European Maritime Safety Agency

Seafarers' Statistics in the EU

Statistical review (2018 data STCW-IS as provided by 31 December 2019)

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EMSA

Executive Summary

The amendments to Directive 2008/106/EC introduced by Directive 2012/35/EU established a mechanism for gathering information on certificates and endorsements issued to seafarers by the EU Member States. The objective is to use it as a primary source of data for statistical analysis and for use by EU Member States and the Commission in policy making.

The statistical review presented in this report is based on data extracted from certificates and endorsements registered by EU Member States, Iceland and Norway until 31 December 2018. This data which was transferred and recorded in the STCW Information System (STCW-IS) until 31 December 2019, represents a snapshot of the European labour market in terms of the number of seafarers holding valid certificates and endorsements in 2018.

The data included in the STCW-IS shows that by end-2018, 209,192 masters and officers held valid certificates of competency (CoC) issued by EU Member States[1] while another 106,334 masters and officers held original CoCs issued by non-EU countries with endorsements issued by EU Member States attesting their recognition (EaR). Overall, the end of 2018 saw almost a third of a million masters and officers as potential manpower to serve on board EU Member State flagged vessels.

The five EU Member States that had more masters and officers holding CoCs issued by them in 2018 were the United Kingdom (30,716), Poland (20,467), Greece (20,450), Norway (16,366) and Croatia (14,291). In addition, the five EU Member States that had more masters and officers holding EaRs issued were Malta (64,158), Cyprus (27,038), Norway (13,645), the United Kingdom (12,511) and Portugal (11,552). Finally, the five non-EU countries which had more masters and officers holding CoCs recognised by EU Member States were the Philippines (39,145), Ukraine (23,449), the Russian Federation (16,766), India (8,594) and Turkey (4,997).

The inclusion of data received from Iceland and Norway as from last year was a positive development and an important contribution to having more robust consolidated data in the system. Nevertheless, because only two years' data has been collected from these countries, the comparative analysis presented under the summary overview 2014-2018 did not include it. From this overview, with the objective of having a wide picture of the number of masters and officers available to serve on board EU Member State flagged vessels, it can be seen that throughout these five years, the overall figures remained broadly stable in terms of distribution per department, capacity, gender, nationality and age. This stability may indicate that, in general terms, the European maritime labour market has been able to attract new entrants that have replaced those leaving the seafaring career.

[1] Hereinafter, and unless otherwise specified, reference to EU or EU Member State(s) is to be taken as including also Norway and Iceland.

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List of Abbreviations

CoC	Certificate of Competency
CoP	Certificate of Proficiency
EaR	Endorsement attesting the recognition of a foreign certificate of competency
EC	European Commission
EFTA	European Free Trade Association
EMSA	European Maritime Safety Agency
ETO	Electro-technical Officer
ETS	Exponential Triple Smoothing
EU	European Union
GT	Gross Tonnage
kW	kilowatts
ML	Management level
NCV	Near Coastal Voyages
OEW	Officer in charge of an engineering watch
OL	Operational level
OOW	Officer in charge of a navigational watch
STCW Convention	The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended
STCW-IS	STCW Information System, hosted and managed by EMSA

1. Introduction

1.1 Legal background

The EMSA Founding Regulation[2] establishes in its Article 2 that "The Agency shall facilitate cooperation between the Member States and the Commission in gathering and analysing data on seafarers provided and used in accordance with Directive 2008/106/EC[3] of the European Parliament and of the Council of 19 November 2008 on the minimum level of training of seafarers".

Article 25a of Directive 2008/106/EC, as amended, establishes that "information shall be made available by Member States to the Commission on a yearly basis and in electronic format and shall include information registered until 31 December of the previous year". Norway and Iceland (Members of the European Free Trade Association States) are similarly bound by this obligation. This data is recorded in the STCW Information System (STCW-IS), operated by EMSA.

1.2 Data collection, analysis and beneficiaries

The statistical review presented in this report is based on data extracted from certificates and endorsements registered by EU Member States, Norway and Iceland until 31 December 2018, and received in the STCW-IS until 31 December 2019. This fifth review presents a snapshot of the number of seafarers holding valid certificates and endorsements in 2018. It should be noted that, because the data extracted from the national registers held by EU Member States did not include any information on whether the holders were active or not, it was not possible to determine how many of them were working on board vessels during 2018.

EMSA has compiled data throughout the years with the objective of having a wide picture of the number of masters and officers available to serve on board EU Member State flagged vessels. The result of this overview can be found in section 2.5.

Due to the inclusion of data from Norway and Iceland and in order to simplify the text for the reader, where the wording EU or EU Member State(s) appears in respect of information from 2017 onwards, this is to be taken as including Norway and Iceland.

The main beneficiaries of this statistical review are the EU Member States and the Commission for policy-making purposes. Ship owners and ship operators may continue to derive added value in terms of knowing the magnitude of manpower available in the EU to crew their vessels. The information provided in this review is also intended to be useful to maritime education and training institutions in the EU and could facilitate estimating market needs for their services. Researchers may also be interested in some of the statistical outputs, as well as seafarers and the organisations that represent them.

1.3 Accuracy

The information in this review must be qualified by the limitation in EMSA's ability to gauge the margin of error in the data extraction processes undertaken at EU Member States' level. Some inconsistencies were in fact identified during the validation phase at EMSA, demonstrating that in some cases seafarers' names and/or document numbers might have been registered as different strings by different EU Member States. Upon request, EMSA also proceeded to the replacement of previous years' data in cases where inconsistencies were detected by the EU Member States themselves. As with previous reviews, corrections were also made in the 2018 reported data on seafarers' gender when different genders were attributed to the same seafarer in the same country. These corrections ensured that any such identified inconsistencies, albeit negligible, would not impair the proper counting of seafarers at EU level.

The original data received from the EU Member States included fields such as gender, nationality and the capacity together with its associated limitations. The information was made available in these fields as free text. To ensure harmonisation and comparability of data, the mentioned fields were subject to a coding process conducted by EMSA. In order to estimate the human error introduced through this process, an automatic sample was selected from the data made available by each EU Member State and was validated by a different operator at EMSA, thus maximising

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002R1406
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0106

the widest possible number of errors to be identified and corrected during the verification process. The dimension of the sample was established by the formula:

$$n = \frac{z^2 * 0.25 * N}{(N-1) * E^2 + 0.25 * z^2}$$

where,

n – is the dimension of the sample (number of documents to be randomly selected);

N – is the total number of documents belonging to the selected country;

z – is the level of confidence;

E – is the maximum amplitude of the error.

A level of confidence of 90% (z = 1.645) and an amplitude of error (E) of 1% were established for the evaluation of the errors introduced by human intervention during the coding process. This ensured a negligible level of error when coding the free text received into STCW-IS internal values.

1.4 Coherence and comparability

The information set subject to review comprised data from 27 EU Member States (Austria does not issue certificates and endorsements to seafarers) and two EFTA countries (Norway and Iceland).

It is to be noted that while measures have been taken to safeguard information subject to data protection rules (please see 1.6 below), said measures still maintained intact the possibility for data in its encrypted form to be analysed and compared.

In order to ensure comparability of the data received from various sources, all data was subject to a coding process, which ensured that all fields received as free text were linked to predefined internal values.

Taking into account the diversity of the capacities established by the national manning regulations, the information received on capacities in which the seafarers were entitled to serve, together with their associated limitations, was converted during the data coding at EMSA into generic capacities as defined by the STCW Convention. In order to keep the coherence, EMSA applied the criteria already used in previous statistical reviews while converting the data during the coding process.

It is to be noted that in the case of masters and officers, their total does not tally with the sum of the total number of masters and deck officers plus the total number of engineer officers. The reason for this is that some masters and officers may hold certificates for both the Deck and the Engine Departments. Furthermore, because a person may hold certificates/endorsements issued by different EU Member States, the sum of the number of masters and officers registered by individual EU Member States may not be equal to the total number of masters and officers at EU level.

1.5 Accessibility and clarity, dissemination format

User access to information featured in this report is restricted to the content of this written report. No direct access may be granted to the original data upon which the statistical compilation is based. EU Member States retain all property rights to the information in its raw data format and can amend their data at any time before its processing begins. Detailed statistics could be compiled by EMSA upon request from the European Commission and the EU Member States based on agreed terms of reference.

This report is published on the STCW-IS portal (https://portal.emsa.europa.eu/web/stcw) hosted by EMSA.

1.6 Confidentiality

All publicly available statistics fully comply with the obligations established in Article 4 of EMSA's Founding Regulation[4], as amended. In order to ensure the safeguarding of personal information subject to data protection, EMSA developed and made available to the EU Member States, Norway and Iceland an anonymisation software module which converts all personal data – such as seafarer's name, seafarer's unique identifier and certificate/ endorsement number – extracted in its raw format from the national registries into anonymous strings of characters by using a powerful encryption algorithm. The data anonymised at source is received and compiled by EMSA in its encrypted format.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32002R1406

2. Statistical processing

The data subject to review was extracted from the national registries on certificates and endorsements issued to seafarers and maintained by the EU Member States. Taking into account the diversity of technologies used to register such data, each EU Member State developed a data extractor module to retrieve the information established in Annex V to Directive 2008/106/EC in a structured format defined by the technical specifications made available by EMSA. As noted above, the data extracted was subject to a preliminary validation process to ensure consistency and to an encryption process by which all personal data was made anonymous at the EU Member State site.

Only documents with a valid status were considered (in principle, an EU Member State may provide information on all documents registered, including those suspended, cancelled, declared lost or destroyed).

2.1 Masters and officers holding valid certificates of competency in 2018

2.1.1 Total

The total number of masters and officers holding valid certificates of competency (CoC) at EU level was 209,192. Of these, 3.45% held CoCs entitling them to serve in both the Deck and Engine Departments. In addition, just a very limited number of them (0.07%) held CoCs issued by more than one EU Member State.

2.1.2 Distribution by EU Member State

The data in Figure 2-1 shows the distribution of masters and officers as registered by EU Member State:

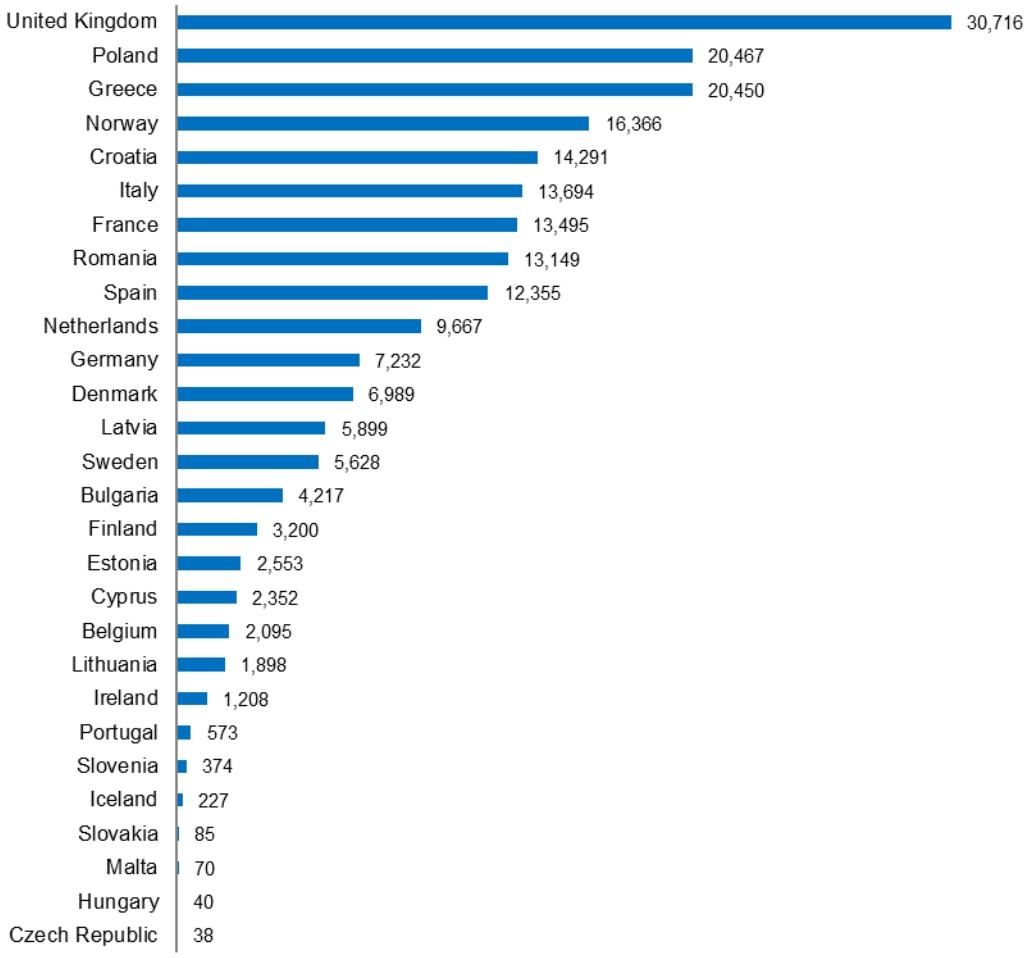

Figure 2-1 Masters and officers holding valid CoCs per EU Member State

2.1.3 Distribution by department

The number of masters and officers holding valid CoCs in each department is presented in Figure 2-2. It illustrates that the number of masters and officers entitled to serve in the Deck Department (Chapter II of the STCW Convention) was 45% higher than the number of officers entitled to serve in the Engine Department (Chapter III of the STCW Convention). The officers grouped under 'Alternative certification' (Chapter VII of the STCW Convention) were reported as holding a multipurpose capacity.

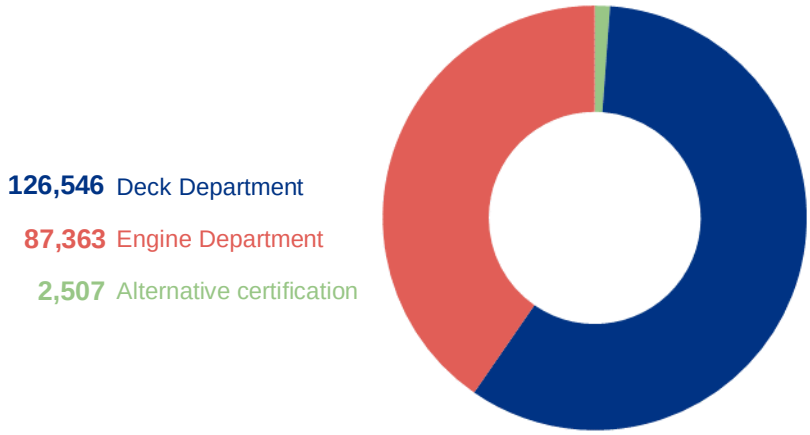

Figure 2-2 Distribution of masters and officers holding valid CoCs by department

The distribution by department within each EU Member State is presented in Figure 2-3.

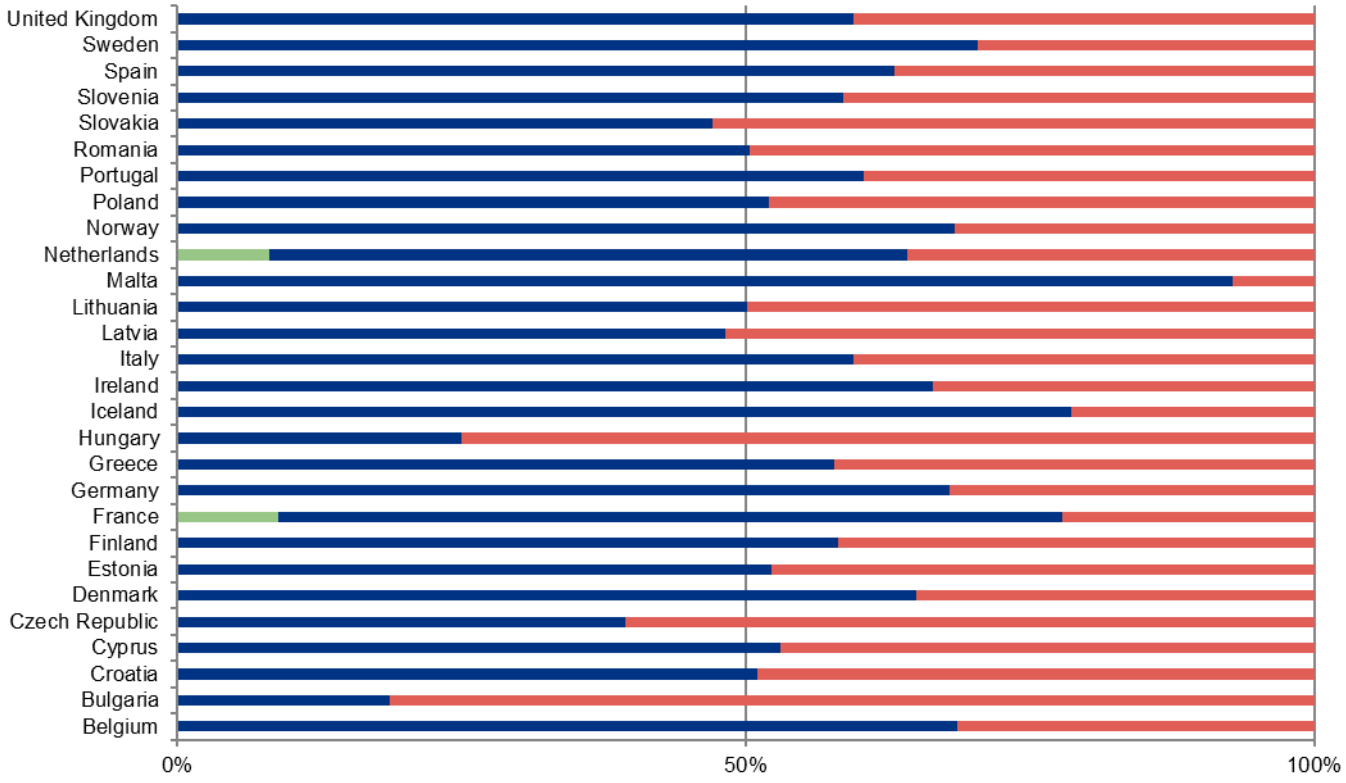

Figure 2-3 Distribution of masters and officers holding valid CoCs by department in each EU Member State

2.1.4 Distribution by capacity

Taking into account that EU Member States do not use the same terms to refer to capacities in their manning regulations, all capacities reported in the CoCs have been linked to the generic capacities established in Chapters II and III of the STCW Convention, in order to establish a common platform for data comparability. The review was conducted separately for the Deck and the Engine Departments. The total number of masters and officers was established by counting each person in his/her highest capacity.

2.1.4.1 Distribution by deck capacity

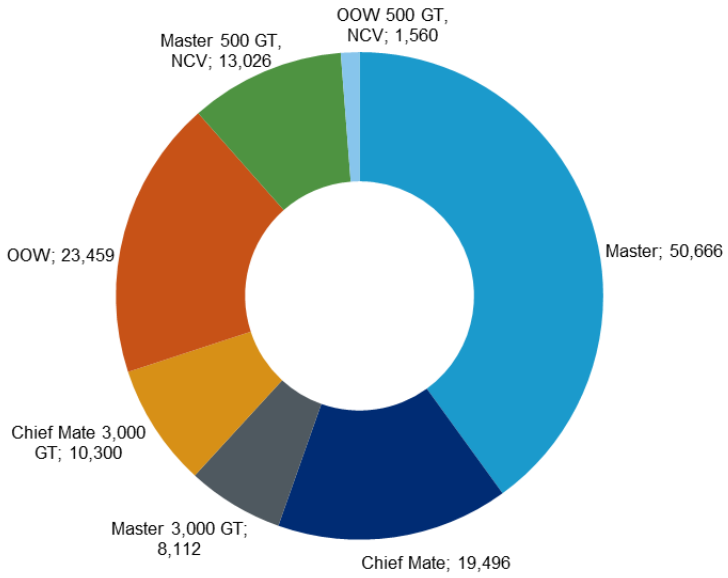

Figure 2-4 Distribution of masters and deck officers holding valid CoCs by deck capacity

The data in Figure 2-4 shows that 55.44% of the deck officers were entitled to serve at management level on ships of 3,000 GT or more, with 1.99% and 1.40% of their CoCs being limited in terms of gross tonnage and area of navigation, respectively.

