Seafarers' Statistics in the EU

Statistical review (2022 data from the STCW-IS as provided by 31 December 2023)

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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

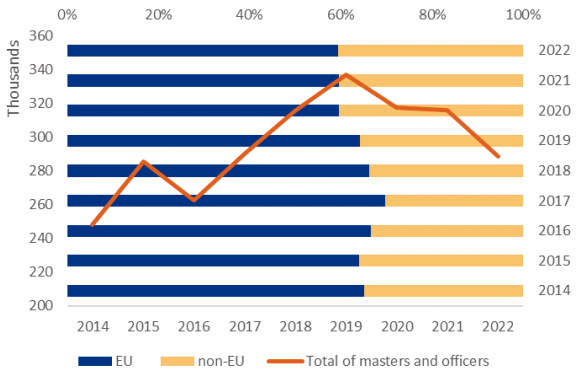
The main objective for gathering information on certificates and endorsements issued to seafarers by the EU Member States is to use it as a primary source of data for statistical analysis in support of the EU Member States, the Commission and the European Parliament in policy making and of other stakeholders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

This review is based on data extracted from certificates and endorsements registered by EU Member States[1], Iceland and Norway until 31 December 2022. This data, which was transferred and recorded in the STCW Information System (STCW-IS) by 31 December 2023, represents a snapshot of the European labour market in terms of the number of seafarers holding valid certificates and endorsements in 2022. It does not cover only masters and officers actively serving on board ships.

The data included in the STCW-IS shows that by end-2022, 171,539 masters and officers held valid certificates of competency (CoC) issued by EU Member States[1] while another 116,990 masters and officers held original CoCs issued by non-EU countries with endorsements issued by EU Member States attesting their recognition (EaR). Overall, the end of 2022 saw almost a third of a million masters and officers as potential manpower to serve on board EU Member State flagged vessels.

The five EU Member States with the highest number of masters and officers holding CoCs issued by them in 2022 were, by order of magnitude, Poland, Norway, Greece, Croatia 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 2014-2022, it can be observed that from 2016 until 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. This trend was interrupted in 2020 due to Brexit and since 2021 due to the COVID-19 pandemic. 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.



In general terms, a certain stability in the European maritime labour market prevails and might suggest a continuing ability of such labour market to attract new entrants who have replaced those leaving the seafaring career. As such, in 2022 and within the EU, there is an indication that over 3,500 officers acquired a CoC as 'OOW 500 GT or more' or 'OEW 750 kW or more' for the first time.

This year, in addition to the brief comparison between the supply of and estimated demand for masters and officers to crew vessels registered under EU Member State flags, the review contains a preliminary analysis of the nationalities of said officers (see section 7). Over the years, the number of masters and officers holding valid CoCs issued by EU Member States has generally indicated that hypothetically, the EU supply of masters and officers could in principle be sufficient to satisfy the demand by EU Member State fleets. In reality, a significant number of masters and officers holding CoCs issued by non-EU countries are engaged on board the EU Member States' fleet. This suggests that a number of those holding CoCs issued by EU Member States are either working on board vessels registered under other flags or are working in the maritime industry ashore. Notwithstanding this, caution should be exercised in deriving any conclusion from the results presented. Ideally any conclusion taken should be confirmed by/compared with any data as may possibly be available from other sources, in relation to the employability of seafarers.

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

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 2022, and received in the STCW-IS by 31 December 2023. 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 nine 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 (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 opportune. One of the last features introduced to this process last year was the possibility to extract the number of masters and officers holding CoCs issued by EU Member States, whose data was introduced in the STCW-IS for the first time in the year in question. This helps with getting a better insight into the profile of those starting a seafaring career in Europe.

As 2022 was another atypical year where, as a result of measures that had to be taken during the COVID-19 pandemic, there may still be an element of distortion in the figures for masters and officers holding valid certificates (see further explanation in section A.2 of Appendix A). When considering numbers in the following sections, it should in fact be borne in mind that these figures may not include an indeterminate number of masters and officers whose certificates, despite not having been registered in the STCW-IS as valid during 2022, might have retained their validity as a result of the pragmatic measures taken by the EU Member States when revalidating certificates during the pandemic period. In this regard, Appendix G presents the number of masters and officers holding CoCs and/or EaRs expiring in 2021 that might have been extended; this should be taken into consideration throughout the report.

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 an analysis of the nationalities of EU and non-EU officers, especially 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 2022

2.1 Total

The total number of masters and officers holding valid CoCs at EU level was 171,539. Of these, 4.26% 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. Finally, 6.52% of these masters and officers were identified as having been reported to the STCW-IS for the first time.

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]:

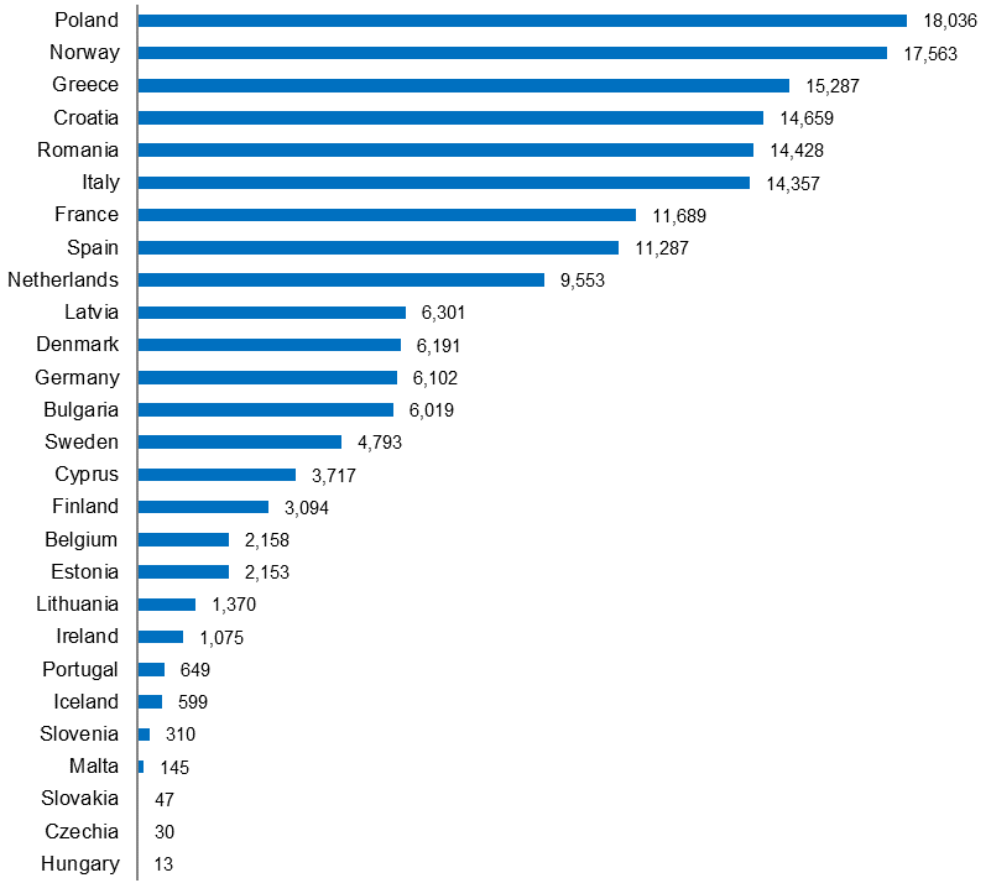


Figure 2-1 Masters and officers holding valid CoCs per EU Member State

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 46% 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.

