European Maritime Safety Agency

SEAFARERS' STATISTICS IN THE EU

STATISTICAL REVIEW (2023 DATA FROM THE STCW-IS AS PROVIDED BY 31 DECEMBER 2024)

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EMSA

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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
ITF	International Transport Workers' Federation
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

Executive Summary

The main objective for gathering information on certificates and endorsements issued to seafarers by the EU Member States is to use it as a primary source of data for statistical analysis in support of the EU Member States, the Commission and the European Parliament in policy making and of other stakeholders in related activities as applicable.

This review is the only statistical overview that results from the gathering of data directly from the maritime administrations that issue the certificates. It is based on data extracted from certificates and endorsements registered by EU Member States[1], Iceland and Norway until 31 December 2023. This data, which was transferred and recorded in the STCW Information System (STCW-IS) by 31 December 2024, represents a snapshot of the European labour market in terms of the number of seafarers holding valid certificates and endorsements in 2023. It should be noted that the numbers presented cover masters and officers who are certified but not all necessarily actively serving on board ships.

The data included in the STCW-IS shows that by end-2023, 172,308 masters and officers held valid certificates of competency (CoC) issued by EU Member States[1] while another 125,519 masters and officers held original CoCs issued by non-EU countries with endorsements issued by EU Member States attesting their recognition (EaR), as presented in Figure 1-1. Overall, the end of 2023 saw almost a third of a million masters and officers as potential manpower to serve on board EU Member State flagged vessels.

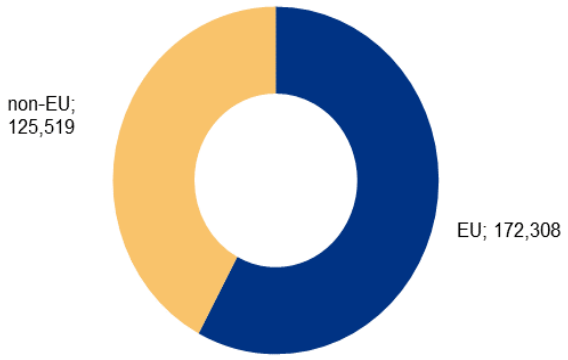

Figure 1-1 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC

The five EU Member States with the highest number of masters and officers holding CoCs issued by them in 2023 were, by order of magnitude, Norway, Poland, Croatia, Italy and Romania. The five EU Member States with most masters and officers holding EaRs issued by them, also by order of magnitude, were Malta, Cyprus, Portugal, Norway and Denmark. Finally, the five non-EU countries which had more masters and officers holding CoCs recognised by EU Member States were the Philippines, Ukraine, the Russian Federation, India and Türkiye.

From the overview for the period 2014-2023, it can be observed from Figure 1-2 that, between 2016 and 2019, the absolute number of masters and officers holding CoCs and EaRs and of ratings holding CoPs – and thereby of those available to serve on board EU Member State flagged vessels – increased. This trend was subsequently interrupted until 2022 influenced by Brexit and the COVID-19 pandemic. However, in 2023 a small increase can be observed. Nevertheless, the overall figures remained broadly stable in terms of distribution by country issuing the original CoC, by masters and officers by department, capacity, gender and age.

[1] Austria does not issue certificates and endorsements to seafarers and therefore is excluded from this report.

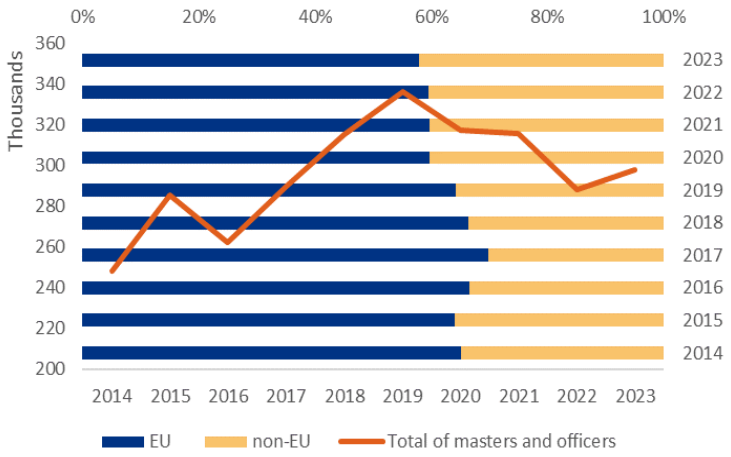

Figure 1-2 Masters and officers available at EU level over the years (EU and non-EU countries issuing the original certificate)

After ten years of the review exercise, it is possible to confirm a certain stability in the European maritime labour market. This stability suggests that the European labour market has been able to attract new entrants to replace those leaving the seafaring career. In 2023 and within the EU, the numbers indicate that over 5,000 officers got a CoC for the first time.

The review also indicates a stability in terms of age and the geographical region and countries from where seafarers originate. In terms of gender, 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. The percentage of female officers globally (EU and non-EU) is expected to continue increasing in the coming years. However, it remains unlikely that globally females will reach the 2% of the total number of masters and officers already available to serve on board EU Member State flagged vessels.

Over the years that data has been received from Member States, the number of masters and officers holding valid CoCs issued by EU Member States indicates that the EU supply of masters and officers could be sufficient to satisfy the demand to crew the EU Member State fleets. However, based on the analysis on nationalities of masters and officers serving on board (see section 7), only 26% of masters and officers serving on board the EU fleet were EU nationals. In addition, EU nationals formed 7% of those serving on board the non-EU fleet. This might suggest that roughly 50% of masters and officers holding CoCs issued by EU Member States are either working in the maritime industry ashore or otherwise outside the industry. Notwithstanding this, caution should be exercised in deriving any conclusion from the results presented. Ideally any conclusion taken in relation to the employability of seafarers should be confirmed by comparing it with any data that may be available from other sources.

1. Introduction

The statistical review presented in this report is based on data extracted from certificates and endorsements registered by EU Member States[2], Norway and Iceland until 31 December 2023, and received in the STCW-IS by 31 December 2024. 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.

For the last ten years, EMSA has compiled the data received to allow the possibility of having a wide picture on the number of masters and officers available to serve on board EU Member State flagged vessels, including by department, age and gender (see section 4). These include those holding CoCs issued by EU Member States (see section 2) and those holding EaRs issued by EU Member States recognising non-EU CoCs (see section 3). A broader view on the number of masters and officers holding EaRs recognising CoCs issued by other EU Member States and on the number of ratings holding CoPs was also possible (see also section 3 and section 5, respectively).

Over the years, elements applied to treat and/or analyse the data have been improved or adjusted to new realities when appropriate. Also, with a view to getting a better insight into the profile of those starting a seafaring career in Europe and of the career path of those already in it, some features have been introduced to this process. One of them allowed the possibility to compare previous years' data on masters and officers holding CoCs issued by EU Member States, with the data introduced in the STCW-IS in the last year in question. This comparison was made in terms of the differences between the capacities stated in the CoCs of the year in question and those already included in the STCW-IS of the previous year. The results of such comparison are included in section 2 (see sub-section 2.8).

Given the more realistic view that emerges through the build-up of data collected over the years, increasingly reliable trend analysis and forecasting is possible and is included in this review in section 6. Section 7 then, includes a brief comparison between the supply (number of masters and officers available to serve on board EU Member State flagged vessels) and demand for masters and officers (estimated number) to crew the vessels registered under EU Member State flags. It also includes a limited analysis, based on MARINFO data, of the nationalities of EU and non-EU officers, who might be currently working on board the EU fleet.

[2] Due to the inclusion of data from Norway and Iceland, 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.

2. Masters and officers holding valid certificates of competency in 2023

2.1 Total

The total number of masters and officers holding valid CoCs at EU level was 172,308. Of these, 4.01% held CoCs entitling them to serve in both the Deck and Engine Departments. In addition, just a very limited number of them (0.05%) held CoCs issued by more than one EU Member State.

2.2 Distribution by EU Member State

The data in Figure 2-1 shows the distribution of masters and officers as registered by EU Member State[3]:

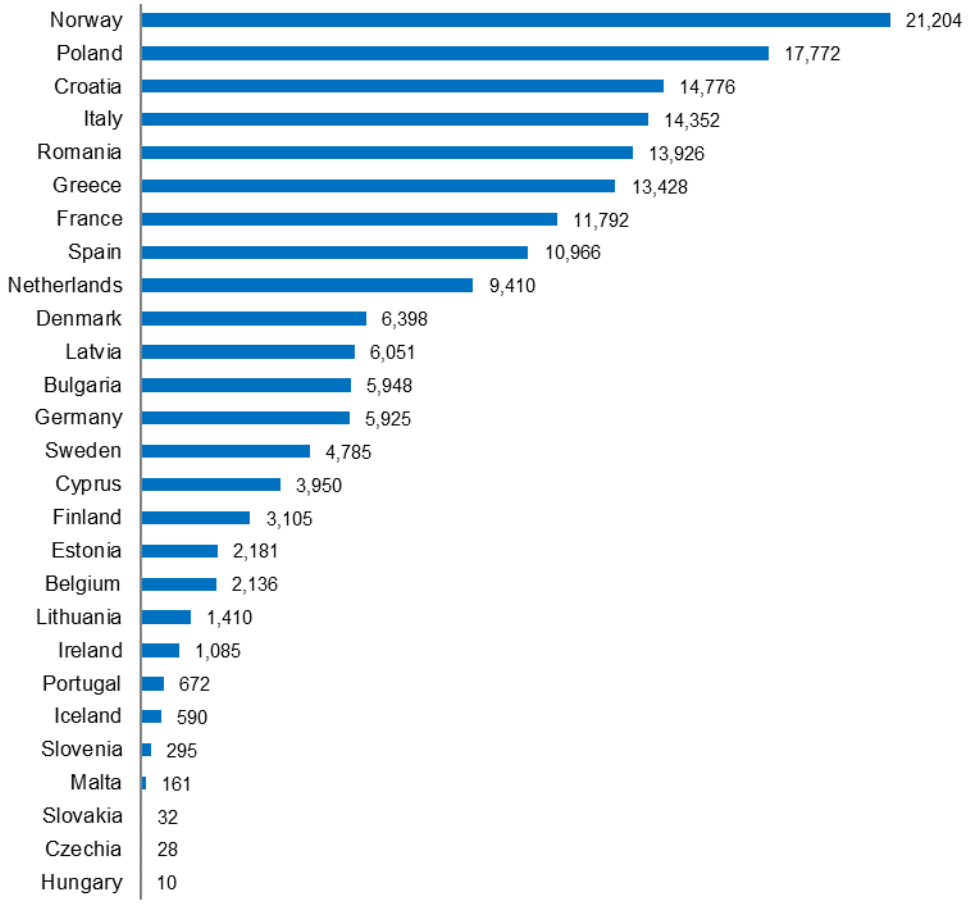

Figure 2-1 Masters and officers holding valid CoCs per EU Member State

2.3 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 51% 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.

[3] Luxembourg does not issue CoCs.

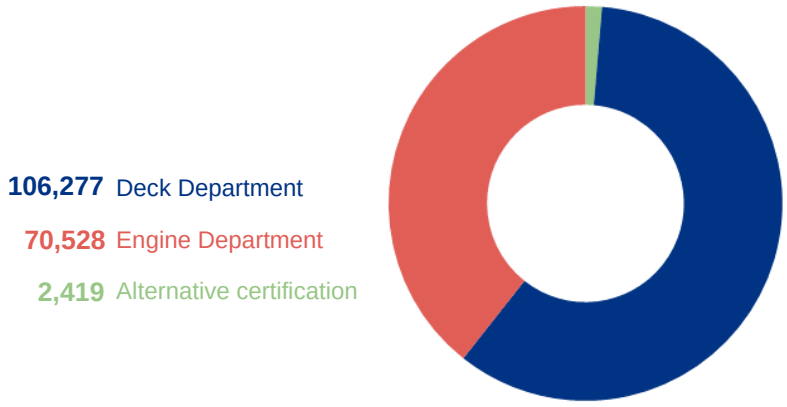

Figure 2-2 Distribution of masters and officers holding valid CoCs by department

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

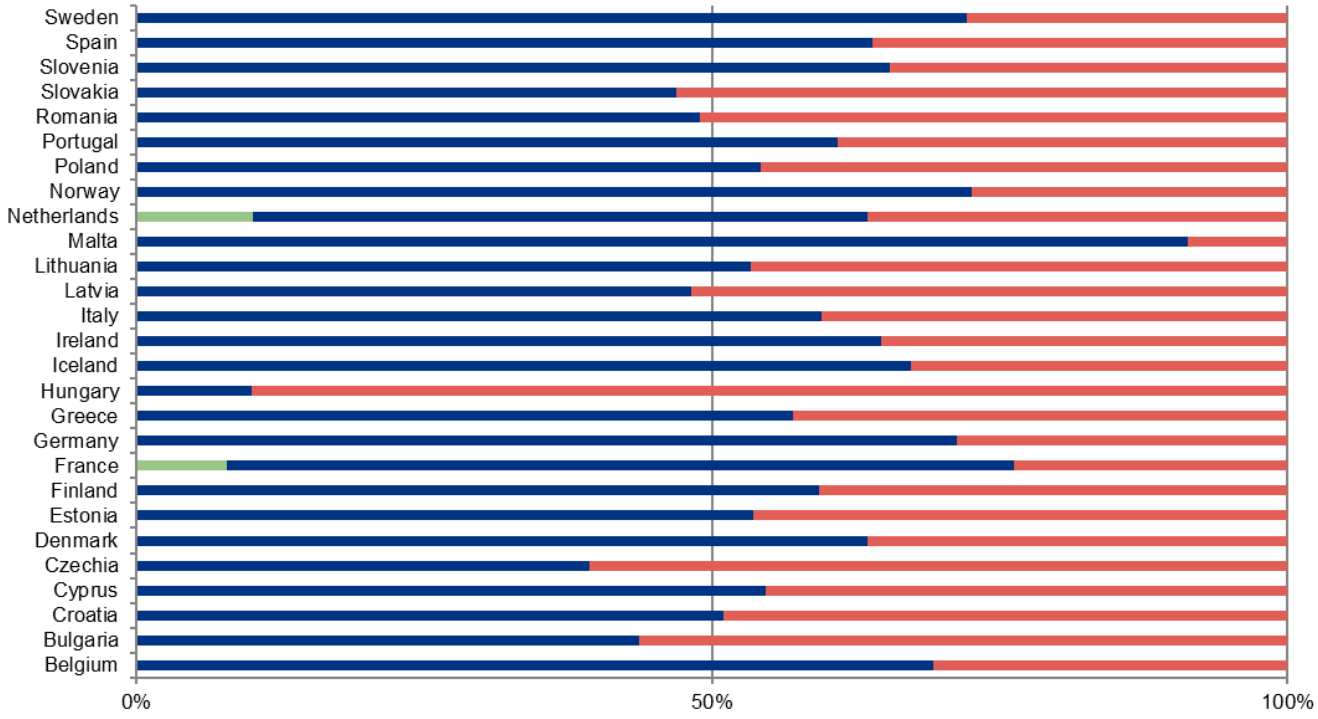

Figure 2-3 Distribution of masters and officers holding valid CoCs by department in each EU Member State

2.4 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.

2.4.1 Distribution by deck capacity

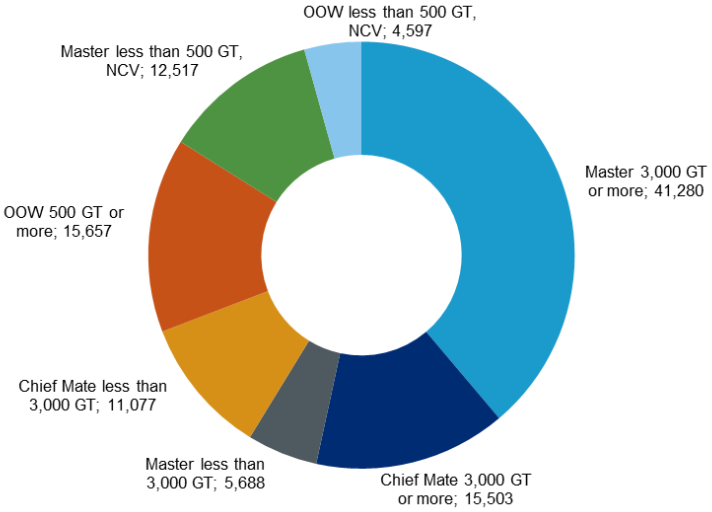

Figure 2-4 Distribution of masters and deck officers holding valid CoCs by deck capacity

The data in Figure 2-4 shows that 53.43% of the deck officers were entitled to serve at management level on ships of 3,000 GT or more.

When analysing the limitations included in the CoCs in terms of area of navigation and gross tonnage in addition to those already shown in Figure 2-4, the following could be stated:

- Only 3.26% of the deck officers entitled to serve on ships of 500 GT or more were restricted to service in a limited area of navigation. This percentage increased to 10.63% when analysing just those entitled to serve at management level on ships of less than 3,000 GT; and
- 10.21% of the deck officers were entitled to serve on ships with a limited gross tonnage different to that established in Chapter II of the STCW Convention (different than 500 or 3,000 GT).

2.4.2 Distribution by engine capacity

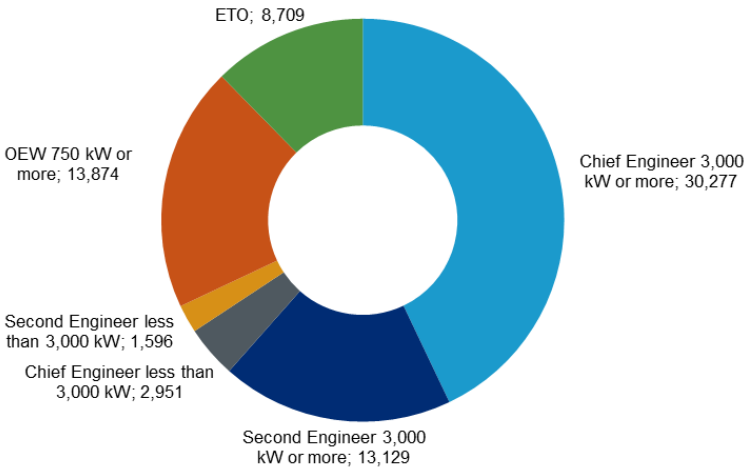

Figure 2-5 Distribution of engineer officers holding valid CoCs by engine capacity

The data in Figure 2-5 shows that 61.54% of the engineer officers were entitled to serve at management level on ships of 3,000 kW or more.

When analysing the limitations included in the CoCs in terms of area of navigation, type of engine and propulsion power in addition to those already shown in Figure 2-5, the following could be stated:

- Only 3.66% of the engineer officers were restricted to service in a limited area of navigation. This percentage increased to 11.08% when analysing just those entitled to serve at management level on ships of less than 3,000 kW;
- 26.73% of the engineer officers were restricted to operate a specified type of propulsion machinery installation; and
- 4.03% of the engineer officers were entitled to serve on ships with a limited propulsion power different than that established in Chapter III of the STCW Convention (different than 750 or 3,000 kW).

2.5 Gender distribution

The information on gender was available for 160,973 masters and officers, representing 93.42% of the total number of officers at EU level holding a CoC.

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 2.78% ± 0.08% compared to 97.22% ± 0.08% of male masters and officers.

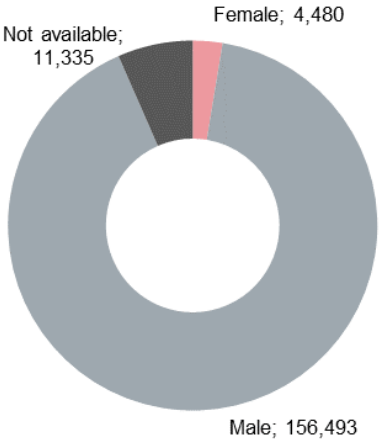

Figure 2-6 Gender distribution of masters and officers holding valid CoCs

The information presented in Figure 2-7 below 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 (86.74%) were entitled to serve in the Deck Department.

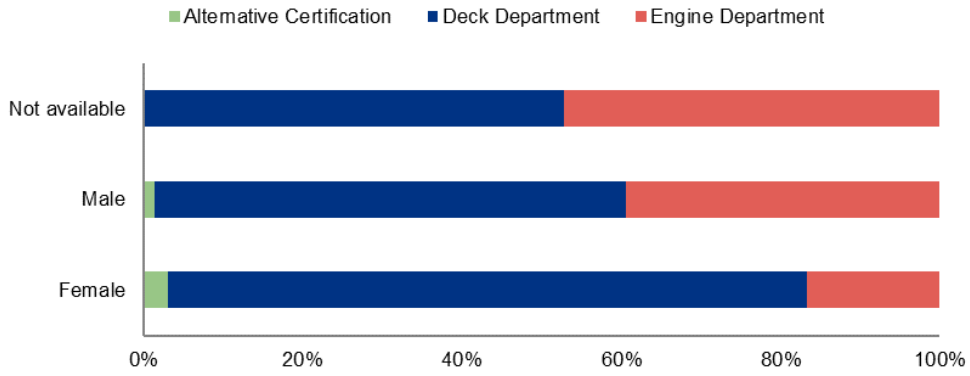

Figure 2-7 Distribution of masters and officers holding valid CoCs by department and by gender

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

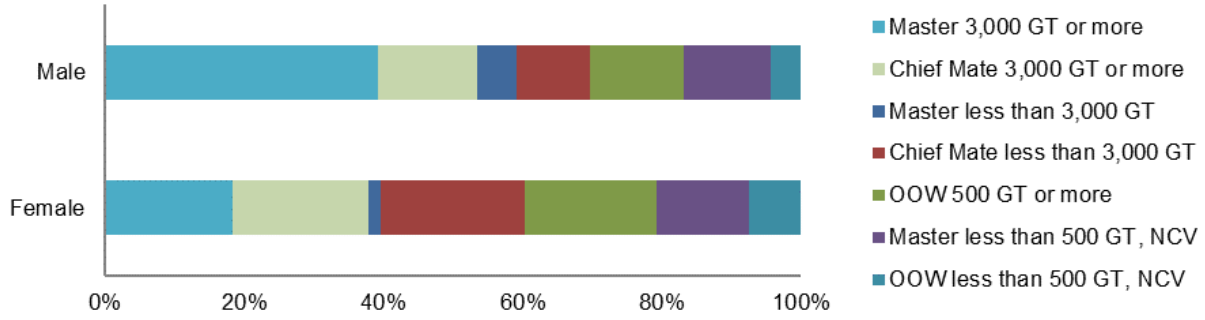

Figure 2-8 Distribution of the deck capacities of masters and deck officers holding valid CoCs by gender

As illustrated in Figure 2-8, the three main capacities in which female officers were entitled to serve were 'Chief Mate less than 3,000 GT' (20.77%), 'Chief Mate 3,000 GT or more' (19.58%), and 'OOW 500 GT or more' (18.91%), capacities representing 59.26% 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 3,000 GT or more' (39.28%), 'Chief Mate 3,000 GT or more' (14.13%) and 'OOW 500 GT or more' (13.47%), capacities representing 66.88% of the total number of male masters and officers entitled to serve in the Deck Department.