2.1.4.2 Distribution by engine capacity

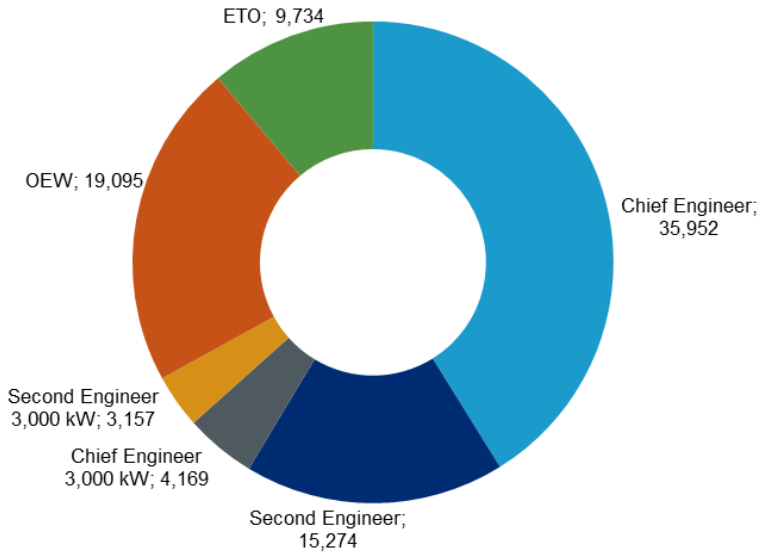

Figure 2-5 Distribution of engineer officers holding valid CoCs by engine capacity

The data in Figure 2-5 shows that 58.64% of the engineer officers were entitled to serve at management level on ships of 3,000 kW or more, with 4.74%, 33.34% and 4.62% of their CoCs being limited in terms of propulsion power, type of engine and area of navigation, respectively.

2.1.5 Gender distribution

The review on gender distribution was based on the data provided by 26 EU Member States which had such data available. Consequently, it covered 179,114 masters and officers representing 85.62% of the total number of officers holding valid CoCs in 2018 at EU level.

Considering the total number of masters and officers whose gender was known, it can be stated with a level of confidence of 99% that the percentage of female masters and officers was 2.22% ± 0.12% compared to 97.78% ± 0.12% of male masters and officers.

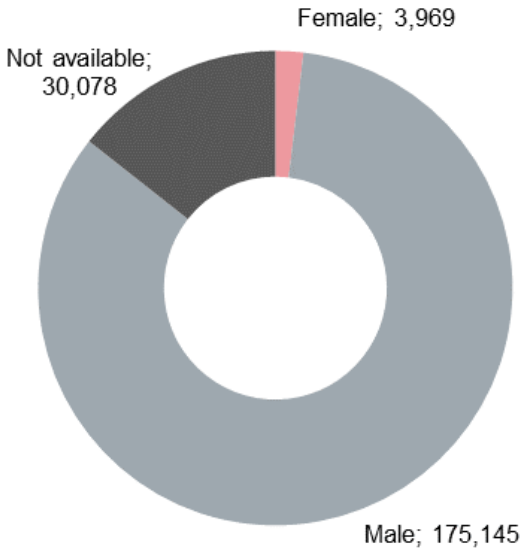

Figure 2-6 Gender distribution of masters and officers holding valid CoCs

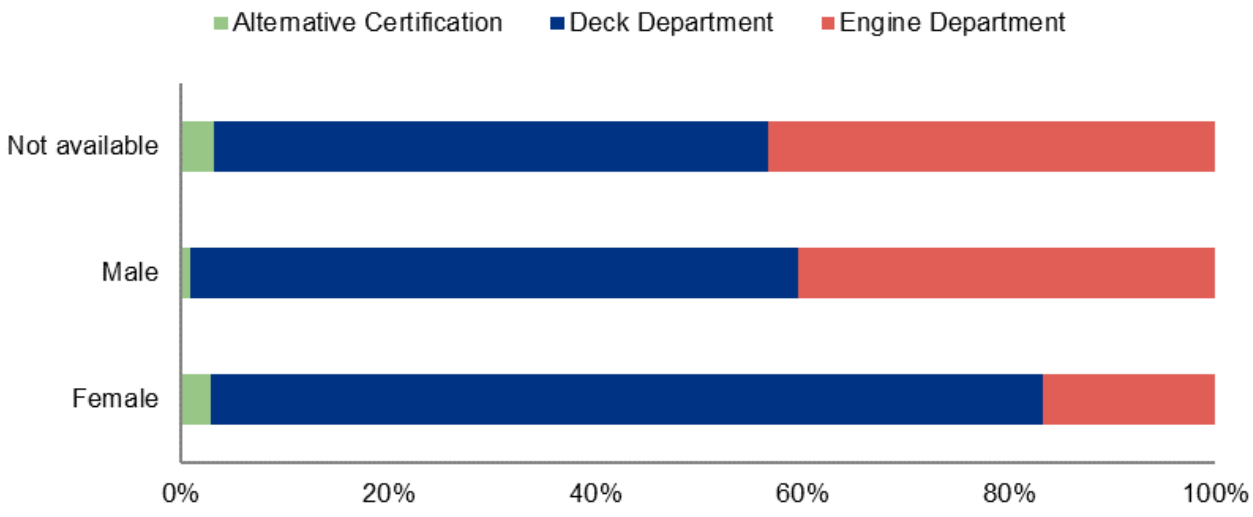

Figure 2-7 Distribution of masters and officers holding valid CoCs by department and by gender

The information presented in Figure 2-7 shows that male masters and officers follow a general distribution by department (60% entitled to serve in the Deck Department and 40% entitled to serve in the Engine Department) while most female masters and officers (86.04%) were entitled to serve in the Deck Department.

The distribution of the capacities of masters and deck officers holding valid CoCs by gender is presented in Figure 2-8.

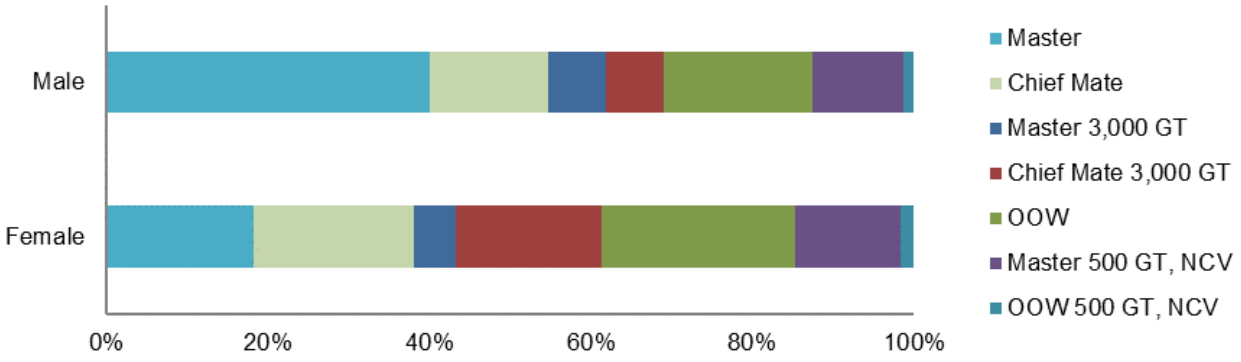

Figure 2-8 Distribution of the deck capacities of masters and deck officers holding valid CoCs by gender

As illustrated in Figure 2-8, the three main capacities in which female officers were entitled to serve were 'OOW' (24.10%), 'Chief Mate' (19.91%) and 'Master' (18.30%), capacities representing 62.31% of the total number of female masters and officers entitled to serve in the Deck Department. The three main capacities in which male masters and officers were entitled to serve were 'Master' (40.05%), 'OOW' (18.45%) and 'Chief Mate' (14.80%), capacities representing 73.29% of the total number of male masters and officers entitled to serve in the Deck Department.

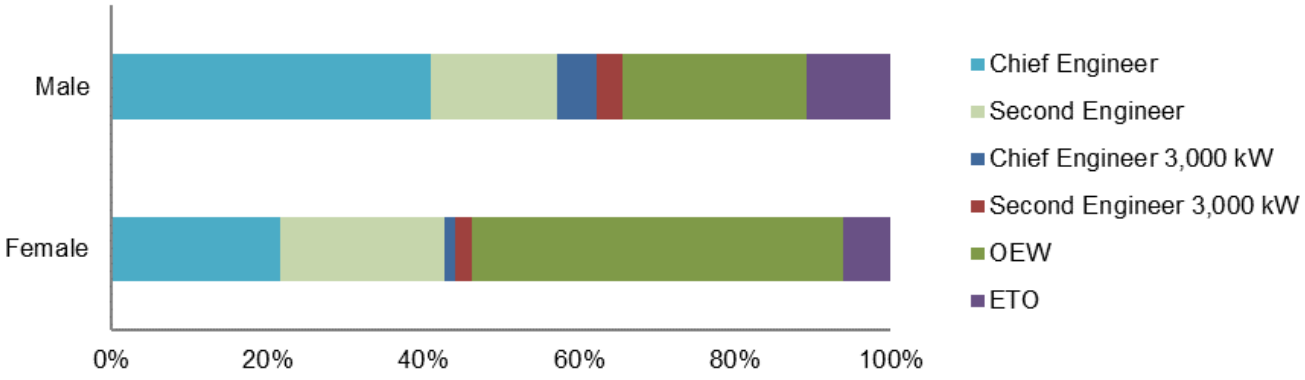

Figure 2-9 Distribution of the engine capacities of engineer officers holding valid CoCs by gender

As illustrated in Figure 2-9, the three main capacities in which female officers were entitled to serve in the Engine Department were 'OEW' (47.67%), 'Chief Engineer' (21.72%) and 'Second Engineer' (21.02%). These capacities covered 90.41% of the total number of female officers entitled to serve in the Engine Department. The three main capacities in which male officers were entitled to serve in the Engine Department were 'Chief Engineer' (40.96%), 'OEW' (23.52%) and 'Second Engineer' (16.14%). These capacities represented 80.62% of the total number of male officers entitled to serve in the Engine Department.

2.1.6 Distribution by nationality

The review of the data received from 28 EU Member States issuing CoCs showed that information on nationality was available for 203,208 masters and officers, representing 97.14% of the total number of officers at EU level holding a CoC.

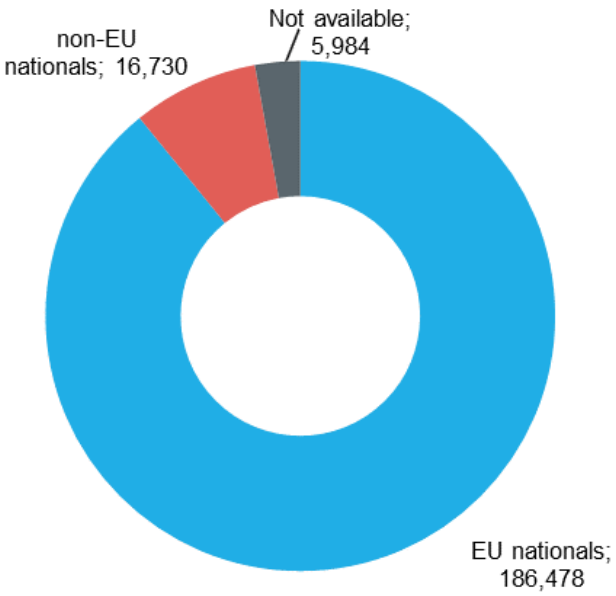

Figure 2-10 Nationality distribution of masters and officers holding valid CoCs

In addition to nationals of the EU Member States, 16,730 nationals of 113 non-EU countries held valid CoCs as masters or officers issued by EU Member States. When grouping these non-EU countries by region, it occurs that 16 were located in Europe, 34 were located in Asia, 33 were located in Africa, 24 were located in the Americas and 6 were located in the Oceania.

The distribution of the non-EU nationals holding valid CoCs issued by the EU Member States presented in Figure 2-11 shows that 83.52% of them were nationals of countries located in Asia.

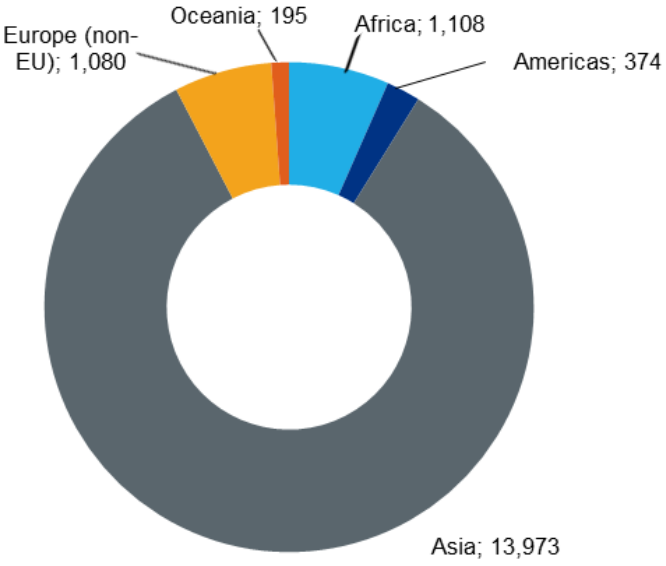

Figure 2-11 Nationality distribution of non-EU nationals holding valid CoCs issued by EU Member States by region of origin

2.1.7 Age distribution

The average age of masters and officers holding valid CoCs was 43.6 (years). Whereas the under 25 age group counted 6,720 masters and officers, all other age groups had a relatively uniform distribution, each counting between 21,000 and 31,000 masters and officers, which represented 10%-15% of the total number.

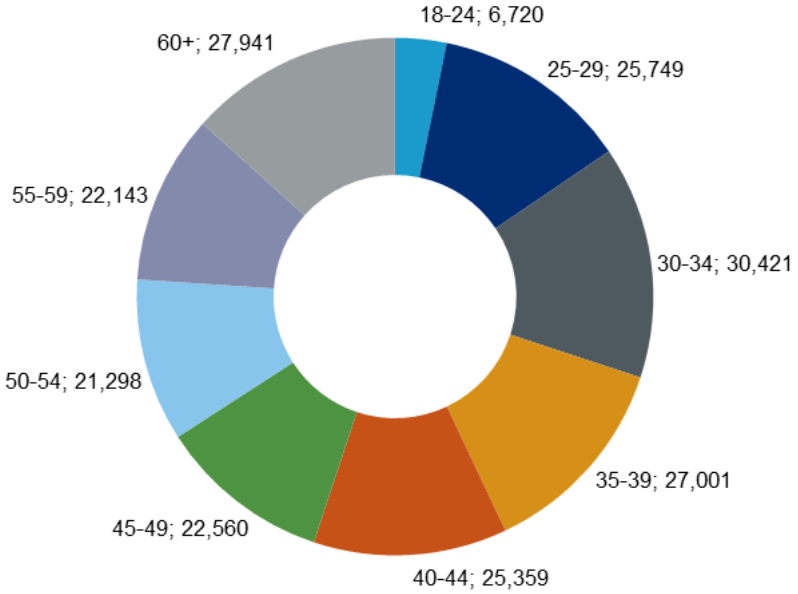

Figure 2-12 Age distribution of masters and officers holding valid CoCs

The age profile per department is presented in Figure 2-13.

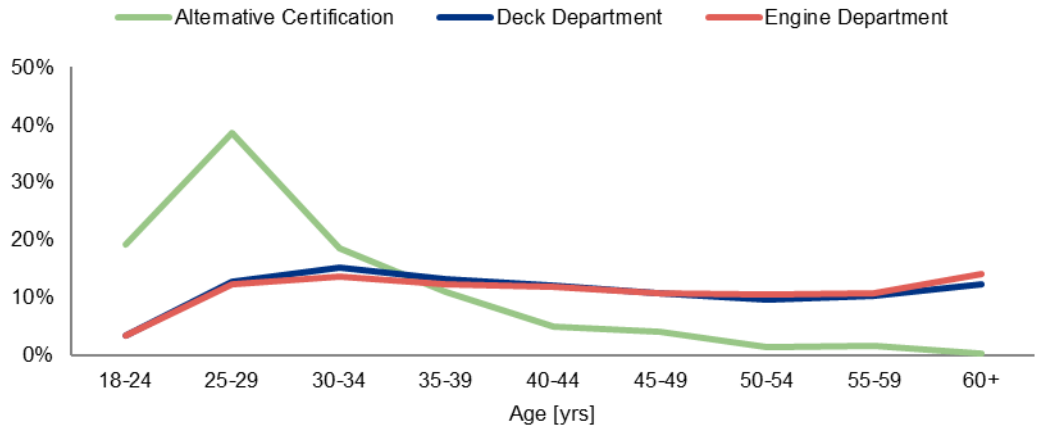

Figure 2-13 Age profile of masters and officers holding valid CoCs per department

Reviewing the data in Table 2-7 of Appendix A, the following conclusions could be stated:

- 76.47% of officers holding certificates issued under Chapter VII, 'Alternative certification' of the STCW Convention were younger than 35 years of age;
- The masters and officers certified under Chapter II (Deck Department) and Chapter III (Engine Department) of the STCW Convention were evenly distributed throughout the age groups other than the 18-24 years of age group;
- 56.86% of masters and deck officers and 53.79% of the engineer officers were younger than 45 years of age.

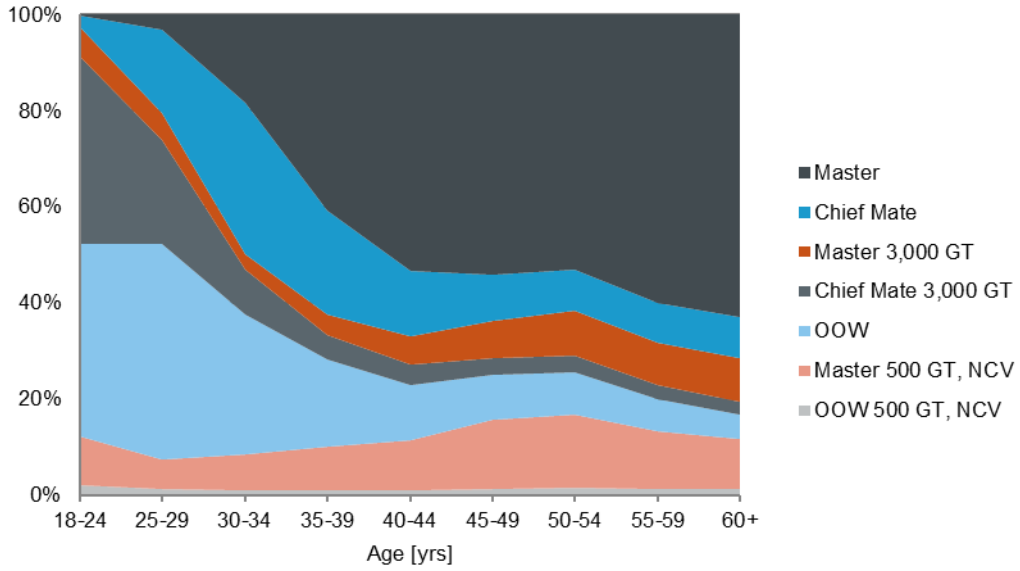

Figure 2-14 Distribution of masters and deck officers holding valid CoCs by age groups

Considering the highest capacity in which masters and deck officers were entitled to serve:

- 62.36% of those entitled to serve as 'Master' were 45 years old or older;
- 64.70% of those entitled to serve as 'Chief Mate' were younger than 40 years of age;
- 58.83% of those entitled to serve as 'Master 3,000 GT' were 45 years old or older;
- 50.90% of those entitled to serve as 'Chief Mate 3,000 GT' were younger than 30 years of age;
- 62.58% of those entitled to serve as 'OOW' were younger than 35 years of age;
- 54.00% of those entitled to serve as 'Master 500 GT, NCV' were 45 years old or older; and
- 59.17% of those entitled to serve as 'OOW 500 GT, NCV' were older than 40 years of age.

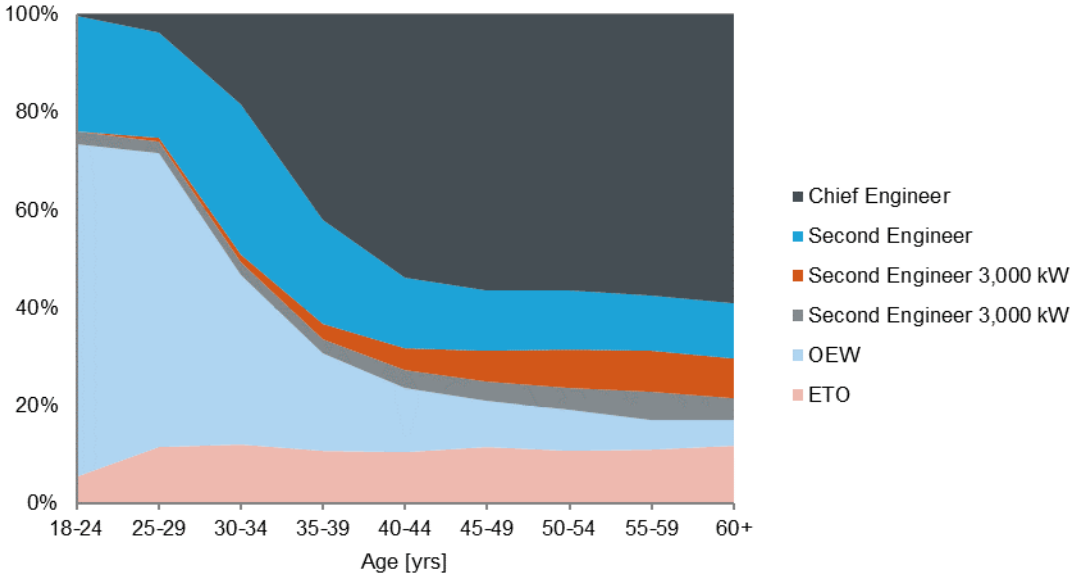

Figure 2-15 Distribution of engineer officers holding valid CoCs by age groups

Considering the highest capacity in which the engineer officers were entitled to serve:

- 64.54% of those entitled to serve as 'Chief Engineer' were 45 years old or older;
- 59.00% of those entitled to serve as 'Second Engineer' were younger than 40 years of age;
- 60.37% of those entitled to serve as 'Chief Engineer 3,000 kW' were 50 years old or older;

- 59.14% of those entitled to serve as 'Second Engineer 3,000 kW' were 45 years old or older;
- 66.33% of those entitled to serve as 'OEW' were younger than 35 years of age; and
- 58.37% of those entitled to serve as 'ETO' were older than 40 years of age.