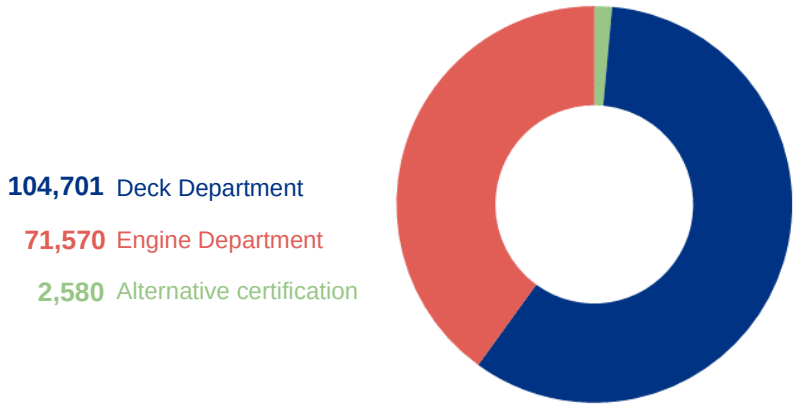


Figure 2-2 Distribution of masters and officers holding valid CoCs by department

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

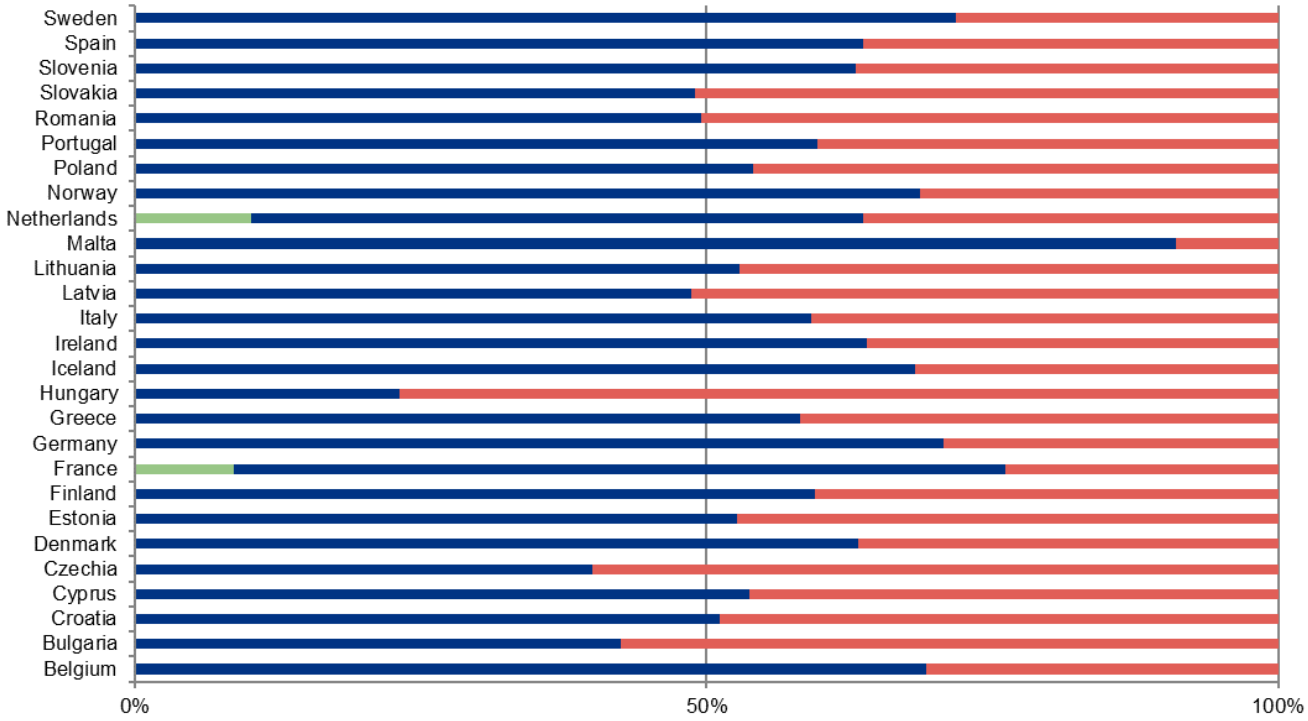


Figure 2-3 Distribution of masters and officers holding valid CoCs by department in each EU Member State

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

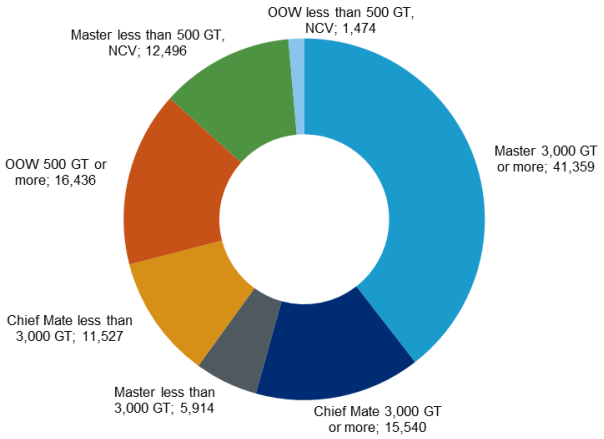


Figure 2-4 Distribution of masters and deck officers holding valid CoCs by deck capacity

The data in Figure 2-4 shows that 54.34% 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 3.37% 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 10.83% when analysing just those entitled to serve at management level on ships of less than 3,000 GT; and
- 10.55% 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).

In addition, among those entitled to serve as 'OOW 500 GT or more', 11.69% of them were identified as having had their data transferred to the STCW-IS for the first time.

2.4.2 Distribution by engine capacity

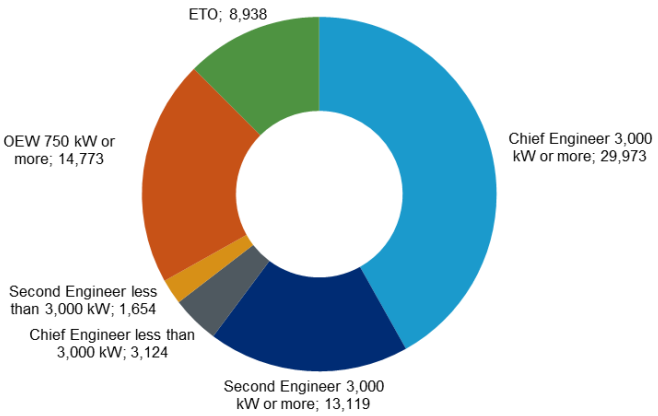


Figure 2-5 Distribution of engineer officers holding valid CoCs by engine capacity

The data in Figure 2-5 shows that 60.21% 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 3.76% of the engineer officers were restricted to service in a limited area of navigation. This percentage increased to 11.11% when analysing just those entitled to serve at management level on ships of less than 3,000 kW;

- 25.40% of the engineer officers were restricted to operate a specified type of propulsion machinery installation; and
- 4.09% 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).

In addition, among those entitled to serve as 'OEW 750 kW or more', 12.96% of them were identified as having had their data transferred to the STCW-IS for the first time.

2.5 Gender distribution

The information on gender was available for 159,888 masters and officers, representing 93.21% 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 2.51% ± 0.08% compared to 97.49% ± 0.08% of male masters and officers.

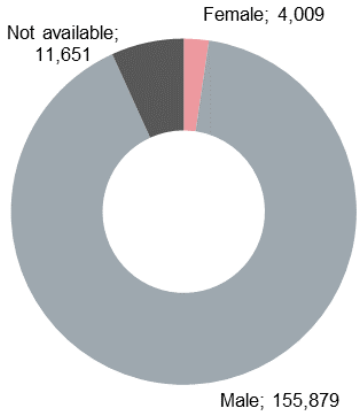


Figure 2-6 Gender distribution of masters and officers holding valid CoCs

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 (86.46%) were entitled to serve in the Deck Department.

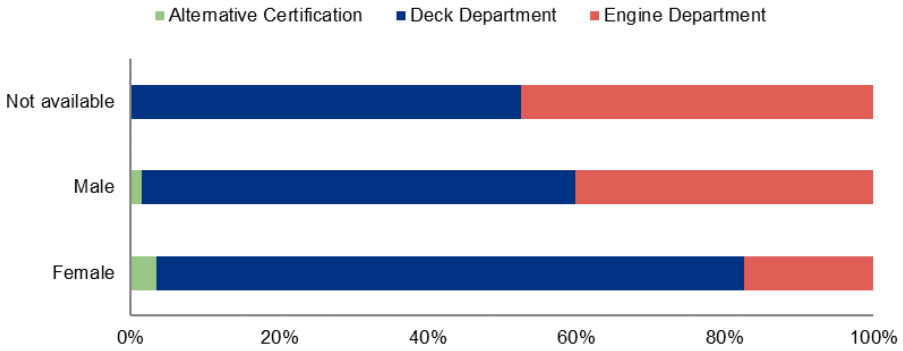


Figure 2-7 Distribution of masters and officers holding valid CoCs by department and by gender

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

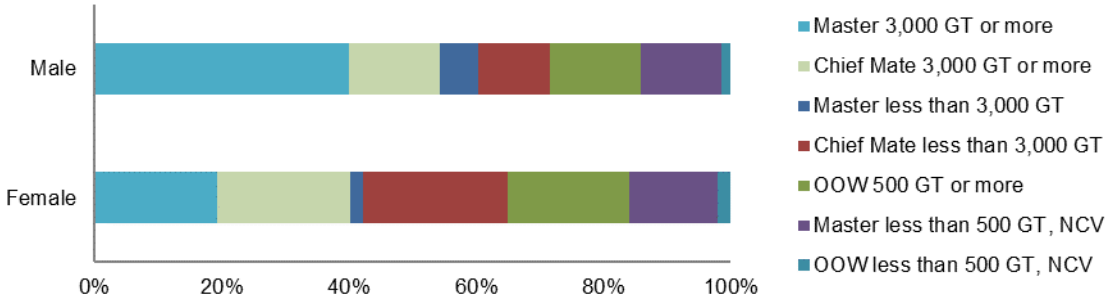


Figure 2-8 Distribution of the deck capacities of masters and deck officers holding valid CoCs by gender

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' (22.79%), 'Chief Mate 3,000 GT or more' (20.92%), and 'Master 3,000 GT or more' (19.33%), capacities representing 63.04% 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' (39.95%),'OOW 500 GT or more' (14.44%) and 'Chief Mate 3,000 GT or more' (14.36%), capacities representing 68.75% of the total number of male masters and officers entitled to serve in the Deck Department.