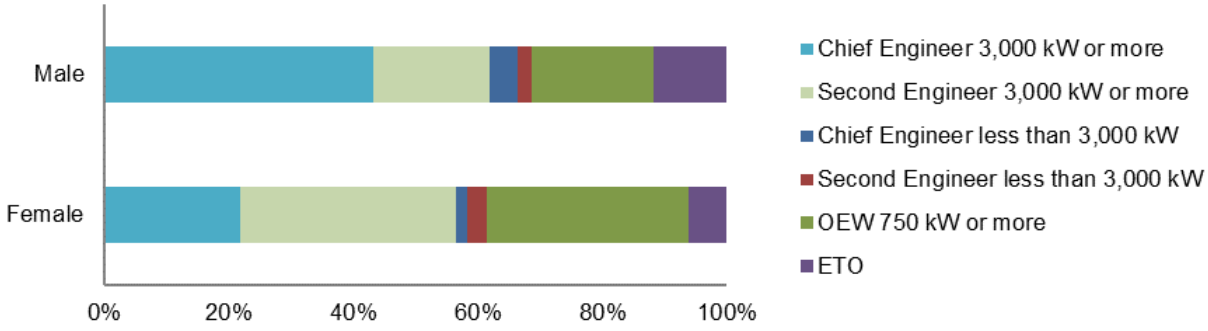

Figure 2-9 Distribution of the engine capacities of engineer officers holding valid CoCs by gender

As illustrated in Figure 2-9, the three main capacities in which female officers were entitled to serve in the Engine Department were 'Second Engineer 3,000 kW or more' (34.81%), 'OEW 750 kW or more' (32.47%) and 'Chief Engineer 3,000 kW or more' (21.77%). These capacities represented 89.05% 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 3,000 kW or more' (43.31%), 'OEW 750 kw or more' (19.62%) and 'Second Engineer 3,000 kW or more' (18.67%). These capacities represented 81.60% of the total number of male officers entitled to serve in the Engine Department.

2.6 Distribution by nationality

The information on nationality was available for 165,950 masters and officers, representing 96.31% of the total number of officers at EU level holding a CoC.

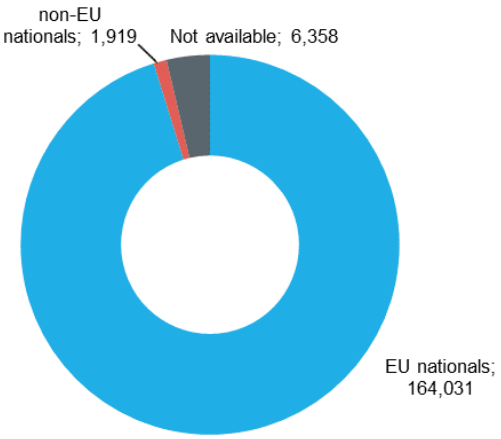

Figure 2-10 Nationality distribution of masters and officers holding valid CoCs

In addition to nationals of the EU Member States, 1,919 nationals of 89 non-EU countries held valid CoCs as masters or officers issued by EU Member States. When grouping these non-EU countries by region[4], it results that 18 were located in Europe, 16 in Asia, 30 in Africa, 21 in the Americas and 4 in Oceania.

The distribution of the non-EU nationals holding valid CoCs issued by the EU Member States presented in Figure 2-11 shows that 67.43% of them were nationals of countries located in Europe.

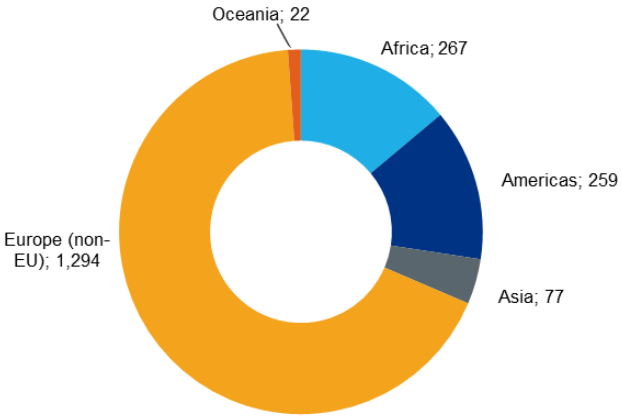

Figure 2-11 Nationality distribution of non-EU nationals holding valid CoCs issued by EU Member States by region of origin

2.7 Age distribution

The average age of masters and officers holding valid CoCs was 43.6 (years). Whereas the under-25 age group counted 5,641 masters and officers, all other age groups had a relatively uniform distribution, each counting between 16,021 and 26,624 masters and officers, which represented 9% to 14% of the total number.

[4] The grouping of countries per regions was based on the “Standard country or area codes for statistical use” established by the United Nations and the list of European countries established by the EU.

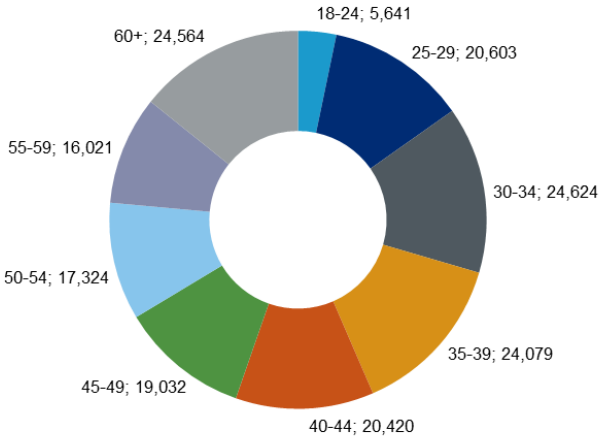

Figure 2-12 Age distribution of masters and officers holding valid CoCs

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

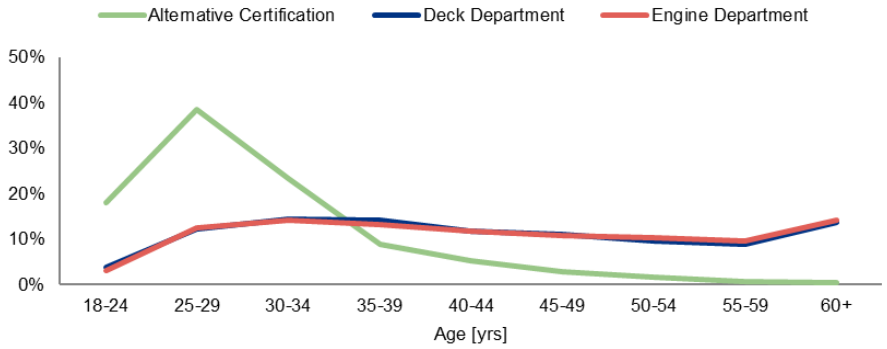

Figure 2-13 Age profile of masters and officers holding valid CoCs per department

Reviewing the data in Table 8-7 of Appendix B, the following conclusions can be drawn:

- 80.03% 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 year age group;
- 56.63% of masters and deck officers and 54.88% of the engineer officers were younger than 45 years of age.

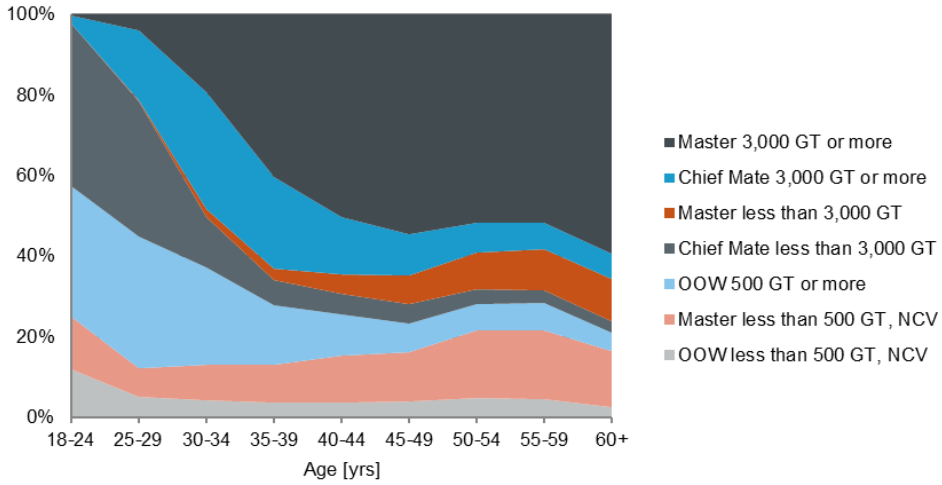

Figure 2-14 Distribution of masters and deck officers holding valid CoCs by age groups

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

- 61.31% of those entitled to serve as ‘Master 3,000 GT or more’ were 45 years old or older;
- 65.93% of those entitled to serve as ‘Chief Mate 3,000 GT or more’ were younger than 40 years of age;
- 60.58% of those entitled to serve as ‘Master less than 3,000 GT’ were 50 years old or older;
- 53.96% of those entitled to serve as ‘Chief Mate less than 3,000 GT’ were younger than 30 years of age;
- 59.34% of those entitled to serve as ‘OOW’ 500 GT or more were younger than 35 years of age;
- 54.49% of those entitled to serve as ‘Master less than 500 GT, NCV’ were 45 years old or older; and
- 51.86% of those entitled to serve as ‘OOW less than 500 GT, NCV’ were younger than 40 years of age.

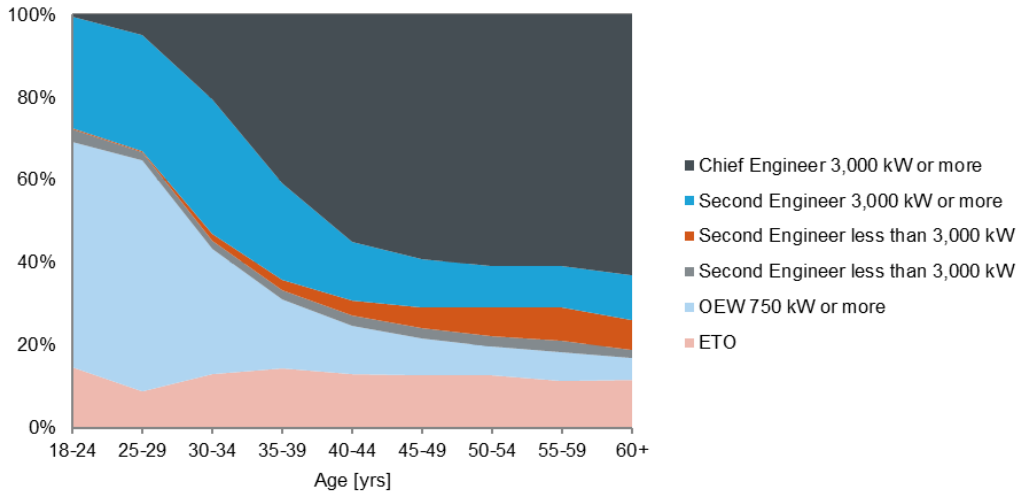

Figure 2-15 Distribution of engineer officers holding valid CoCs by age groups

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

- 64.15% of those entitled to serve as ‘Chief Engineer 3,000 kW or more’ were 45 years old or older;
- 65.02% of those entitled to serve as ‘Second Engineer 3,000 kW or more’ were younger than 40 years of age;
- 60.66% of those entitled to serve as ‘Chief Engineer less than 3,000 kW’ were 50 years old or older;
- 59.40% of those entitled to serve as ‘Second Engineer less than 3,000 kW’ were 40 years old or older;
- 66.12% of those entitled to serve as ‘OEW 750 kW or more’ were younger than 35 years of age; and
- 56.84% of those entitled to serve as ‘ETO’ were 40 years old or older.

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 34.8 years, while that for male masters and officers was 43.6 years;
- 73.35% 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 43.42%;
- the average age of female masters and deck officers (34.9 years) was higher than the average age of the female engineer officers (33.2 years).

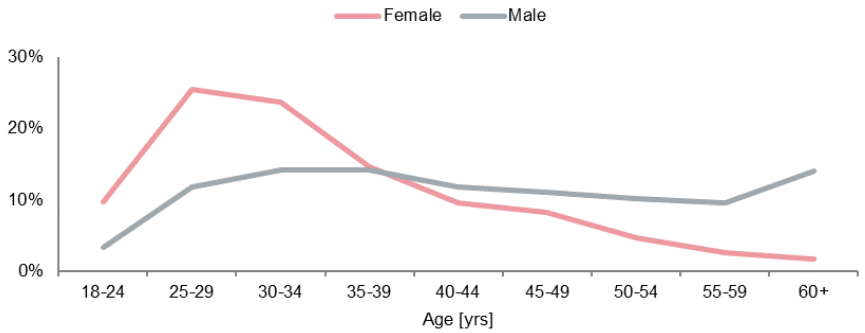

Figure 2-16 Age profile of masters and officers holding valid CoCs per gender

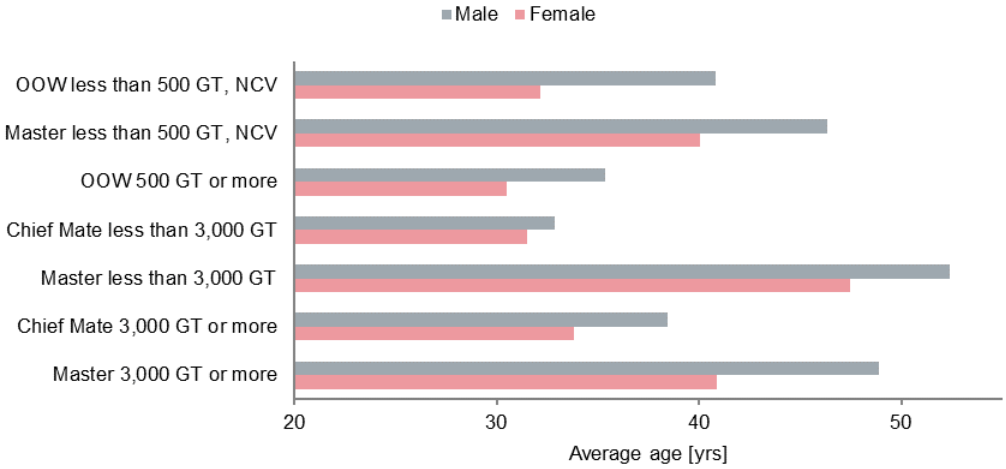

Figure 2-17 Average age of masters and deck officers holding valid CoCs per gender by deck capacity

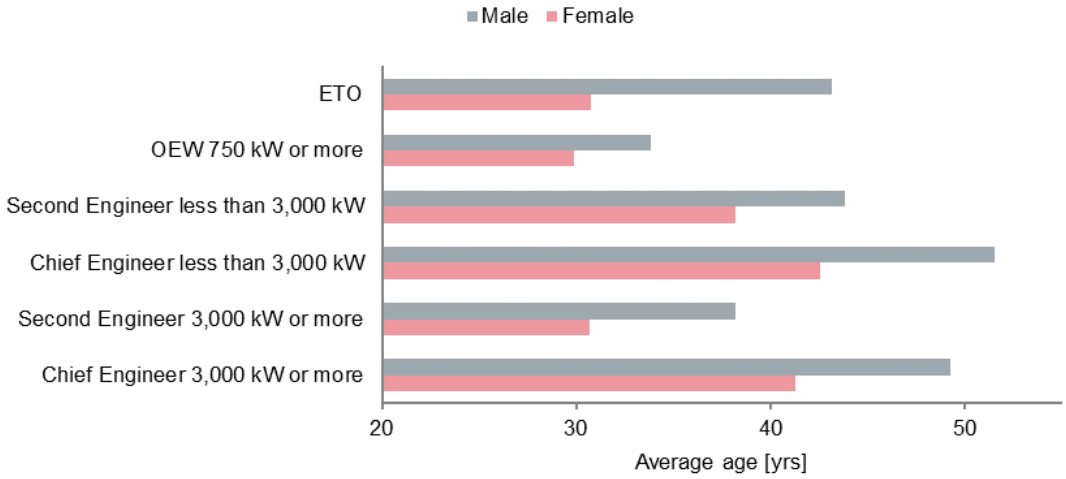

Figure 2-18 Average age of engineer officers holding valid CoCs per gender by engine capacity

2.8 Career path insight

Regarding the retention of masters and officers, it is noted that 92.49% of the total number of masters and officers that held valid CoCs in 2022 continue holding valid CoCs in 2023. These masters and officers (158,651) represent 92.07% of the total number of those officers who in 2023 held valid CoCs. Approximately 87% of them kept their certificates valid, maintaining also the capacity and corresponding limitations in which they were entitled to serve. 9% needed to revalidate their CoCs in order to continue to be entitled to serve on board in the capacities stated in their certificates. In addition, a minor percentage (4%) of masters and officers upgraded their CoCs, meaning that in 2023 they were entitled to serve in a higher capacity on board than the one they were entitled in 2022 or at least

with the same capacity but different limitations in terms of area of navigation, tonnage, propulsion power or type of engine, as appropriate.

Yet, of the total number of masters and officers holding a valid CoC in 2023, 7.93% (13,657) were identified as "new", meaning that they did not hold a valid CoC in 2022. This does not mean that all of them started a seafaring career in 2023. Some of them might have held a valid CoC in a previous year and others could have acquired the first certificate in a third country before acquiring a CoC issued by a Member State.

When reviewing per department the masters and officers that in 2023 were identified as "new" and as having revalidated or upgraded their CoCs, the following could be stated:

- The number of masters and deck officers identified as "new" (10,095) represented 9.50% of the total number of masters and officers entitled to serve in the Deck Department while from the number of those entitled to serve in the engine department the "new" engineer officers (4,232) represented 6.00%. From these "new" masters and officers, 6.80% deck officers and 10.11% engineers were identified as having previously held a valid CoC for at least one year between 2019 and 2021;
- The number of masters and officers identified as having revalidated their CoCs (8,912 for deck and 5,761 for engine) represented, in both departments, approximately 8% of the total number of masters and officers entitled to serve in the Deck Department or in the Engine Department; and
- The number of masters and officers identified as having upgraded their CoCs (3,561 for deck and 2,776 for engine) represented, in both departments, approximately 3.50% of the total number of masters and officers entitled to serve in the Deck Department or in the Engine Department.

Distributing the masters and officers by deck and engine capacities, the data shows that:

- of the total number of masters and officers identified as "new": in the deck department 35.90% were entitled to serve as 'OOW 500 GT or more' (2,026) and as 'Chief mate less than 3,000 GT' (1,598). In the engine department 59.10% were entitled to serve as 'OEW 750 kW or more' (1,886) and 'ETO' (615). Among the total number of masters and officers entitled to serve in the mentioned capacities, these "new" officers represented 12.94%, 14.43%, 13.59% and 7.06% of the total, respectively;
- of the total number of masters and officers identified as having revalidated their CoCs: in the deck department 64.39% were entitled to serve as 'Master 3,000 GT or more' (3,985) and as 'OOW 500 GT or more' (1,753). In the engine department 66.50% were entitled to serve as 'Chief Engineer 3,000 kW or more' (2,820) and 'OEW 750 kW or more' (1,011). Among the total number of masters and officers entitled to serve in the mentioned capacities, these "revalidated" represented 9.65%, 11.20%, 9.31% and 7.29% of the total, respectively;
- of the total of masters and officers identified as having upgraded their CoCs: in the deck department 81.83% were entitled to serve as 'Chief Mate 3,000 GT or more' (1,538) and 'Master 3,000 GT or more' (1,376) and in the engine department 89.91% were entitled to serve as 'Chief Engineer 3,000 or more' (1,268) and 'Second Engineer 3,000 kW or more' (1,228). Among the total number of masters and officers entitled to serve in the mentioned capacities, the "upgraded" represented 9.92%, 3.33%, 4.19% and 9.35% of the total, respectively. When reviewing in the deck department the capacities that 87.98% of these officers were entitled to serve in the previous year it can be noted that, by order of magnitude, they were entitled to serve as 'Chief mate 3,000 GT or more', 'OOW 500 GT or more' and 'Chief mate less than 3,000'. In the engine department, the previous capacities of 90.13% of those that upgraded their certificates were, by order of magnitude, 'OEW 750 kW or more' and 'Second Engineer 3,000 kW or more'.

Regarding female masters and officers that were identified as "new" and as having revalidated or upgraded their CoCs, they represented in each department 28.05% and 23.12% of the total number of female masters and officers holding a valid CoC in 2023 for service in the deck and engine department, respectively. Male masters and officers identified as "new" represented 21.13% and 18.32% of the total number of male masters and officers entitled to serve in the deck and engine department, respectively.

When analysing separately the number of masters and officers which were identified as "new", it can be stated with a level of confidence of 99% that the percentage of female deck officers was 7.70% ± 0.20% and engineer officers was 2.91% ± 0.37%. As stated in section 2.5 from the total number of masters and officers whose gender was known, the percentage of female masters and officers was 2.78% ± 0.08%.

Reviewing the age profile of the masters and officers that in 2023 were identified as “new” and as having revalidated or upgraded their CoCs, the following conclusions can be stated:

- Their average age was 38.6 years. When analysing them by gender, the average age of male officers was 38.7 years old and the average age of female officers was 31.6 years old;
- Considering those “new” officers entitled to serve as ‘OOW 500 GT or more’ and ‘OEW 750 kW or more’, their average age was around 28.6 years old. When dividing them by gender, the average age of female officers was slightly lower (27.8 years) whereas for male officers that remained at 28.6 years old.

Figure 2-19 below illustrates and summarises the information included in this section.