Figure 2-16 presents the age profile per gender, while Figure 2-17 and Figure 2-18 present the average age per capacity for each of the two gender groups. These figures indicate that:

- the average age for female masters and officers was 34.3 years, while that for male masters and officers was 43.5 years;
- 75.16% of female masters and officers were younger than 40 years of age, while the percentage of the male masters and officers in the same age group was only 42.91%;
- the average age of female masters and deck officers (34.5 years) was higher than the average age of the female engineer officers (32.8 years).

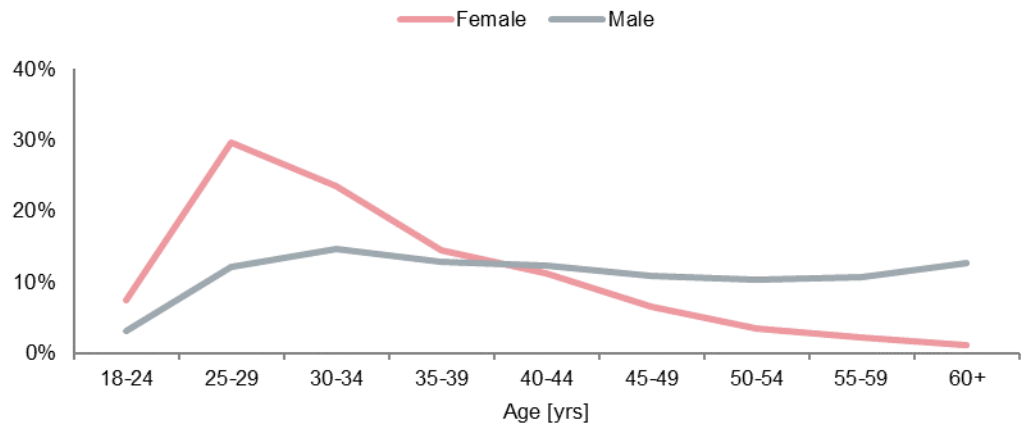

Figure 2-16 Age profile of masters and officers holding valid CoCs per gender

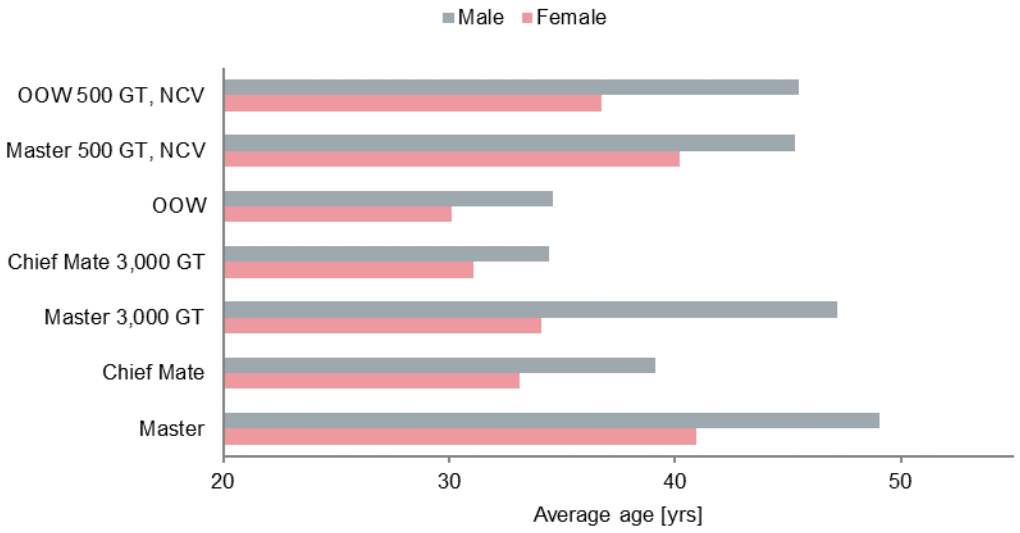

Figure 2-17 Average age of masters and deck officers holding valid CoCs per gender by deck capacity

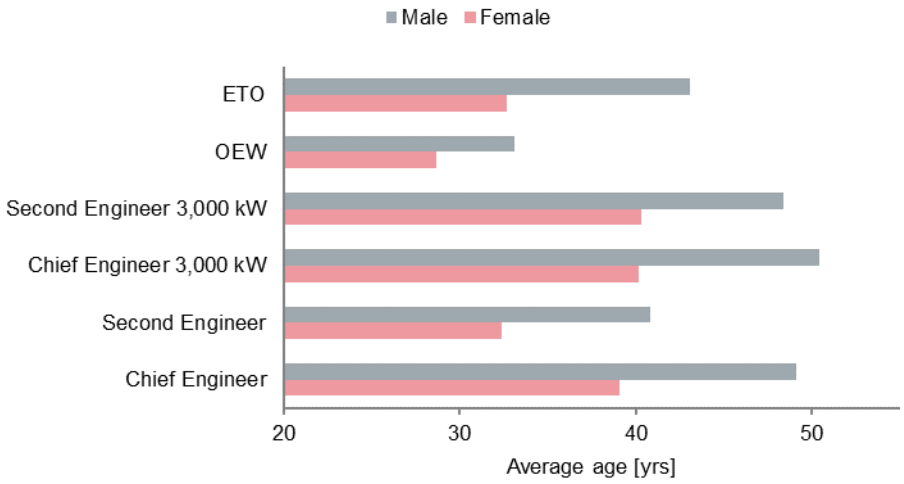

Figure 2-18 Average age of engineer officers holding valid CoCs per gender by engine capacity

2.2 Masters and officers who in 2018 held valid endorsements attesting recognition

2.2.1 Total

The total number of masters and officers holding valid EaRs at EU level was 155,338, with 0.10% of them entitled to serve in both the Deck and Engine Departments. In addition, 9.53% of them held more than one EaR issued by different EU Member States.

Reviewing the distribution by group of countries issuing the original CoC, 49,041 masters and officers held original CoCs issued by other EU Member States (23.44% of the total number of masters and officers holding valid CoCs as per section 2.1.1), 106,334 held original CoCs issued by non-EU countries and 0.03% held original CoCs issued by both EU Member States and non-EU countries.

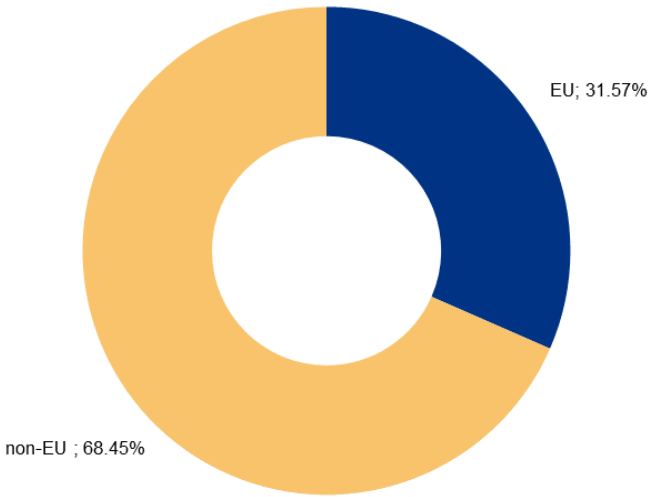

Figure 2-19 Distribution of masters and officers holding valid EaRs by countries issuing the original CoC

2.2.2 Distribution by EU Member State

The distribution of the number of masters and officers holding valid EaRs issued by EU Member State is presented in Figure 2-20.

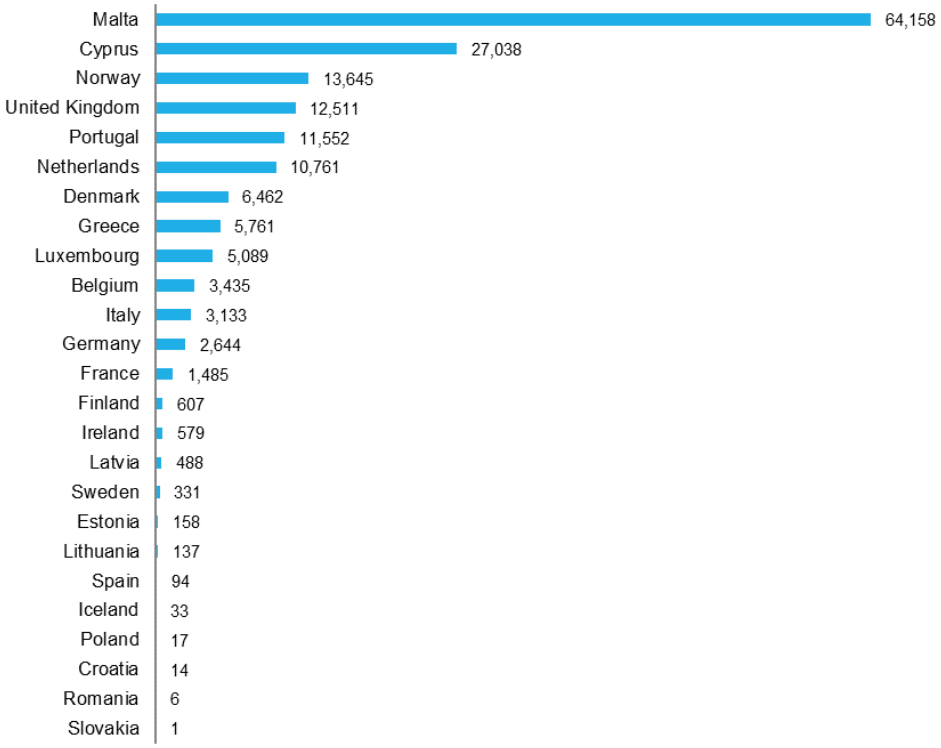

Figure 2-20 Masters and officers holding valid EaRs per EU Member State

The distribution of the masters and officers holding valid EaRs endorsing original CoCs issued by EU and non-EU countries is presented in Figure 2-21.

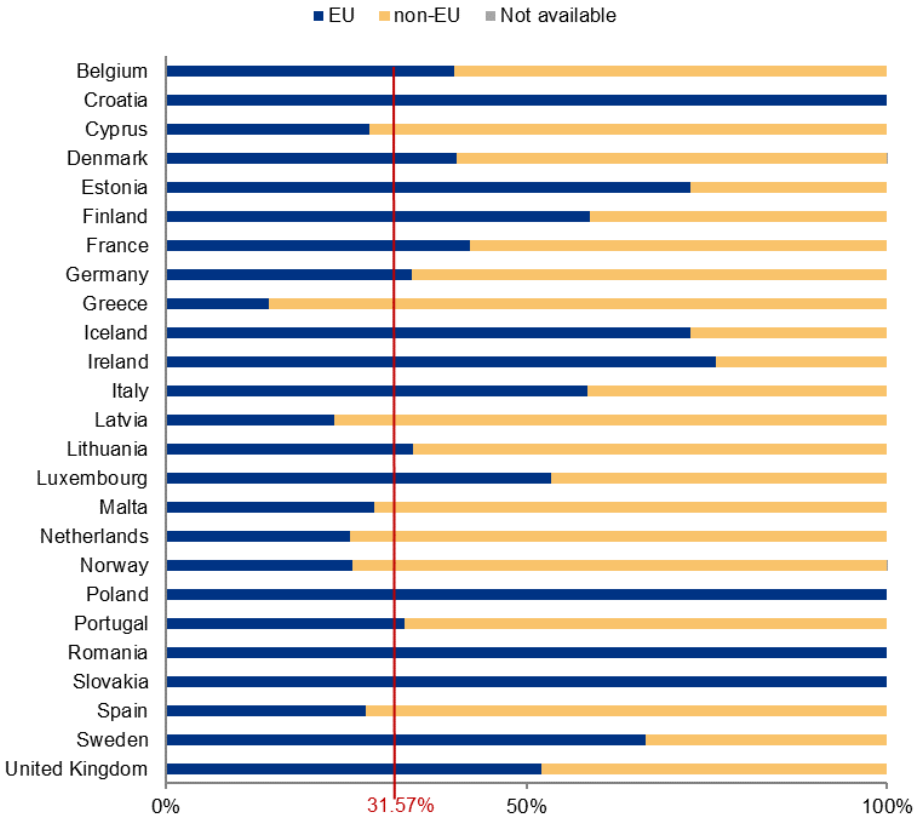

Figure 2-21 Distribution of masters and officers holding valid EaRs recognising original CoCs issued by EU and non-EU countries

2.2.3 Distribution by countries issuing the original CoCs

Based on reporting by the 25 EU Member States issuing EaRs, the name of the country that issued the original CoC was made available for 155,330 masters and officers, which represented 99.99% of the total number of masters and officers holding valid EaRs at EU level. Figure 2-22 shows the distribution of masters and officers holding valid EaRs by region where the respective countries issuing the original CoC are located.

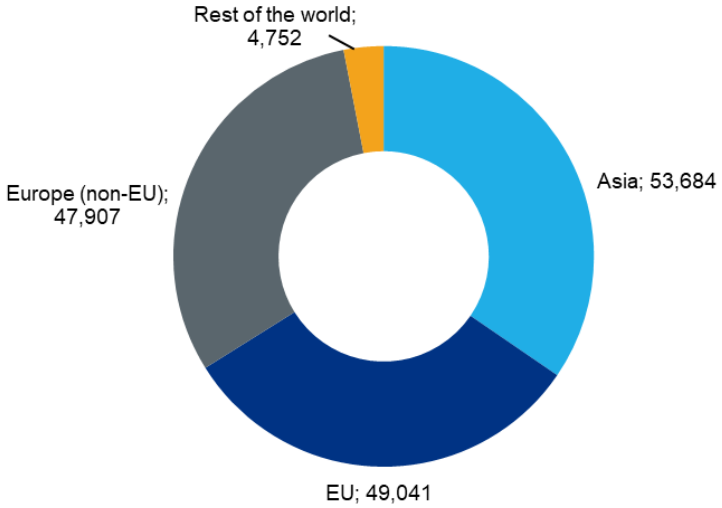

Figure 2-22 Distribution of masters and officers holding valid EaRs by region of the country issuing the original CoC

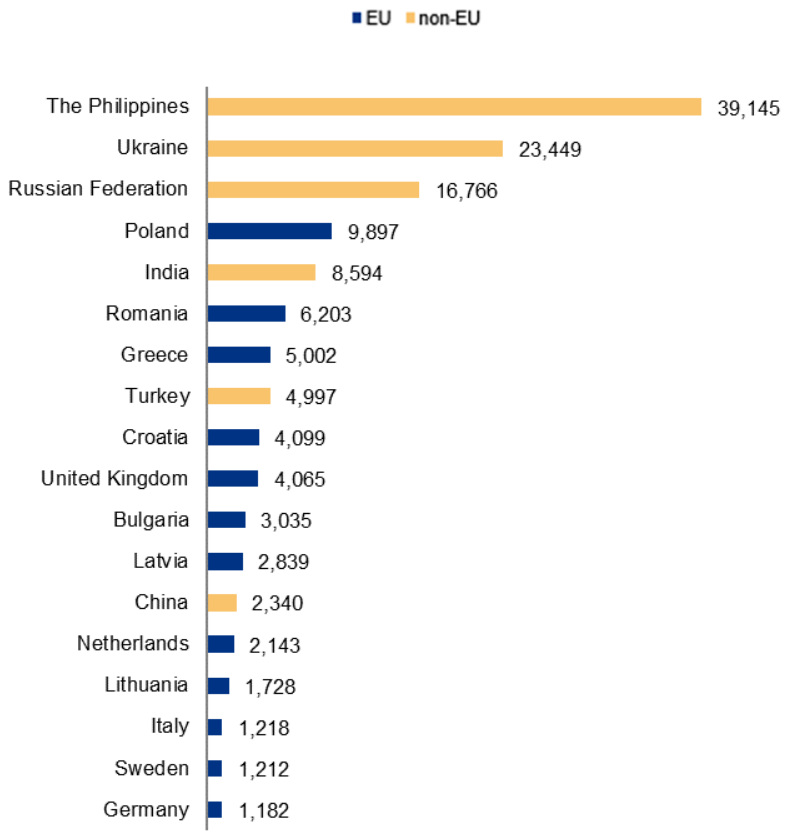

Figure 2-23 Countries issuing the original CoCs registering more than 0.75% of masters and officers holding valid EaRs

The masters and officers registered with valid EaRs in 2018 held original CoCs issued by 87 countries. Figure 2-23 identifies the 18 countries – twelve EU Member States and six non-EU countries – which provided 88.78% of the

total number of masters and officers holding valid EaRs at EU level. Table 2-15 and Table 2-16 of Appendix B present a more detailed list of countries issuing the original CoCs.

2.2.4 Distribution by department

The departments in which the holders of EaRs were entitled to serve are presented in Figure 2-24.

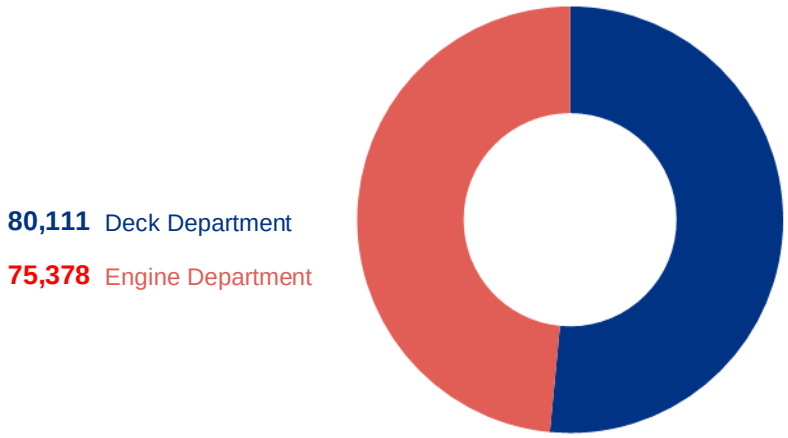

Figure 2-24 Distribution of masters and officers holding valid EaRs by department

The figure illustrates that the number of masters and officers entitled to serve in the Deck Department was only 6.28% higher than the number of officers entitled to serve in the Engine Department.

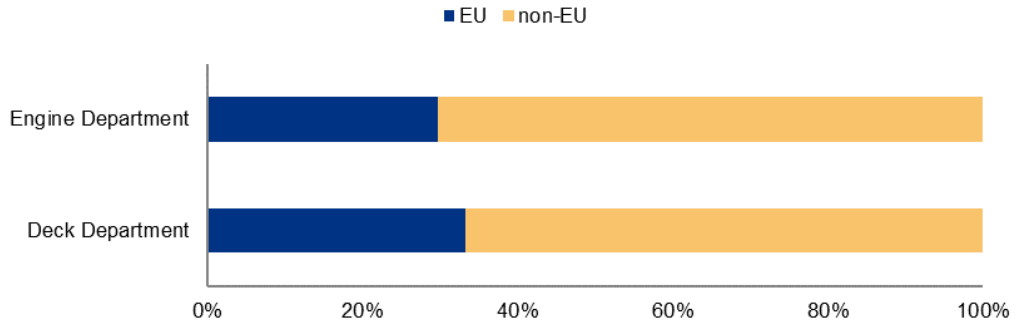

Figure 2-25 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by department

The ratio between the masters and officers holding original CoCs issued by EU Member States and those holding original CoCs issued by non-EU countries follows the same pattern for both the Deck (33% to 67%) and the Engine (30% to 70%) Departments, which is similar to the general distribution presented in Figure 2-19.

2.2.5 Distribution by capacity

Taking into account that EU Member States do not use the same terms to refer to capacities in their manning regulations, all capacities reported in the CoCs have been linked to the generic capacities established in Chapters II and III of the STCW Convention, in order to establish a common platform for data comparability. The review was conducted separately for the Deck and the Engine Departments. The total number of masters and officers was established by counting each person in his/her highest capacity.