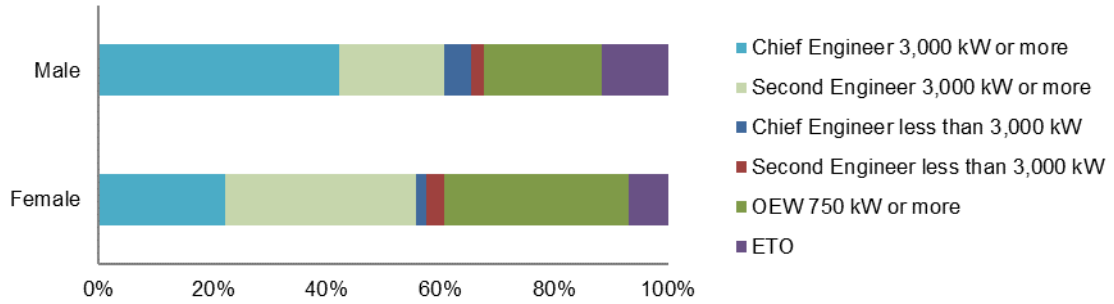


Figure 2-9 Distribution of the engine capacities of engineer officers holding valid CoCs by gender

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' (33.59%), 'OEW 750 kW or more' (32.42%) and 'Chief Engineer 3,000 kW or more' (22.09%). These capacities represented 88.10% 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' (42.28%), 'OEW 750 kw or more' (20.59%) and 'Second Engineer 3,000 kW or more' (18.40%). These capacities represented 81.28% of the total number of male officers entitled to serve in the Engine Department.

When analysing the number of masters and officers which had their data transferred into the STCW-IS for the first time, it can be stated with a level of confidence of 99% that the percentage of female masters and officers was 3.20% ± 0.17%. The main capacity at operational level in which these female officers were entitled to serve was 'OOW 500 GT or more' (32.39%), while the main capacity for in which male officers were entitled to serve was 'OEW 750 kW or more' (16.98%).

2.6 Distribution by nationality

The information on nationality was available for 164,515 masters and officers, representing 95.91% of the total number of officers at EU level holding a CoC.

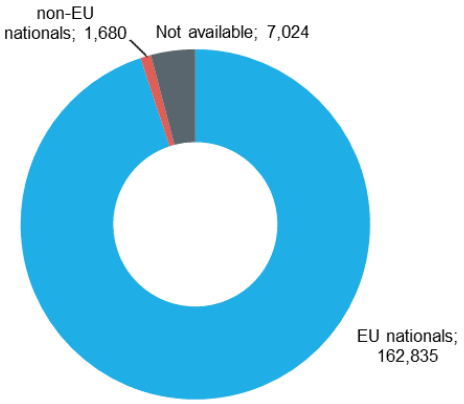


Figure 2-10 Nationality distribution of masters and officers holding valid CoCs

In addition to nationals of the EU Member States, 1,680 nationals of 84 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 16 were located in Europe, 17 in Asia, 30 in Africa, 17 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 65.12% of them were nationals of countries located in Europe.

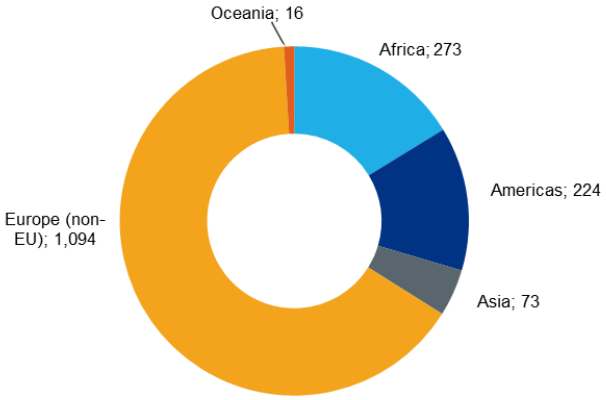


Figure 2-11 Nationality distribution of non-EU nationals holding valid CoCs issued by EU Member States by region of origin

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 5,057 masters and officers, all other age groups had a relatively uniform distribution, each counting between 16,403 and 25,026 masters and officers, which represented 10% to 15% 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.

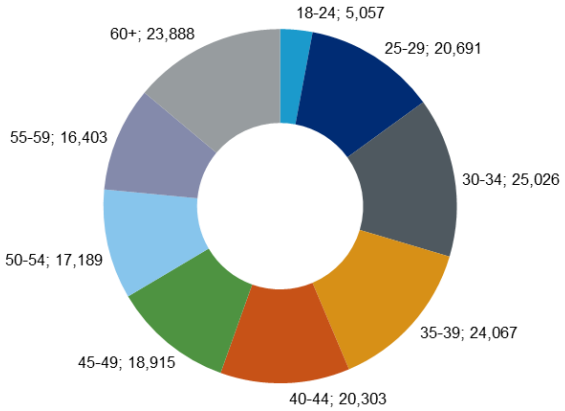


Figure 2-12 Age distribution of masters and officers holding valid CoCs

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

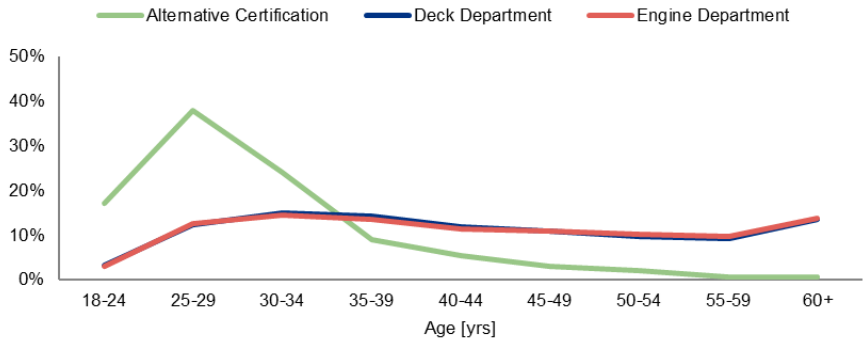


Figure 2-13 Age profile of masters and officers holding valid CoCs per department

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

- 79.30% 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;
- 56.76% of masters and deck officers and 55.13% of the engineer officers were younger than 45 years of age.

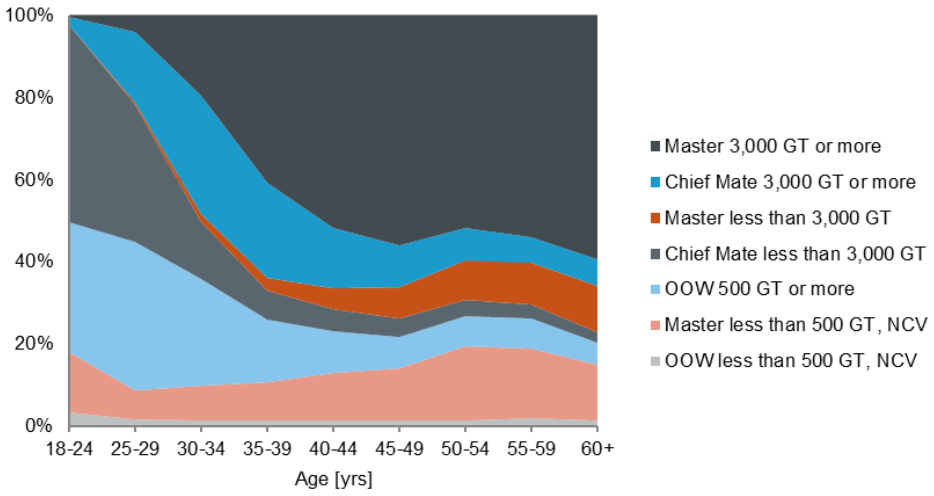


Figure 2-14 Distribution of masters and deck officers holding valid CoCs by age groups

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

- 60.97% of those entitled to serve as ‘Master 3,000 GT or more’ were 45 years old or older;
- 65.91% of those entitled to serve as ‘Chief Mate 3,000 GT or more’ were younger than 40 years of age;
- 59.96% of those entitled to serve as ‘Master less than 3,000 GT’ were 50 years old or older;
- 52.31% of those entitled to serve as ‘Chief Mate less than 3,000 GT’ were younger than 30 years of age;
- 60.02% of those entitled to serve as ‘OOW’ 500 GT or more were younger than 35 years of age;
- 54.83% of those entitled to serve as ‘Master less than 500 GT, NCV’ were 45 years old or older; and
- 58.14% of those entitled to serve as ‘OOW less than 500 GT, NCV’ were younger than 45 years of age.

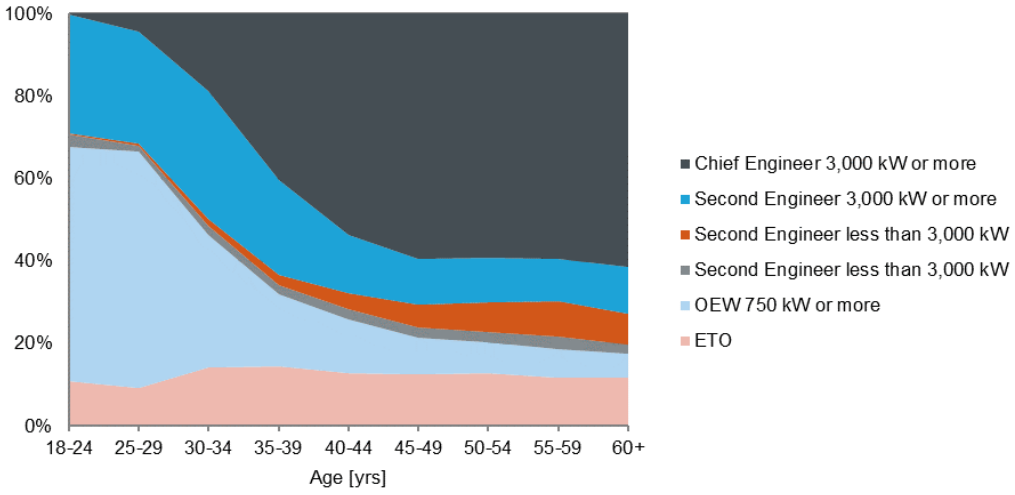


Figure 2-15 Distribution of engineer officers holding valid CoCs by age groups

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

- 64.39% of those entitled to serve as ‘Chief Engineer 3,000 kW or more’ were 45 years old or older;
- 64.72% of those entitled to serve as ‘Second Engineer 3,000 kW or more’ were younger than 40 years of age;
- 59.86% of those entitled to serve as ‘Chief Engineer less than 3,000 kW’ were 50 years old or older;
- 50.42% of those entitled to serve as ‘Second Engineer less than 3,000 kW’ were 45 years old or older;
- 65.98% of those entitled to serve as ‘OEW 750 kW or more’ were younger than 35 years of age; and
- 56.16% of those entitled to serve as ‘ETO’ were younger than 45 years of age.