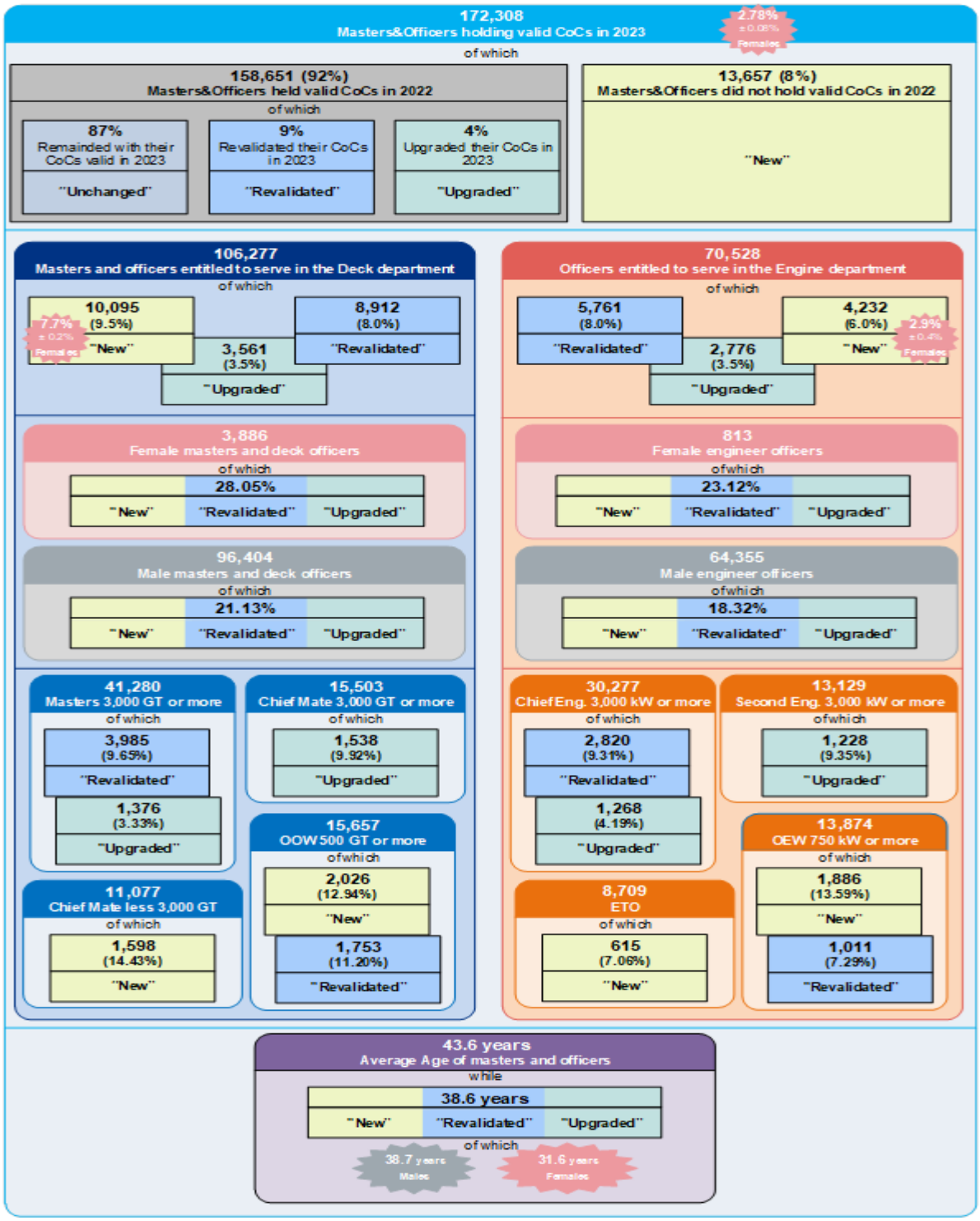

Figure 2-19 Career path insight

3. Masters and officers who in 2023 held valid endorsements attesting recognition

3.1 Total

The total number of masters and officers holding valid EaRs at EU level was 173,436, with 0.08% of them entitled to serve in both the Deck and Engine Departments. In addition, 9.62% of them held more than one EaR issued by different EU Member States.

A review of the distribution by group of countries issuing the original CoC, reveals that 47,988 masters and officers held original CoCs issued by EU Member States which were recognised through endorsement by other EU Member State (27.85% of the total number of masters and officers holding valid CoCs as per section 2.1). In addition, 125,519 held original CoCs issued by non-EU countries and 0.04% held original CoCs issued by both EU Member States and non-EU countries.

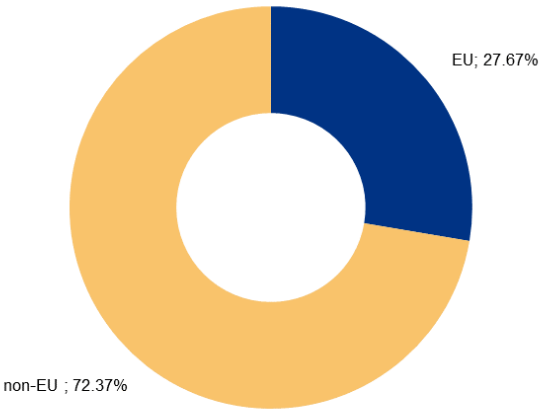

Figure 3-1 Distribution of masters and officers holding valid EaRs by countries issuing the original CoC

3.2 Distribution by EU Member State

The distribution of the number of masters and officers holding valid EaRs issued by EU Member State[5] is presented in Figure 3-2. In addition, the distribution of masters and officers holding valid EaRs endorsing original CoCs issued by EU and non-EU countries is presented in Figure 3-3.

[5] Czechia, Hungary and Slovakia did not issue EaRs.

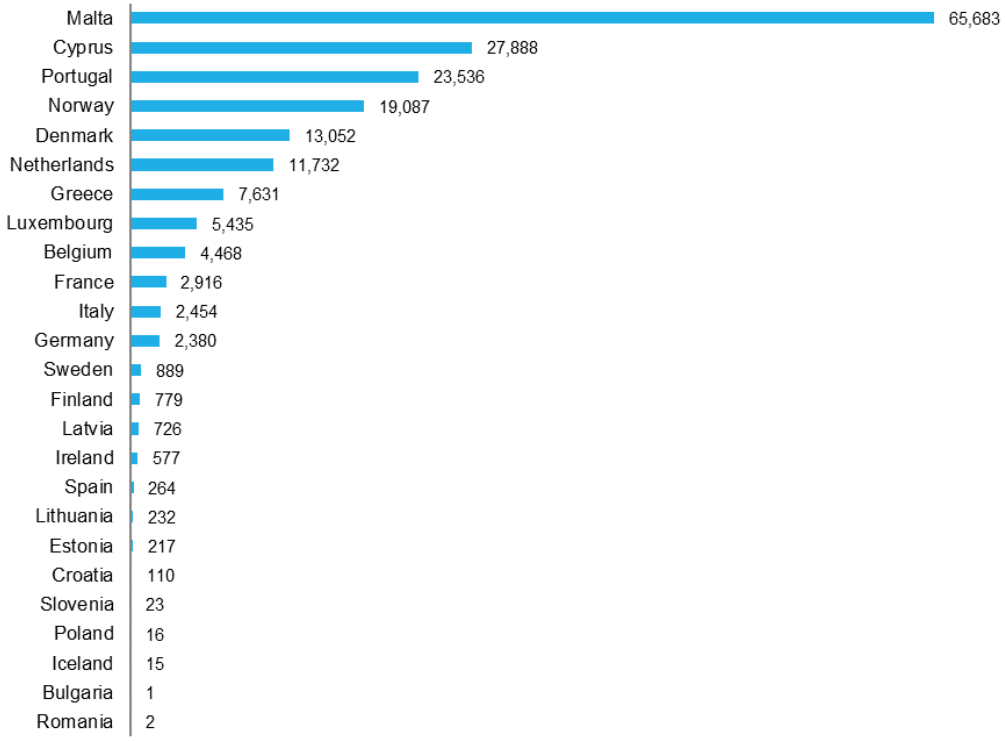

Figure 3-2 Masters and officers holding valid EaRs per EU Member State

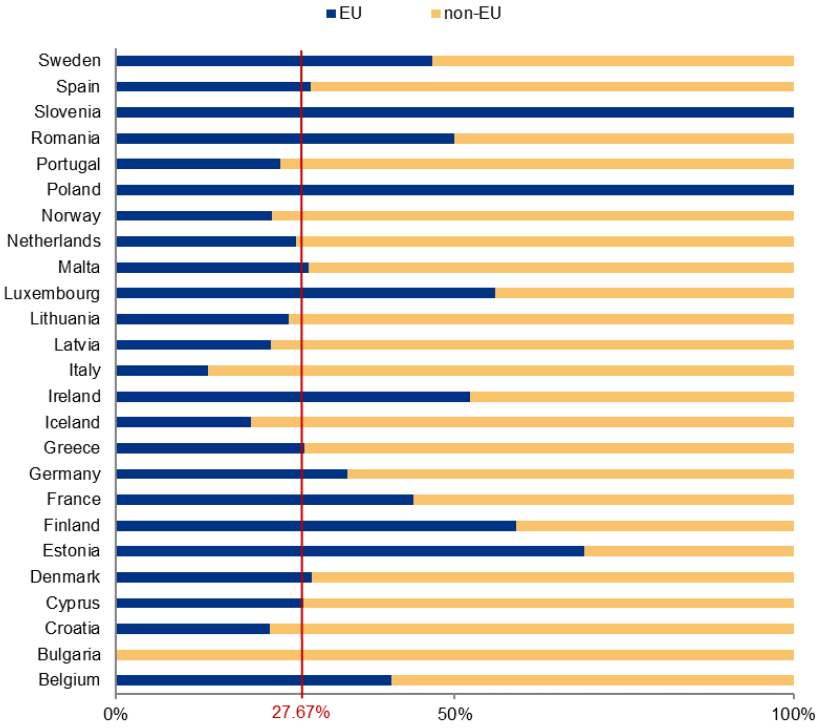

Figure 3-3 Distribution of masters and officers holding valid EaRs recognising original CoCs issued by EU and non-EU countries

3.3 Distribution by countries issuing the original CoCs

The name of the country that issued the original CoC was respectively available for 173,433 masters and officers. Figure 3-4 shows the distribution of masters and officers holding valid EaRs by region[6] where the respective countries issuing the original CoC are located.

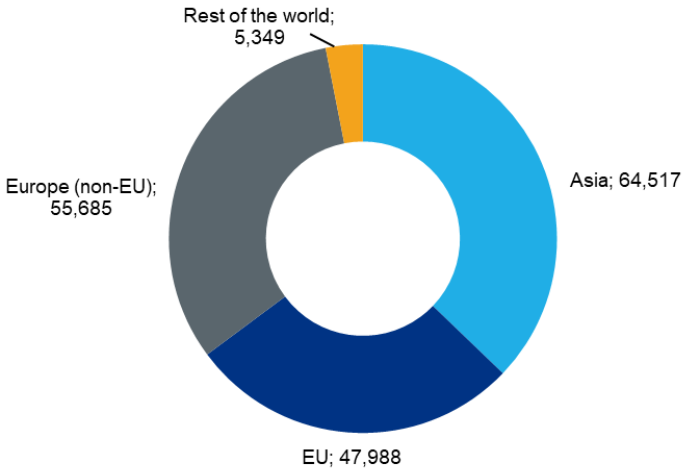

Figure 3-4 Distribution of masters and officers holding valid EaRs by region of the country issuing the original CoC

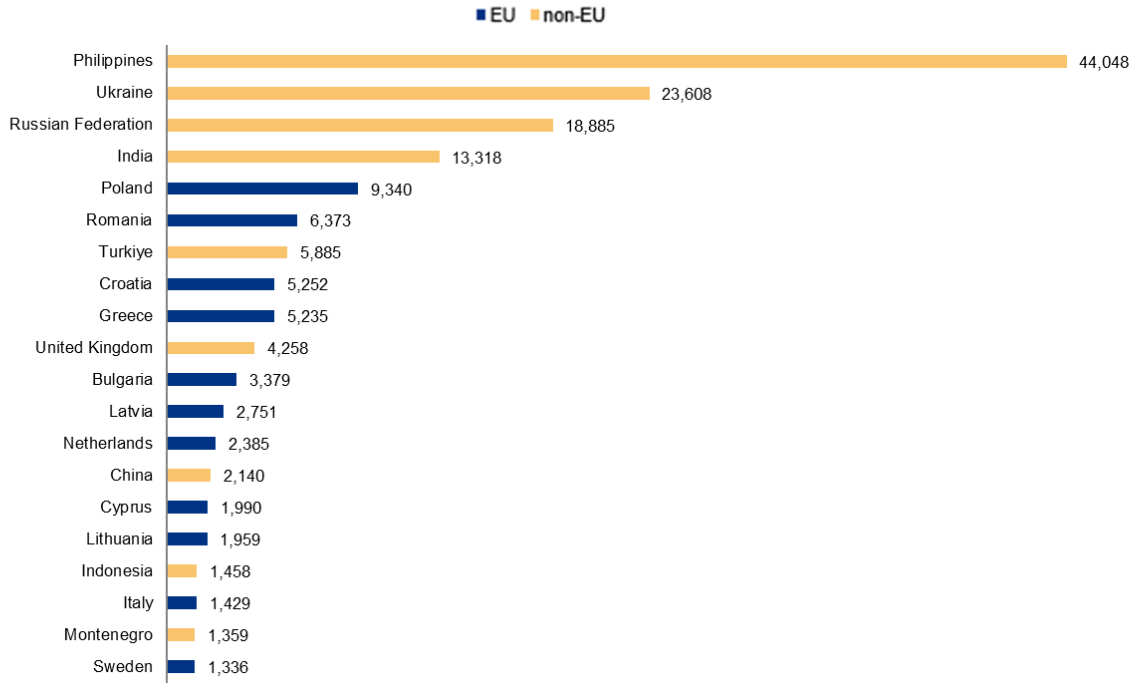

Figure 3-5 Countries issuing the original CoCs registering more than 0.75% of masters and officers holding valid EaRs

The masters and officers registered with valid EaRs in 2023 held original CoCs issued by 87 countries. Figure 3-5 identifies the 20 countries – eleven EU Member States and nine non-EU countries – which provided for 90.17% of the total number of masters and officers holding valid EaRs at EU level. Table and Table 8-16 of Appendix C present a more detailed list of countries issuing the original CoCs.

[6] The grouping of countries per regions was based on the “Standard country or area codes for statistical use” established by the United Nations and the list of European countries established by the EU

3.4 Distribution by department

The departments in which the holders of EaRs were entitled to serve are presented in Figure 3-6.

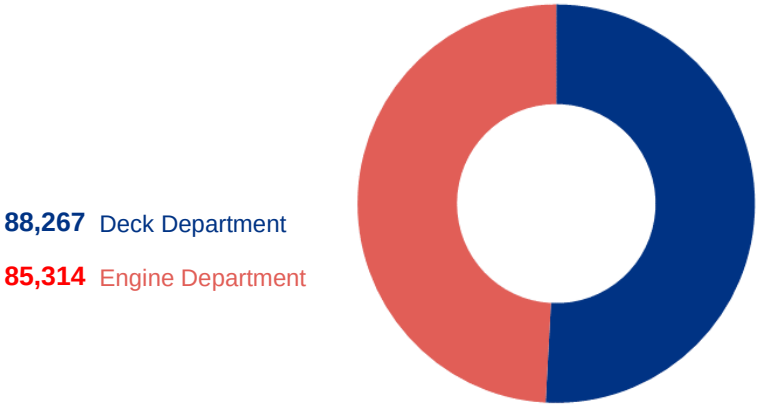

Figure 3-6 Distribution of masters and officers holding valid EaRs by department

The figure illustrates that the number of masters and officers entitled to serve in the Deck Department was only 3.46% higher than the number of officers entitled to serve in the Engine Department.

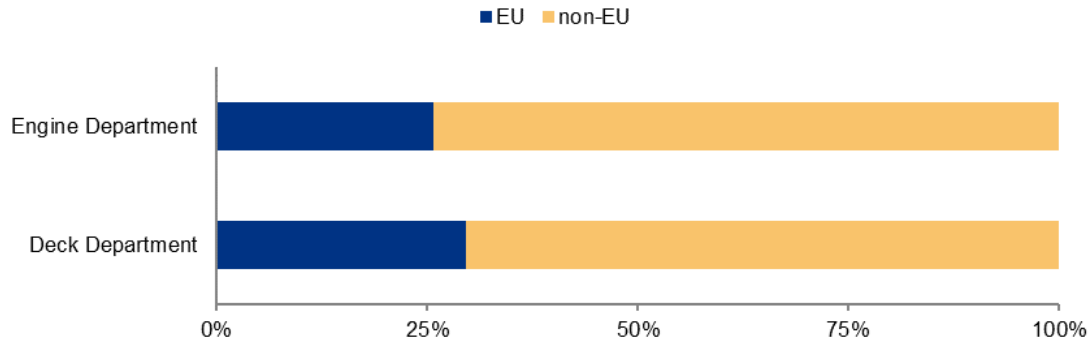

Figure 3-7 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by department

The ratio between masters and officers holding original CoCs issued by EU Member States and those holding original CoCs issued by non-EU countries, shown in Figure 3-7 follows a pattern for both the Deck (30% to 70%) and the Engine (26% to 74%) Departments, which is similar to the general distribution presented in Figure 3-1.

3.5 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 original 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.

3.5.1 Distribution by deck capacity

The information in Figure 3-8 shows that, out of the total number of masters and deck officers holding valid EaRs in 2023, 98.71% were entitled to serve on ships of 3,000 GT or more. In addition, the data also indicated that 59.84% of them were entitled to serve at management level on ships of 3,000 GT or more, with less than 0.3% of their EaRs being limited in terms of tonnage and/or navigation area.

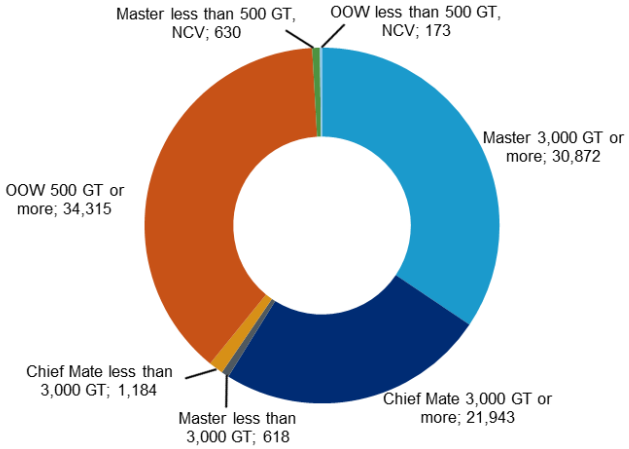

Figure 3-8 Distribution of masters and deck officers holding valid EaRs by deck capacity

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 30% to 70%. 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 3-9).

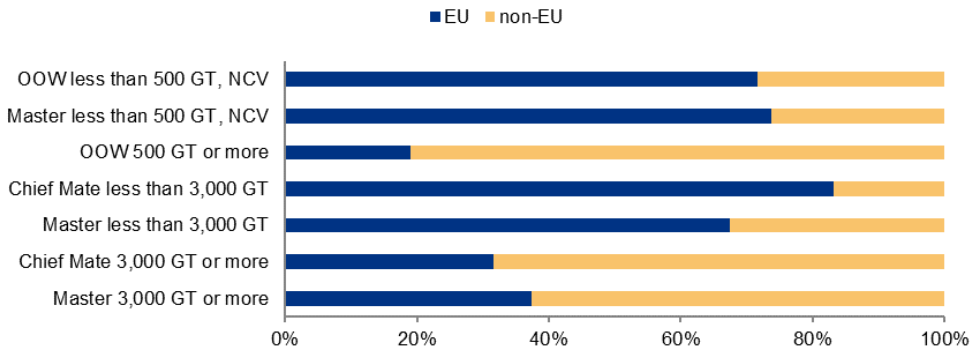

Figure 3-9 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by deck capacity

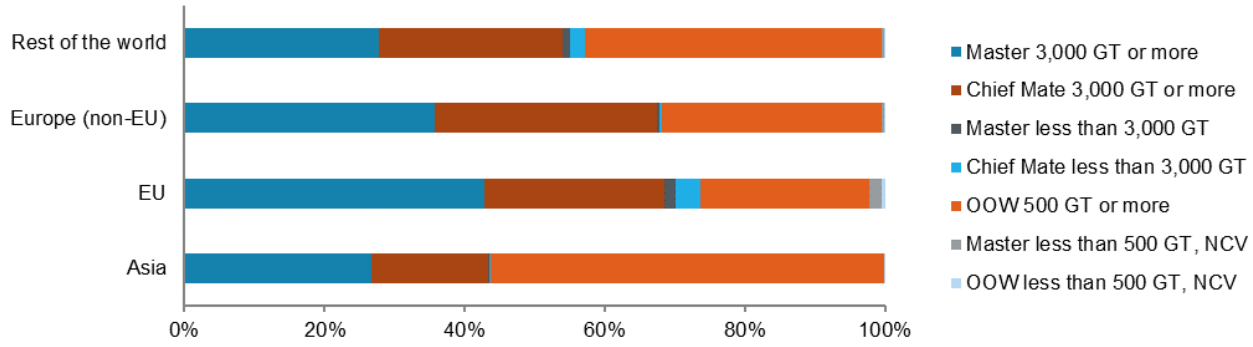

Figure 3-10 Distribution of the deck capacities of masters and deck officers holding valid EaRs by region of the country issuing the original CoC

The majority of deck officers having their original CoCs 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 (see Figure 3-10).

3.5.2 Distribution by engine capacity

The information in Figure 3-11 shows that, out of the total number of engineer officers holding valid EaRs, 98.71% 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 53.54% 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 0.2% of their EaRs being limited in terms of propulsion power or area of navigation and 21.66% being limited in terms of type of propulsion machinery.

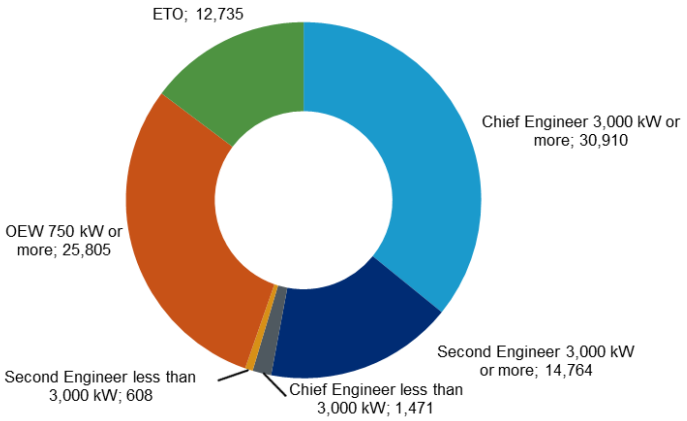

Figure 3-11 Distribution of engineer officers holding valid EaRs by engine capacity

The ratio between the engineer officers holding CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 26% to 74%. Nevertheless, this pattern was not clearly followed by those entitled to serve on board ships limited in propulsion power (see Figure 3-12).