2.2.5.1 Distribution by deck capacity

The information in Figure 2-26 shows that, out of the total number of masters and deck officers holding valid EaRs in 2018, 97.57% were entitled to serve on ships of 3,000 GT or more. In addition, the data also indicated that 60.31% of

them were entitled to serve at management level on ships of 3,000 GT or more, with less than 0.5% of their EaRs being limited in terms of tonnage and/or navigation area.

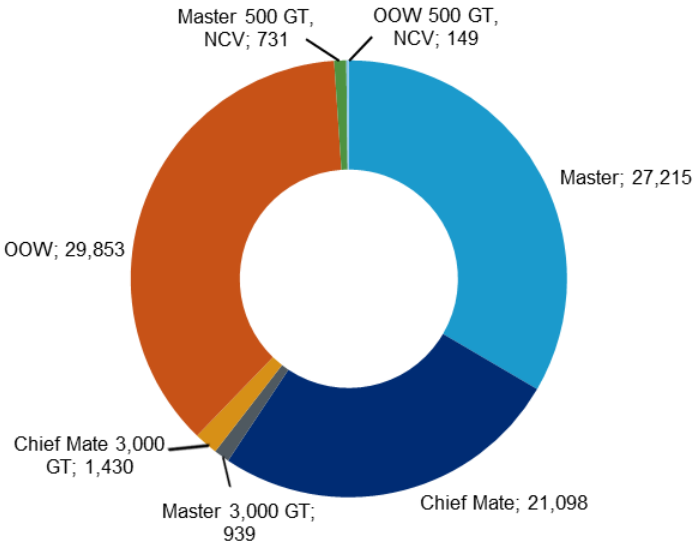

Figure 2-26 Distribution of masters and deck officers holding valid EaRs by deck capacity

The ratio between the masters and officers holding valid EaRs endorsing CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 33% to 67%. Nevertheless, the majority of masters and officers entitled to serve on board ships limited in tonnage or navigation area held CoCs issued mainly by EU Member States (see Figure 2-27).

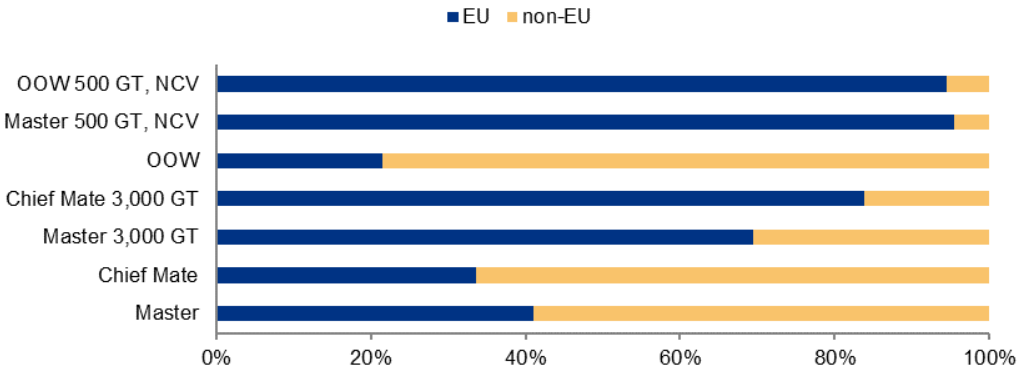

Figure 2-27 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by deck capacity

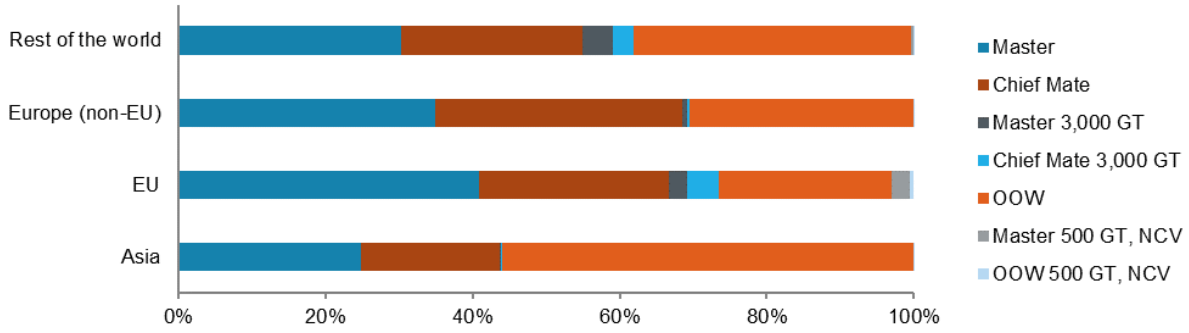

Figure 2-28 Distribution of the deck capacities of masters and deck officers holding valid EaRs by region of the country issuing the original CoC

The majority of masters and deck officers having their original CoC issued by Asian countries held EaRs entitling them to serve at operational level. Deck officers with original CoCs issued by countries in other parts of the world held, in their majority, EaRs entitling them to serve at management level.

2.2.5.2 Distribution by engine capacity

The information in Figure 2-29 shows that, out of the total number of engineer officers holding valid EaRs, 98.01% were entitled to serve on ships powered by main propulsion machinery of 3,000 kW propulsion power or more. In addition, the data also indicated that 57.36% of the engineer officers were entitled to serve at management level on ships powered by main propulsion machinery of 3,000 kW propulsion power or more, with less than 1% of their EaRs being limited in terms of propulsion power or area of navigation and 30.85% being limited in terms of type of propulsion machinery.

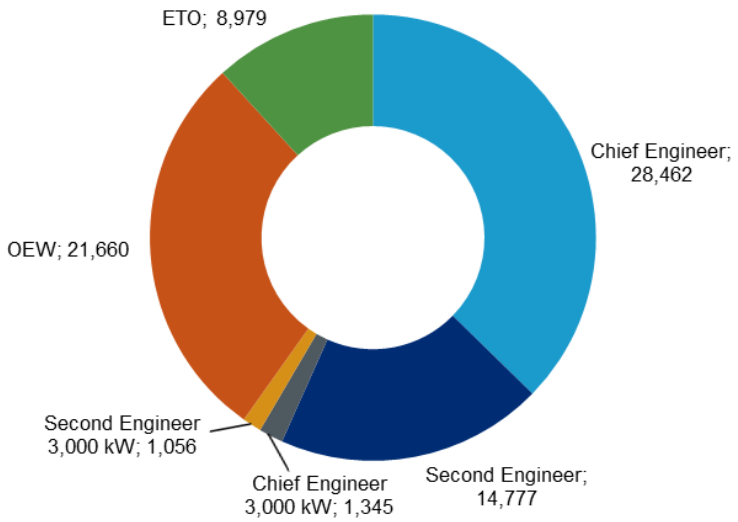

Figure 2-29 Distribution of engineer officers holding valid EaRs by engine capacity

The ratio between the engineer officers holding CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 30% to 70%. Nevertheless, this pattern was not clearly followed by those entitled to serve on board ships limited in propulsion power (see Figure 2-30).

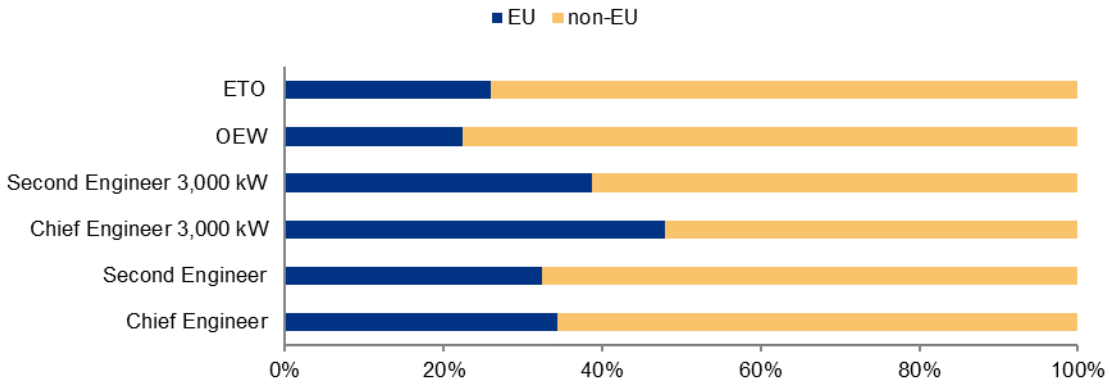

Figure 2-30 Distribution of engineer officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by engine capacity

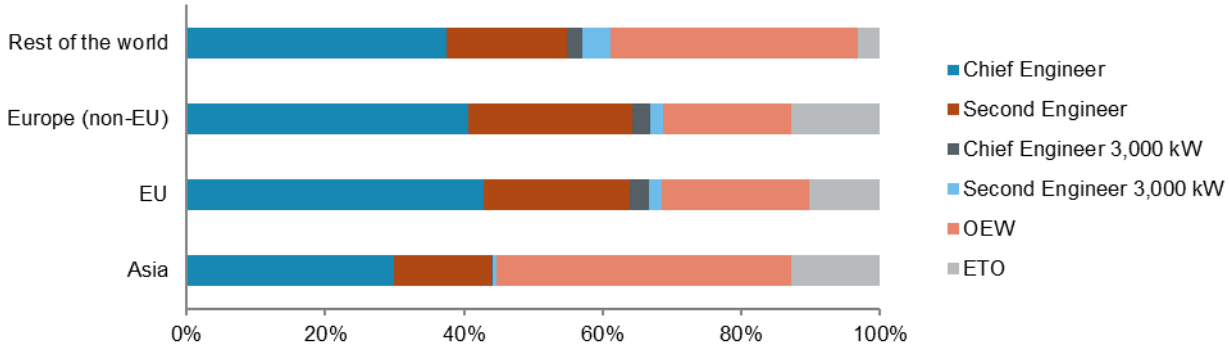

Figure 2-31 Distribution of the engine capacities of engineer officers holding valid EaRs by region of the country issuing the original CoC

The majority of the engineer officers having the original CoC issued by Asian countries held EaRs entitling them to serve at operational level. Engineer officers with CoCs issued by countries located in other parts of the world held, in their majority, EaRs entitling them to serve at management level.

2.2.6 Gender distribution

The review of the gender distribution of masters and officers holding valid EaRs considered the data provided by 23 EU Member States. Consequently, this review was conducted for 146,732 masters and officers that represented 94.46% of the total number holding valid EaRs in 2018 at EU level.

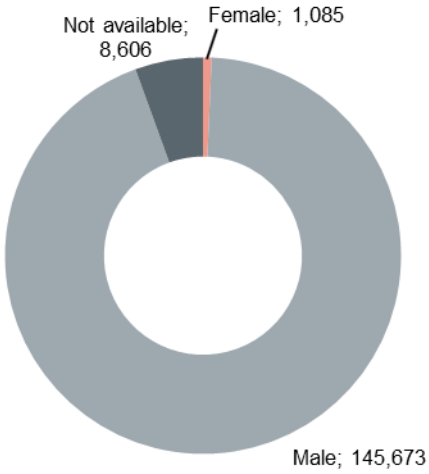

Figure 2-32 Gender distribution of masters and officers holding valid EaRs

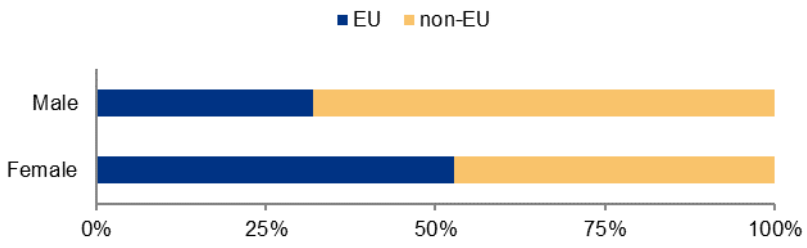

Figure 2-33 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by gender

It was noted that 52.72% of the total number of female masters and officers holding valid EaRs held original CoCs issued by EU Member States, followed by 16.50% who had their original CoCs issued by countries located in Asia.

2.2.7 Distribution by nationality

The review of data made available by the 25 EU Member States issuing EaRs showed that masters and officers holding valid EaRs were nationals of 127 countries. The distribution of these countries per region of origin does not show a significant deviation from the review on countries issuing the original CoCs.

2.2.8 Age distribution

The average age of masters and officers holding valid EaRs was 41 years. Reviewing the average age per country issuing the original CoCs, the average age of masters and officers holding CoCs issued by the EU Member States was 43.1 years, while of those holding original CoCs issued by non-EU countries was 40.1 years.

Considering the ratio between the masters and officers holding valid EaRs endorsing CoCs issued by the EU Member States and those holding valid EaRs endorsing CoCs issued by non-EU countries (32% to 68%), the distribution by age groups shows a deviation, especially for the masters and officers younger than 25 years of age and for those older than 59 as presented in Figure 2-35.

The data presented in Table 2-17 of Appendix B and in Figure 2-36 indicates that:

- the number of officers entitled to serve in the Engine Department was similar throughout the age groups (except for those of the boundaries) which was not the case with the masters and deck officers;
- 54.93% of the masters and officers holding valid EaRs for the Deck Department were younger than 40 years of age;
- the number of engineer officers was higher than the number of masters and deck officers for all age groups over 44 years of age.

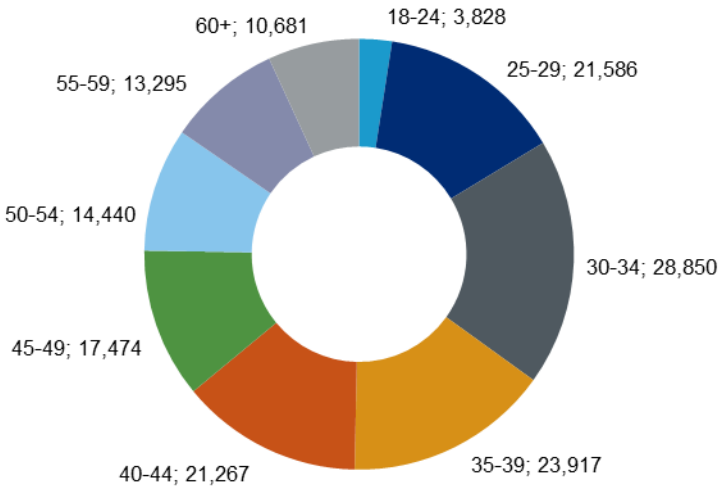

Figure 2-34 Age distribution of masters and officers holding valid EaRs

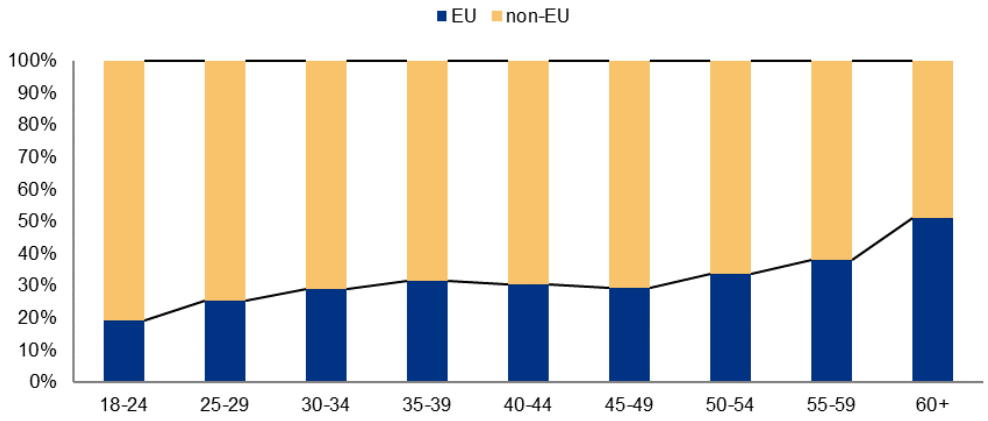

Figure 2-35 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by age group

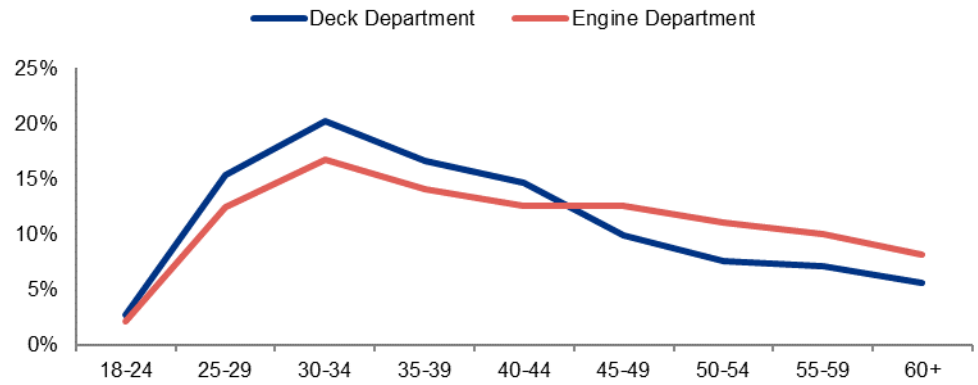

Figure 2-36 Age profile of masters and officers holding valid EaRs per department

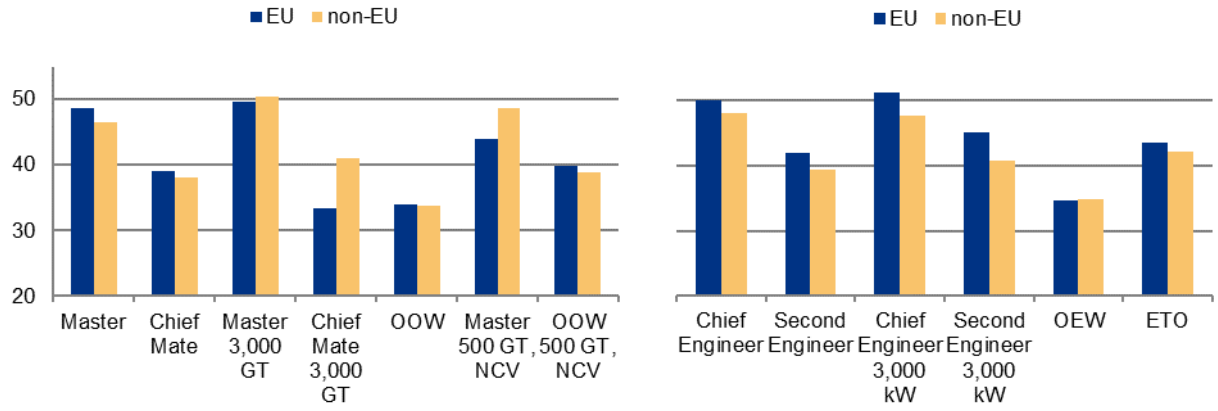

Figure 2-37 Average age of officers holding valid EaRs per EU and non-EU countries issuing the original CoC by capacity

The graphs in Figure 2-37 indicate that the average age of masters and officers was higher for those holding original CoCs issued by EU Member States, except for masters and chief mates holding EaRs endorsing capacities limited in gross tonnage.

2.3 Masters and officers available to serve on board EU Member State flagged vessels in 2018

Figure 2-38 aggregates the number of masters and officers holding valid CoCs and EaRs. This encompasses EaRs issued to holders of CoCs issued by both EU and non-EU countries analysed in sections 2.1 and 2.2.

Figure 2-38 Masters and officers holding valid CoCs or EaRs per EU Member State

2.3.1 Total

The total number of masters and officers available to serve on board EU Member State flagged vessels was 315,526, distributed as presented in Figure 2-39. It included the masters and officers holding valid CoCs issued by EU Member States and the masters and officers holding valid EaRs issued by EU Member States recognising CoCs issued by non-EU countries.

Figure 2-39 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC

2.3.2 Distribution by department

Figure 2-40 presents the distribution by department of masters and officers available to serve on board EU Member State flagged vessels. It excludes officers holding original CoCs issued by EU Member States under Chapter VII 'Alternative Certification' of the STCW Convention because no officers from non-EU countries held such certification.

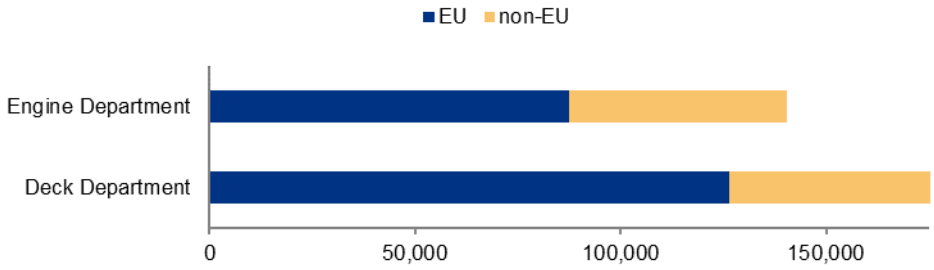

Figure 2-40 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by department

The number of masters and officers available to serve in the Deck Department (179,939) was 28% higher than the number of officers available to serve in the Engine Department (140,335). This percentage changes depending on whether the CoCs were issued by EU Member States or non-EU countries. In the first case it was 45% while in the second case it was 0.8%.