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

- the average age for female masters and officers was 35 years, while that for male masters and officers was 43.6 years;
- 73.09% 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 43.54%;
- the average age of female masters and deck officers (35.2 years) was higher than the average age of the female engineer officers (33.2 years).

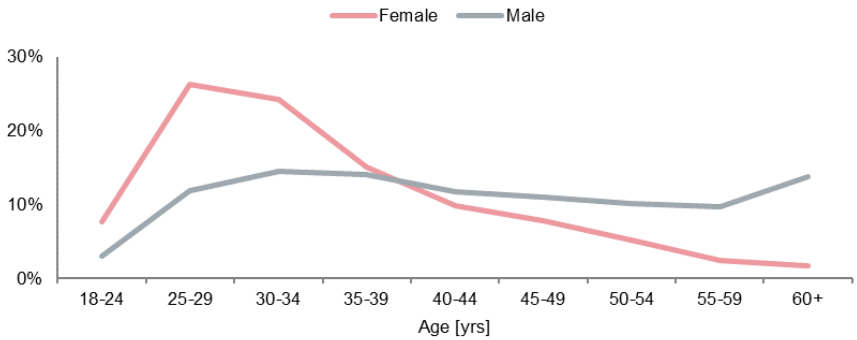


Figure 2-16 Age profile of masters and officers holding valid CoCs per gender

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

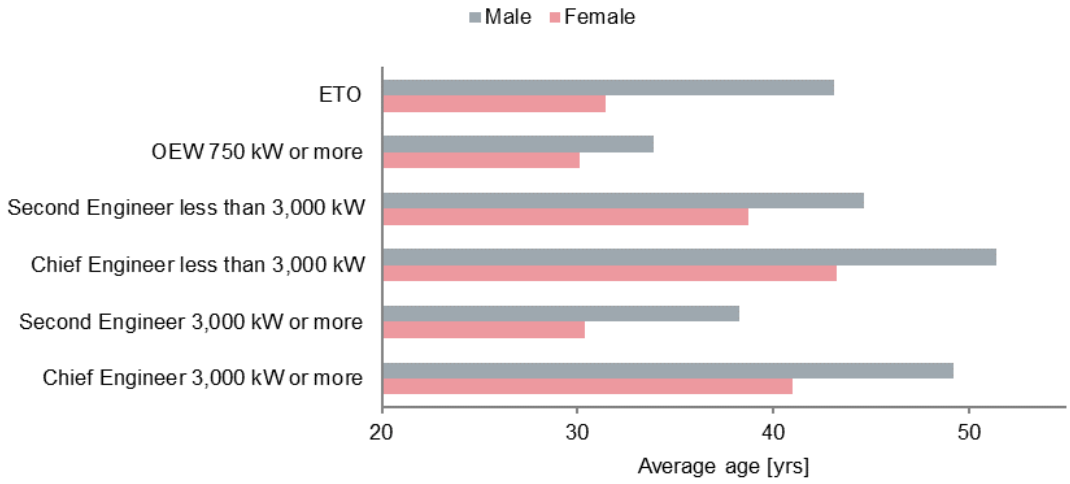


Figure 2-18 Average age of engineer officers holding valid CoCs per gender by engine capacity

Reviewing the age profile of the masters and officers which had their data transferred to the STCW-IS for the first time, the following conclusions could be stated:

- Their average age was 37.3 years. When analysing them per gender, while the average age of male officers was 37.8 years, that of the female officers was 31.4 years;
- Considering those entitled to serve as ‘OOW 500 GT or more’ and ‘OEW 750 kW or more’, their average age was around 29.2 years. However, when dividing them by gender, the average age of female officers was 26 years whereas for male officers that remained invariable on the 29.3 years.

3. Masters and officers who in 2022 held valid endorsements attesting recognition

3.1 Total

The total number of masters and officers holding valid EaRs at EU level was 160,872, with 0.07% of them entitled to serve in both the Deck and Engine Departments. In addition, 8.45% 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 43,950 masters and officers held original CoCs issued by EU Member States which were recognised through endorsement by other EU Member State (25.62% of the total number of masters and officers holding valid CoCs as per section 2.1). In addition, 116,990 held original CoCs issued by non-EU countries and 0.04% held original CoCs issued by both EU Member States and non-EU countries.

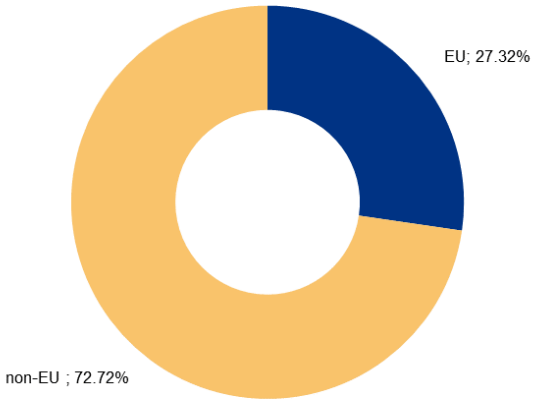


Figure 3-1 Distribution of masters and officers holding valid EaRs by countries issuing the original CoC

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.

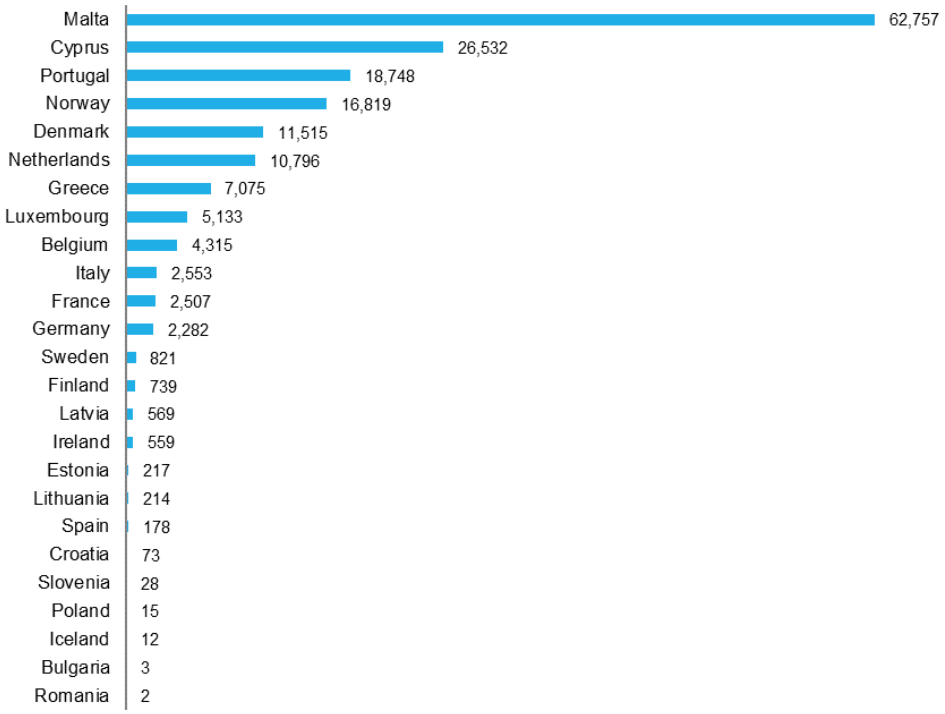


Figure 3-2 Masters and officers holding valid EaRs per EU Member State

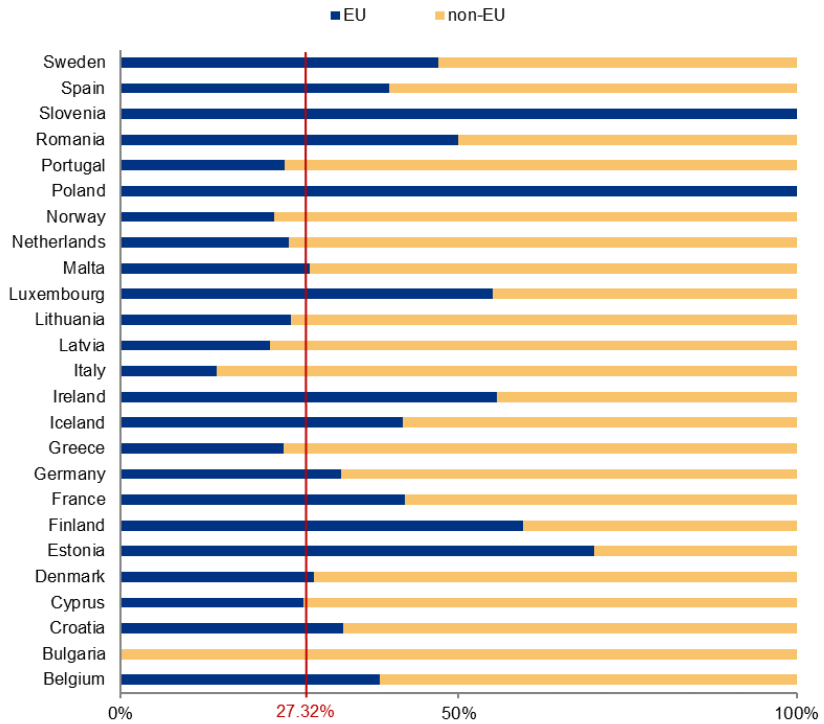


Figure 3-3 Distribution of masters and officers holding valid EaRs recognising original CoCs issued by EU and non-EU countries

3.3 Distribution by countries issuing the original CoCs

The name of the country that issued the original CoC was respectively available for 160,871 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.