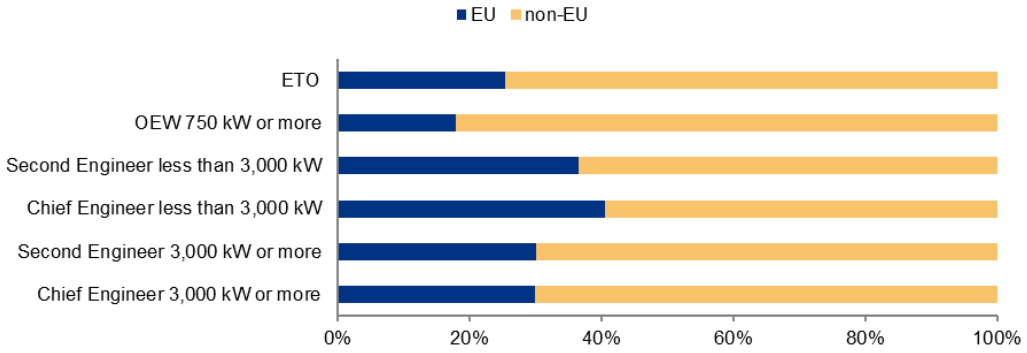

Figure 3-12 Distribution of engineer officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by engine capacity

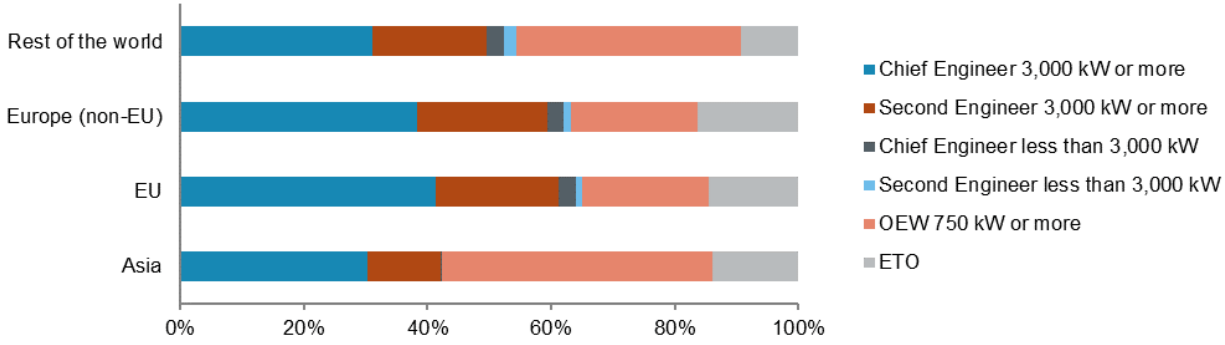

Figure 3-13 Distribution of the engine capacities of engineer officers holding valid EaRs by region of the country issuing the original CoC

The majority of the engineer officers having original CoCs 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 (see Figure 3-13).

3.6 Gender distribution

The information on gender was available for 173,423 masters and officers that represented 99.99% of the total number of those holding valid EaRs in 2023 at EU level.

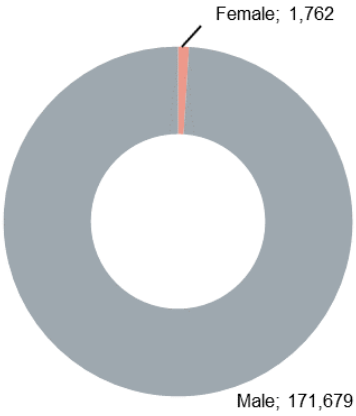

Figure 3-14 Gender distribution of masters and officers holding valid EaRs

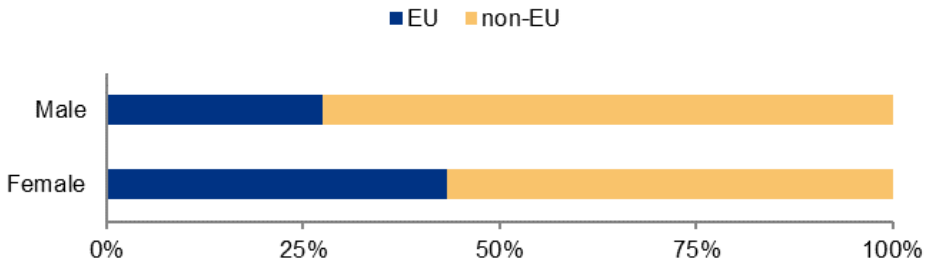

Figure 3-15 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by gender

As regards the total number of female masters and officers holding valid EaRs, 43.25% of them held original CoCs issued by EU Member States, followed by 25.09% and 18.73% who had their original CoCs issued by countries located in Asia and in Europe, respectively.

3.7 Age distribution

The average age of masters and officers holding valid EaRs was 41.3 years. Consideration of the average age per country issuing the original CoCs reveals that the average age of masters and officers holding CoCs issued by the EU Member States was 43.0 years, while that of those holding original CoCs issued by non-EU countries was 40.6 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 (28% to 72%), the distribution by age groups shows a deviation, especially for masters and officers older than 54, as presented in Figure 3-17.

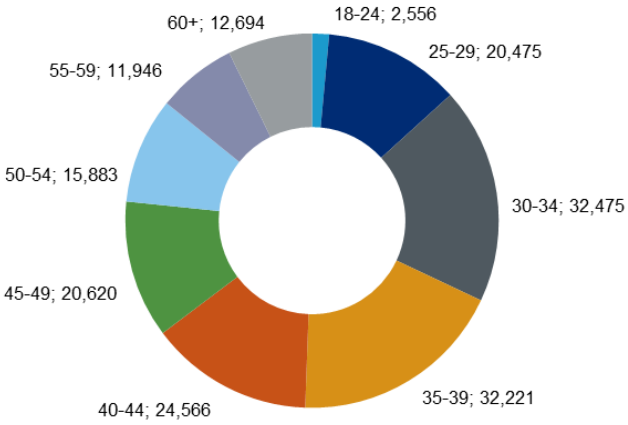

Figure 3-16 Age distribution of masters and officers holding valid EaRs

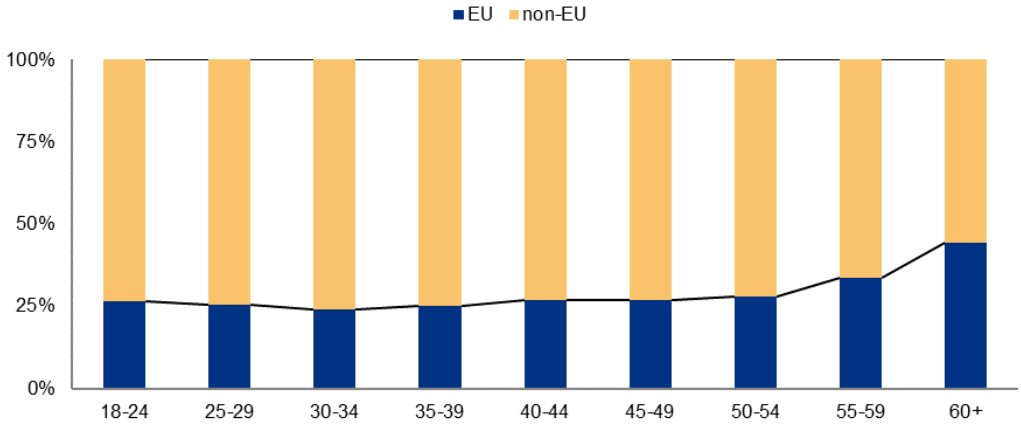

Figure 3-17 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by age group

The data presented in Table 8-17 of Appendix C and in Figure 3-18 indicates that:

- in both departments there are few officers younger than 25 years of age;
- 53.42% of 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 49 years of age.

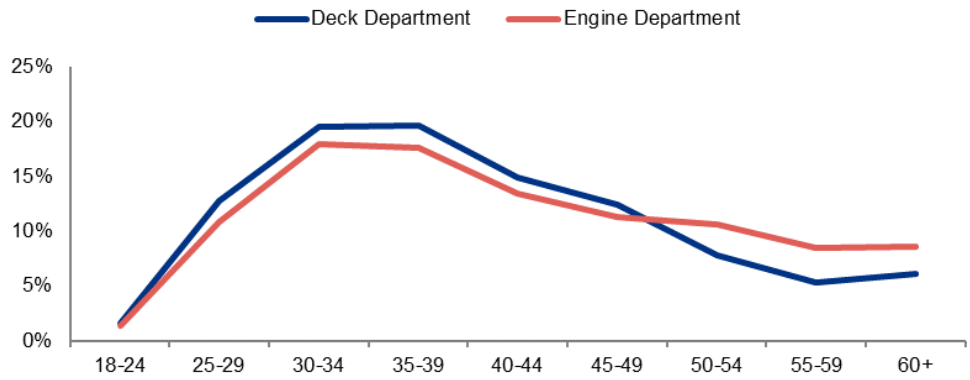

Figure 3-18 Age profile of masters and officers holding valid EaRs per department

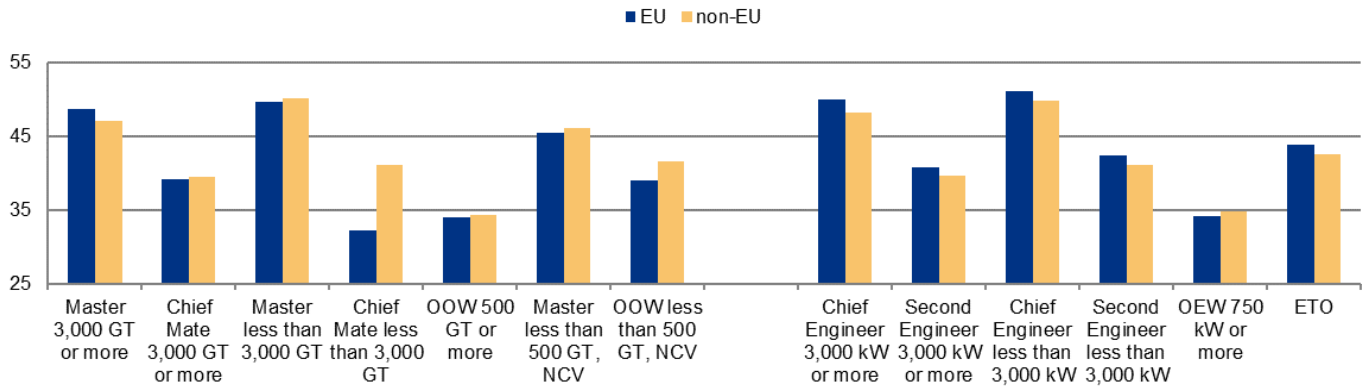

Figure 3-19 Average age of officers holding valid EaRs per EU and non-EU countries issuing the original CoC by capacity

The graphs in Figure 3-19 indicate that the average age of masters and officers was slightly higher for those holding original CoCs issued by EU Member States endorsed to serve as 'Master on ships of 3,000 GT or more' and for those endorsed to serve in all capacities as engineer officers, except as OEW.

3.8 Distribution by nationality

The information on nationality was available for 161,860 masters and officers, representing 93.33% of the total number of officers at EU level holding EaRs which were nationals of 135 countries. The distribution of these countries of origin by region[7] does not show a significant deviation from the review on countries issuing the original CoCs.

[7] The grouping of countries per regions was based on the "Standard country or area codes for statistical use" established by the United Nations and the list of European countries established by the EU

4. Masters and officers available to serve on board EU Member State flagged vessels in 2023

Figure 4-1 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 and 3.

Figure 4-1 Masters and officers holding valid CoCs or EaRs per EU Member State

4.1 Total

The total number of masters and officers available to serve on board EU Member State flagged vessels was 297,756 distributed as presented in Figure 4-2. 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 4-2 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

4.2 Distribution by department

Figure 4-3 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 EaRs for such certification.

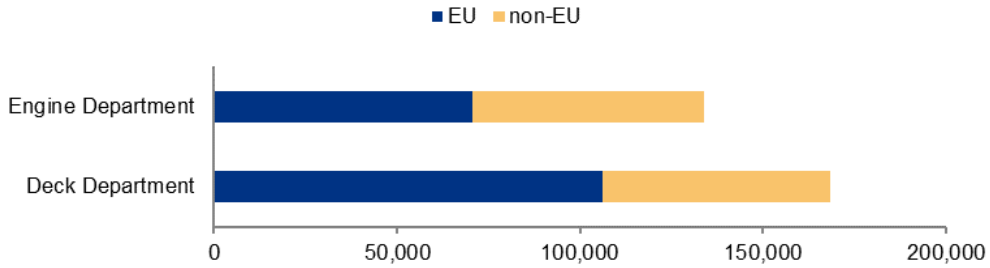

Figure 4-3 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by department

The number of masters and officers available to serve in the Deck Department (168,389) was 26% higher than the number of officers available to serve in the Engine Department (133,929). This percentage changes depending on whether the CoCs were issued by EU Member States or non-EU countries. In the first case, the number of masters and officers available to serve in the Deck Department was 51% higher than the number of officers available to serve in the Engine Department. When CoCs were issued by non-EU countries the number of master and officers available to serve in the Engine Department was higher (2.1%) than the number of officers available to serve in the Deck Department.

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 (71% and 11% higher for Deck and Engine Departments, respectively).

4.3 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.

4.3.1 Distribution by deck capacity

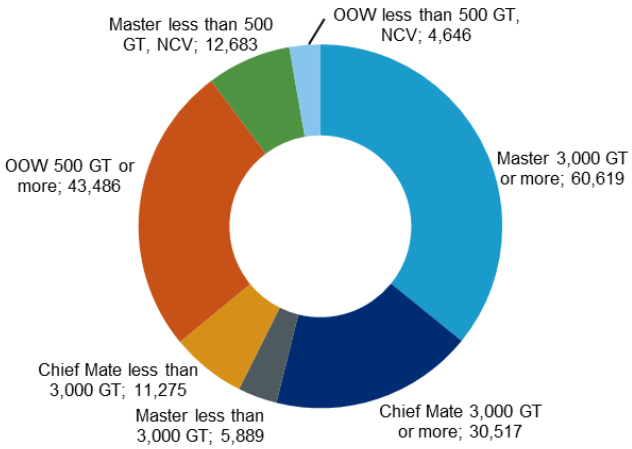

Figure 4-4 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by deck capacity

The information in Figure 4-4 shows that 54.12% (91,136) 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 63% to 37%, it changed significantly for masters and officers entitled to serve on board ships limited in gross tonnage or area of navigation where more than 96% were holders of CoCs issued by EU Member States. In the case of those officers entitled to serve as 'OOW 500 GT or more' the ratio was 36% to 64%. This is presented in Figure 4-5.

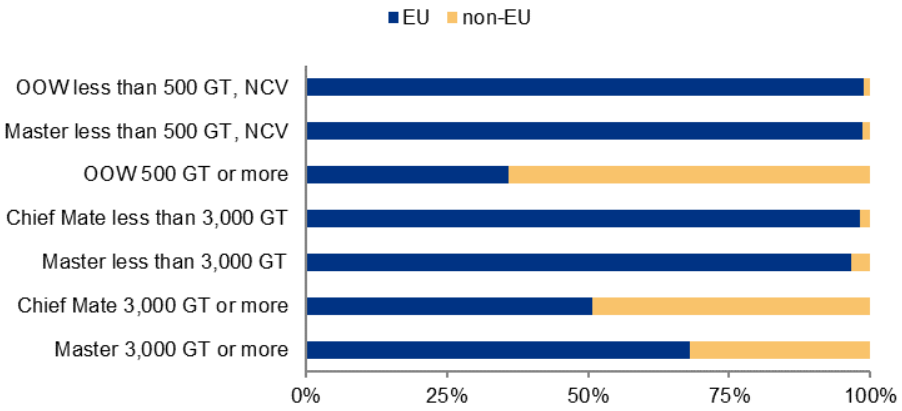

Figure 4-5 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by deck capacity

4.3.2 Distribution by engine capacity

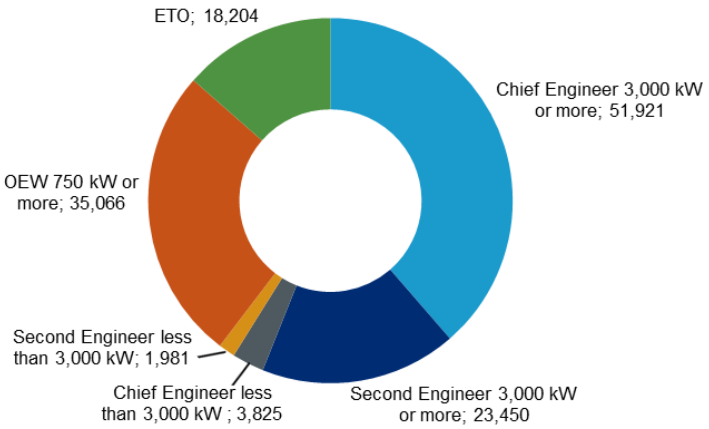

Figure 4-6 Distribution of engineer officers available to serve on board EU Member State flagged vessels by engine capacity

The information in Figure 4-6 shows that 56.28% (75,371) 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 53% to 47%, it changed significantly for officers entitled to serve on board ships limited in propulsion power where more than 77% were holders of CoCs issued by EU Member States. In the case of those officers entitled to serve as 'OEW 750 kW or more' the ratio was 40% to 60%. This is illustrated in Figure 4-7.

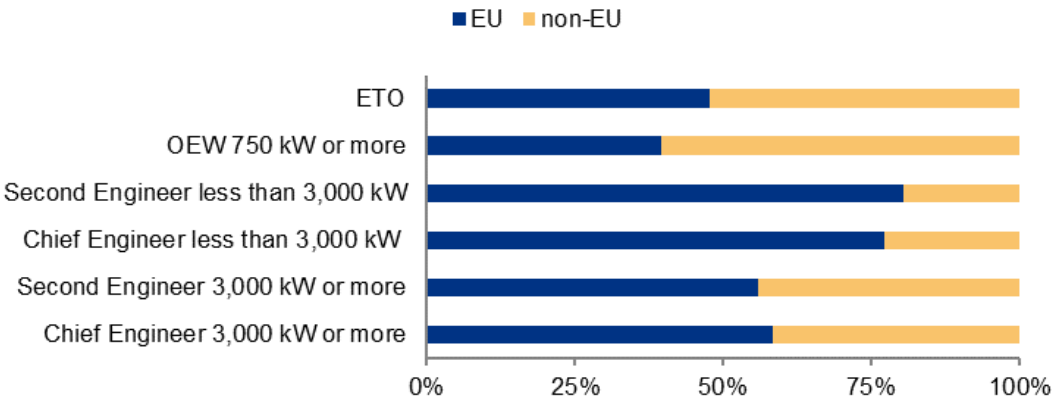

Figure 4-7 Distribution of engineer officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by engine capacity

4.4 Gender distribution

The information on gender was made available for 286,420 masters and officers representing 96.19% of the total number of those available to serve on board EU Member State flagged vessels.

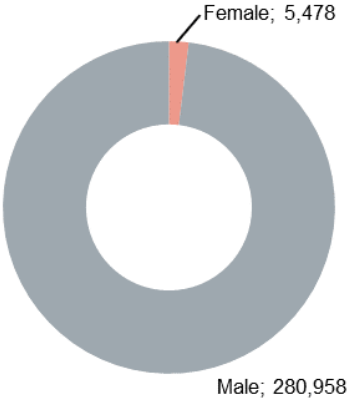

Figure 4-8 Gender distribution of masters and officers available to serve on board EU Member State flagged vessels

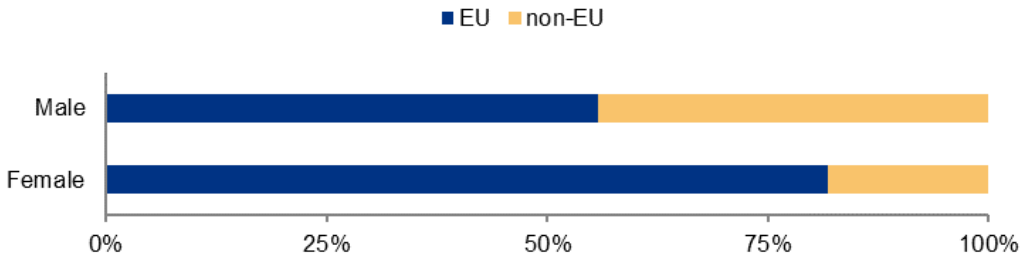

Figure 4-9 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by gender

Masters and officers whose gender was known were predominantly males. Female masters and officers represented 1.91% of the total number of officers available, with 81.78% 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 2.78% of their total, while for CoCs issued by non-EU countries they represented 0.80% of their total.

4.5 Distribution by nationality

The information on nationality was made available for 282,342 masters and officers, representing 94.82% 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 148 countries, with the distribution by region[8] as presented in Figure 4-10.