In both Deck and Engine Departments, the number of officers holding valid CoCs issued by EU Member States and available to serve on board EU Member State flagged vessels was higher than those holding CoCs issued by non-EU countries.

2.3.3 Distribution by capacity

Taking into account that EU Member States do not use the same terms to refer to capacities in their manning regulations, all capacities reported in the CoCs have been linked to the generic capacities established in Chapters II and III of the STCW Convention, in order to establish a common platform for data comparability. The review was conducted separately for the Deck and the Engine Departments. The total number of masters and officers was established by counting each person in his/her highest capacity.

2.3.3.1 Distribution by deck capacity

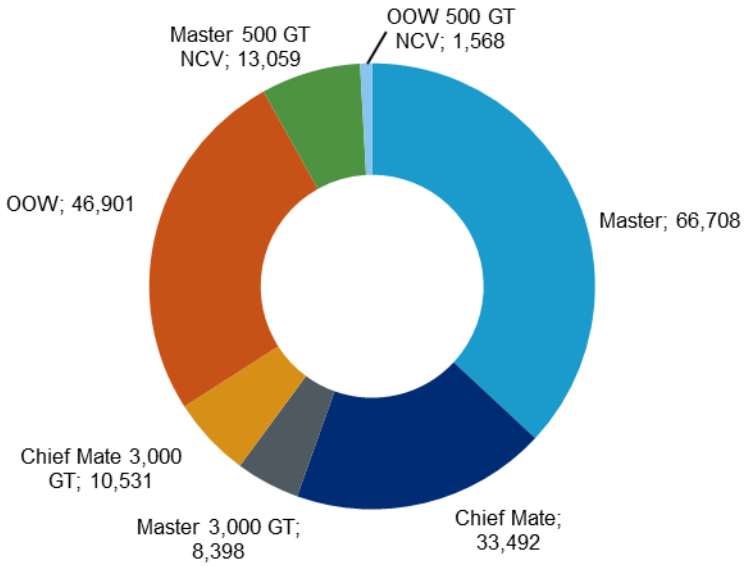

Figure 2-41 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by deck capacity

The information in Figure 2-41 shows that 55.69% (100,200) of the total number of available masters and deck officers were entitled to serve at management level on ships of 3,000 GT or more.

Although the ratio between masters and deck officers holding CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 70% to 30%, it changed significantly for masters and officers entitled to serve on board ships limited in gross tonnage or area of navigation where more than 95% were holders of CoCs issued by EU Member States. In the case of those officers entitled to serve as OOW the ratio was 50% to 50%. This is presented in Figure 2-42.

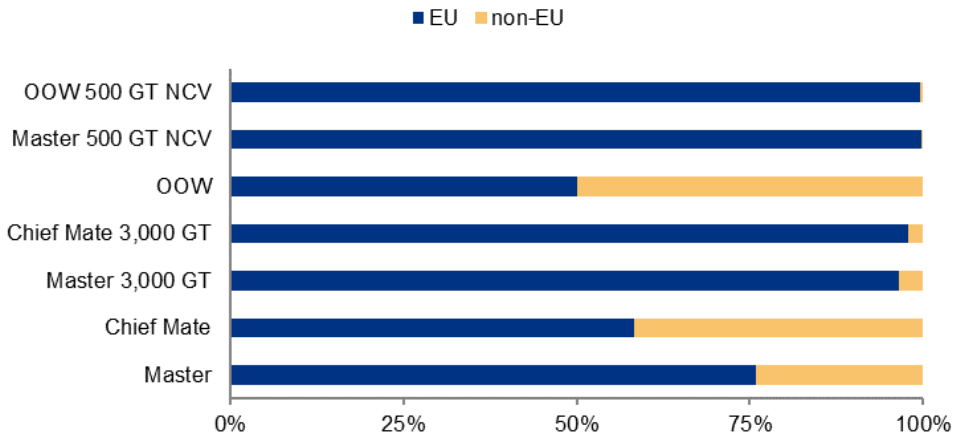

Figure 2-42 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by deck capacity

2.3.3.2 Distribution by engine capacity

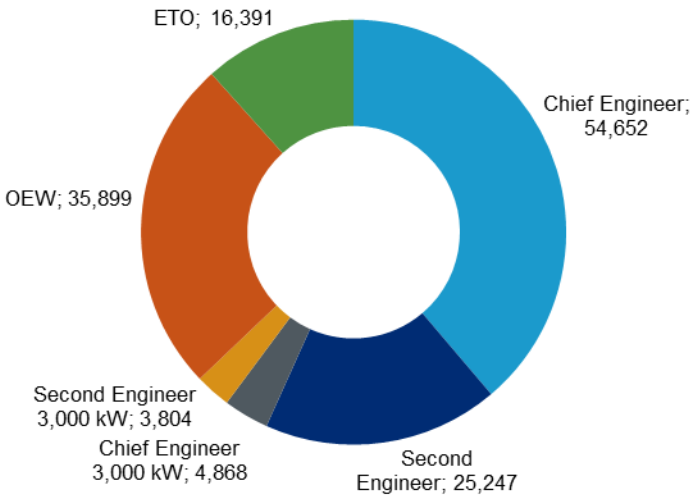

Figure 2-43 Distribution of engineer officers available to serve on board EU Member State flagged vessels by engine capacity

The information in Figure 2-43 shows that 56.93% (79,899) of the engineer officers were entitled to serve at management level on ships powered by main propulsion machinery of 3,000 kW propulsion power or more.

Although the ratio between engineer officers holding CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 62% to 38%, it changed significantly for officers entitled to serve on board ships limited in propulsion power where more than 80% were holders of CoCs issued by EU Member States. In the case of those officers entitled to serve as OEW the ratio was 53% to 47%. This is illustrated in Figure 2-44.

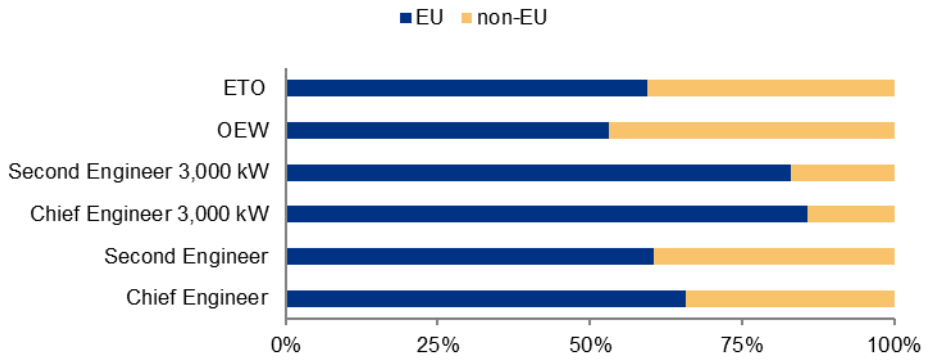

Figure 2-44 Distribution of engineer officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by engine capacity

2.3.4 Gender distribution

The review on gender distribution of masters and officers available to serve on board EU Member State flagged vessels considered the data provided by the 27 EU Member States, which made available information on gender. Consequently, the review was made for 278,840 masters and officers representing 88.37% of the total number of those available to serve on board EU Member State flagged vessels.

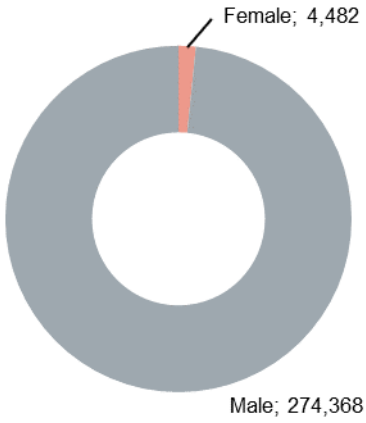

Figure 2-45 Gender distribution of masters and officers available to serve on board EU Member State flagged vessels

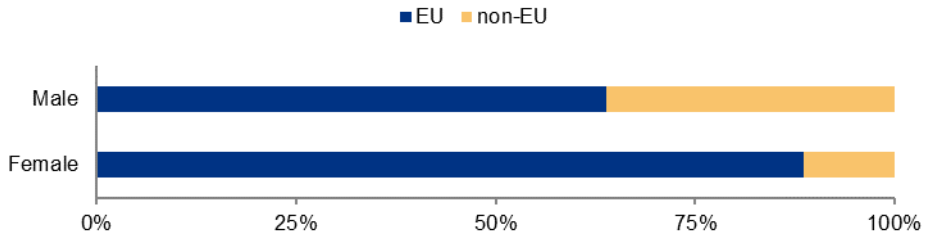

Figure 2-46 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by gender

Masters and officers whose gender was known were predominantly males. Female masters and officers represented 1.61% of the total number of officers available, with 88.55% of them holding CoCs issued by EU Member States.

Within the total number of masters and officers holding valid CoCs issued by EU Member States and available to serve on board EU Member State flagged vessels, female masters and officers represented 2.22% of their total, while for CoCs issued by non-EU countries they represented 0.51% of their total.

2.3.5 Distribution by nationality

The review of the data submitted by the 29 EU Member States indicated that information on nationality was available for 303,252 masters and officers, representing 96.11% of the total number of officers available to serve on board EU Member State flagged vessels. It also showed that the masters and officers were nationals of 155 countries, with the distribution by region as presented in Figure 2-47.

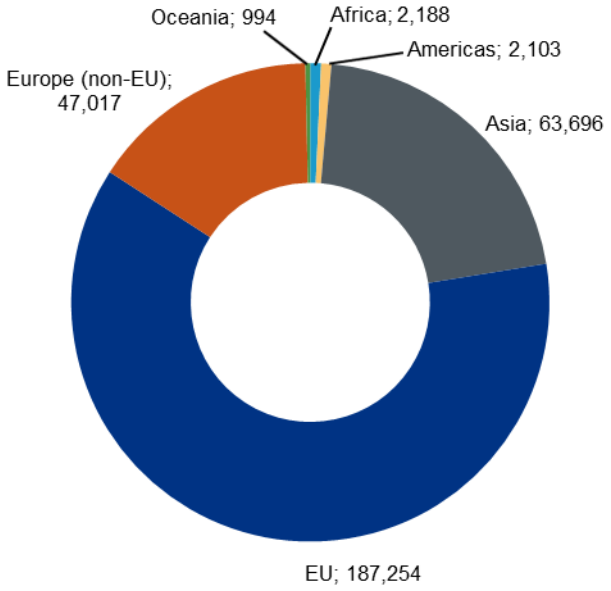

Figure 2-47 Nationality distribution of masters and officers available to serve on board EU Member State flagged vessels by geographical region according to nationality

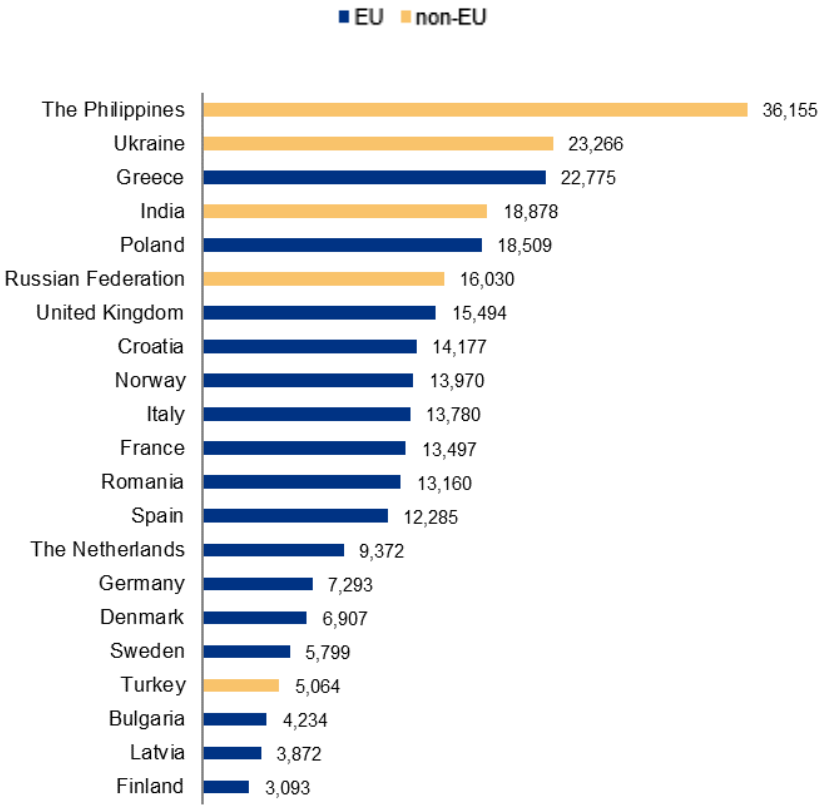

Figure 2-48 Countries whose nationals represented more than 0.75% of the total number of masters and officers available to serve on board EU Member State flagged vessels

The data in Figure 2-48 identifies the 21 countries whose nationals represented 87.98% of the total number of masters and officers available to serve on board EU Member State flagged vessels.

2.3.6 Age distribution

The average age of all masters and officers available to serve on board EU Member State flagged vessels was 42.4 years. The average age of masters and officers holding CoCs issued by EU Member States was 43.6 years, while for those holding original CoCs issued by non-EU countries, it was 40.1 years.

The age profile, per country issuing the original CoC, grouped under EU or non-EU in Figure 2-49, shows that those holding EU CoCs were more evenly distributed throughout the age groups than those holding non-EU CoCs.

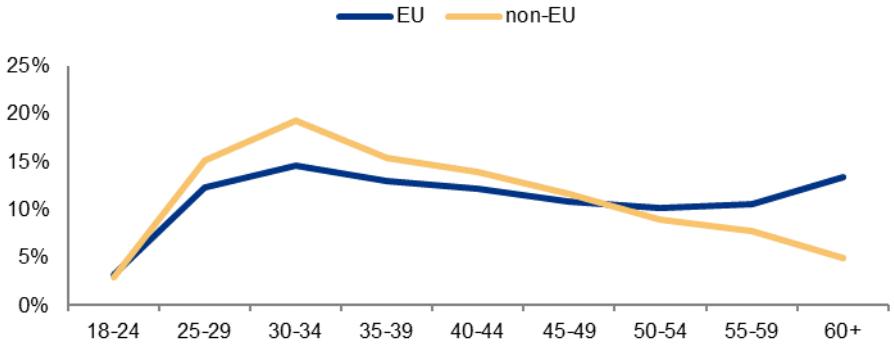

Figure 2-49 Age profile of masters and officers available to serve on board EU Member State flagged vessels per EU and non-EU countries issuing the original CoC

The highest average age was identified for masters entitled to serve on ships of 500 GT or more and for Chief Engineers entitled to serve on ships powered by main propulsion machinery of 750 kW propulsion power or more, as presented in Figure 2-50.

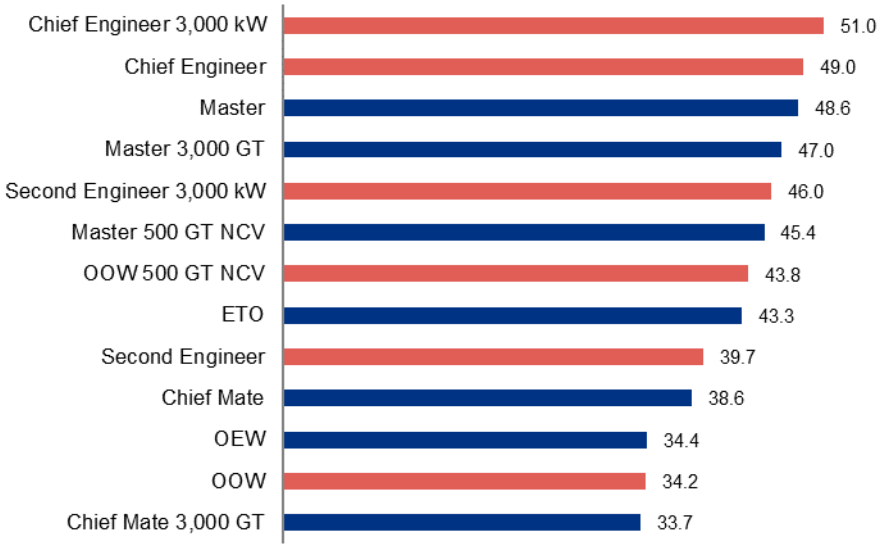

Figure 2-50 Average age of masters and officers available to serve on board EU Member State flagged vessels per deck and engine capacities

A variation ranging between 0.5 and 3 years in the average age was noticed for Masters, Chief Mates, Chief Engineers, Second Engineers, OOWs and OEWs holding CoCs issued by EU Member States and non-EU countries without limitations in gross tonnage or propulsion power. In all of those, with the exception of the OEWs, the highest average age was found in holders of CoCs issued by EU Member States.

2.4 Ratings holding valid certificates of proficiency in 2018

The data presented below is based on the information provided on certificates of proficiency (CoP) issued to ratings under regulations II/4, II/5, III/4, III/5, III/7 and VII/2 of the STCW Convention. This data is not mandatory under Directive 2008/106/EC but was voluntarily provided by 16 EU Member States.

2.4.1 Total

The total number of ratings holding valid CoPs in 2018 in the 16 EU Member States reporting such data was 71,176 with 6.57% of them entitled to serve in both the Deck and the Engine Departments.

2.4.2 Distribution by EU Member State

The distribution of the number of ratings holding valid CoPs by EU Member State is presented in Figure 2-51.

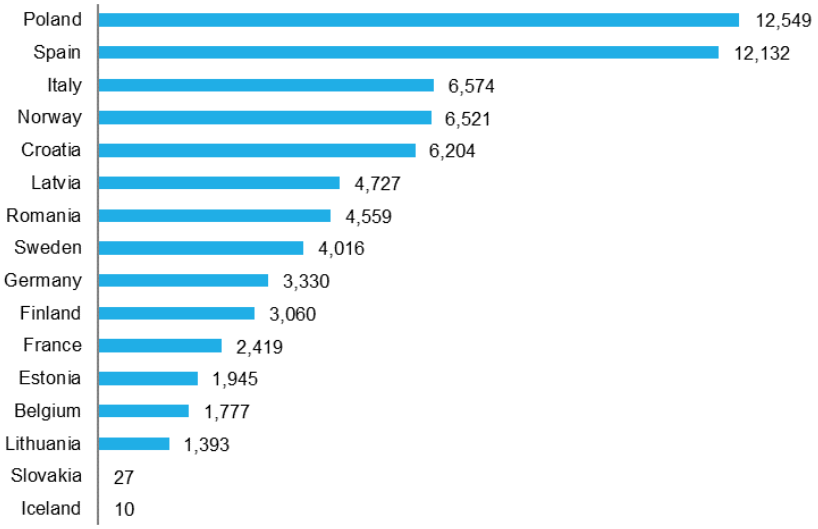

Figure 2-51 Ratings holding valid CoPs per EU Member State

2.4.3 Distribution by department

The distribution by department on which the ratings were entitled to serve is presented in Figure 2-52. It shows that the number of ratings entitled to serve in the Deck Department (Chapter II of the STCW Convention) was 86% higher than the number of ratings entitled to serve in the Engine Department (Chapter III of the STCW Convention). It also shows that 4.30% of them are qualified under Chapter VII, Alternative Certification, of the STCW Convention.

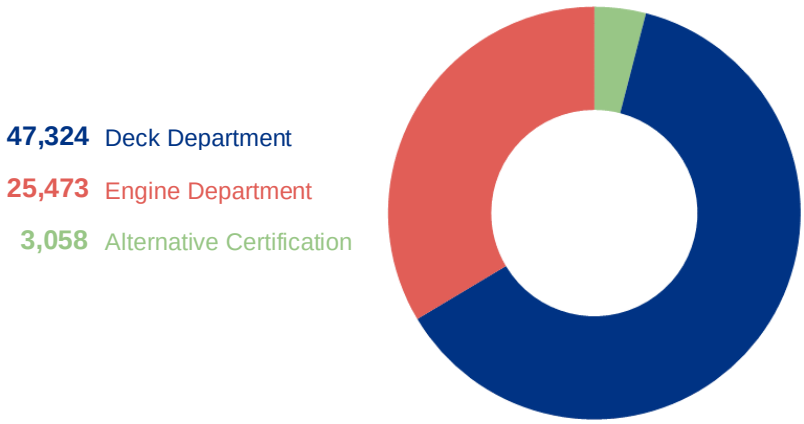

Figure 2-52 Distribution of ratings holding valid CoPs by department

2.4.4 Distribution by capacity

The distribution of ratings by capacity is illustrated in Table 2-22 of Appendix C. Taking into account that EU Member States do not use the same terms to refer to capacities in their manning regulations, all capacities reported in the CoPs have been linked to the generic capacities established in Chapters II and III of the STCW Convention, in order to establish a common platform for data comparability. The review was conducted separately for the Deck and the Engine Departments, even if compiled in Figure 2-53. The total number of deck and engineer ratings was established by counting each person per department.