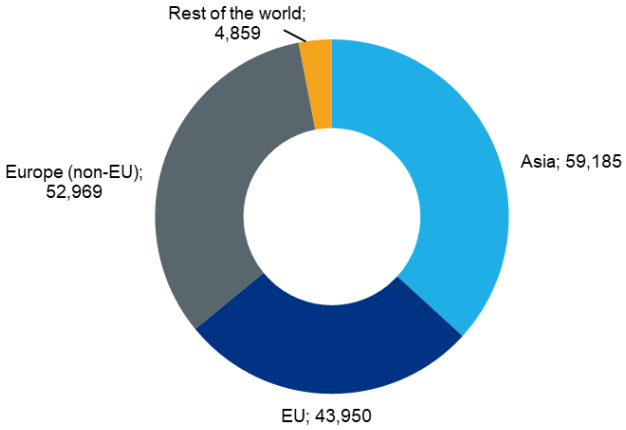


Figure 3-4 Distribution of masters and officers holding valid EaRs by region of the country issuing the original CoC

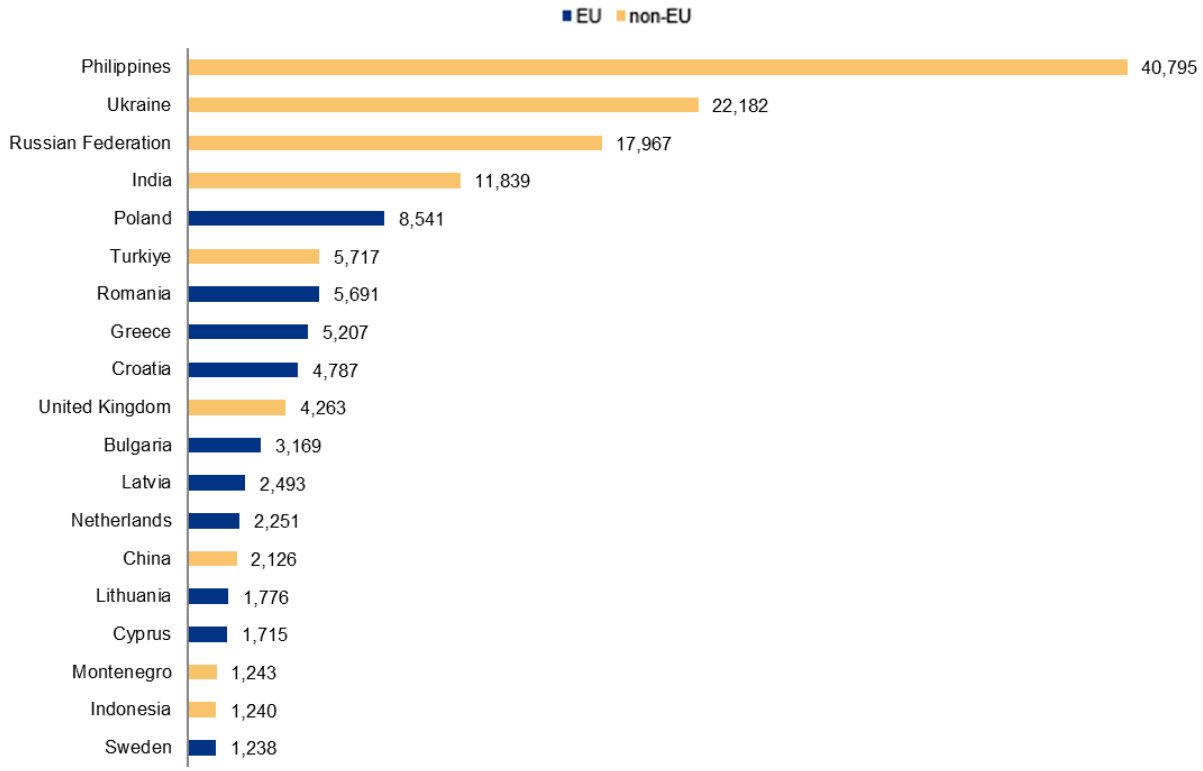


Figure 3-5 Countries issuing the original CoCs registering more than 0.75% of masters and officers holding valid EaRs

The masters and officers registered with valid EaRs in 2022 held original CoCs issued by 86 countries. Figure 3-5 identifies the 19 countries – ten EU Member States and nine non-EU countries – which provided for 89.66% of the total number of masters and officers holding valid EaRs at EU level. Table and Table C-6 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.

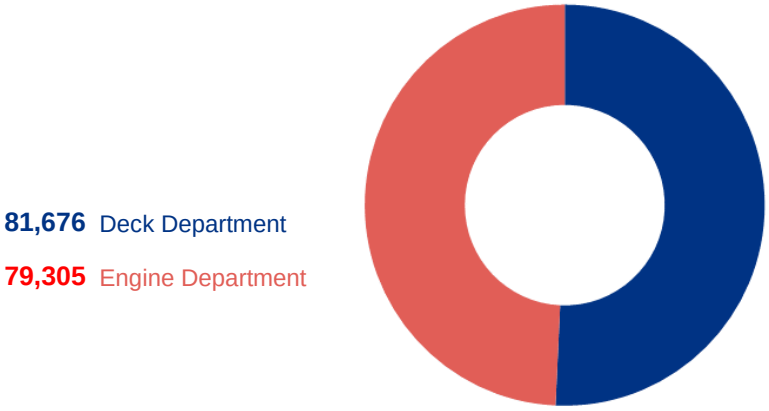


Figure 3-6 Distribution of masters and officers holding valid EaRs by department

The figure illustrates that the number of masters and officers entitled to serve in the Deck Department was only 2.99% higher than the number of officers entitled to serve in the Engine Department.

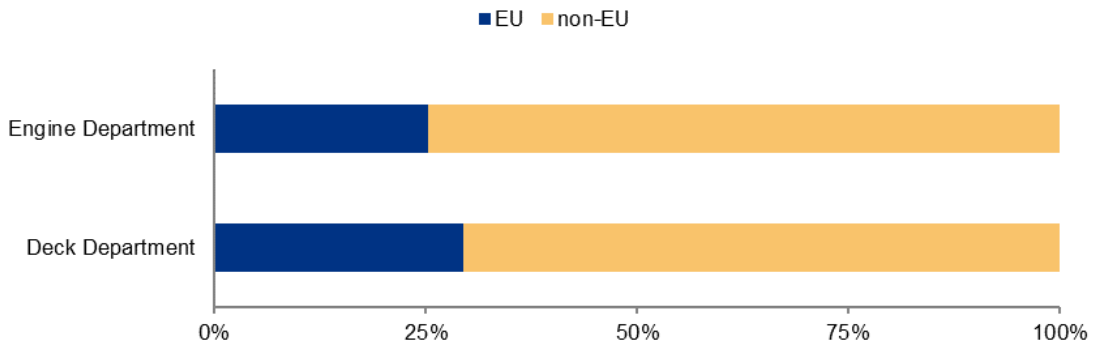


Figure 3-7 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by department

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 (29% to 71%) and the Engine (25% to 75%) 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 2022, 97.97% were entitled to serve on ships of 3,000 GT or more. In addition, the data also indicated that 59.73% 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.

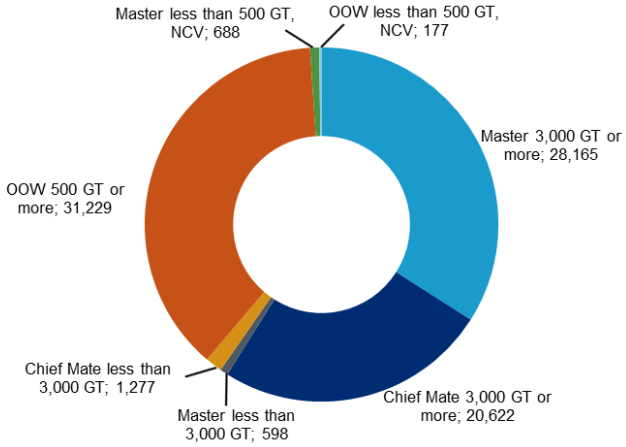


Figure 3-8 Distribution of masters and deck officers holding valid EaRs by deck capacity

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 29% to 71%. 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).