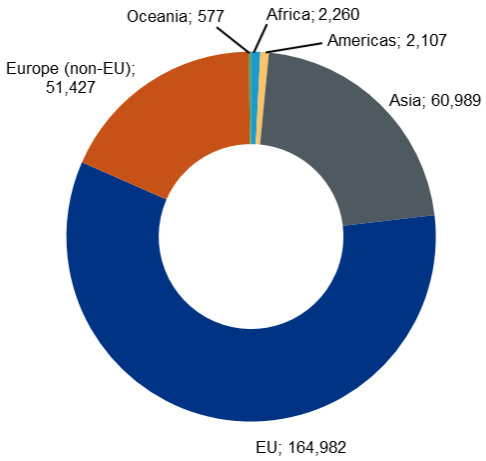

Figure 4-10 Nationality distribution of masters and officers available to serve on board EU Member State flagged vessels by geographical region according to nationality

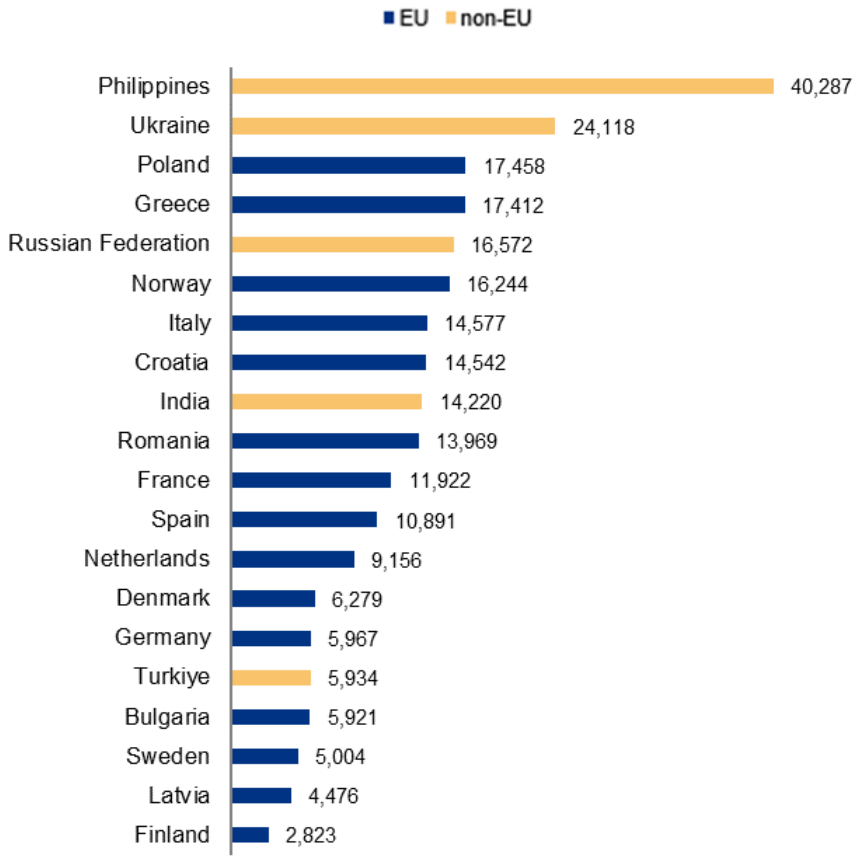

Figure 4-11 Countries whose nationals represented more than 0.75% of the total number of masters and officers available to serve on board EU Member State flagged vessels

[8] The grouping of countries per region was based on the “Standard country or area codes for statistical use” established by the United Nations and the list of European countries established by the EU

The data in Figure 4-11 identifies the 20 countries whose nationals represented 86.57% of the total number of masters and officers available to serve on board EU Member State flagged vessels.

4.6 Age distribution

The average age of all masters and officers available to serve on board EU Member State flagged vessels was 42.3 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 40.6 years.

The age profile, per country issuing the original CoC, grouped under EU or non-EU in Figure 4-12, shows that those holding EU CoCs were more evenly distributed throughout the age groups than those holding non-EU CoCs.

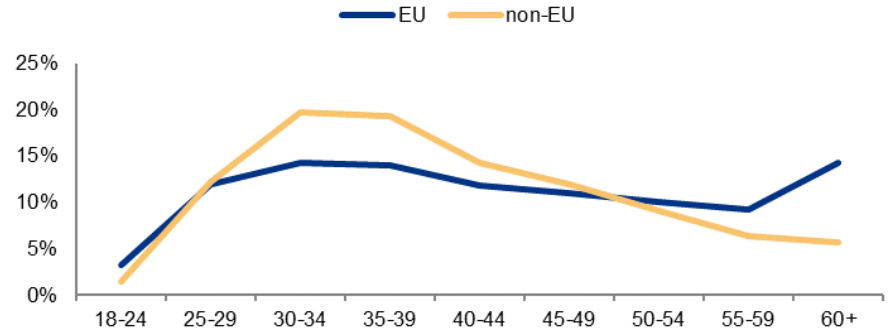

Figure 4-12 Age profile of masters and officers available to serve on board EU Member State flagged vessels per EU and non-EU countries issuing the original CoC

The highest average age was identified for masters and for chief engineers, as presented in Figure 4-13.

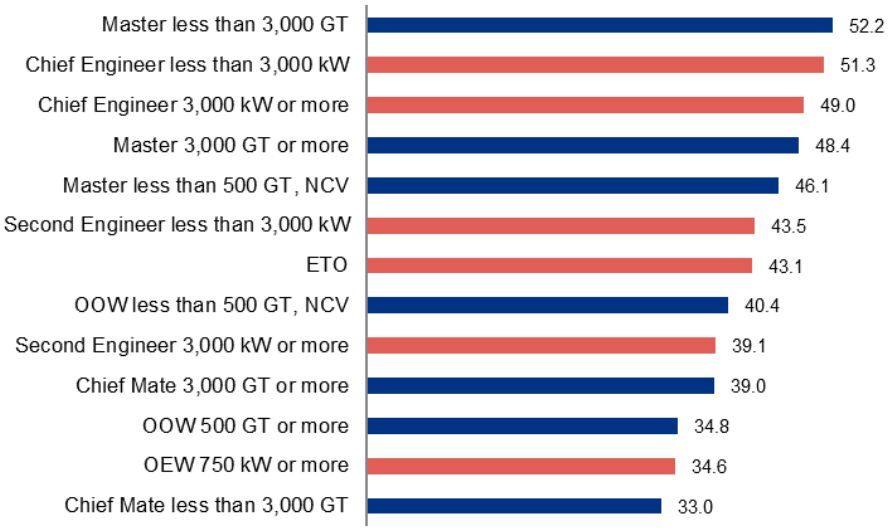

Figure 4-13 Average age of masters and officers available to serve on board EU Member State flagged vessels per deck and engine capacities

A variation ranging between 0.9 and 1.9 years in the average age was noticed for all those holding CoCs entitled to serve on ships of 3,000 GT/kW or more, either at management or operational level, issued by EU Member States and non-EU countries. In all of those, with exception of Chief Mates, OEWs and Second Engineers 3,000 kW or more, the highest average age was found in holders of CoCs issued by EU Member States.

5. Ratings holding valid certificates of proficiency in 2023

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. The submission of this data is not mandatory under Directive (EU) 2022/993 but was voluntarily provided by 16[9] EU Member States.

5.1 Total

The total number of ratings holding valid CoPs in 2023 in the 16 EU Member States reporting such data was 79,608 with 5.44% of them entitled to serve in both the Deck and the Engine Departments.

5.2 Distribution by EU Member State

The distribution of the number of ratings holding valid CoPs by EU Member State is presented in Figure 5-1.

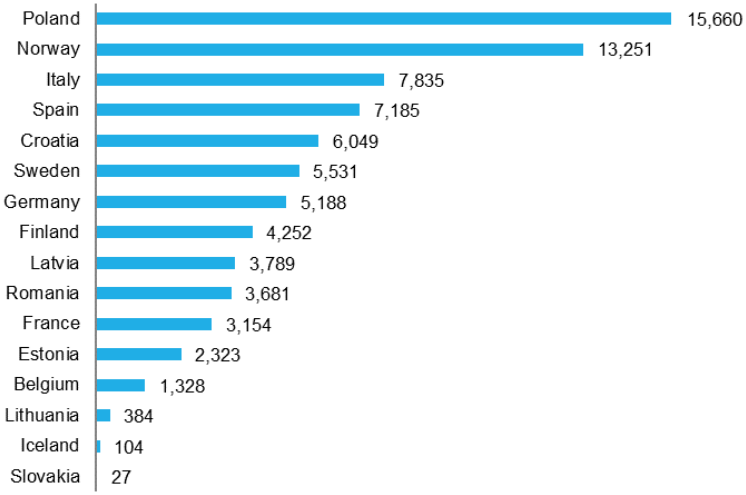

Figure 5-1 Ratings holding valid CoPs per EU Member State

5.3 Distribution by department

The distribution by department in which the ratings were entitled to serve is presented in Figure 5-2. It shows that the number of ratings entitled to serve in the Deck Department (Chapter II of the STCW Convention) was 99.36% higher than the number of ratings entitled to serve in the Engine Department (Chapter III of the STCW Convention). It also shows that 5.25% of them were qualified under Chapter VII - Alternative Certification, of the STCW Convention.

[9] The 16 EU Member States that voluntarily provided data on ratings are listed in figure 5-1.

Figure 5-2 Distribution of ratings holding valid CoPs by department

5.4 Distribution by capacity

The distribution of ratings by capacity is illustrated in Table 8-22 of Appendix D. 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 5-3. The total number of deck and engineer ratings was established by counting each person by department.

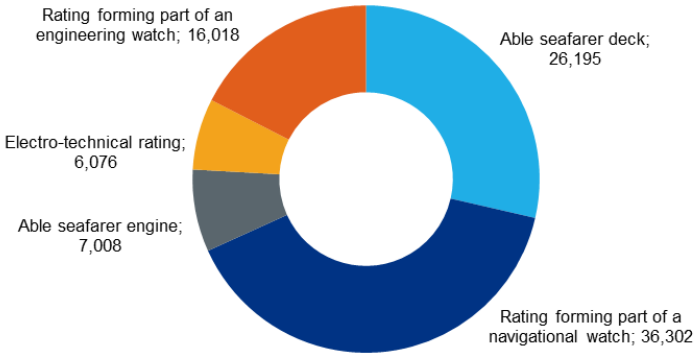

Figure 5-3 Distribution of ratings holding valid CoPs by capacity

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 68.35% for deck and 60.12% for engine.

5.5 Gender distribution

The information on gender was made available for 65,113 ratings representing 81.79% 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 4.64% ± 0.22%.

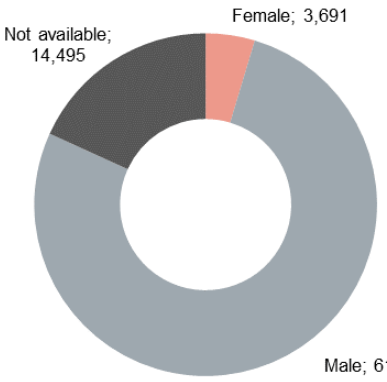

Figure 5-4 Gender distribution of ratings holding valid CoPs

5.6 Distribution by nationality

The review of the data showed that, except for 11.05% where nationality was not available, ratings holding valid CoPs were nationals from 107 countries (28 EU Member States and 79 non-EU countries). The review also showed that 86.45% of the ratings were nationals of the same EU Member State providing the data (see section 5.2).

5.7 Age distribution

The average age of ratings holding valid CoPs was 41.3 years. Except for the age groups 40-59, all other groups registered higher distributions between 10.53% and 15.30%. The average age for female ratings was 32.1 years, while that for male ratings was 41.8 years. 80.01% of all female ratings were younger than 40 years of age while the percentage of male ratings in the same age group was 49.58%.

The age profile of ratings per gender is presented in Figure 5-6.

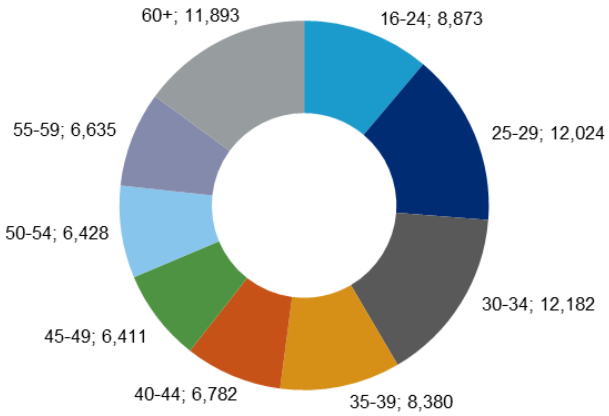

Figure 5-5 Age distribution of ratings holding valid CoPs

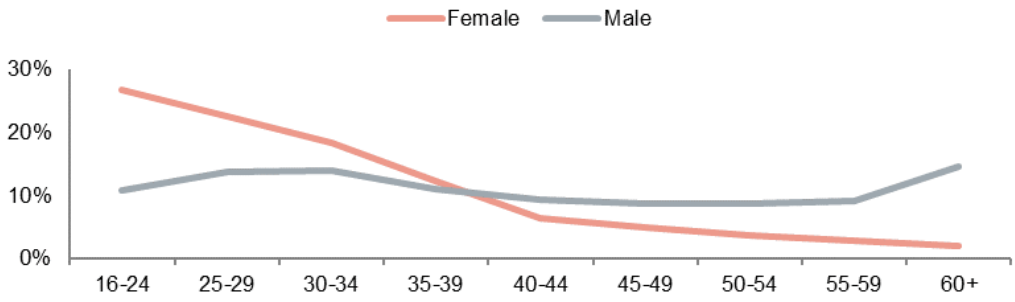

Figure 5-6 Age profile of ratings holding valid CoPs per gender

6. Masters and officers - summary overview 2014-2023

This section presents a compilation of the data received during the last ten years, with the objective of providing a broader picture of the number of masters and officers available to serve on board EU Member State flagged vessels. As previously mentioned, some elements applied to treat and/or analyse the data were continuously improved or had to be adjusted to new realities, such as the inclusion of data received from EFTA countries since 2017 or the withdrawal of the United Kingdom from the EU in 2020. The analysis in this section takes into account such changes, in an effort to provide the most accurate view possible. Forecasts are made using linear regression and exponential triple smoothing (ETS) algorithm methods[10]. Related values calculated can be found in Appendix D.

In the following sub-sections, the clustered horizontal bar graphs include only five years' data for better clarity of the said graphs. All others will include all the years available.

6.1 Countries issuing the original CoCs

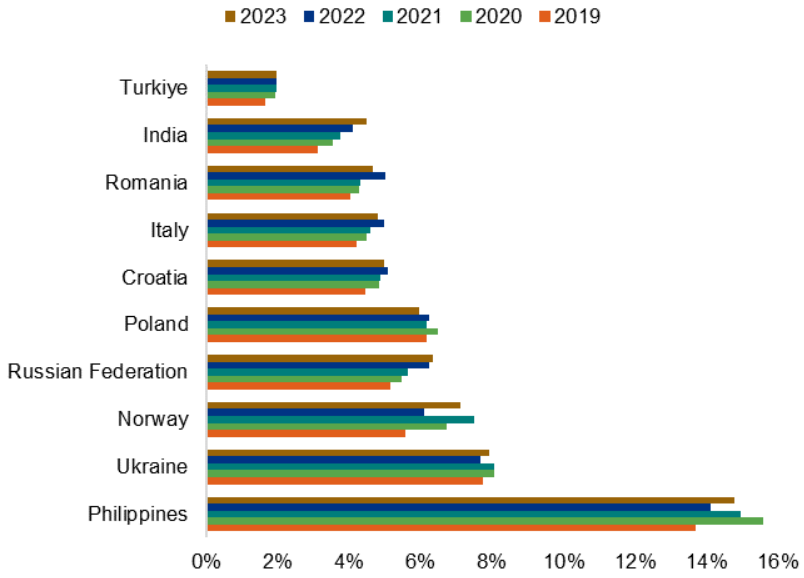

Figure 6-1 Top 5 EU and top 5 non-EU countries issuing the original CoCs

The five non-EU countries (India, the Russian Federation, the Philippines, Türkiye and Ukraine) which had more masters and officers having their CoCs recognised by EU Member States (see Figure 6-1 above) have retained the top spots throughout the last ten years. The total percentage of these masters and officers among all those masters and officers available to serve on board EU Member State flagged vessels has varied, over the years, between 26% (in 2017) and 35% (in 2023).

At the level of EU Member States, the situation has been more fluid. However, only nine countries have achieved the top 5 since this data started being collected. Figure 6-1 features the five Member States that occupied the top ranking in 2023. It is to be noted that Poland has always been in this top 5 list and that, upon introduction of its data in 2017, Norway has always remained in the top 5.

Figure 6-2 below presents the forecast for the coming years in relation to the percentage of 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 previously estimated – a slight decrease regarding Poland and an increase for Norway continues to be suggested. Regarding the estimates for those holding CoCs issued by Croatia, significant changes are not foreseen in the coming years.

[10] 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).

As regards non-EU countries, the percentage of masters and officers holding CoCs issued by the Russian Federation and by Ukraine has remained broadly unchanged. Based on this trend, estimates for the coming years do not foresee any significant change.

Regarding those holding CoCs issued by the Philippines, the percentage of masters and officers available to serve on board EU Member State flagged vessels increased between 2017 and 2020. Nevertheless, as already foreseen, a slight growth could be expected in the coming years as it was noted in 2023.

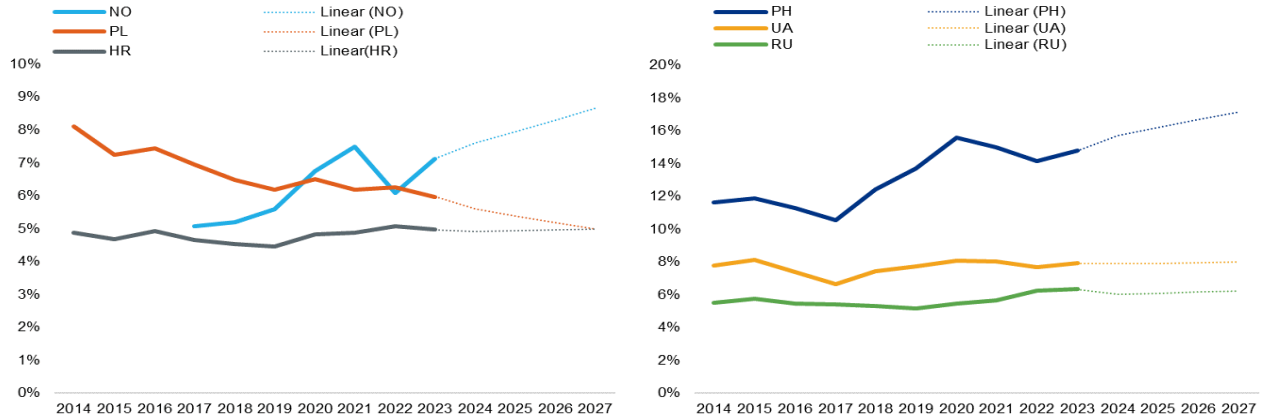

Figure 6-2 Overview with forecast for the next years of masters and officers holding CoCs issued by the top 3 EU and top 3 non-EU countries

6.2 Department - level of responsibility

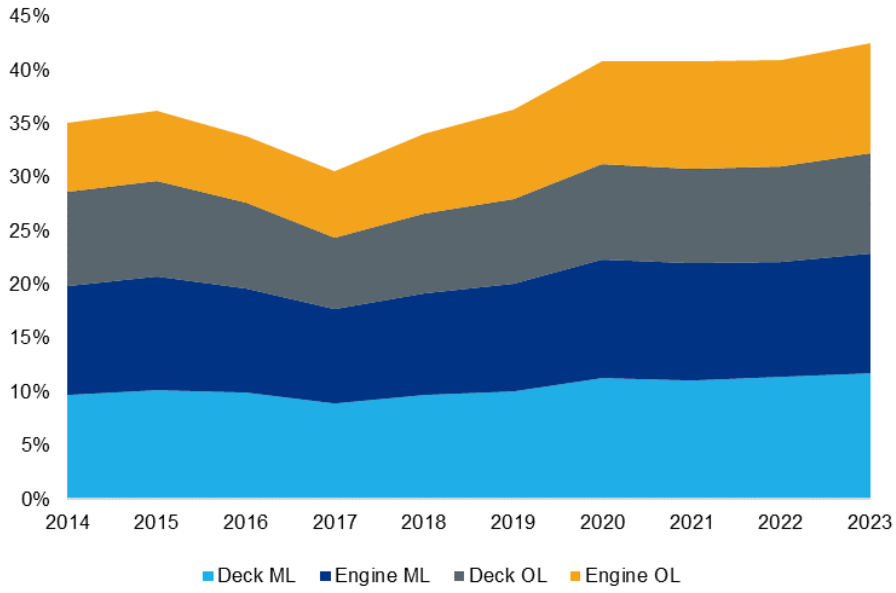

Figure 6-3 Officers at management and operational level holding CoCs issued by non-EU countries

The total percentage of masters and officers holding CoCs issued by non-EU countries recognised by EU Member States has been on the increase since 2017. Moreover, an analysis of these figures per department and level of responsibility indicates that this increase continued to be verified in both departments and levels of responsibility. Although, this is more evident in the engine department at operational level.

As regards the percentage of masters and officers available to serve on board EU Member State flagged vessels, Figure 6-4 below shows that, similarly to what has been estimated in the last five years, a slight increase continues

to be expected for officers entitled to serve in the engine department at operational level, even though this has not been observed in 2023.

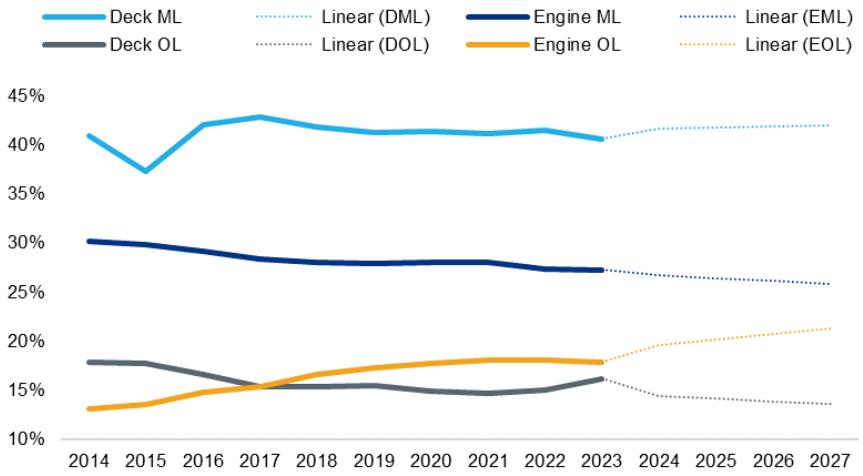

Figure 6-4 Overview with forecast for the next years of officers at management and operational level available to serve on board EU Member State flagged vessels

6.3 Female officers

As presented in Figure 6-5 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.