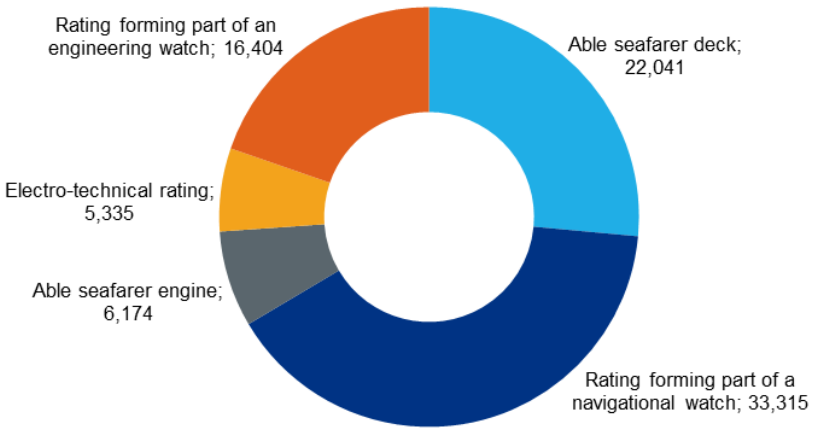

Figure 2-53 Distribution of ratings holding valid CoPs by capacity

The information shows that the majority of ratings either of deck or engine were entitled to serve as ratings forming part of a watch, being 70.40% for deck and 64.40% for engine.

2.4.5 Gender distribution

Fifteen out of the 16 EU Member States that provided data on ratings made available information on gender. It covered 58,627 ratings representing 82.37% of the total number of the ratings reported as holding valid CoPs.

The information shows that the ratings holding valid CoPs were predominantly male. Considering the data provided as a sample of the total number of ratings at EU level, it can be stated with a level of confidence of 99% that the percentage of female ratings was 3.73% ± 0.22%.

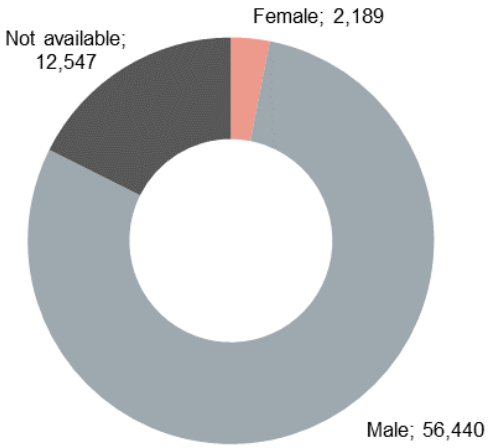

Figure 2-54 Gender distribution of ratings holding valid CoPs

2.4.6 Distribution by nationality

The review of the data made available by the 16 EU Member States showed that, except for 6.98% where nationality was not made available, ratings holding valid CoPs were nationals from 103 countries (29 EU Member States and 74 non-EU countries). The review also showed that 90.41% of the ratings were nationals of the same EU Member State providing the data (see section 2.4.2).

2.4.7 Age distribution

The average age of ratings holding valid CoPs was 40.8 years. Except for the 25-29 age group, all other groups registered similar distributions between 9.62% and 11.61%. The average age for female ratings was 32.9 years, while that for male ratings was 41.5 years. 75.70% of all female ratings were younger than 40 years of age while the percentage of male ratings in the same age group was 47.06%.

The distribution of gender groups by age intervals is presented in Figure 2-56.

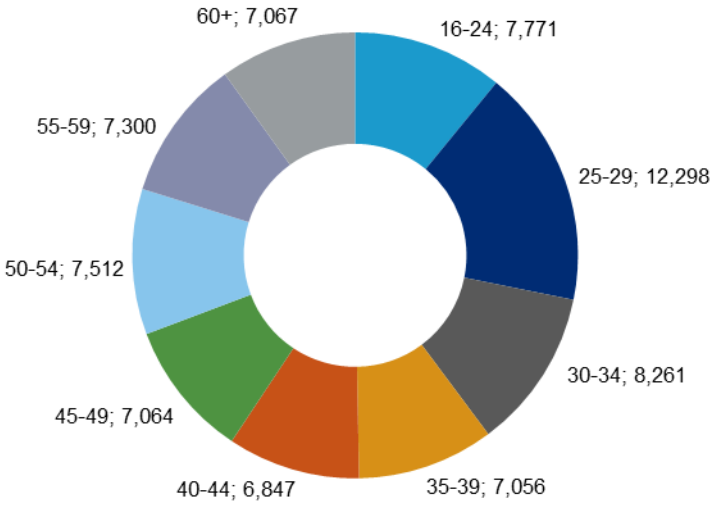

Figure 2-55 Age distribution of ratings holding valid CoPs

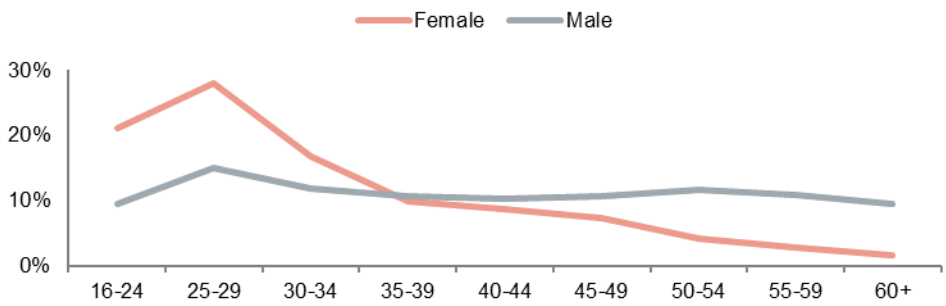

Figure 2-56 Age profile of ratings holding valid CoPs per gender

2.5 Masters and officers - summary overview 2014-2018

For the last five years, EMSA has compiled data which allowed it to have a wide picture of the number of masters and officers available to serve on board EU Member State flagged vessels. Nonetheless, a more accurate view of the situation could emerge with the build-up of data collected over the years. This not only is conducive to a more precise trend analysis and forecasting but also contributes to stabilising the premises used to treat the data, which suffered slight changes during the past five years. For the analysis that follows, forecasts were made using linear

regression and exponential triple smoothing (ETS) algorithm methods[5]. The values calculated can be found in Appendix D.

Apart from an increase in the absolute number of masters and officers available to serve on board EU Member State flagged vessels, the overall figures remained broadly stable throughout the years in terms of distribution by department, capacity, gender, nationality and age. This stability may indicate that, in general terms, the European maritime labour market has been able to attract new entrants that have replaced those leaving the seafaring career.

2.5.1 Countries issuing the original CoCs

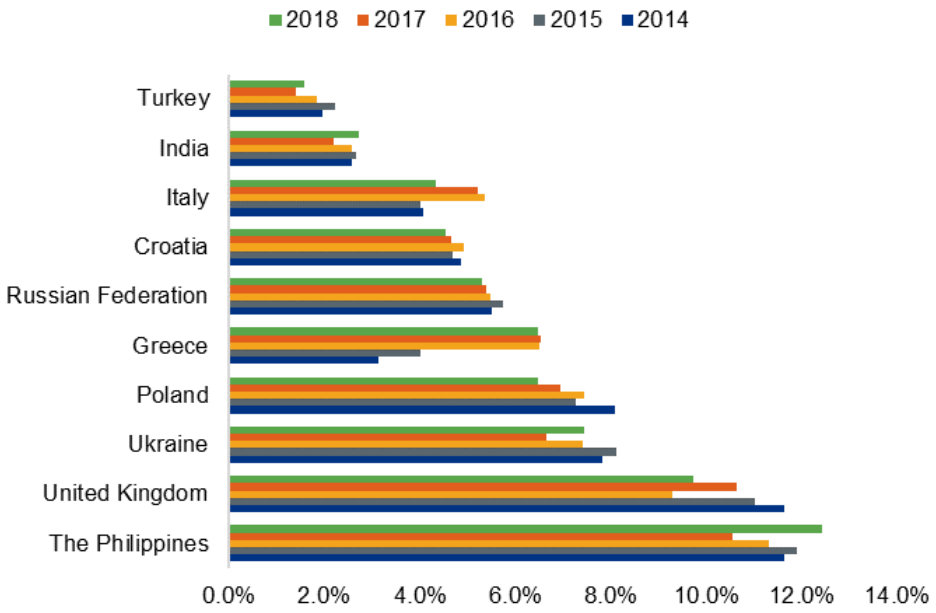

Figure 2-57 Top 5 EU and top 5 non-EU countries issuing the original CoCs

The five non-EU countries (India, the Russian Federation, the Philippines, Turkey and Ukraine) which had more masters and officers holding their CoCs recognised by EU Member States have retained the top spots throughout the last five years. The total percentage of these masters and officers among those available to serve on board EU Member State flagged vessels has varied, over the years, between 26.21% (in 2017) and 30.66% (in 2015).

For EU countries, the situation has been more fluid, with the top five spots – particularly the third, fourth and fifth – being occupied by different countries over recent years. Figure 2-57 in fact, features the five EU Member States that occupied the top rankings in 2018, but which may not have necessarily placed similarly in the previous years. It is also to be noted that upon introduction of its data, Norway features in this list. Nevertheless, its data is not being included for the purpose of this review in order to ensure solidity and consistence of figures until more years' data is collected.

Figure 2-58 below presents the forecast for the next two years in relation to the masters and officers holding CoCs issued by the top 3 EU and the top 3 non-EU countries. In terms of linear forecast and similarly to what was estimated last year, a slight decrease concerning the UK and Poland and an increase for Greece is suggested. However, it should be noted that for Greece, the predicted estimated increase of 2% for 2018-2019 did not materialise in 2018. The future 2019 data analysis will confirm if Greece will have reached the 7.78% ±1.57% of masters and officers available to serve on board EU Member State flagged vessels as estimated through the ETS forecast.

Concerning the non-EU countries, the percentage of masters and officers holding CoCs issued by the Russian Federation is still expected to remain broadly unchanged. Contrary to last year's forecast, where a slight decrease was suggested for the Philippines and Ukraine, the 2018 results of both countries did not follow that prediction.

[5] The linear regression method is suited for small and simple data sets that do not have enough historical data. The Exponential Triple Smoothing (ETS) algorithm is best suited for non-linear data models by smoothing out minor deviations in past data trends, detecting seasonality patterns and establishing confidence intervals (in this case, a level of confidence of 95% was used).

Nevertheless, the estimates for the next two years suggest that the Philippines' numbers will be more or less the same as in 2014 and 2015 and that for Ukraine a slight decrease will continue to be observed (ETS forecast for 2019 = 6.42% ±1.14%).

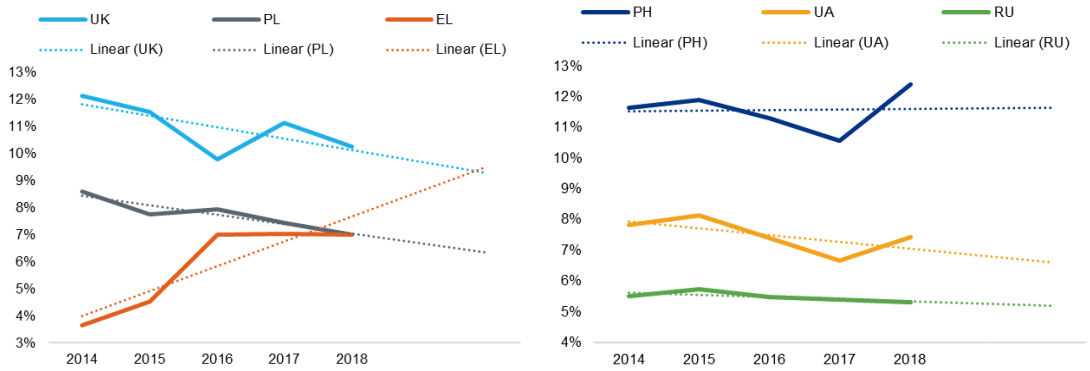

Figure 2-58 Forecast for the next two years of masters and officers holding CoCs issued by the top 3 EU and top 3 non-EU countries

2.5.2 Department - level of responsibility

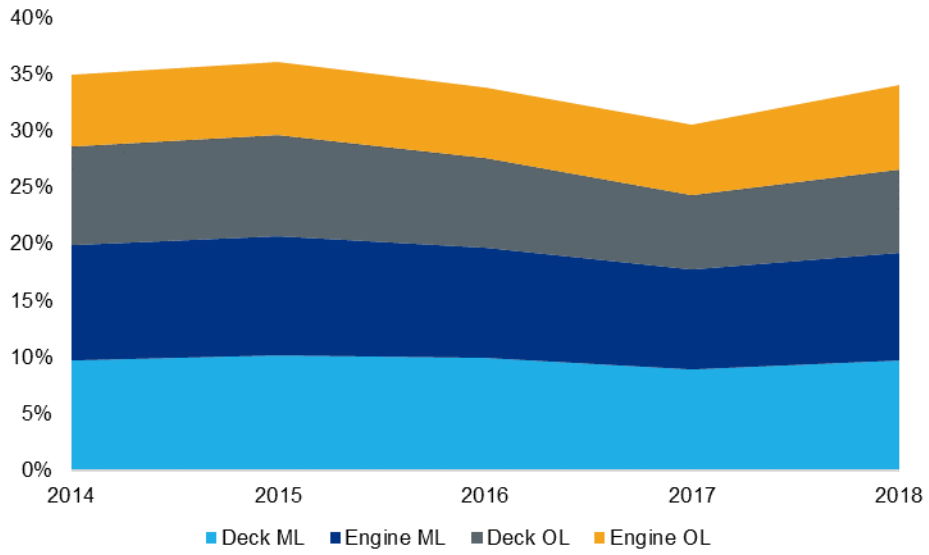

Figure 2-59 Officers at management and operational level holding CoCs issued by non-EU countries

The total percentage of masters and officers holding CoCs issued by non-EU countries recognised by EU Member States increased when compared with the values of last year. Nevertheless, when analysing these figures per department and level of responsibility, in 2018 only the percentage of those entitled to serve in the engine department at operational level (OEW and ETO) reached the highest value during this five year period, as illustrated in Figure 2-59.

Regarding the percentage of masters and officers available to serve on board EU Member State flagged vessels, Figure 2-60 below shows that, similarly to what was estimated last year a slight increase is still expected for officers entitled to serve in the engine department at operational level.

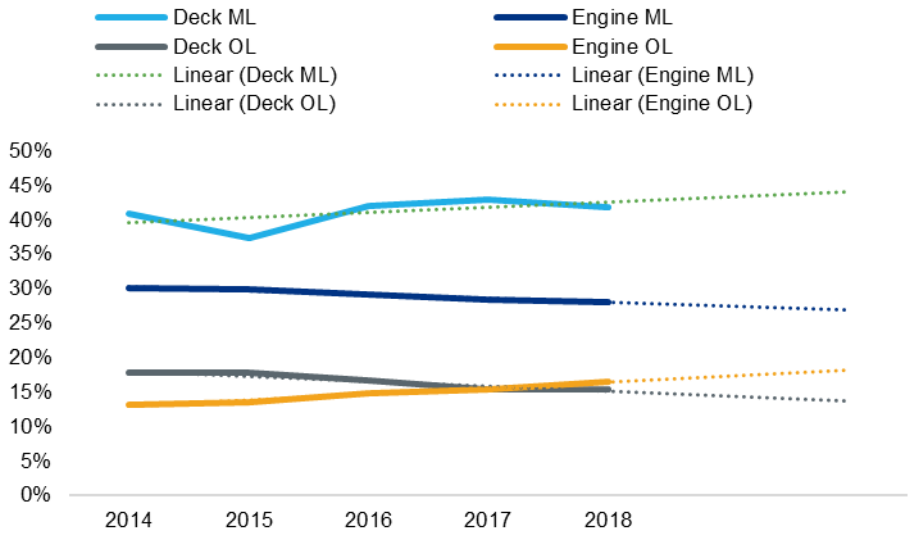

Figure 2-60 Forecast for the next two years of officers at management and operational level available to serve on board EU Member State flagged vessels

2.5.3 Female officers

As presented in Figure 2-61 below, the majority of female officers continues to be made up of those who hold CoCs issued by EU Member States entitling them to work in the deck department.

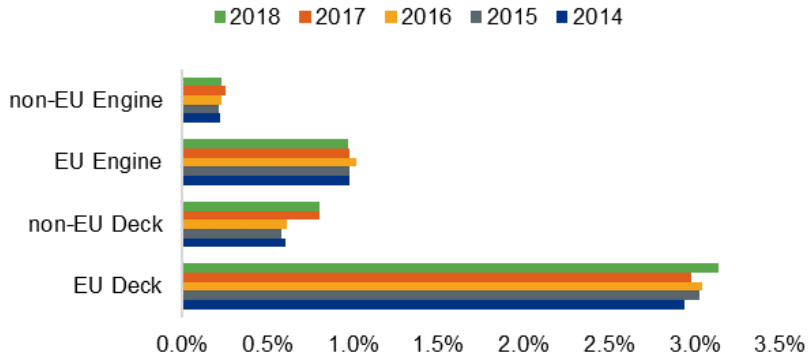

Figure 2-61 Female officers per department holding CoCs issued by EU and non-EU countries

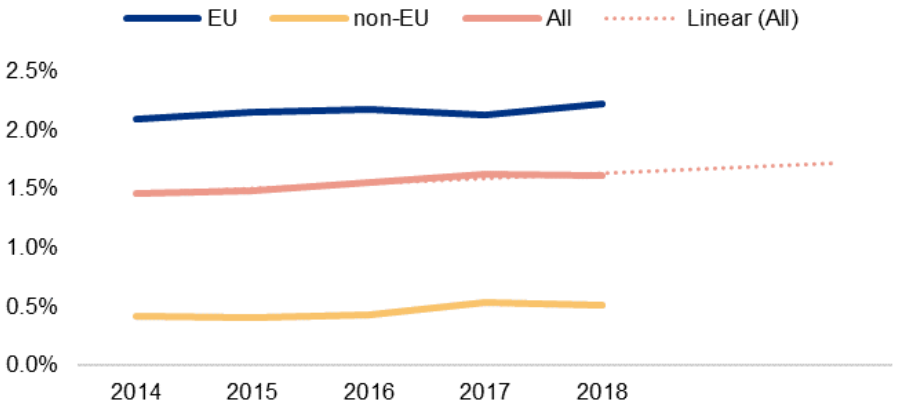

Figure 2-62 Forecast for the next two years of female officers available to serve on board EU Member State flagged vessels

As shown in Figure 2-62 the percentage of female officers globally (EU and non-EU) continues to be expected to increase in the coming years. However, it is unlikely that globally they will reach the 2% of the total number of masters and officers already available to serve on board EU Member State flagged vessels; this percentage denotes the proportion of female participation currently achieved in the EU as indicated in the said Figure.

2.5.4 Nationality

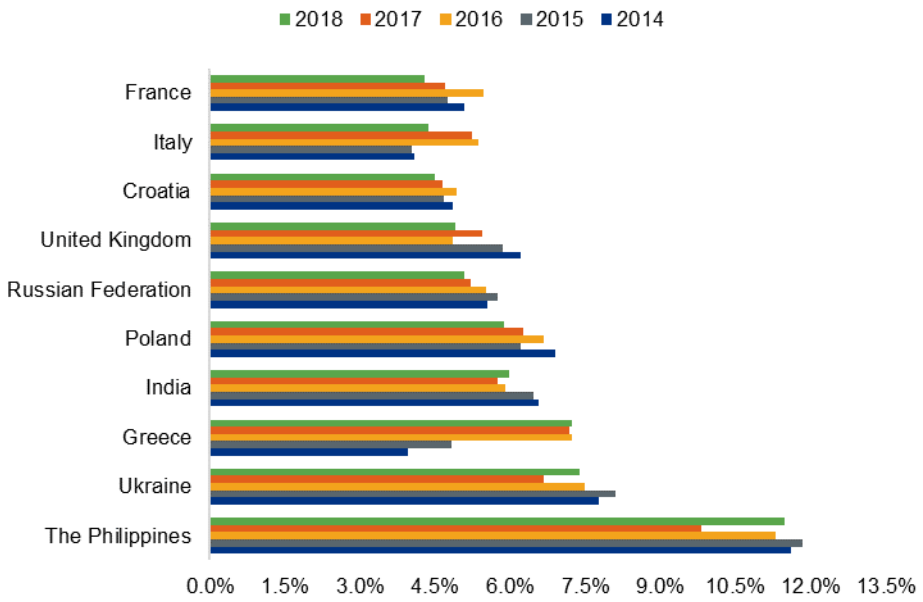

Figure 2-63 Top 10 nationalities of masters and officers available to serve on board EU member State flagged vessels

The 10 nationalities which had more masters and officers available to serve on board EU Member State flagged vessels have remained broadly the same for the last three years. It should be noted that Norway would feature in this list if its data had been included for the purpose of this review. Nevertheless, its data was not included as this is only the second year when data from this country was received (see also section 2.5.1).