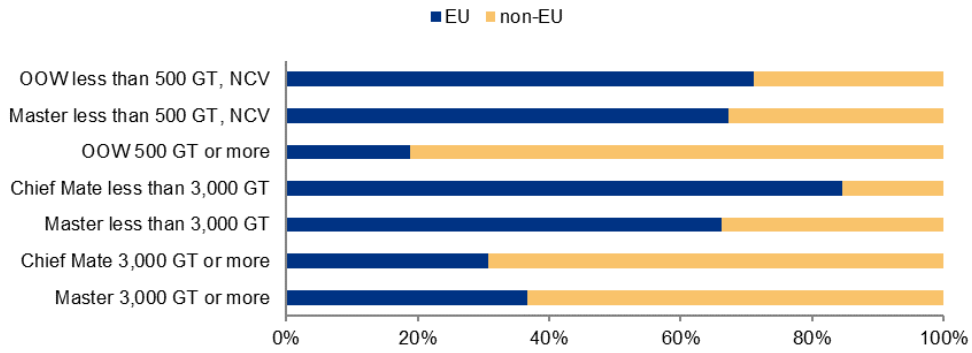


Figure 3-9 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by deck capacity

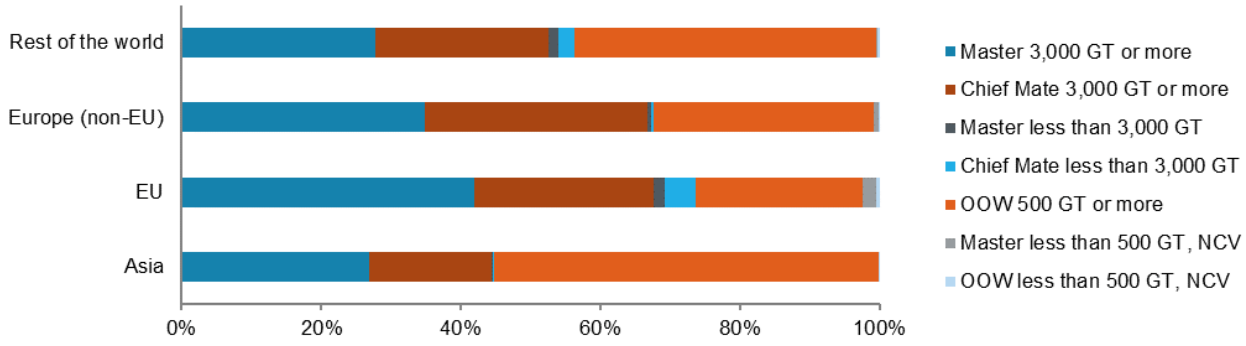


Figure 3-10 Distribution of the deck capacities of masters and deck officers holding valid EaRs by region of the country issuing the original CoC

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, 98.49% 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 53.30% 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 0.3% of their EaRs being limited in terms of propulsion power or area of navigation and 21.67% being limited in terms of type of propulsion machinery.

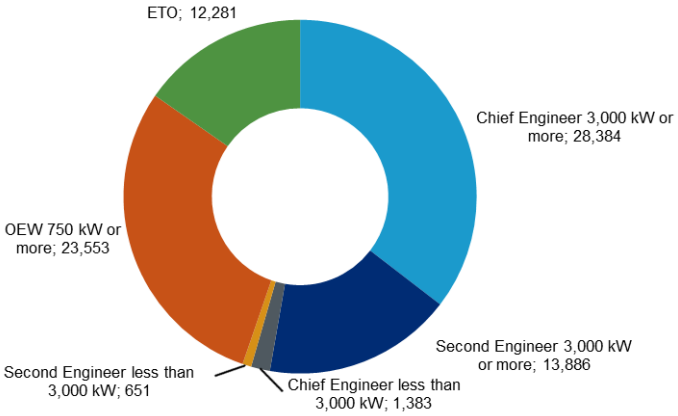


Figure 3-11 Distribution of engineer officers holding valid EaRs by engine capacity

The ratio between the engineer officers holding CoCs issued by EU Member States and those holding CoCs issued by non-EU countries was 25% to 75%. Nevertheless, this pattern was not clearly followed by those entitled to serve on board ships limited in propulsion power (see Figure 3-12).

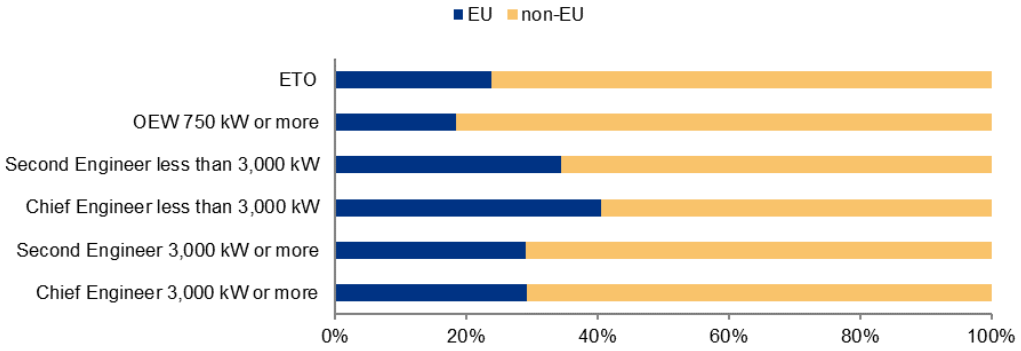


Figure 3-12 Distribution of engineer officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by engine capacity

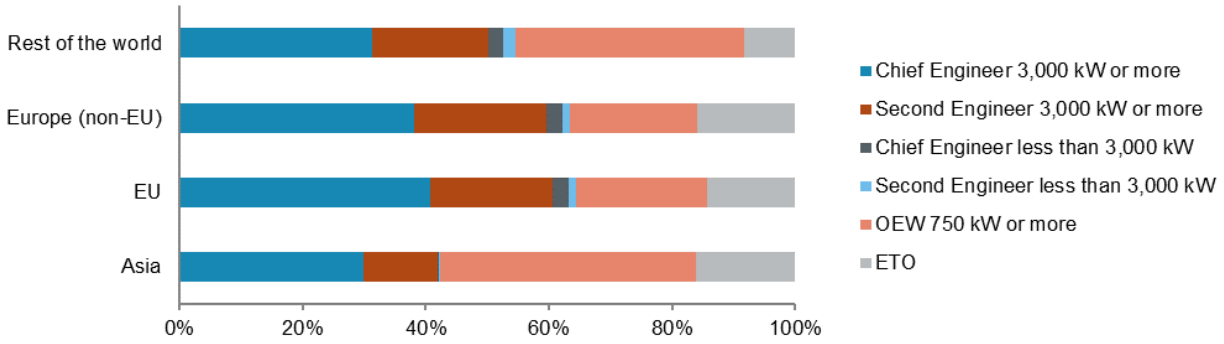


Figure 3-13 Distribution of the engine capacities of engineer officers holding valid EaRs by region of the country issuing the original CoC

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 160,858 masters and officers that represented 99.99% of the total number of those holding valid EaRs in 2022 at EU level.

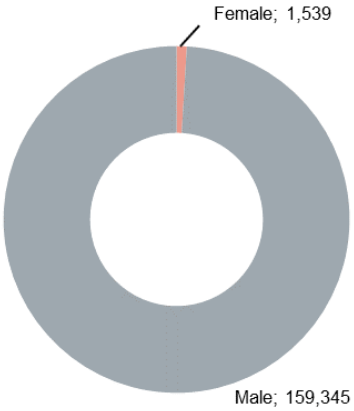


Figure 3-14 Gender distribution of masters and officers holding valid EaRs

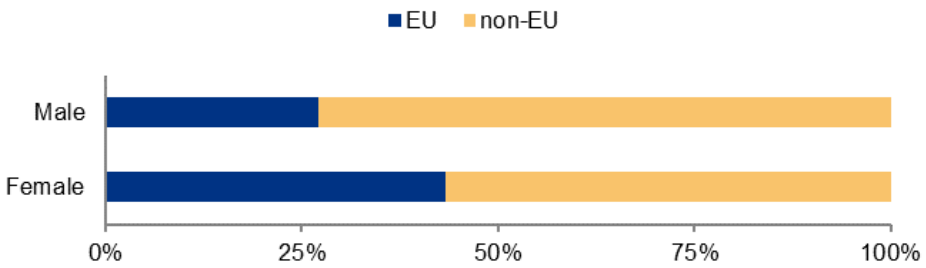


Figure 3-15 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by gender

As regards the total number of female masters and officers holding valid EaRs, 43.27% of them held original CoCs issued by EU Member States, followed by 22.35% and 21.77% 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 40.9 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 42.6 years, while that of those holding original CoCs issued by non-EU countries was 40.3 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 (27% to 73%), the distribution by age groups shows a deviation, especially for masters and officers younger than 25 years of age and for those older than 54, as presented in Figure 3-17.