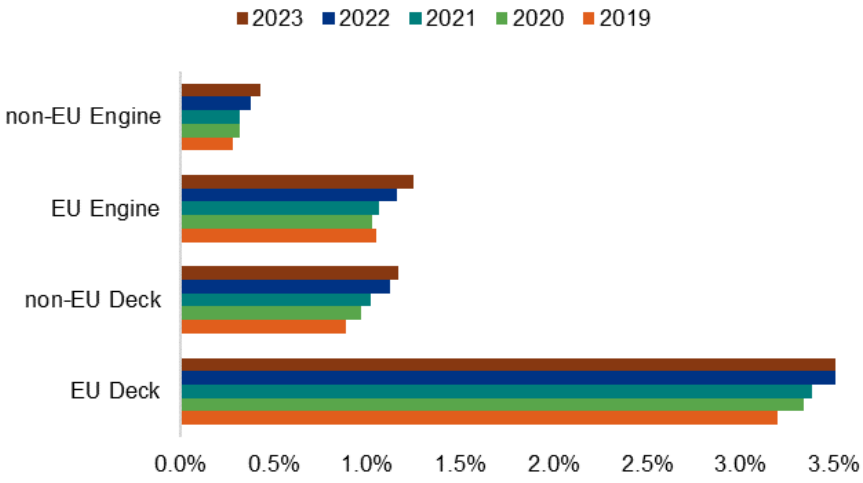

Figure 6-5 Female officers per department holding CoCs issued by EU and non-EU countries

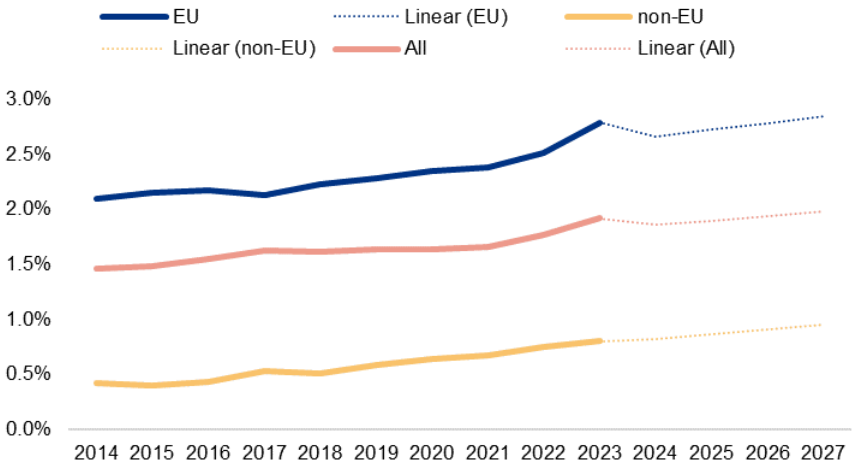

Figure 6-6 Overview with forecast for the next years of female officers available to serve on board EU Member State flagged vessels

As illustrated in Figure 6-6, the percentage of female officers globally (EU and non-EU) is expected to continue increasing in the coming years. However, it remains unlikely that globally females 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.

6.4 Nationality

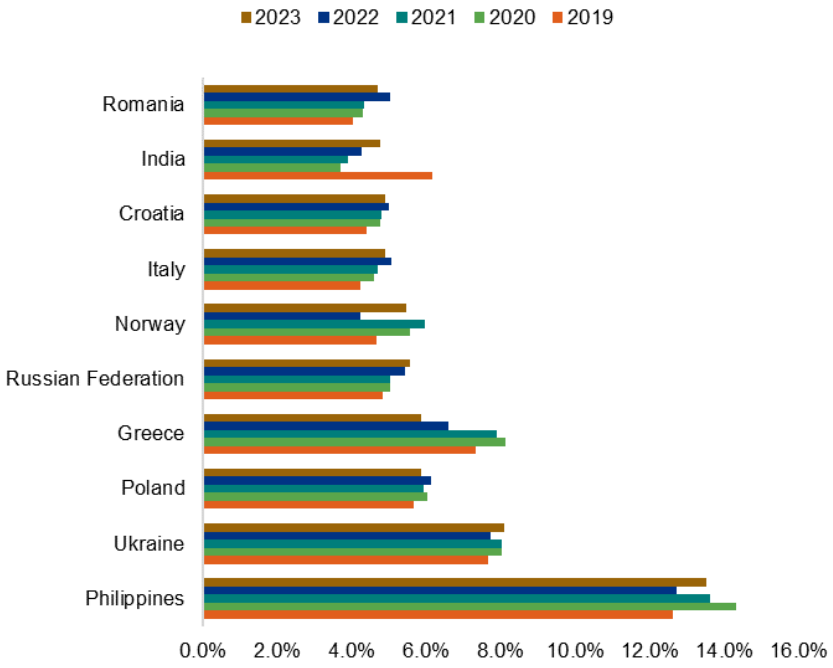

Figure 6-7 Top 10 nationalities of masters and officers available to serve on board EU member State flagged vessels

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 past years. With the exception of nationals from India and Romania, the nationals from the other eight countries have been in this top 10 list at least for the last six years.

Figure 6-8 below continues to indicate that, in the coming years, and in accordance with the nationality of masters and officers, an expected stability per geographical region will persist. It also indicates 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.

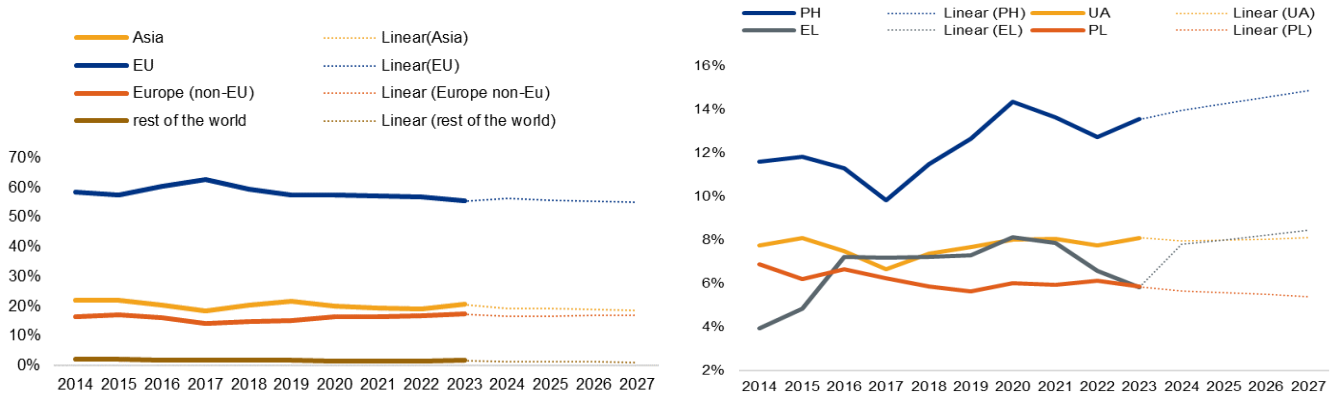

Figure 6-8 Overview with forecast for the next years of the nationalities of masters and officers available to serve on board EU Member State flagged vessels

6.5 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 this scenario is forecasted to continue, without any indication of an increase in the coming years.

Figure 6-10 suggests, as already foreseen in the last five years, that there is no indication that the average age of masters and officers holding CoCs at management level, either issued by EU or non-EU countries will increase. This may continue to suggest that younger officers of a lower rank are progressing in their seafaring career.

However, for officers holding CoCs at operational level, indications persist that the average age will continue to increase, albeit slightly.

The reasons for the continuous indication of an increase in the average age of officers holding CoCs at operational level, as already mentioned in the three previous years' reports, might not be fully ascertained without further research. Nevertheless, this might indicate that the candidates for the issue of their first CoC take longer to fulfil the requirements for certification or, if already certified, follow a longer path to a management level CoC.

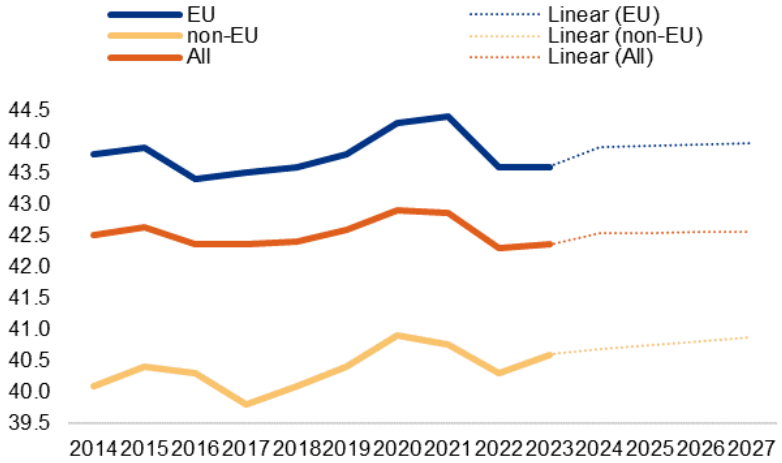

Figure 6-9 Overview with forecast for the next years concerning the average age of masters and officers available to serve on board EU Member State flagged vessels

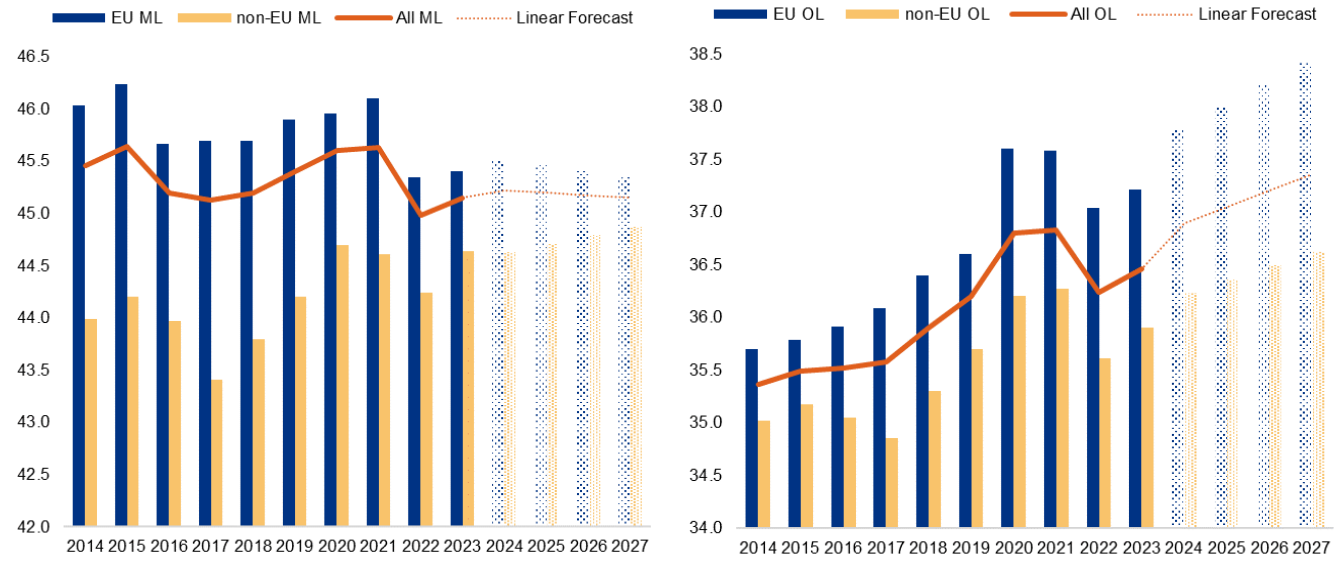

Figure 6-10 Overview with forecast for the next years concerning the average age of officers at management and operational level available to serve on board EU Member State flagged vessels

7. Crew overview 2017-2023

As already mentioned in the executive summary, the data on masters and officers – as extracted from the national registers held by EU Member States – did not include any information on whether the holders of the certificates were active or not (see also section A.2 of Appendix A). Therefore, it has not been possible over the years to determine how many of them have been working on board vessels. Notwithstanding this, the following analysis attempts to address, even if in a limited way, this lack of information. For that purpose, a link was made between the number of certified officers as provided by the STCW-IS and presented in the sections above, with the information on crews as provided by the MARINFO database[11]. This database stores information on vessels' characteristics and also on their crews. The information on crews is derived from the crew lists of vessels for which shipping companies have signed an ITF agreement. This information in the database increased over the years and nowadays represents approximately 42% of the whole EU fleet and 30% of the non-EU fleet.

The information extracted concerned the number of vessels registered under EU Member State flags and under other flags (hereinafter referred to as the EU fleet and the non-EU fleet, respectively) and the number of officers on board and their nationalities, with a view to estimating the number of masters and officers crewing said vessels and how many of them were EU nationals.

7.1 Estimated number of masters and officers to crew the EU fleet

The number of masters and officers available to serve on board the EU fleet - compiled over the years in EMSA's statistical review exercises – compared with the estimated number of masters and officers crewing said fleet, can provide an insight as to whether the supply of those certified at EU level aligns in principle with the demand for officers to crew the EU fleet.

The estimated number of masters and officers to crew the EU fleet, as presented below, was achieved by considering the EU fleet average of the number of officers on board, based on the available crew list information. Taking into account that most commonly, masters and officers work 6 to 8 months per year on board, the crewing combinations considered were those of 2 complementary crews per 1 vessel or 3 complementary crews per 2 vessels. For the purpose of this exercise, the numbers were increased by 10% to cater for any contingent unavailability of such officers forming part of the complement. Taking all these factors into account, the values considered as necessary to crew the EU fleet - in the proportion of 3 crews to 2 vessels – were taken and can be found in Appendix E.

As illustrated in Figure 7-1 and as already mentioned in last years' reports, when considering the aggregate number of masters and officers holding valid CoCs issued by EU Member States and EaRs endorsing CoCs issued by non-EU countries, the number of masters and officers available over the years has been more than double the estimated number of those needed to crew the EU fleet.

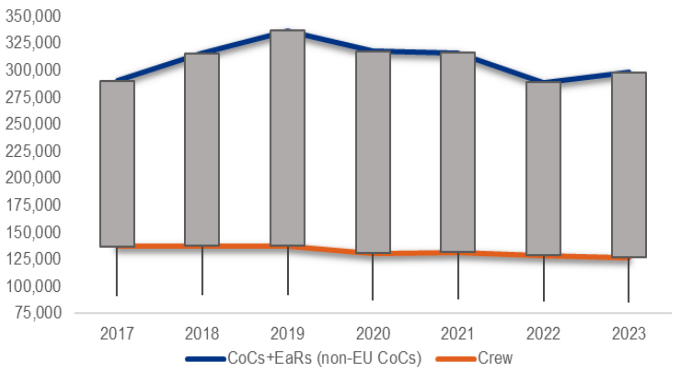

Figure 7-1 Overview concerning the number of officers available to serve on board EU Member State flagged vessels and the estimated number of those needed to crew the EU fleet

[11] Data provided by S&P Global (former IHS Markit & Trade)

When reviewing solely the number of masters and officers holding valid CoCs issued by EU Member States, these have been, until 2021, 40% higher than those estimated to crew the fleet. After 2022 the difference decreased to 30% but still continues to indicate that hypothetically, the EU supply of masters and officers could have been sufficient to meet the demand from the EU fleet should all available holders be active at sea.

In reality, a significant number of masters and officers holding CoCs issued by non-EU countries are working on board the EU fleet (even if on their own, they would not have been sufficient in number to crew the fleet). This suggests that a number of those holding CoCs issued by EU Member States are either working ashore or employed under other world fleets.

When analysing exclusively the number of masters and officers holding EaRs, it has been noticed over the years that around 25% of masters and officers holding CoCs issued by EU Member States also held EaRs issued by other EU Member States. This might indicate that the holders of such endorsements were, most likely, working in the EU fleet. As can be inferred from Figure 7-2 presented below, these officers, together with those holding EaRs issued by EU Member States recognising CoCs issued by non-EU countries, have been sufficient in number to crew the EU fleet.

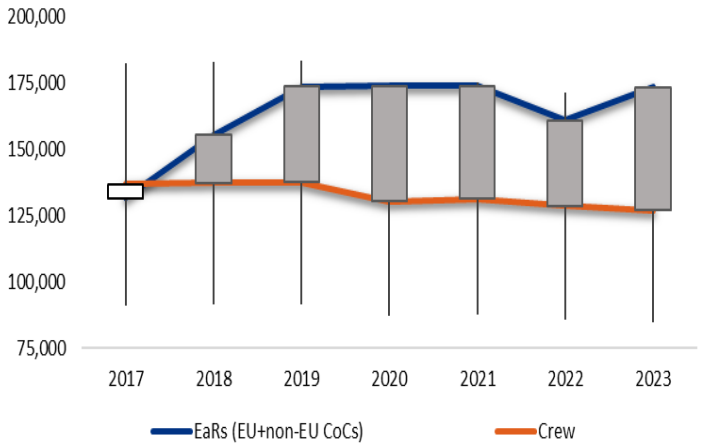

Figure 7-2 Overview concerning the number of officers holding EaRs issued by EU Member States and the estimated number of those needed to crew the EU fleet

At EU level, when breaking down the number of officers by department (deck and engine), the emerging scenario is similar to that established above when analysing numbers of masters and officers holding CoCs issued by EU Member States and/or EaRs. The exception is for those engineer officers holding non-EU CoCs as presented in Figure 7-3.

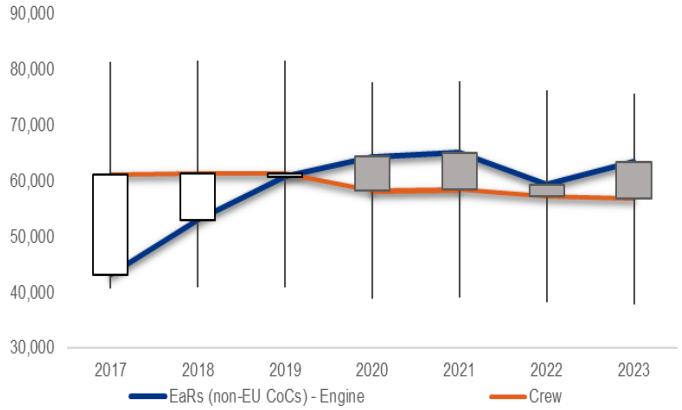

Figure 7-3 Overview concerning the number of engineer officers holding EaRs issued by EU Member States recognising non-EU CoCs and the estimated number of those needed to crew the EU fleet

Regarding these engineer officers, there is an indication that since 2020 they have been sufficient in number to crew the EU fleet as far as concerns the engine department.

Moreover, when individualising the review per EU Member State, the above scenario differed for certain EU Member State fleets. For instance, when reviewing the number of masters and officers holding valid CoCs issued by Cyprus, Denmark, Malta, the Netherlands and Portugal, it resulted that their supply seems to have not been sufficient to meet the demand from their repective fleets. It is to be noted that, the fleets of these EU Member States ranked among the top 10 EU flags which, as in 2022, accounted in 2023 for 83% of the total estimated demand for officers by the EU fleet. Luxembourg should be added to the EU Member States with insufficient number of masters and officers holding CoCs issued by them to crew their fleet by the fact that no CoCs are issued by this country. Neverthless, no maritime education and training institution is established in Luxembourg and due to the small size of the country and population this may not be even feasible.

As regards the assumption that masters and officers holding EaRs recognising CoCs issued by other EU Member States and by non-EU countries, have been sufficient in number to crew the EU fleet, the same seems to be applicable to the flags of Belgium, Cyprus, Denmark, Luxembourg, Malta, Norway, the Netherlands and Portugal. The need of the supply of masters and officers holding EaRs issued by these EU Member States (except Belgium and Norway) to crew their fleet may be partially explained by the lack of sufficient masters and officers holding CoCs issued by them as already mentioned above. For Belgium and Norway, the total number of masters and officers holding valid CoCs seems to have been sufficient to crew their fleets. However, when breaking down the number of officers by department (deck and engine), this was not the case for officers holding CoCs to serve in the engine department, thus explaining partially why the said fleets may have needed to employ within their crews officers holding EaRs.

In 2023, Germany and Sweden should be added to those EU Member States for which the total number of officers holding CoCs to serve in the engine department was not sufficient to crew their fleets.

Pursuant to these results, as already mentioned in the previous report, it would be interesting if further elements of information could help ascertain whether the above mentioned scenario regarding the engineering department is mainly attributed to engineer officers with EU CoCs working on board vessels flying non-EU flags or to many of them working in the maritime industry ashore (even if they hold a valid CoC).

7.2 Estimated percentage of EU and non-EU nationals on board the EU and non-EU fleets

Information on the nationalities of officers on board EU and non-EU fleets, gathered from the crew lists collected, may be a tool to finetune the insight on employment. The analysis below intends to identify the main nationalities on board and also to estimate the minimum percentage of those holding EU CoCs that might be considered as actively serving on board.

7.2.1 EU and non-EU nationals on board the EU fleet

The information on nationality in the crew lists of vessels belonging to the EU fleet which represented approximately 36% of the total fleet – was available for 98% of the officers reported in the lists. The officers for which the nationality was known were nationals of 28 EU Member State countries (nationals from Luxembourg were not reported) and of 88 non-EU countries.

The top 10 nationalities of officers on board EU Member State flagged vessels were, by order of magnitude, the Philippines, Ukraine, the Russian Federation, India, Türkiye, Greece, Poland, Romania, Italy and Bulgaria representing 80% of the total number of officers whose nationality was known (representing a proportion on board, of 8 nationals from those 5 non-EU countries to 2 nationals from those 5 EU countries). These 10 countries are included in the list of the 20 countries whose nationals represented more than 0.75% of the total number of masters and officers available to serve on board the EU fleet as presented in Figure 4-11 of section 4.5.

In terms of nationals from all EU countries, it can be stated with a 99% confidence level that the percentage of EU nationals on board the EU fleet was 26% ± 2%.

When breaking down the EU fleet by EU Member State flagged vessels (information was made available for vessels of 24 flags) the indication was that 26% of EU nationals or less was verified on board vessels flying the flags of Belgium, Cyprus, Latvia, Luxembourg, Malta and Portugal. On the other hand, on board vessels flying the flags of Bulgaria, Croatia, Finland, Italy, Lithuania, Romania, Spain and Sweden, most of the officers on board were nationals from EU countries. The percentage of EU nationals on board vessels flying the flags of the remaining EU Member States fluctuated between 26% and 50%.

Comparing the above with the scenario described in last year's report, all remained broadly unchanged except the fact that Croatia was replaced by Bulgaria in the list of the Top 10 nationalities. Furthermore, the percentage of EU nationals on board vessels flying the flag of Poland increased to more than 26% and flying the flag of Bulgaria and Sweden increased to more than 50%.