Figure 2-64 below continues to indicate that nationals from EU Member States will potentially increase and that the Philippines will continue to be the country from where there will be more nationals among the masters and officers available to serve on board EU Member State flagged vessels. Indications that by 2018, the number of Philippines nationals would start decreasing did not materialise but predictions of such downward movement in the next two years still hold.

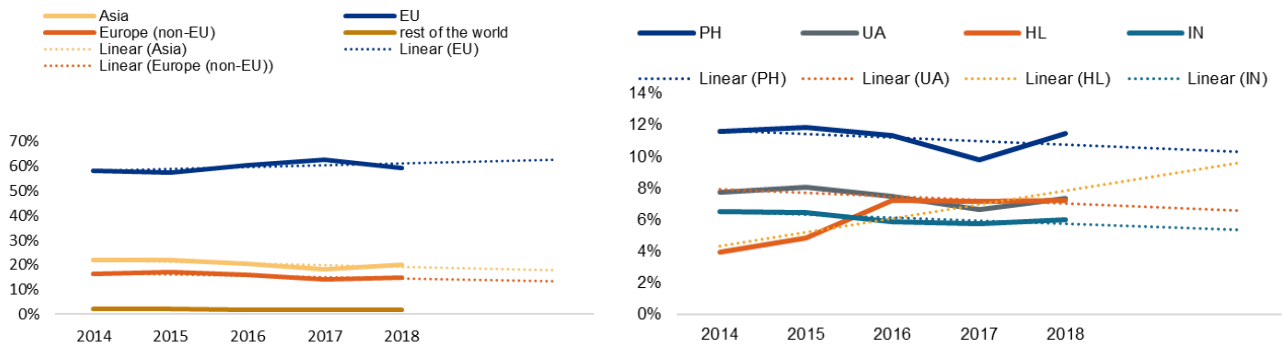

Figure 2-64 Forecast for the next two years of the nationalities of masters and officers available to serve on board EU Member State flagged vessels

2.5.5 Age

The average age of masters and officers available to serve on board EU Member State flagged vessels has remained stable throughout the years and prospects to continue, without any indication that it will increase in the next two years.

Figure 2-66 indicates that the average age of masters and officers holding CoCs at management level, either issued by EU or non-EU countries, will not increase as already predicted last year. This may suggest that officers of a lower rank are progressing in the seafaring career. However, for officers holding CoCs at operational level there is an indication that the average age will continue to slightly increase except for those holding CoCs issued by non-EU countries.

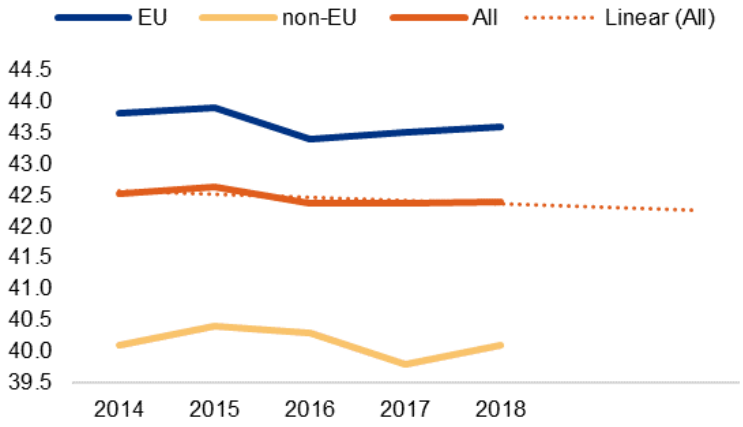

Figure 2-65 Forecast for the next two years concerning the average age of masters and officers available to serve on board EU Member State flagged vessels

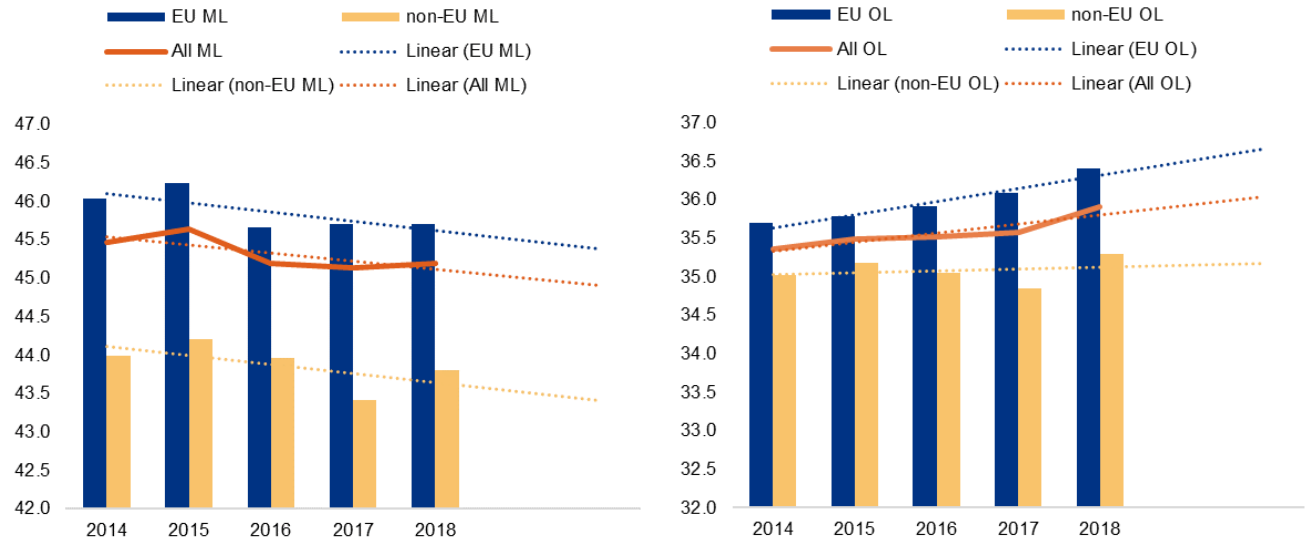

Figure 2-66 Forecast for the next two years concerning the average age of officers at management and operational level available to serve on board EU Member State flagged vessels

Appendix A Data on masters and officers holding valid CoCs in 2018

Table 2-1 Distribution of masters and officers by departments and EU Member States

Department	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Alternative certification	0	0	0	0	0	0	0	0	0	1	1500	0	0	0	0	0	0	0	0	1006	0	0	0	0	0	0	0	0
Deck	1438	787	1248	15	4961	4604	1337	11832	8168	1869	11633	7304	10	804	181	8201	951	2847	65	6999	11184	10661	346	6623	4046	221	40	18269
Engine	659	3431	1104	23	2338	2484	1218	8621	4782	1349	3737	6997	30	405	49	5587	947	3054	5	4453	5182	9811	227	6531	1703	156	45	12469
Total[6]	**2095**	**4217**	**2352**	**38**	**7232**	**6989**	**2553**	**20450**	**12355**	**3200**	**13495**	**14291**	**40**	**1208**	**227**	**13694**	**1898**	**5899**	**70**	**9667**	**16366**	**20467**	**573**	**13149**	**5628**	**374**	**85**	**30716**

Table 2-2 Masters and deck officers registered by EU Member States

Capacity	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Master	591	515	989	14	2914	1973	599	4100	1875	1108	1686	2976	2	312	40	3552	253	1094	24	2958	5809	4831	128	2212	1731	97	11	8286
Chief Mate	165	133	217	1	669	132	350	2782	622	184	588	1118	0	203	4	1129	284	648	10	781	1364	2422	80	1610	634	23	2	3341
Master 3,000 GT	20	6	6	0	32	350	4	341	2166	5	299	536	4	6	4	688	0	80	0	474	2662	42	19	6	223	31	0	110
Chief Mate 3,000 GT	14	1	2	0	2	298	23	3881	2018	7	340	175	0	14	0	91	23	42	0	1924	240	176	8	23	733	2	0	264
OOW	378	129	34	0	860	413	301	471	1487	548	622	1888	4	167	28	2438	381	902	31	38	256	3136	99	2759	0	68	27	5996
Master 500 GT, NCV	211	3	0	0	413	793	49	257	0	11	8005	444	0	102	103	221	5	72	0	632	853	0	4	13	647	0	0	201
OOW 500 GT, NCV	59	0	0	0	71	645	11	0	0	6	93	167	0	0	2	87	5	9	0	195	0	54	8	0	78	0	0	71
Total	**1438**	**787**	**1248**	**15**	**4961**	**4604**	**1337**	**11832**	**8168**	**1869**	**11633**	**7304**	**10**	**804**	**181**	**8201**	**951**	**2847**	**65**	**6999**	**11184**	**10661**	**346**	**6623**	**4046**	**221**	**40**	**18269**

[6] The sum of the rows may not be equal to the total because some officers held CoCs for both Deck and Engine Departments

Table 2-3 Engineer officers registered by EU Member States

Capacity	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Chief Engineer	221	1391	756	12	1538	497	627	3306	1756	660	1481	2152	19	126	37	2627	254	1146	0	2089	3330	3330	4056	99	2089	968	64	4656
Second Engineer	54	642	209	0	333	98	294	1281	341	83	652	1170	0	99	3	579	237	697	0	1802	913	913	1634	17	1287	331	34	2483
Chief Eng. 3,000 kW	104	39	0	0	13	224	5	232	1214	40	290	547	2	10	4	434	0	110	0	24	182	182	401	12	1	18	13	251
Second Eng. 3,000 kW	20	23	0	0	0	4	13	408	680	5	156	191	0	53	1	62	12	61	0	517	0	0	147	8	9	8	8	771
OEW	260	589	136	0	374	329	173	2937	765	437	1132	1408	1	71	4	1679	275	697	5	21	0	0	1708	75	1618	378	18	3973
Electro-technical Officer	0	747	3	11	80	1332	106	457	26	124	26	1529	8	46	0	206	169	343	0	0	757	757	1865	16	1527	0	19	335
Total	**659**	**3431**	**1104**	**23**	**2338**	**2484**	**1218**	**8621**	**4782**	**1349**	**3737**	**6997**	**30**	**405**	**49**	**5587**	**947**	**3054**	**5**	**4453**	**5182**	**5182**	**9811**	**227**	**6531**	**1703**	**156**	**12469**

Table 2-4 Distribution of gender groups by EU Member States

Gender	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Female	79	9	8	0	331	204	20	376	690	138	610	31	0	36	2	142	15	40	7	**----**	335	----	19	119	243	0	1	518
Male	2016	4208	2344	38	6901	6785	2533	20074	11665	3062	12885	14260	40	1172	225	13552	1883	5859	63	----	16031	----	554	13030	5385	374	84	30198
Total	**2095**	**4217**	**2352**	**38**	**7232**	**6989**	**2553**	**20450**	**12355**	**3200**	**13495**	**14291**	**40**	**1208**	**227**	**13694**	**1898**	**5899**	**70**		**16366**		**573**	**13149**	**5628**	**374**	**85**	**30716**

Table 2-5 Non-EU nationals holding CoCs issued by EU Member States

Region of Origin	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK	Total
Africa	66	1	2	0	1	5	0	0	29	3	69	37	0	45	0	1	0	0	0	6	0	60	0	0	0	0	1	782	**1108**
Americas	104	0	0	0	2	3	1	0	27	1	6	5	0	3	0	0	0	1	0	19	6	0	1	0	0	0	0	195	**374**
Asia	10	0	2	0	0	3	0	0	1	1	2	13	0	49	0	0	0	0	0	34	1	10	0	0	0	0	0	13847	**13973**
Europe (non-EU)	5	7	1	0	28	110	406	0	12	3	5	29	0	0	1	0	33	321	0	2	4	60	0	28	0	2	0	23	**1080**
Oceania	0	0	0	0	1	2	0	0	0	0	1	0	0	16	0	0	0	2	0	4	0	2	0	0	0	0	0	167	**195**
Total	**185**	**8**	**5**	**0**	**32**	**123**	**407**	**0**	**69**	**8**	**83**	**84**	**0**	**113**	**1**	**1**	**33**	**324**	**0**	**65**	**11**	**132**	**1**	**28**	**0**	**2**	**1**	**15014**	**16730**

Table 2-6 Age distribution by EU Member States

Age	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
age<25	55	30	1	0	99	54	27	1398	254	90	555	269	0	76	2	685	127	132	14	859	410	172	14	142	70	9	2	1175
25≤age<30	369	285	111	0	876	666	227	3634	1154	318	1708	1541	1	193	18	2175	431	679	22	1388	2058	1852	55	1860	510	29	19	3576
30≤age<35	316	543	197	0	1335	729	347	3849	1273	416	1989	1976	1	200	23	1948	308	804	14	1187	2135	2551	80	2582	657	44	23	4909
35≤age<40	241	520	99	2	936	644	316	2714	1571	434	2048	2238	0	151	18	1444	210	840	5	961	1778	2808	70	1733	629	44	14	4553
40≤age<45	182	718	43	1	648	704	216	2399	2088	425	1848	2152	0	144	16	1540	158	733	2	1028	1722	2391	72	1677	644	42	5	3775
45≤age<50	242	646	24	3	626	750	252	1515	1647	345	1984	1551	0	154	31	1403	123	626	2	1143	2001	1963	58	1570	646	36	1	3238
50≤age<55	257	563	152	2	657	917	316	1732	1710	371	1534	1517	6	87	28	1447	142	557	0	1133	1843	1767	45	1349	691	38	3	2454
55≤age<60	260	482	576	12	788	920	389	1899	1584	358	1168	1467	10	56	36	1489	185	673	1	988	1768	2391	70	1187	567	52	9	2781
age≥60	173	430	1149	18	1267	1605	463	1310	1074	443	661	1580	22	147	55	1563	214	855	10	980	2651	4572	109	1049	1214	80	9	4255
Total	**2095**	**4217**	**2352**	**38**	**7232**	**6989**	**2553**	**20450**	**12355**	**3200**	**13495**	**14291**	**40**	**1208**	**227**	**13694**	**1898**	**5899**	**70**	**9667**	**16366**	**20467**	**573**	**13149**	**5628**	**374**	**85**	**30716**

Table 2-7 Age distribution by departments

Department	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Alternative certification	481	970	466	277	127	103	35	41	7	**2507**
Deck	4454	16139	19211	16743	15404	13555	12276	12999	15765	**126546**
Engine	2980	10812	11976	10857	10369	9383	9290	9370	12326	**87363**
Total[7]	**6720**	**25749**	**30421**	**27001**	**25359**	**22560**	**21298**	**22143**	**27941**	**209192**

[7] The sum of the rows may not be equal to the total because some officers held CoCs for both Deck and Engine Departments

Table 2-8 Age distribution for masters and deck officers

Capacity	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Master	4	514	3539	6807	8208	7353	6519	7810	9912	**50666**
Chief Mate	110	2804	6049	3651	2109	1299	1041	1081	1352	**19496**
Master 3,000 GT	269	873	607	708	883	1050	1149	1119	1454	**8112**
Chief Mate 3,000 GT	1742	3501	1786	863	680	480	431	407	410	**10300**
OOW	1788	7268	5624	3028	1777	1245	1075	873	781	**23459**
Master 500 GT, NCV	449	1000	1428	1530	1585	1963	1884	1539	1648	**13026**
OOW 500 GT, NCV	94	189	188	166	167	176	192	175	213	**1560**
Total	**4454**	**16139**	**19211**	**16743**	**15404**	**13555**	**12276**	**12999**	**15765**	**126546**

Table 2-9 Age distribution for engineer officers

Capacity	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Chief Engineer	9	409	2202	4559	5570	5300	5248	5385	7270	**35952**
Second Engineer	703	2322	3686	2300	1512	1165	1111	1067	1408	**15274**
Chief Eng. 3,000 kW	2	79	190	349	460	572	726	784	1007	**4169**
Second Eng. 3,000 kW	74	243	308	301	364	365	428	524	550	**3157**
OEW	2024	6499	4142	2177	1384	889	764	585	631	**19095**
Electro-technical Officer	168	1260	1450	1174	1083	1097	1013	1028	1461	**9734**
Total	**2980**	**10812**	**11976**	**10857**	**10369**	**9383**	**9290**	**9370**	**12326**	**87363**

Table 2-10 Age distribution by gender group

Gender	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Female	293	1177	935	578	449	263	139	88	47	**3969**
Male	5396	21332	25755	22663	21499	19201	18268	18685	22346	**175145**
Not available	1031	3240	3731	3760	3411	3096	2891	3370	5548	**30078**
Total	**6720**	**25749**	**30421**	**27001**	**25359**	**22560**	**21298**	**22143**	**27941**	**209192**

Appendix B Data on masters and officers holding valid EaRs in 2018

Table 2-11 EU and non-EU countries issuing the original CoCs per EU Member States issuing the EaRs

Country issuing the original CoC	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK
EU Member State	1372	7628	900	2605	115	820	26	357	625	14	442	24	1829	47	2717	114	18513	2755	3532	17	3824	6	220	1	6520
non-EU country	2067	19411	1744	3856	43	4942	68	250	860	0	137	9	1304	90	2372	374	45655	8008	10111	0	7729	0	111	0	5991
Not available	0	73	0	0	0	3	0	0	0	0	0	0	0	0	0	0	12	0	0	0	6	0	0	0	9
Total[8]	**3435**	**27038**	**2644**	**6462**	**158**	**5761**	**94**	**607**	**1485**	**14**	**579**	**33**	**3133**	**137**	**5089**	**488**	**64158**	**10761**	**13645**	**17**	**11552**	**6**	**331**	**1**	**12511**

Table 2-12 EU and non-EU countries issuing the original CoCs per departments

	Deck Department		Engine Department		Total[9]
Country issuing the original CoC	Number	Percentage	Number	Percentage	Number
EU Member State	26733	54.51%	22427	45.73%	**49041**
non-EU country	53393	50.21%	52972	49.82%	**106334**
Not available	2	25.00%	7	87.50%	**8**
Total[10]	**80111**	**51.57%**	**75378**	**48.53%**	**155338**

Table 2-13 Engineer officers holding EaRs registered by EU Member States

Capacity	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK
Chief Engineer	563	5482	443	1159	33	745	41	119	231	5	121	3	642	24	960	60	11165	2059	2703	3	2413	1	51	1	2383
Second Engineer	339	2401	230	598	9	514	7	56	164	2	39	4	417	25	485	37	6432	987	1097	2	1020	0	13	0	1422
Chief Eng. 3,000 kW	64	8	22	23	5	0	1	3	7	0	18	1	13	8	75	39	518	274	188	0	0	0	4	0	113
Second Eng. 3,000 kW	41	19	2	16	2	0	2	2	4	0	0	0	103	2	31	7	593	56	104	0	0	0	0	0	101
OEW	486	3318	329	1738	10	1192	8	91	166	1	30	2	443	13	476	34	8838	1172	1855	0	1199	0	66	0	1547
Electro-technical Officer	204	1636	252	17	6	831	0	0	176	0	8	0	275	10	276	6	3443	192	877	0	829	0	14	0	543
Total	**1694**	**12861**	**1276**	**3550**	**65**	**3282**	**59**	**271**	**748**	**8**	**216**	**10**	**1893**	**82**	**2302**	**183**	**30970**	**4737**	**6811**	**5**	**5461**	**1**	**148**	**1**	**6109**

[8] The sum of the rows may not be equal to the total because some officers held EaRs recognising original CoCs issued by EU Member States and non-EU countries
[9] The sum of the columns may not be equal to the total because some officers held EaRs for both Deck and Engine Departments
[10] The sum of the rows may not be equal to the total because some officers held EaRs recognising original CoCs issued by EU Member States and non-EU countries

Table 2-14 Master and deck officers holding EaRs registered by EU Member States

Capacity	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK
Master	592	6000	137	652	34	398	11	71	118	4	111	1	265	20	1228	101	12272	1432	1530	9	2538	5	93	0	1740
Chief Mate	379	3066	354	677	16	645	5	27	245	0	95	14	345	16	663	82	7475	2628	2673	1	1406	0	20	0	2097
Master 3,000 GT	72	54	38	9	6	0	4	11	17	0	31	2	59	5	92	29	338	4	0	0	0	0	14	0	199
Chief Mate 3,000 GT	52	47	18	33	2	0	2	1	12	0	23	1	13	0	62	15	903	2	89	1	0	0	2	0	182
OOW	563	5017	819	1459	21	1445	8	192	343	2	104	4	395	15	685	78	11970	1939	2528	1	2154	0	71	0	2168
Master 500 GT, NCV	81	0	5	60	14	1	5	21	3	0	0	2	155	0	58	0	282	28	0	0	0	0	0	0	38
OOW 500 GT, NCV	5	1	3	26	0	0	0	13	1	0	0	0	24	0	8	0	14	11	38	0	0	0	0	0	5
Total	**1744**	**14184**	**1373**	**2915**	**93**	**2489**	**35**	**336**	**739**	**6**	**363**	**24**	**1253**	**55**	**2793**	**305**	**33218**	**6030**	**6836**	**12**	**6097**	**5**	**200**	**0**	**6428**