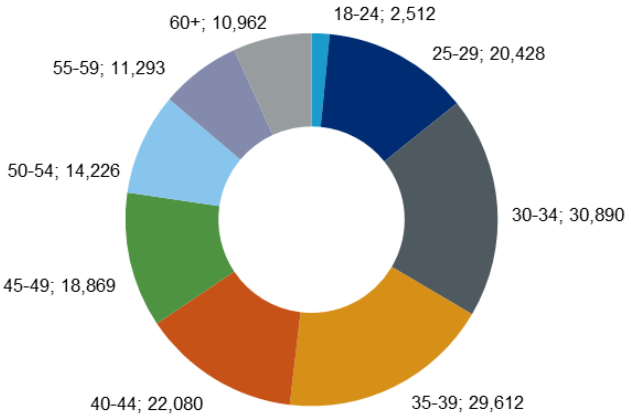


Figure 3-16 Age distribution of masters and officers holding valid EaRs

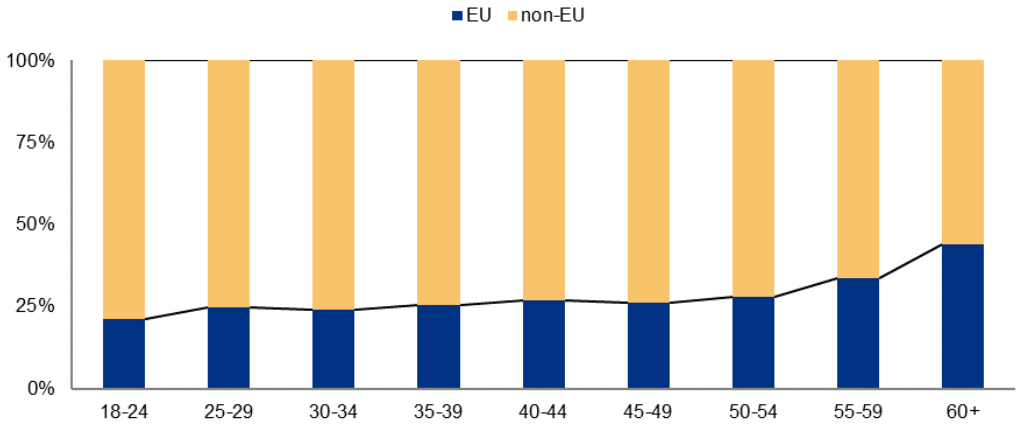


Figure 3-17 Distribution of masters and officers holding valid EaRs by EU and non-EU countries issuing the original CoC and by age group

The data presented in Table C-7 of Appendix C and in Figure 3-18 indicates that:

- in both departments there are few officers younger than 25 years of age;
- 55.19% 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.

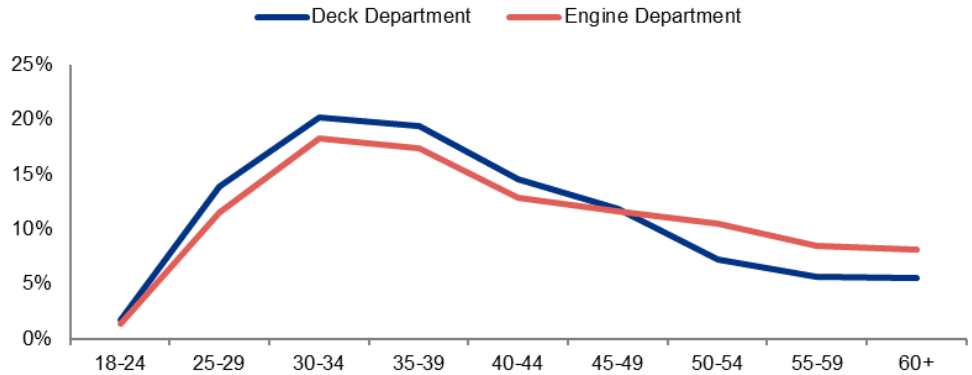


Figure 3-18 Age profile of masters and officers holding valid EaRs per department

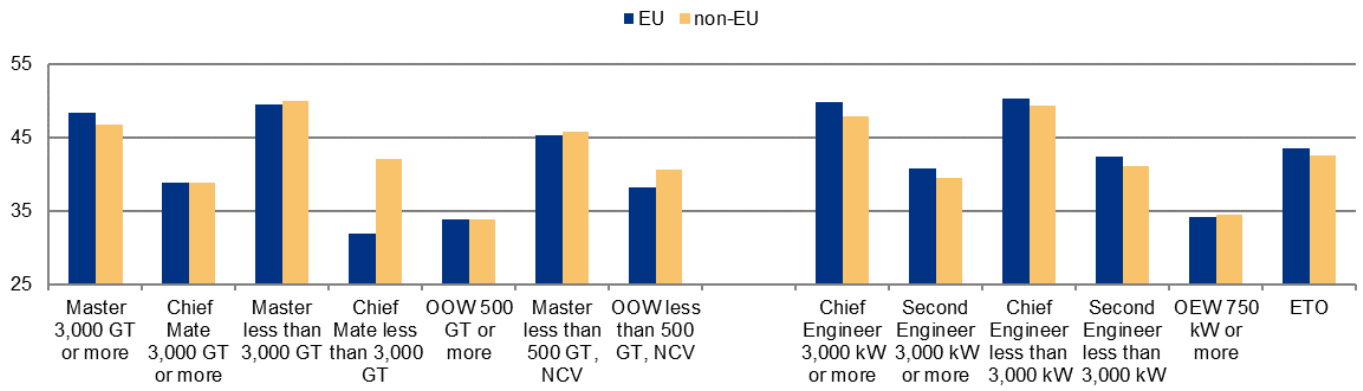


Figure 3-19 Average age of officers holding valid EaRs per EU and non-EU countries issuing the original CoC by capacity

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 147,837 masters and officers, representing 91.90% of the total number of officers at EU level holding EaRs which were nationals of 130 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 2022

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 288,472 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.

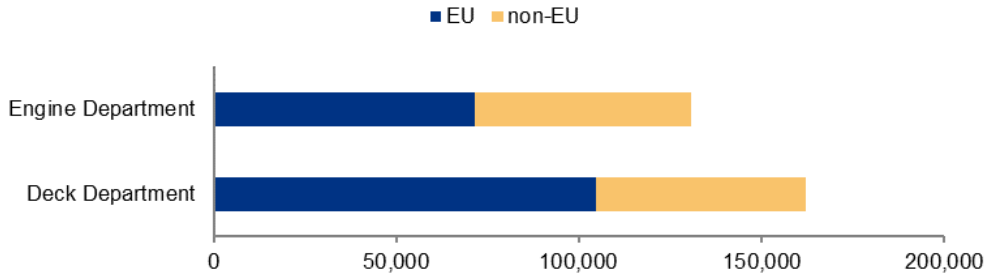


Figure 4-3 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by department

The number of masters and officers available to serve in the Deck Department (162,367) was 24% higher than the number of officers available to serve in the Engine Department (130,870). 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 46% 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 (2.8%) 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 (81% and 21% 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

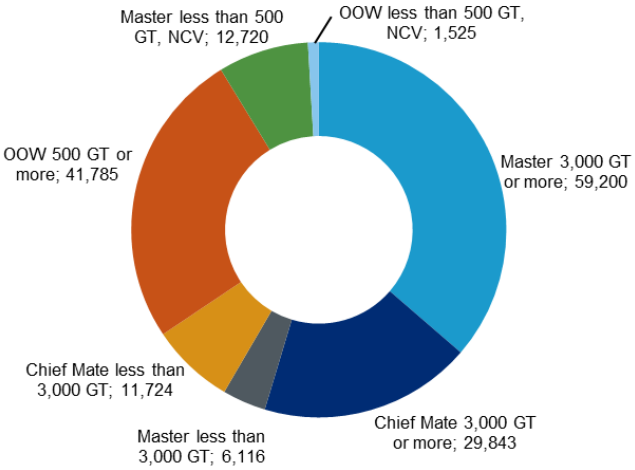


Figure 4-4 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by deck capacity

The information in Figure 4-4 shows that 54.84% (89,043) 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 64% to 36%, 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 39% to 61%. This is presented in Figure 4-5.

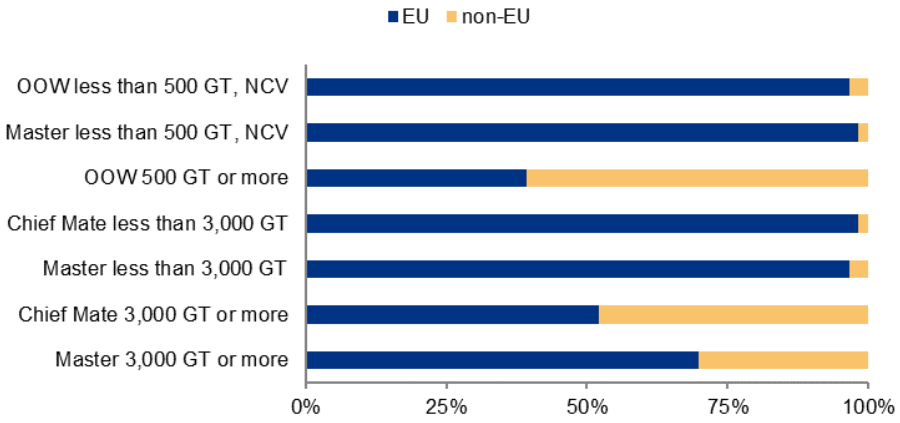


Figure 4-5 Distribution of masters and deck officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by deck capacity

4.3.2 Distribution by engine capacity

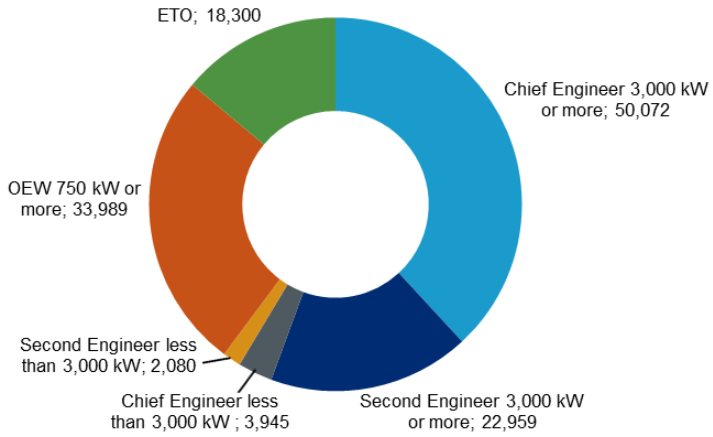


Figure 4-6 Distribution of engineer officers available to serve on board EU Member State flagged vessels by engine capacity

The information in Figure 4-6 shows that 55.80% (73,031) 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 55% to 45%, it changed significantly for officers entitled to serve on board ships limited in propulsion power where more than 79% 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 43% to 57%. This is illustrated in Figure 4-7.