Finally, when analysing the distribution of nationals from each EU Member State, identified as being on board the EU fleet, by EU flags, it results that the majority of nationals from ten EU Member States (DE, DK, ES, FI, FR, IT, MT, NL, NO and PT) were serving on board vessels flying the flag of their own national country. Table 7-1 below, lists the top 5 flags among which the nationals of each EU Member State are distributed.

EU nationalities	EU flags				
	1st flag	2nd flag	3rd flag	4th flag	5th flag
AT	CY	DK	-	-	-
BE	NL	BE	CY	LU	DE
BG	MT	CY	PT	NO	BG
CY	CY	MT	FI	EL	NL
CZ	PT	MT	IT	NO	#
DE	DE	PT	DK	NL	MT
DK	DK	NO	MT	NL	IE
EE	PT	CY	NL	FI	EE
EL	MT	EL	CY	IT	PT
ES	ES	MT	CY	PT	IT
FI	FI	CY	NO	SE	PT
FR	FR	EL	BE	MT	DE
HR	MT	HR	NO	CY	PT
HU	EL	PT	CY	IT	MT

EU nationalities	EU flags				
	1st flag	2nd flag	3rd flag	4th flag	5th flag
IS	NO	MT	IS	ES	NL
IE	PT	DK	NO	IT	IE
IT	IT	MT	PT	CY	FR
LV	MT	CY	PT	IT	DK
LT	PT	LT	CY	MT	DK
MT	MT	IT	-	-	-
NL	NL	MT	CY	DE	BE
NO	NO	MT	CY	NL	DK
PL	CY	MT	PT	DK	NO
PT	PT	NO	MT	BE	CY
RO	MT	PT	IT	DK	CY
SK	CY	PT	DE	IE	NO
SI	CY	PT	MT	NL	ES
SE	NO	SE	DK	FI	MT

Table 7-1 Distribution of the EU nationals serving on board the EU fleet per flag – top 5 flags for each EU nationality

7.2.2 EU nationals on board the non-EU fleet

The analysis focused on crews of non-EU vessels that reported having EU nationals on board. These represented approximately 30% of the vessels of the non-EU fleet and flew the flags of 92 non-EU countries. The information on nationality in the crew lists of these vessels was available for 99% of the officers reported in the lists. On board these vessels, the officers for which nationality was known were nationals of 28 EU Member State (nationals from Luxembourg were not reported) and of 134 non-EU countries.

In terms of nationals from EU countries, it can be stated with a 99% confidence level that the percentage of EU nationals serving on board the non-EU fleet was 7% ± 1% (2% less than in 2022).

The list of EU countries whose nationals represented more than 0.5% of the total number of officers whose nationalities was known were, by order of magnitude, Poland, Greece, Romania, Croatia, Latvia and Bulgaria representing 86% (6% more than in 2022) of the total number of EU nationals serving on board vessels flying the flag of non-EU countries.

It also results that in almost half of the non-EU fleet analysed (vessels of 43 out of 92 flags), 7% of EU nationals or less were identified on board. Conversely, it appears that, on board vessels of the Faroe Islands, Georgia, Oman and Uruguay, most of the officers on board were nationals from EU countries.

Finally, considering the estimated number of masters and officers to crew the EU fleet and the non-EU fleet in 2023, – as extrapolated from the population of vessels retrieved from MARINFO and based on the assumptions referred in the beginning of section 7.1 above, it may be estimated that in 2023 there were around 82,600 EU nationals actively serving on board ships (±33,400 on board the EU fleet and 49,200 on board the non-EU fleet). The decrease of 2% denoted from 2022 accompanied the decrease in the number of ships provided by MARINFO from 2022 to 2023. As in 2022, these numbers continue to indicate that EU nationals actively serving on board represented roughly 50% of the total number of EU nationals that in 2023 held a valid CoCs or EaRs issued by an EU Member State, assuming that all these EU nationals just hold an EU CoC or an EU EaR.

Decisively, caution should be exercised in deriving any conclusion from the results presented, which should ideally be confirmed by/compared with any other data as may possibly be available, in relation to the employment of seafarers in the maritime industry EU and worldwide.

8. Main conclusions

Between 2016 and 2019, the absolute number of masters and officers holding CoCs and EaRs and of ratings holding CoPs – and thereby of those available to serve on board EU Member State flagged vessels – had been on the increase. However, due to Brexit, in 2020 (see further explanation in section A.2 of Appendix A), this trend was interrupted and a decrease in these numbers in absolute terms was noted. In parallel, a decrease in the cumulative number of vessels under the flags of EU Member States (EU fleet) was also observed. This decrease persisted until 2022, still in the wake of the COVID-19 pandemic. In 2023 a small increase in the number of those available to serve in the EU fleet was observed.

Figure 8-1 below shows that, between 2016 and 2019 there was an increase of more than 70,000 masters and officers nominally available to serve on board EU Member State flagged vessels. This was followed by a decrease of 48,000 masters and officers between 2019 and 2022. In 2023 the increase was of about 9,000 masters and officers.

However, it should be noted that between 2017 and 2020 the percentage of masters and officers holding CoCs issued by non-EU countries had increased by 10% and remained roughly unchanged since then. Half of this increase may be attributed to the inclusion of the United Kingdom in the non-EU countries category. Notwithstanding this, the overall figures in terms of distribution by country issuing the original CoC remained broadly stable.

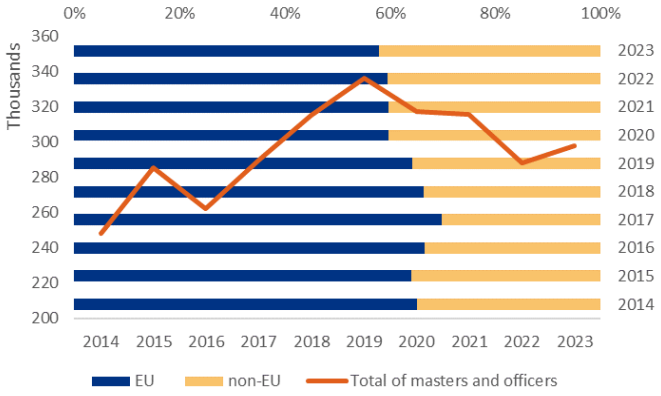

Figure 8-1 Masters and officers available at EU level over the years (EU and non-EU countries issuing the original certificate)

Apart from that, when reviewing the numbers of masters, officers and ratings by type of certificate held, the figures remained stable in terms of distribution by department, capacity, gender and age. In general terms and over the last ten years, a certain stability in the European maritime labour market prevails, suggesting a continued ability of such market to attract new entrants who have replaced those leaving the seafaring career. In the past ten years the overall average age of the masters and officers varied between 43 and 44 years. This indicates that new entrants with a younger age were replacing holder masters and officers that were leaving the seafaring career. In 2023 within the EU, around 13,500 masters and officers were identified as “new” meaning that they did not hold a valid CoC in 2022. Nevertheless, it shall be noted that this does not mean that all of them started a seafaring career in 2023. Some of them might have held a valid CoC in previous non-consecutive years and others could have

acquired the first certificate in a third country before acquired a CoC issued by a Member State. The newcomer tag might be more appropriately attributed to over 5,000 officers whose data indicated that a CoC as ‘OOW 500 GT or more’, ‘Chief Mate less than 3,000 GT’, ‘OEW 750 kW or more’ or ‘ETO’ was acquired for the first time.

Over the years, the number of masters and officers holding valid CoCs issued by EU Member States has generally indicated that the EU supply of masters and officers could in principle be sufficient to satisfy the demand by EU Member State fleets, even if in reality, a significant number of masters and officers holding CoCs issued by non-EU countries are employed on board the EU Member States’ fleet.

Regarding nationalities of masters and officers serving onboard, it results that around 26% of masters and officers serving on board the EU fleet were EU nationals. In addition, EU nationals formed 7% of those serving on board the non-EU fleet. Taking the estimated total number of masters and officers to crew both the EU and non-EU fleets in 2023, EU nationals actively serving on board would appear to represent, as in 2022, roughly 50% of the total number of EU nationals who in 2023 held valid CoCs or EaRs issued by an EU Member States. Conversely, this might suggest that the remaining 50% of those holding CoCs issued by EU Member States are either working in the maritime industry ashore or otherwise outside the industry; without additional information it is difficult to ascertain in which field of activity they are working or if they are even still in the employment market.

Appendix A Framework and methodology

A.1 Legal background

The EMSA Founding Regulation[12] 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 (EU) 2022/993 of the European Parliament and of the Council of 8 June 2022 on the minimum level of training of seafarers [13].

Article 27 of Directive (EU) 2022/993, establishes that "the Member States shall communicate the information referred to in Annex III" and 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), developed and hosted in EMSA.

A.2 Data collection, analysis and beneficiaries

The data subject to this 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 III to Directive (EU) 2022/993 in a structured format defined by the technical specifications made available by EMSA.

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).

This tenth review presents a snapshot of the number of seafarers holding valid certificates and endorsements in 2023. It should be noted that since the available data – as extracted from the national registers held by EU Member States – did not include any information on whether the certificate holders were active or not, it was not possible to determine how many of them were working on board vessels during 2023.

Since 2020, the actions taken worldwide as a result of the Coronavirus outbreak posed a serious challenge for Administrations to allow the continued training and certification of seafarers in accordance with the STCW Convention. Within this context, IMO provided guidance relating to the certification of seafarers through Circular Letter No.4204/Add.5/Rev.1, of 2 April 2020. According to it, Administrations were "encouraged to take a pragmatic and practical approach with regard to the extension of certificates, including medical certificates and endorsements, as strictly necessary". One of the approaches adopted (between 2020 and 2022, inclusive) was for the issuing Administrations to use their prerogative of extension of validity of the certificates and endorsements to seafarers that needed such certification to continue being on board or to embark. This may have affected to some extent the data (of on certificates included in the national registers held by EU Member States and received in the STCW-IS by not fully mirroring their real status and validity until the end of 2022.

It is also to be noted that, having ceased to be an EU Member State following Brexit, since 2020 the United Kingdom had no more the obligation to provide information on its certificates and endorsements issued and consequently, the last data received concerned 2019. Therefore, for the purpose of this report, the United Kingdom is treated as a third country from 2020 onwards and any information regarding seafarers holding certificates of competency issued by the UK will only be available within the context of related endorsements issued by the EU Member States attesting the recognition of said certificates.

The main beneficiaries of this statistical review are the EU Member States, the Commission and the European Parliament 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

[12] http://data.europa.eu/eli/reg/2002/1406/2016-10-06
[13] http://data.europa.eu/eli/dir/2022/993/oj

the estimation of market demand for their services. Researchers may also be interested in some of the statistical outputs, as well as seafarers and the organisations that represent them.

A.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 2023 reported data on seafarers' gender when different genders were attributed to the same seafarer within the same country. In the case of seafarers reported as having different genders among different countries, a query was developed to identify and correct these inconsistencies.

The original data received from the EU Member States included fields such as gender, nationality and capacity together with its associated limitations. The information in these fields was made available as free text and consequently had to be encoded to ensure the harmonisation and comparability of data. 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 the widest possible number of errors to be identified 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, especially when considering that every identified error is consequently corrected not only within the sampled data but also in the whole data set.

A.4 Coherence and comparability

The information considered in this review comprised data from 26 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 (please see 'Confidentiality' 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 data coherent and comparable, criteria were established and followed throughout all statistical reviews when 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.

A.5 Accessibility and clarity, dissemination format

User access to information featured in this report is restricted to the content of this written report. EU Member States retain all property rights to the information in its raw data format and could amend their data at any time before its processing began. Detailed statistics may 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 webpage (https://portal.emsa.europa.eu/web/stcw/documents) and in the EMSA website (https://emsa.europa.eu/visits-to-member-states/standards-for-seafarers.html). Access in a customised way to the data included in this report is also provided through an interactive reporting module available likewise on the STCW-IS webpage (https://portal.emsa.europa.eu/web/stcw/seafarers-stats).

A.6 Confidentiality

All publicly available statistics fully comply with the obligations established in Article 4 of EMSA's Founding Regulation[14], as amended and Regulation (EU) 2018/1725[15] of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data by the Union institutions, bodies, offices and agencies and on the free movement of such data. 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, compiled and analysed by EMSA in its encrypted format.

[14] http://data.europa.eu/eli/reg/2002/1406/2016-10-06
[15] http://data.europa.eu/eli/reg/2018/1725/oj

Appendix B Data on masters and officers holding valid CoCs in 2023

Table 8-1 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
Alternative certification	0	0	0	0	0	0	0	0	0	1	1120	0	0	0	0	0	0	0	0	1298	0	0	0	0	0	0	0
Deck	1480	2599	2159	11	4261	4164	1168	7651	7315	1851	9740	7542	1	704	404	8585	753	2915	147	6864	15429	9629	409	6818	3531	193	15
Engine	659	3351	1791	17	1720	2399	1013	5778	4128	1271	3391	7241	9	384	197	5846	658	3138	14	4699	5832	8147	263	7110	1368	102	17
Total[16]	**2136**	**5948**	**3950**	**28**	**5925**	**6398**	**2181**	**13428**	**10966**	**3105**	**11792**	**14776**	**10**	**1085**	**590**	**14352**	**1410**	**6051**	**161**	**9410**	**21204**	**17772**	**672**	**13926**	**4785**	**295**	**32**

Table 8-2 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
Master 3,000 GT or more	608	1979	1367	10	2528	1789	540	1907	1606	954	1341	3245	0	293	165	3778	171	1133	50	2604	6404	4612	144	2482	1493	81	2
Chief Mate 3,000 GT or more	209	580	590	1	473	313	222	1820	656	260	580	980	0	163	12	1147	196	706	34	909	1004	2059	87	1877	610	14	1
Master less than 3,000 GT	21	32	19	0	9	372	30	138	2061	13	230	563	1	5	89	585	1	96	1	515	573	135	20	21	128	31	0
Chief Mate less than 3,000 GT	17	3	2	0	3	407	20	3477	1870	3	213	193	0	11	2	71	20	37	0	2084	1912	113	10	23	585	3	0
OOW 500 GT or more	370	4	181	0	517	70	304	258	1119	576	647	1839	0	135	33	2695	351	859	61	17	376	2656	136	2379	0	64	12
Master less than 500 GT, NCV	219	1	0	0	665	621	47	51	3	35	6563	567	0	97	102	270	12	77	0	497	2005	0	7	36	650	0	0
OOW less than 500 GT, NCV	36	0	0	0	66	592	5	0	0	10	166	155	0	0	1	39	2	7	1	238	3155	54	5	0	65	0	0
Total	**1480**	**2599**	**2159**	**11**	**4261**	**4164**	**1168**	**7651**	**7315**	**1851**	**9740**	**7542**	**1**	**704**	**404**	**8585**	**753**	**2915**	**147**	**6864**	**15429**	**9629**	**409**	**6818**	**3531**	**193**	**15**

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

Table 8-3 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
Chief Engineer 3,000 kW or more	231	1488	1077	8	1205	1014	586	1579	1790	549	1380	2298	5	128	155	2754	143	1204	0	1852	3829	3731	98	2279	848	47	1
Second Engineer 3,000 kW or more	60	647	518	0	255	311	178	1200	398	80	588	982	0	79	12	694	177	725	0	2300	719	1430	25	1497	239	14	1
Chief Engineer less than 3,000 kW	108	44	1	0	7	176	44	116	878	46	260	512	1	5	12	315	1	105	0	73	104	107	8	7	11	10	0
Second Engineer less than 3,000 kW	21	13	2	0	0	30	6	143	379	7	79	213	0	16	1	42	9	52	0	470	0	77	2	7	23	4	0
OEW 750 kW or more	239	311	191	0	181	604	119	2609	640	455	1009	1331	0	88	15	1798	243	755	14	4	0	1306	104	1588	247	12	11
Electro-technical Officer	0	848	2	9	72	264	80	131	43	134	75	1905	3	68	2	243	85	297	0	0	1180	1496	26	1732	0	15	4
Total	**659**	**3351**	**1791**	**17**	**1720**	**2399**	**1013**	**5778**	**4128**	**1271**	**3391**	**7241**	**9**	**384**	**197**	**5846**	**658**	**3138**	**14**	**4699**	**5832**	**8147**	**263**	**7110**	**1368**	**102**	**17**

Table 8-4 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
Female	97	13	68	0	276	212	28	339	717	155	643	67	0	43	8	273	14	37	11	234	778	77	32	131	225	1	1
Male	2039	5935	3882	28	5649	6186	2153	13089	10249	2950	11149	14709	10	1041	582	14079	1396	6014	150	9160	20426	6377	640	13795	4560	294	31
Not available	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	16	0	11318	0	0	0	0	0

Table 8-5 Non-EU nationals holding CoCs issued by EU Member States

Region[17] 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	Total
Africa	43	0	4	0	6	8	0	0	28	5	44	28	0	31	0	1	1	0	0	2	2	61	3	0	0	0	0	**267**
Americas	153	0	1	0	3	3	1	0	30	2	7	13	0	4	0	1	0	1	1	17	10	0	12	0	0	0	0	**259**
Asia	2	0	2	0	0	9	0	0	2	5	2	10	0	20	0	0	0	0	1	7	11	5	0	0	1	0	0	**77**
Europe (non-EU)	7	33	4	0	32	75	381	0	13	7	14	43	0	45	1	0	191	245	7	6	30	123	1	32	1	3	0	**1294**
Oceania	0	0	1	0	1	1	0	0	0	1	0	0	0	7	0	0	0	2	3	2	3	1	0	0	0	0	0	**22**
Total	**205**	**33**	**12**	**0**	**42**	**96**	**382**	**0**	**73**	**20**	**67**	**94**	**0**	**107**	**1**	**2**	**192**	**248**	**12**	**34**	**56**	**190**	**16**	**32**	**2**	**3**	**0**	**1919**

[17] The grouping of countries per regions was based on the “Standard country or area codes for statistical use” established by the United Nations and the list of European countries established by the EU

Table 8-6 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
age<25	43	5	50	0	57	76	26	1053	134	138	557	183	0	55	5	779	228	116	21	738	1145	59	27	95	43	9	0
25≤age<30	315	197	349	0	466	664	156	3907	1043	306	1290	1314	0	174	13	2132	345	476	31	1584	2983	1224	111	1194	304	26	2
30≤age<35	423	581	711	0	823	851	193	3081	1343	413	1756	2040	0	148	33	2360	287	716	30	1215	2807	1952	84	2219	531	29	9
35≤age<40	289	885	559	0	946	601	321	2723	1194	403	1686	2067	0	172	51	1916	274	918	35	992	2240	2328	82	2826	545	32	7
40≤age<45	229	887	226	2	756	537	274	1237	1393	384	1682	2235	0	128	45	1413	158	928	15	819	2056	2580	72	1822	517	35	4
45≤age<50	163	1005	102	1	553	643	214	573	1870	384	1464	2083	0	119	55	1411	51	771	11	894	2066	2216	72	1710	568	36	2
50≤age<55	214	889	92	3	560	690	228	257	1460	309	1540	1492	0	131	68	1273	27	637	5	983	2440	1818	61	1540	585	30	0
55≤age<60	211	699	360	2	616	848	277	239	1345	326	1074	1415	3	72	91	1269	16	540	2	996	2107	1585	40	1235	629	34	2
age≥60	249	800	1501	20	1148	1488	492	358	1184	442	743	1947	7	86	229	1799	24	949	11	1189	3360	4010	123	1285	1063	64	6
Total	**2136**	**5948**	**3950**	**28**	**5925**	**6398**	**2181**	**13428**	**10966**	**3105**	**11792**	**14776**	**10**	**1085**	**590**	**14352**	**1410**	**6051**	**161**	**9410**	**21204**	**17772**	**672**	**13926**	**4785**	**295**	**32**

Table 8-7 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	437	934	565	214	130	69	43	16	11	**2419**
Deck	3982	13151	15352	15154	12550	11660	10335	9442	14651	**106277**
Engine	2267	8743	10046	9379	8268	7689	7259	6786	10091	**70528**
Total[18]	**5641**	**20603**	**24624**	**24079**	**20420**	**19032**	**17324**	**16021**	**24564**	**172308**

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

Table 8-8 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 3,000 GT or more	14	532	2978	6135	6312	6365	5341	4895	8708	**41280**
Chief Mate 3,000 GT or more	81	2279	4451	3410	1801	1189	776	614	902	**15503**
Master less than 3,000 GT	1	48	292	456	608	837	946	952	1548	**5688**
Chief Mate less than 3,000 GT	1603	4374	1909	937	628	537	374	313	402	**11077**
OOW 500 GT or more	1286	4300	3705	2231	1287	859	667	631	691	**15657**
Master less than 500 GT, NCV	522	943	1364	1419	1449	1418	1740	1625	2037	**12517**
OOW less than 500 GT, NCV	476	676	662	570	472	456	496	421	368	**4597**
Total	**3982**	**13151**	**15352**	**15154**	**12550**	**11660**	**10335**	**9442**	**14651**	**106277**

Table 8-9 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 3,000 kW or more	8	419	2045	3838	4543	4545	4410	4120	6349	**30277**
Second Engineer 3,000 kW or more	612	2460	3274	2190	1171	893	727	689	1113	**13129**
Chief Engineer less than 3,000 kW	6	40	168	230	315	402	513	547	730	**2951**
Second Engineer less than 3,000 kW	71	162	208	207	186	190	174	195	203	**1596**
OEW 750 kW or more	1238	4897	3038	1566	970	676	504	457	528	**13874**
Electro-technical Officer	332	766	1313	1348	1084	985	934	779	1168	**8709**
Total	**2267**	**8743**	**10046**	**9379**	**8268**	**7689**	**7259**	**6786**	**10091**	**70528**

Table 8-10 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	437	1139	1058	652	428	366	207	118	75	**4480**
Male	5156	18493	22215	22087	18458	17294	15932	14925	21933	**156493**
Not available	48	971	1351	1340	1534	1372	1185	978	2556	**11335**
Total	**5641**	**20603**	**24624**	**24079**	**20420**	**19032**	**17324**	**16021**	**24564**	**172308**

Appendix C Data on masters and officers holding valid EaRs in 2023

Table 8-11 EU and non-EU countries issuing the original CoCs per EU Member States issuing the EaRs