Table 2-15 EU Member States and EFTA countries issuing original CoCs endorsed by other EU Member States

Country issuing the original CoC	EU Member State issuing the EaR																									Total[11]
	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK	
Austria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Belgium	0	37	5	0	0	25	0	0	78	0	0	0	23	0	518	0	140	233	3	0	3	0	0	0	9	**994**
Bulgaria	163	277	22	14	0	26	0	0	36	0	0	0	83	0	44	0	1864	64	77	0	260	0	0	0	427	**3035**
Croatia	366	472	40	80	0	7	1	0	58	0	2	1	0	0	685	24	1433	304	563	0	182	0	0	0	623	**4099**
Cyprus	0	0	0	0	0	296	0	0	0	0	0	0	0	0	0	0	485	0	0	0	4	0	0	0	0	**746**
Czech Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	0	7	0	0	0	1	**23**
Denmark*	3	55	7	0	2	0	1	1	26	0	0	1	0	0	1	0	1	56	80	533	0	2	1	0	0	**798**
Estonia	5	177	17	11	0	1	0	275	4	0	6	0	9	16	6	54	130	186	61	0	115	0	2	0	151	**1088**
Finland	0	53	0	10	70	1	0	0	0	0	0	3	0	0	1	4	32	31	105	0	13	0	112	0	14	**417**
France	25	44	6	0	0	0	4	0	0	0	0	0	2	0	257	0	227	32	5	0	0	0	1	0	101	**685**
Germany	2	162	0	125	7	2	2	1	0	0	0	0	86	0	69	3	339	143	32	1	312	0	1	0	56	**1182**
Greece	5	950	0	1	0	0	0	0	2	0	0	0	1	0	6	0	4095	12	2	0	36	0	1	0	15	**5002**
Hungary	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	11	0	0	0	2	**18**
Iceland	0	1	2	12	10	0	0	0	0	0	0	0	0	5	0	1	1	1	62	7	0	0	0	0	3	**105**

[11] The sum of the columns may not be equal to the total because some officers held EaRs issued by different EU Member States

Country issuing the original CoC	EU Member State issuing the EaR																								Total[11]
	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK	
Ireland	1	29	0	8	0	0	0	0	1	0	0	0	2	0	1	0	26	15	12	0	3	0	1	0	288	**361**
Italy	2	51	1	5	0	0	0	0	5	0	1	0	0	0	23	0	406	6	4	0	55	0	0	0	684	**1218**
Latvia	40	342	29	112	14	5	0	3	108	0	1	2	96	18	27	0	1049	326	365	0	188	0	10	0	561	**2839**
Lithuania	40	428	41	76	5	0	9	1	8	0	30	12	34	0	144	20	314	278	133	1	274	0	3	0	384	**1728**
Luxembourg	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	1	**4**
Netherlands	441	496	87	53	0	0	1	17	21	8	2	1	0	7	413	2	628	0	28	7	11	0	2	0	83	**2143**
Norway	0	120	6	19	0	0	2	3	1	1	0	0	0	0	0	0	203	22	0	0	4	5	17	0	105	**493**
Poland	95	2661	569	677	0	17	0	5	94	1	308	4	0	0	237	3	2593	308	747	0	1331	0	20	1	1837	**9897**
Portugal	0	12	2	6	0	0	1	0	0	0	0	0	0	0	0	0	26	6	34	0	0	0	0	0	11	**98**
Romania	51	401	36	414	0	425	1	0	163	0	0	1	1228	0	159	0	2515	231	76	0	740	0	4	0	875	**6203**
Slovakia	0	4	6	4	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	15	0	1	0	0	**32**
Slovenia	1	47	2	1	0	0	4	0	0	4	0	0	5	0	4	1	37	9	3	0	27	0	0	0	6	**124**
Spain	8	245	3	14	2	3	0	0	3	0	0	0	4	0	30	0	392	41	26	0	115	0	2	0	202	**1005**
Sweden	0	50	10	326	6	0	1	42	1	0	1	0	0	0	0	0	72	25	649	0	6	0	0	0	58	**1212**
United Kingdom	125	520	10	639	1	12	0	8	41	0	91	0	260	0	96	0	1516	404	406	1	131	0	2	0	0	**4065**

*Includes Faroe Islands

Table 2-16 Non-EU countries, recognised at EU level or under the process of recognition, issuing original CoCs endorsed by EU Member States

Country issuing the original CoC	EU Member State issuing the EaR																								Total[12]
	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK	
ALGERIA	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
ARGENTINA	84	14	0	0	0	0	3	0	0	0	0	0	0	0	34	0	45	0	79	0	1	0	0	0	0	**248**
AUSTRALIA	8	150	1	52	5	2	0	0	0	0	1	1	0	0	27	0	201	37	372	0	11	0	0	0	78	**864**
AZERBAIJAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	485	0	0	0	1	0	0	0	0	**486**
BANGLADESH	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**38**
BRAZIL	0	98	0	107	0	0	0	0	7	0	0	0	0	0	10	0	0	6	276	0	23	0	0	0	40	**556**

[12] The sum of the columns may not be equal to the total because some officers held EaRs issued by different EU Member States

Country issuing the original CoC	EU Member State issuing the EaR																									Total[12]
	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK	
CANADA	2	10	0	25	0	1	0	0	1	0	0	0	0	0	3	0	45	9	46	0	2	0	0	0	53	**190**
CAPE VERDE	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
CHILE	0	15	0	0	0	0	4	0	0	0	0	0	0	0	7	0	0	1	2	0	0	0	0	0	0	**25**
CHINA	0	204	23	78	0	0	0	0	0	0	0	0	0	0	0	0	685	78	321	0	69	0	0	0	1022	**2340**
CUBA	0	31	0	22	0	0	49	0	0	0	0	0	5	0	0	0	110	0	0	0	49	0	0	0	0	**244**
EGYPT	5	179	2	1	0	0	0	0	5	0	0	0	0	0	75	0	519	0	1	0	76	0	0	0	0	**843**
ETHIOPIA	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	26	0	0	0	0	**43**
FIJI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
GEORGIA	5	152	0	2	0	86	0	0	0	0	0	0	4	1	0	0	561	0	0	0	29	0	0	0	0	**784**
GHANA	2	33	1	1	0	0	0	0	0	0	0	0	0	0	16	0	14	0	6	0	7	0	0	0	0	**76**
HONG KONG	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	5	**12**
INDIA	306	738	0	1457	1	44	0	0	63	0	0	0	490	0	147	0	3239	89	1385	0	483	0	0	0	536	**8594**
INDONESIA	6	250	0	0	0	9	0	0	10	0	0	0	0	0	19	0	247	332	33	0	105	0	0	0	0	**960**
IRAN, ISLAMIC REPUBLIC OF	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	**11**
ISRAEL	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	3	0	0	0	0	**60**
JAMAICA	84	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	1	0	0	0	7	**103**
JAPAN	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	**7**
JORDAN	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	116	0	0	0	0	0	0	0	0	**118**
KOREA, REPUBLIC OF	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	460	0	0	0	1	0	0	0	7	**484**
LEBANON	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	49	0	0	0	0	0	0	0	0	**50**
MADAGASCAR	0	0	0	0	0	0	0	0	37	0	0	0	0	0	47	0	0	0	0	0	0	0	0	0	0	**58**
MALAYSIA	1	20	0	0	0	0	0	0	0	0	0	0	0	0	9	0	31	0	6	0	0	0	0	0	4	**71**
MEXICO	4	34	1	0	0	0	2	0	0	0	0	0	0	0	7	0	0	0	0	0	2	0	0	0	0	**46**
MONTENEGRO	0	254	1	0	0	1	0	0	0	0	0	0	0	0	26	0	603	0	42	0	98	0	0	0	148	**1034**
MOROCCO	0	50	0	0	0	0	0	0	25	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	**80**
MYANMAR	0	67	8	1	0	0	0	0	0	0	0	0	0	0	1	0	374	0	12	0	85	0	0	0	45	**570**

Country issuing the original CoC	EU Member State issuing the EaR																								Total[12]
	BE	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SK	UK	
NEW ZEALAND	7	54	1	25	2	0	0	0	0	0	0	0	0	0	14	0	101	68	93	0	9	0	0	0	125	**473**
PAKISTAN	0	73	0	0	0	3	0	0	0	0	0	0	0	0	0	0	12	0	0	0	6	0	0	0	9	**103**
PANAMA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	**4**
PERU	0	74	0	0	0	0	5	0	0	0	0	1	0	0	1	0	186	0	3	0	187	0	0	0	0	**438**
RUSSIAN FEDERATION	206	4128	320	204	31	72	0	23	64	0	125	5	21	80	408	297	6938	2871	806	0	1435	0	1	0	1033	**16766**
SENEGAL	0	0	0	0	0	0	0	0	9	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	**15**
SERBIA	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	**10**
SINGAPORE	7	42	0	92	0	0	0	0	1	0	0	0	0	0	10	0	135	7	71	0	32	0	0	0	29	**418**
SOUTH AFRICA	1	12	0	7	0	0	0	0	0	0	0	0	0	0	3	0	0	4	2	0	2	0	0	0	20	**49**
SRI LANKA	0	112	7	10	0	0	0	0	0	0	0	0	0	0	0	0	247	0	17	0	97	0	0	0	38	**476**
THE PHILIPPINES	298	7130	902	1357	0	3555	0	220	303	0	4	0	784	0	542	0	14675	1976	5448	0	1828	0	110	0	1387	**39145**
TUNISIA	0	0	0	0	0	0	0	0	15	0	0	0	0	0	13	0	9	0	0	0	0	0	0	0	0	**30**
TURKEY	0	17	3	1	0	0	0	0	0	0	0	0	0	0	12	0	4867	3	0	0	178	0	0	0	0	**4997**
UKRAINE	1028	5185	475	397	2	1162	0	7	252	0	7	2	0	10	849	77	10547	2474	670	0	2866	0	0	0	1298	**23449**
UNITED STATES	5	18	1	19	0	0	0	0	0	0	0	0	0	0	0	0	63	1	22	0	0	0	0	0	76	**203**
URUGUAY	0	10	0	0	0	0	5	0	0	0	0	0	0	0	6	0	0	0	0	0	1	0	0	0	0	**18**
VIET NAM	0	96	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	59	0	0	12	0	0	0	22	**232**

Table 2-17 Age distribution of holders of EaRs by departments

Department	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Deck	2207	12265	16207	13326	11791	7980	6085	5768	4482	**80111**
Engine	1625	9366	12671	10611	9491	9509	8365	7536	6204	**75378**
Total[13]	**3828**	**21586**	**28850**	**23917**	**21267**	**17474**	**14440**	**13295**	**10681**	**155338**

[13] The sum of the rows may not be equal to the total because some officers held EaRs for both Deck and Engine Departments

Table 2-18 Age distribution for engineer officers holding EaRs

Capacity	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Chief Engineer	3	120	1753	3813	4622	4946	4387	4595	4223	**28462**
Second Engineer	28	1249	4268	2871	1840	1569	1306	960	686	**14777**
Chief Eng. 3,000 kW	0	18	112	154	160	199	238	214	250	**1345**
Second Eng. 3,000 kW	21	129	212	139	122	111	106	113	103	**1056**
OEW	1406	7014	5063	2348	1732	1620	1241	856	380	**21660**
Electro-technical Officer	172	923	1497	1446	1128	1165	1162	872	614	**8979**
Total	**1625**	**9366**	**12671**	**10611**	**9491**	**9509**	**8365**	**7536**	**6204**	**75378**

Table 2-19 Age distribution for masters and deck officers holding EaRs

Capacity	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Master	4	142	2050	4296	5285	4416	3731	3939	3352	**27215**
Chief Mate	46	2185	6571	4606	3217	1827	1207	876	563	**21098**
Master 3,000 GT	0	7	68	95	126	143	173	148	179	**939**
Chief Mate 3,000 GT	126	436	357	159	108	79	59	58	48	**1430**
OOW	2031	9553	7394	4304	3091	1529	905	734	312	**29853**
Master 500 GT, NCV	4	42	102	109	127	118	93	74	62	**731**
OOW 500 GT, NCV	4	21	30	27	25	11	13	9	9	**149**
Total	**2207**	**12265**	**16207**	**13326**	**11791**	**7980**	**6085**	**5768**	**4482**	**80111**

Table 2-20 Age distribution of officers holding EaRs by gender group[14]

Gender	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Female	89	419	296	129	66	38	24	15	9	**1085**
Male	3390	19806	26855	22520	20054	16510	13680	12610	10248	**145673**
Total	**3479**	**20217**	**27143**	**22645**	**20119**	**16546**	**13703**	**12625**	**10255**	**146732**

[14] Poland and the Netherlands not included

Table 2-21 Age distribution by region of the country issuing the original CoC

Region of the country issuing the original CoC	age<25	25≤age<30	30≤age<35	35≤age<40	40≤age<45	45≤age<50	50≤age<55	55≤age<60	age≥60	Total
Asia	1469	8765	10126	8487	8520	6460	4258	3535	2064	**53684**
EU	730	5454	8338	7549	6432	5156	4878	5059	5445	**49041**
Europe (non-EU)	1541	6571	9391	7214	5847	5429	4878	4275	2761	**47907**
Rest of the World	88	797	1010	677	474	436	431	426	413	**4752**
Total	**3828**	**21586**	**28849**	**23916**	**21265**	**17472**	**14439**	**13294**	**10681**	**155330**

Appendix C Data on ratings holding valid CoPs in 2018

Table 2-22 Ratings holding CoPs registered by EU Member States

Capacity	BE	DE	EE	ES	FI	FR	HR	IS	IT	LT	LV	NO	PL	RO	SE	SK
Able seafarer deck	0	30	816	980	656	147	653	4	3283	255	2280	4884	4684	1113	2260	3
Rating forming part of a navigational watch	1215	1380	664	8875	562	1498	3473	1	2104	885	1252	0	8687	1556	1153	11
Able seafarer engine	0	7	774	408	378	98	170	1	1104	15	873	689	480	659	519	1
Rating forming part of an engineering watch	377	363	0	4984	391	969	1628	5	981	297	689	0	3684	1709	316	11
Electro-technical rating	0	106	67	137	335	154	1374	0	557	15	48	1069	309	987	176	1
Total[15]	**1777**	**3330**	**1945**	**12132**	**3060**	**2419**	**6204**	**10**	**6574**	**1393**	**4727**	**6521**	**12549**	**4559**	**4016**	**27**

[15] The sum of the rows may not be equal to the total because some ratings held CoPs for both Deck and Engine Departments

Appendix D Overview – Forecast for 2019 and 2020

Table 2-23 Forecast for the next two years of masters and officers holding CoCs issued by the top 5 EU and top 5 non-EU countries

Forecast -Year[16]	PH	UK	UA	PL	EL	RU	HR	IT	IN	TR
2019										
Linear Forecast	11.62%	9.20%	6.82%	6.19%	8.09%	5.27%	4.53%	5.13%	2.49%	1.34%
ETS Forecast	11.92%	10.01%	6.42%	6.20%	7.78%	5.28%	4.41%	4.82%	2.23%	1.22%
ETS Confidence bound (±)	1.27%	1.42%	1.14%	0.43%	1.57%	0.26%	0.25%	1.17%	0.49%	0.61%
2020										
Linear Forecast	11.64%	8.79%	6.60%	5.83%	9.01%	5.20%	4.46%	5.30%	2.47%	1.19%
ETS Forecast	11.98%	9.09%	5.68%	6.28%	8.63%	4.96%	4.56%	4.95%	2.12%	0.72%
ETS Confidence bound (±)	1.27%	1.78%	1.15%	0.43%	1.62%	0.26%	0.25%	1.17%	0.50%	0.63%

Table 2-24 Forecast for the next two years of officers at management and operational level available to serve on board EU Member State flagged vessels

Forecast -Year[17]	Deck ML	Engine ML	Deck OL	Engine OL
2019				
Linear Forecast	43.24%	27.42%	14.41%	17.28%
ETS Forecast	43.60%	27.31%	14.01%	17.10%
ETS Confidence bound (±)	4.55%	0.45%	1.10%	0.06%
2020				
Linear Forecast	43.99%	26.85%	13.68%	18.16%
ETS Forecast	48.55%	26.52%	12.73%	18.29%
ETS Confidence bound (±)	4.58%	0.46%	1.10%	0.06%

[16] The values presented are the % of master and officers holding CoCs issued by the specific country among the total number of masters and officers available to serve on board EU Member State flagged vessels for the year forecasted
[17] The values presented are the % of officers by department and level of responsibility among the total number of masters and officers available to serve on board EU Member State flagged vessels for the year forecasted

Table 2-25 Forecast for the next two years of female officers available to serve on board EU Member State flagged vessels

Forecast -Year[18]	EU	Non-EU	All
2019			
Linear Forecast	2.22%	0.55%	1.68%
ETS Forecast	2.19%	0.58%	1.70%
ETS Confidence bound (±)	0.08%	0.09%	0.06%
2020			
Linear Forecast	2.25%	0.58%	1.72%
ETS Forecast	2.19%	0.64%	1.76%
ETS Confidence bound (±)	0.08%	0.09%	0.06%

Table 2-26 Forecast for the next two years of the top 10 nationalities of masters and officers available to serve on board EM Member State flagged vessels

Forecast -Year[19]	PH	UA	EL	IN	PL	RU	UK	HR	IT	FR
2019										
Linear Forecast	10.51%	6.81%	8.74%	5.57%	5.78%	4.97%	4.55%	4.49%	5.15%	4.36%
ETS Forecast	9.62%	6.36%	8.44%	5.70%	5.74%	4.92%	4.99%	4.37%	4.85%	4.17%
ETS Confidence bound (±)	1.76%	1.13%	1.51%	0.41%	0.50%	0.34%	0.69%	0.26%	1.16%	0.72%
2020										
Linear Forecast	10.28%	6.59%	9.63%	5.38%	5.58%	4.83%	4.26%	4.42%	5.33%	4.19%
ETS Forecast	9.01%	5.67%	9.26%	5.53%	6.03%	4.77%	4.39%	4.52%	4.98%	3.97%
ETS Confidence bound (±)	1.78%	1.14%	1.56%	0.41%	0.50%	0.35%	0.87%	0.26%	1.16%	0.72%

[18] The values presented are the % of female officers among the total number of masters and officers holding CoCs issued by EU or non-EU countries or available to serve on board EU Member State flagged vessels for the year forecasted

[19] The values presented are the % of master and officers nationals of the specific country among the total number of masters and officers available to serve on board EU Member State flagged vessels for the year forecasted

Table 2-27 Forecast for the next two years of the nationalities by region of origin of masters and officers available to serve on board EM Member State flagged vessels

Forecast -Year[20]	Asia	EU	Europe (non-EU)	rest of the world
2019				
Linear Forecast	18.43%	61.76%	13.91%	1.52%
ETS Forecast	17.07%	63.43%	13.35%	1.47%
ETS Confidence bound (±)	2.39%	3.93%	2.22%	0.16%
2020				
Linear Forecast	17.73%	62.51%	13.31%	1.38%
ETS Forecast	16.02%	65.39%	11.68%	1.28%
ETS Confidence bound (±)	2.39%	3.93%	2.28%	0.16%

Table 2-28 Forecast for the next two years concerning the average age of masters and officers available to serve on board EU Member State flagged vessels

Forecast -Year[21]	EU	Non-EU	All
2019			
Linear Forecast	43.4	40.0	42.3
ETS Forecast	43.5	39.7	42.3
ETS Confidence bound (±)	0.3	0.6	0.2
2020			
Linear Forecast	43.3	39.9	42.3
ETS Forecast	43.4	39.5	42.1
ETS Confidence bound (±)	0.3	0.6	0.2

[20] The values presented are the % of master and officers nationals of countries included in the specific region of origin among the total number of masters and officers available to serve on board EU Member State flagged vessels for the year forecasted
[21] The values presented are the average age of masters and officers among the total number of masters and officers holding CoCs issued by EU or non-EU countries or available to serve on board EU Member State flagged vessels for the year forecasted

Table 2-29 Forecast for the next two years concerning the average age of officers at management and operational level available to serve on board EU Member State flagged countries

Forecast -Year[22]	EU ML	non-EU ML	All ML	EU OL	non-EU OL	All OL
2019						
Linear Forecast	45.5	43.5	45.0	36.5	35.2	35.9
ETS Forecast	45.5	43.3	45.0	36.5	34.9	36.0
ETS Confidence bound (±)	0.3	0.7	0.3	0.2	0.4	0.2
2020						
Linear Forecast	45.4	43.4	44.9	36.7	35.2	36.0
ETS Forecast	45.1	43.0	44.6	36.7	34.9	36.1
ETS Confidence bound (±)	0.3	0.7	0.3	0.2	0.4	0.2

[22] The values presented are the average age of officers by department and level of responsibility among the total number of masters and officers holding CoCs issued by EU or non-EU countries or available to serve on board EU Member State flagged vessels for the year forecasted

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