Country issuing the original CoC	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI
EU Member State	1818	0	7726	815	3776	150	2120	76	460	1280	25	303	3	336	59	3042	166	18643	3117	4400	16	5701	1	415	23
non-EU country	2652	1	20167	1566	9276	67	5513	189	319	1637	85	276	12	2126	173	2393	560	47045	8615	14687	0	17855	1	474	0
Not available	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
Total[19]	**4468**	**1**	**27888**	**2380**	**13052**	**217**	**7631**	**264**	**779**	**2916**	**110**	**577**	**15**	**2454**	**232**	**5435**	**726**	**65683**	**11732**	**19087**	**16**	**23536**	**2**	**889**	**23**

Table 8-12 EU and non-EU countries issuing the original CoCs per departments

Country issuing the original CoC	Deck Department		Engine Department		Total[20]
	Number	Percentage	Number	Percentage	Number
EU Member State	26156	54.51%	21911	45.66%	**47988**
non-EU country	62148	49.51%	63433	50.54%	**125519**
Total[21]	**88267**	**50.89%**	**85314**	**49.19%**	**173436**

Table 8-13 Engineer officers holding EaRs registered by EU Member States

Capacity	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI
Chief Engineer 3,000 kW or more	730	0	5740	419	1856	49	1041	33	175	345	24	114	1	576	37	980	89	11117	2175	3449	3	4665	1	161	5
Second Engineer 3,000 kW or more	417	0	2257	177	990	9	783	8	65	222	11	53	0	187	33	491	54	6025	977	1418	1	1920	0	48	2
Chief Engineer less than 3,000 kW	81	0	1	25	32	14	1	3	6	28	0	7	0	15	12	53	50	494	335	382	0	0	0	0	0
Second Engineer less than 3,000 kW	35	0	9	7	23	1	2	0	1	3	0	1	0	11	4	23	14	375	58	53	0	0	0	0	2
OEW 750 kW or more	652	0	3425	303	2959	22	1254	70	96	579	20	30	4	539	17	638	44	9952	1234	2736	1	2761	0	110	1
Electro-technical Officer	414	0	2288	265	121	7	1339	9	18	368	10	6	0	333	20	424	8	4978	246	1431	0	1809	0	47	0
Total	**2328**	**0**	**13719**	**1196**	**5977**	**102**	**4420**	**123**	**361**	**1544**	**65**	**211**	**5**	**1661**	**123**	**2606**	**259**	**32893**	**5025**	**9459**	**5**	**11152**	**1**	**366**	**10**

[19] 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
[20] The sum of the columns may not be equal to the total because some officers held EaRs for both Deck and Engine Departments
[21] 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 8-14 Master and deck officers holding EaRs registered by EU Member States

Capacity	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI
Master 3,000 GT or more	824	0	6166	117	1404	36	888	97	114	281	18	139	2	198	31	1250	169	12300	1643	2177	7	5078	0	255	6
Chief Mate 3,000 GT or more	478	0	3050	342	1513	20	926	4	52	343	9	109	3	100	38	633	119	6772	2817	3630	4	2904	1	44	2
Master less than 3,000 GT	60	0	13	32	37	8	0	3	7	28	0	12	1	7	6	81	47	297	0	0	0	0	0	0	2
Chief Mate less than 3,000 GT	51	0	35	29	47	5	2	1	3	15	0	4	0	6	3	52	14	848	0	75	0	0	0	0	4
OOW 500 GT or more	706	1	4920	663	3951	18	1398	75	215	702	18	103	3	343	31	796	116	12351	2176	3699	0	4414	0	223	0
Master less than 500 GT, NCV	30	0	1	5	99	27	0	2	23	5	0	1	1	116	0	20	2	252	63	0	0	2	0	3	1
OOW less than 500 GT, NCV	1	0	0	1	31	1	0	1	4	0	0	0	0	25	0	3	0	28	17	61	0	1	0	0	0
Total	**2149**	**1**	**14179**	**1189**	**7077**	**115**	**3213**	**183**	**418**	**1373**	**45**	**368**	**10**	**794**	**109**	**2835**	**467**	**32809**	**6716**	**9634**	**11**	**12393**	**1**	**525**	**15**

Table 8-15 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[22]
	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	
Belgium	0	0	89	7	4	0	69	2	0	216	0	0	0	24	0	601	1	75	227	3	0	40	0	1	0	**1231**
Bulgaria	237	0	512	29	38	0	64	1	0	51	1	2	0	118	0	78	2	2022	135	127	0	415	0	0	0	**3379**
Croatia	544	0	509	128	263	0	75	18	1	121	0	1	0	0	0	975	6	2051	483	744	0	371	0	2	1	**5252**
Cyprus	0	0	0	1	2	0	1281	0	0	2	0	0	0	0	0	1	0	929	1	1	0	24	0	1	0	**1990**
Czechia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	9	0	0	0	**16**
Denmark*	9	0	28	7	0	2	0	2	1	1	0	0	1	0	2	3	0	51	129	559	0	2	0	66	0	**847**
Estonia	15	0	189	13	41	0	5	1	335	3	0	4	0	6	18	10	98	94	176	107	0	200	0	9	0	**1140**
Finland	0	0	45	1	20	72	48	0	0	0	0	0	0	0	0	0	12	41	17	135	0	16	1	197	0	**572**
France	35	0	64	5	0	0	0	11	0	0	0	0	1	0	0	178	0	191	65	11	0	11	0	4	0	**562**
Germany	15	0	128	0	114	29	0	2	1	2	0	0	0	121	0	33	0	300	147	21	0	243	0	20	1	**1068**
Greece	2	0	841	2	3	0	0	0	1	4	0	2	0	4	0	7	0	4409	11	3	0	39	0	1	0	**5235**
Hungary	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	0	0	3	0	0	0	**8**
Iceland	0	0	1	1	16	11	0	0	0	1	0	0	0	0	7	0	0	9	9	55	4	0	0	5	0	**113**

[22] 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[22]
	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	
Ireland	4	0	44	0	9	0	0	0	0	0	0	0	0	0	0	0	0	33	19	16	1	7	0	5	0	**126**
Italy	6	0	117	5	8	0	0	9	1	9	1	0	0	0	0	47	0	1061	32	11	0	173	0	0	0	**1429**
Latvia	75	0	429	26	408	22	18	10	5	109	4	4	0	25	21	53	0	733	333	574	2	351	0	28	0	**2751**
Lithuania	54	0	607	60	275	6	1	4	3	17	0	35	0	9	0	151	30	210	406	201	1	429	0	7	0	**1959**
Malta	1	0	5	0	1	0	19	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	**30**
Netherlands	633	0	526	84	71	0	1	2	24	11	5	0	1	0	8	535	1	567	0	33	8	147	0	8	16	**2385**
Norway	1	0	125	1	17	1	0	0	13	1	0	0	0	0	0	6	0	76	21	0	0	11	0	23	0	**281**
Poland	126	0	2594	379	1307	1	28	1	17	87	2	252	0	0	1	156	15	2136	454	1268	0	1974	0	27	5	**9340**
Portugal	1	0	6	4	13	5	0	2	0	0	0	0	0	0	0	2	0	19	13	52	0	0	0	0	0	**113**
Romania	44	0	523	36	718	1	511	4	6	560	8	0	0	5	2	202	0	3316	346	120	0	985	0	8	0	**6373**
Slovakia	0	0	4	0	5	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	8	0	0	0	**19**
Slovenia	2	0	30	0	1	0	1	6	0	0	4	0	0	18	0	4	0	19	9	4	0	15	0	0	0	**95**
Spain	15	0	246	12	21	2	0	0	1	83	0	1	0	6	0	11	0	325	57	18	0	254	0	3	0	**975**
Sweden	0	0	66	14	424	0	0	1	51	0	0	1	0	0	0	0	0	74	42	695	0	8	0	0	0	**1336**

*Includes Faroe Islands

Table 8-16 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[23]
	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	
Algeria	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
Argentina	80	0	4	0	3	0	0	26	0	0	0	0	0	0	0	82	0	58	0	63	0	1	0	0	0	**308**
Australia	19	0	64	4	102	0	0	0	0	1	0	0	0	0	0	12	0	98	12	461	0	50	0	0	0	**769**
Azerbaijan	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	264	0	0	0	8	0	0	0	**276**

[23] 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[23]
	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	
Bangladesh	19	0	9	0	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	28	0	0	0	**70**
Brazil	0	0	15	1	175	0	40	0	0	0	0	0	0	0	0	16	0	0	0	294	0	15	0	0	0	**544**
Cabo Verde	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	0	0	31	0	0	0	**38**
Canada	1	0	16	0	6	0	1	0	0	2	0	0	0	0	0	0	0	19	4	38	0	25	0	0	0	**111**
Chile	0	0	2	0	0	0	0	7	0	0	0	0	0	0	0	1	0	0	1	10	0	1	0	0	0	**22**
China	0	0	224	19	182	0	23	0	16	0	0	0	0	0	0	14	0	950	81	517	0	191	0	0	0	**2140**
Cote D'Ivoire	0	0	0	0	0	0	0	0	0	78	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	**100**
Cuba	0	0	29	0	57	0	7	42	0	0	0	0	0	0	0	0	0	73	0	0	0	37	0	0	0	**210**
Egypt	1	0	341	7	11	0	0	0	0	37	0	0	0	0	0	135	2	543	0	0	0	149	0	0	0	**1193**
Ethiopia	0	0	27	0	6	0	0	0	0	0	0	0	0	0	0	1	1	59	0	0	0	123	0	0	0	**200**
Georgia	8	0	192	2	17	0	97	0	0	6	0	0	0	6	0	0	1	699	6	0	0	111	0	0	0	**1050**
Ghana	0	0	44	5	21	0	0	0	0	18	0	0	0	0	0	32	0	54	0	3	0	13	0	0	0	**177**
Hong Kong	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	**4**
India	344	0	722	16	3384	0	51	0	0	53	0	0	0	317	0	257	0	4713	43	2029	0	1843	0	0	0	**13318**
Indonesia	10	0	290	0	21	0	3	0	0	25	2	0	0	0	0	112	0	377	454	67	0	173	0	0	0	**1458**
Iran, Islamic republic of	1	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	16	0	0	0	**49**
Israel	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**34**
Jamaica	66	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	17	0	2	0	0	0	**92**
Japan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	**4**
Jordan	5	0	3	0	1	0	1	0	0	0	0	0	0	0	0	0	0	135	0	0	0	6	0	0	0	**151**
Korea, Republic of	0	0	4	1	1	0	5	0	1	0	0	0	0	0	0	0	0	153	0	5	0	1	0	0	0	**169**
Lebanon	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	91	0	0	0	0	0	0	0	**93**
Madagascar	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	**54**
Malaysia	5	0	19	1	0	0	0	0	0	1	0	1	0	0	0	0	0	12	0	36	0	4	0	0	0	**79**
Mexico	0	0	50	5	35	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	2	0	0	0	**91**
Montenegro	1	0	274	5	23	0	27	0	0	0	0	0	0	0	0	20	0	833	27	63	0	266	0	0	0	**1359**

Country issuing the original CoC	EU Member State issuing the EaR																									Total[23]
	BE	BG	CY	DE	DK	EE	EL	ES	FI	FR	HR	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	
Morocco	0	0	106	1	0	0	0	0	0	10	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	**118**
Myanmar	0	0	62	1	74	0	0	0	0	10	0	0	0	0	0	0	0	338	0	347	0	114	0	0	0	**905**
New Zealand	7	0	37	0	42	0	0	0	0	2	0	0	0	0	0	2	0	93	29	96	0	25	0	0	0	**315**
Nigeria	0	0	6	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**9**
Oman	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Pakistan	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	180	0	0	0	35	0	0	0	**227**
Panama	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Peru	0	0	59	0	0	0	0	24	0	0	0	0	1	0	0	2	0	267	24	9	0	336	0	0	0	**653**
Philippines	458	0	7325	751	2893	0	3298	78	253	794	46	4	5	1619	0	450	0	14929	2198	6547	0	3409	0	469	0	**44048**
Russian Federation	251	0	4457	314	408	47	416	0	28	102	0	185	1	28	126	305	346	5956	2867	2039	0	3637	0	2	0	**18885**
Senegal	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
Serbia	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Singapore	4	0	35	0	166	0	0	0	1	2	0	0	0	0	0	10	0	254	2	73	0	87	0	0	0	**623**
South Africa	0	0	5	2	108	0	0	0	0	0	0	0	0	0	0	34	0	0	19	5	0	15	0	0	0	**182**
Sri Lanka	3	0	89	1	65	0	0	0	0	0	0	0	0	0	0	0	0	517	0	13	0	249	0	0	0	**832**
Tunisia	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	4	0	2	0	0	0	0	0	0	0	**20**
Türkiye	0	0	21	7	21	0	0	0	1	0	0	0	0	0	0	44	0	5451	8	22	0	500	0	0	0	**5885**
Ukraine	1259	1	4774	403	683	18	1528	0	13	396	37	25	5	39	47	665	202	8357	2476	999	0	5930	1	0	0	**23608**
United Kingdom	106	0	683	16	757	0	19	1	5	48	0	61	0	117	0	104	5	1403	262	517	0	369	0	3	0	**4258**
United States of America	5	0	16	5	9	0	0	0	0	0	0	0	0	0	0	0	0	54	1	11	0	0	0	0	0	**100**
Uruguay	0	0	3	0	0	0	0	11	0	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	**19**
Viet Nam	0	0	63	0	3	0	0	0	0	0	0	0	0	0	0	5	0	95	83	20	0	61	0	0	0	**323**

Table 8-17 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	1421	11279	17197	17256	13149	10988	6889	4722	5366	**88267**
Engine	1139	9222	15311	14992	11435	9646	9006	7228	7335	**85314**
Total[24]	**2556**	**20475**	**32475**	**32221**	**24566**	**20620**	**15883**	**11946**	**12694**	**173436**

Table 8-18 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 3,000 kW or more	0	83	1539	4422	5335	5323	5142	4256	4810	**30910**
Second Engineer 3,000 kW or more	34	886	3804	4121	2058	1321	1083	789	668	**14764**
Chief Engineer less than 3,000 kW	0	20	87	172	163	217	251	249	312	**1471**
Second Engineer less than 3,000 kW	10	54	118	139	82	61	51	43	50	**608**
OEW 750 kW or more	875	7251	7924	4065	1949	1407	1158	708	468	**25805**
Electro-technical Officer	224	1004	2074	2284	1971	1419	1407	1259	1093	**12735**
Total	**1139**	**9222**	**15311**	**14992**	**11435**	**9646**	**9006**	**7228**	**7335**	**85314**

Table 8-19 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 3,000 GT or more	8	134	1498	4942	6003	6239	4500	3361	4187	**30872**
Chief Mate 3,000 GT or more	51	1331	5500	6334	3637	2387	1311	745	647	**21943**
Master less than 3,000 GT	0	5	39	77	88	94	85	99	131	**618**
Chief Mate less than 3,000 GT	79	440	286	144	67	53	47	32	36	**1184**
OOW 500 GT or more	1280	9427	10081	5988	3511	2261	960	471	336	**34315**
Master less than 500 GT, NCV	2	20	86	105	94	93	83	65	82	**630**
OOW less than 500 GT, NCV	3	30	35	29	19	21	16	13	7	**173**
Total	**1421**	**11279**	**17197**	**17256**	**13149**	**10988**	**6889**	**4722**	**5366**	**88267**

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

Table 8-20 Age distribution of officers holding EaRs 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	94	666	501	249	127	62	36	16	11	**1762**
Male	2465	19813	31974	31974	24438	20556	15847	11930	12682	**171679**
Not available	0	0	3	1	3	2	1	1	2	**13**
Total	**2556**	**20475**	**32475**	**32221**	**24566**	**20620**	**15883**	**11946**	**12694**	**173436**

Table 8-21 Age distribution by region of the country issuing the original CoC

Region[25] 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	363	8384	14189	12362	9336	8454	5751	3336	2342	**64517**
EU	676	5198	7815	8044	6613	5562	4447	4011	5622	**47988**
Europe (non-EU)	1466	6222	9179	10808	7927	6156	5315	4272	4340	**55685**
Rest of the World	52	682	1313	1032	707	462	378	332	391	**5349**
Total	**2556**	**20475**	**32475**	**32221**	**24566**	**20620**	**15883**	**11945**	**12692**	**173433**

[25] The grouping of countries per regions was based on the “Standard country or area codes for statistical use” established by the United Nations and the list of European countries established by the EU

Appendix D Data on ratings holding valid CoPs in 2023

Table 8-22 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	39	921	510	846	353	621	19	3588	81	1955	7495	5900	1099	2778	3
Rating forming part of a navigational watch	1044	2237	876	4697	1117	1874	3127	69	2861	227	800	3808	10713	775	2068	11
Able seafarer engine	0	16	932	170	481	164	159	3	1285	9	681	1384	587	491	648	1
Rating forming part of an engineering watch	279	518	0	2617	859	1183	1379	38	1280	69	485	873	4731	1119	578	11
Electro-technical rating	0	133	79	162	433	221	1608	0	712	23	31	1280	413	764	218	1
Dual-purpose rating (VII)	22	2360	0	0	1800	0	0	0	0	0	0	0	0	0	0	0
Total[26]	**1328**	**5188**	**2323**	**7185**	**4252**	**3154**	**6049**	**104**	**7835**	**384**	**3789**	**13251**	**15660**	**3681**	**5531**	**27**

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

Appendix E Masters and officers summary overview – Forecast for 2024 and 2025

Table 8-23 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[27]	HR	IN	IT	NO	PH	PL	RO	RU	TR	UA
2024										
Linear Forecast	4.91%	4.42%	4.86%	7.60%	15.73%	5.60%	4.92%	6.02%	1.87%	7.88%
ETS Forecast	5.01%	4.68%	4.78%	7.54%	15.27%	5.76%	4.91%	6.41%	1.98%	7.96%
ETS Confidence bound (±)	0.38%	0.53%	0.98%	1.07%	2.02%	0.60%	0.50%	0.47%	0.45%	0.90%
2025										
Linear Forecast	4.94%	4.65%	4.90%	7.95%	16.21%	5.39%	5.05%	6.10%	1.87%	7.92%
ETS Forecast	5.03%	4.91%	4.82%	7.89%	15.74%	5.56%	5.04%	6.48%	1.98%	7.99%
ETS Confidence bound (±)	0.48%	0.71%	0.99%	1.07%	2.71%	0.75%	0.51%	0.64%	0.61%	0.91%

Table 8-24 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[28]	Deck ML	Engine ML	Deck OL	Engine OL
2024				
Linear Forecast	41.67%	26.76%	14.43%	19.56%
ETS Forecast	41.95%	26.95%	15.89%	17.76%
ETS Confidence bound (±)	2.74%	0.60%	1.27%	0.68%
2025				
Linear Forecast	41.67%	26.76%	14.43%	19.56%
ETS Forecast	41.95%	26.95%	15.89%	17.76%
ETS Confidence bound (±)	2.74%	0.60%	1.27%	0.68%

[27] 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
[28] 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 8-25 Forecast for the next two years of female officers available to serve on board EU Member State flagged vessels

Forecast -Year[29]	EU	Non-EU	All
2024			
Linear Forecast	2.66%	0.82%	1.85%
ETS Forecast	2.85%	0.83%	1.95%
ETS Confidence bound (±)	0.15%	0.07%	0.09%
2025			
Linear Forecast	2.66%	0.82%	1.85%
ETS Forecast	2.85%	0.83%	1.95%
ETS Confidence bound (±)	0.15%	0.07%	0.09%

Table 8-26 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[30]	EL	HR	IN	IT	NO	PH	PL	RO	RU	UA
2024										
Linear Forecast	7.80%	4.82%	3.77%	4.97%	7.21%	13.95%	5.67%	4.93%	5.13%	7.95%
ETS Forecast	5.94%	4.92%	3.70%	4.89%	6.81%	13.79%	5.77%	4.92%	5.52%	8.00%
ETS Confidence bound (±)	1.92%	0.38%	1.20%	0.97%	2.66%	2.09%	0.61%	0.49%	0.45%	0.88%
2025										
Linear Forecast	7.80%	4.82%	3.77%	4.97%	7.21%	13.95%	5.67%	4.93%	5.13%	7.95%
ETS Forecast	5.94%	4.92%	3.70%	4.89%	6.81%	13.79%	5.77%	4.92%	5.52%	8.00%
ETS Confidence bound (±)	1.92%	0.38%	1.20%	0.97%	2.66%	2.09%	0.61%	0.49%	0.45%	0.88%

[29] 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

[30] 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 8-27 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[31]	Asia	EU	Europe (non-EU)	rest of the world
2024				
Linear Forecast	19.24%	56.09%	16.55%	1.32%
ETS Forecast	19.42%	55.13%	17.32%	1.57%
ETS Confidence bound (±)	2.28%	3.37%	1.81%	0.27%
2025				
Linear Forecast	19.24%	56.09%	16.55%	1.32%
ETS Forecast	19.42%	55.13%	17.32%	1.57%
ETS Confidence bound (±)	2.28%	3.37%	1.81%	0.27%

Table 8-28 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[32]	EU	Non-EU	All
2024			
Linear Forecast	43.9	40.7	42.5
ETS Forecast	44.0	40.7	42.5
ETS Confidence bound (±)	0.6	0.5	0.4
2025			
Linear Forecast	43.9	40.7	42.5
ETS Forecast	44.0	40.7	42.5
ETS Confidence bound (±)	0.6	0.5	0.4

[31] 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
[32] 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 8-29 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[33]	EU ML	non-EU ML	All ML	EU OL	non-EU OL	All OL
2024						
Linear Forecast	45.5	44.6	45.2	37.8	36.2	36.9
ETS Forecast	45.5	44.7	45.2	37.8	36.3	36.9
ETS Confidence bound (±)	0.5	0.7	0.4	0.6	0.6	0.5
2025						
Linear Forecast	45.5	44.6	45.2	37.8	36.2	36.9
ETS Forecast	45.5	44.7	45.2	37.8	36.3	36.9
ETS Confidence bound (±)	0.5	0.7	0.4	0.6	0.6	0.5

[33] 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

Appendix F Crew overview 2017-2023

Table 8-30 Estimated number of masters and officers to crew EU Member State flagged vessels

Crew[34]	2017	2018	2019	2020	2021	2022	2023
Deck	75,650	76,145	76,230	72,042	72,890	71,480	70,117
Engine	61,113	61,266	61,268	58,368	58,484	57,274	56,768
Total	136,763	137,410	137,498	130,410	131,374	128,755	126,885

[34] The values represent 3 crews complement needed for each 2 vessels increased in 10%.

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