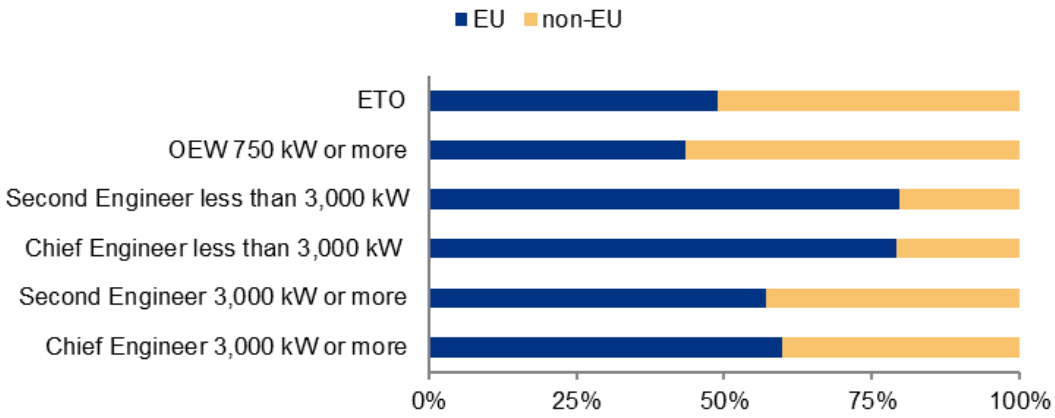


Figure 4-7 Distribution of engineer officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by engine capacity

4.4 Gender distribution

The information on gender was made available for 276,819 masters and officers representing 95.96% of the total number of those available to serve on board EU Member State flagged vessels.

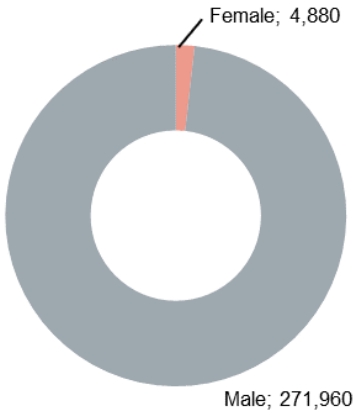


Figure 4-8 Gender distribution of masters and officers available to serve on board EU Member State flagged vessels

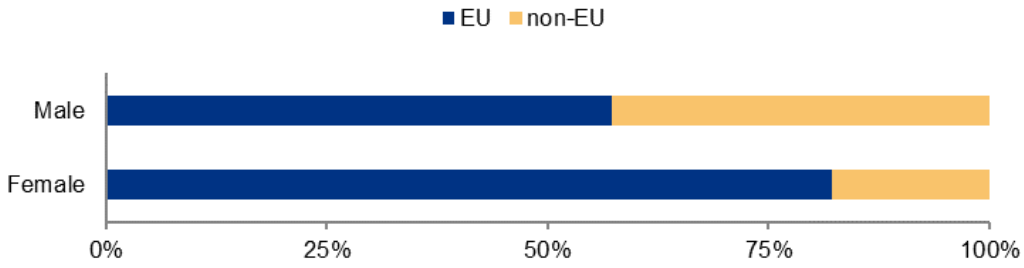


Figure 4-9 Distribution of masters and officers available to serve on board EU Member State flagged vessels by EU and non-EU countries issuing the original CoC and by gender

Masters and officers whose gender was known were predominantly males. Female masters and officers represented 1.76% of the total number of officers available, with 82.15% 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 2.51% of their total, while for CoCs issued by non-EU countries they represented 0.75% of their total.

4.5 Distribution by nationality

The information on nationality was made available for 271,175 masters and officers, representing 94.00% 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 144 countries, with the distribution by region[8] as presented in Figure 4-10.

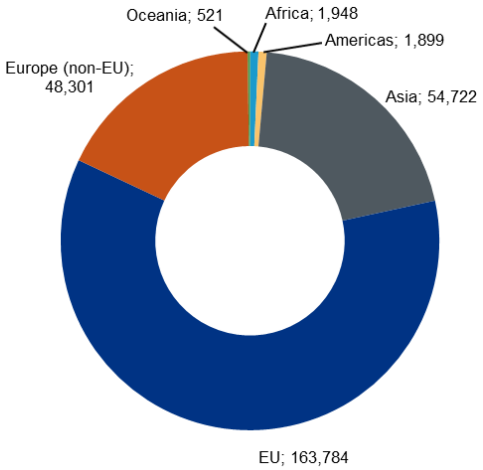


Figure 4-10 Nationality distribution of masters and officers available to serve on board EU Member State flagged vessels by geographical region according to nationality

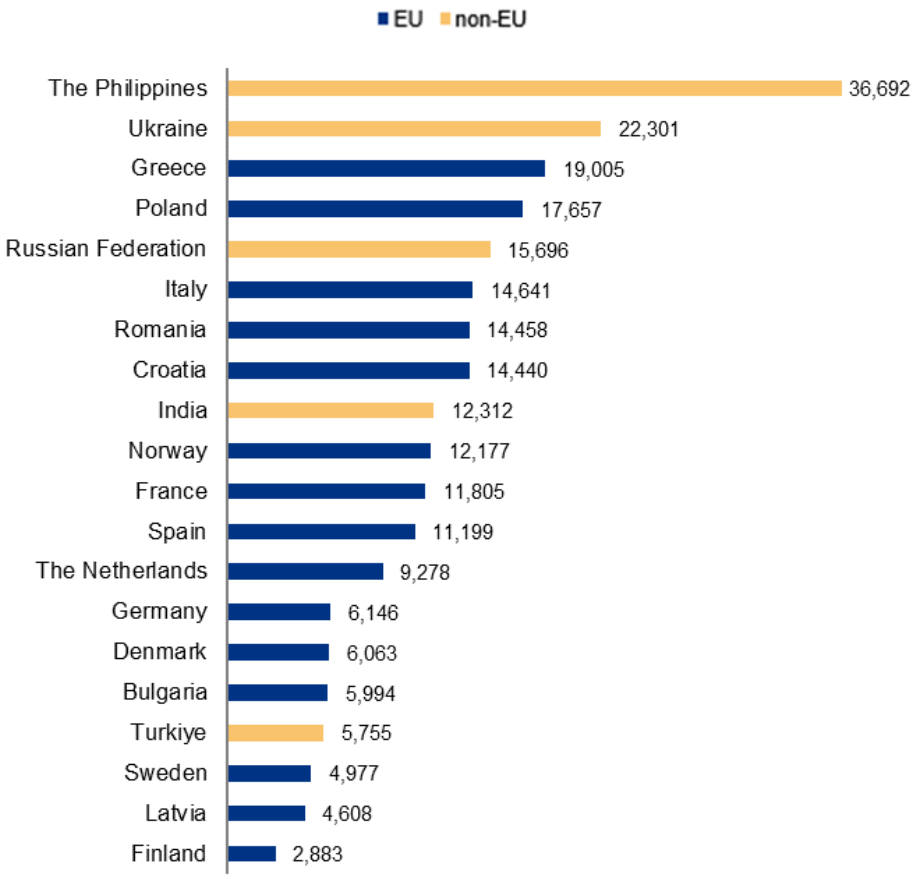


Figure 4-11 Countries whose nationals represented more than 0.75% of the total number of masters and officers available to serve on board EU Member State flagged vessels

[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 86.00% 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 40.3 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.

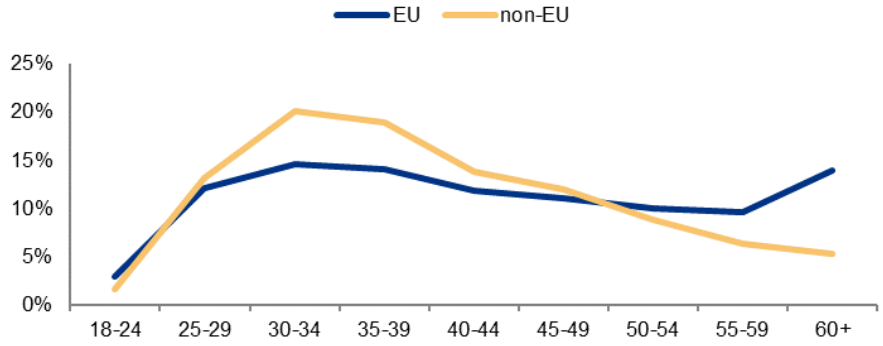


Figure 4-12 Age profile of masters and officers available to serve on board EU Member State flagged vessels per EU and non-EU countries issuing the original CoC

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

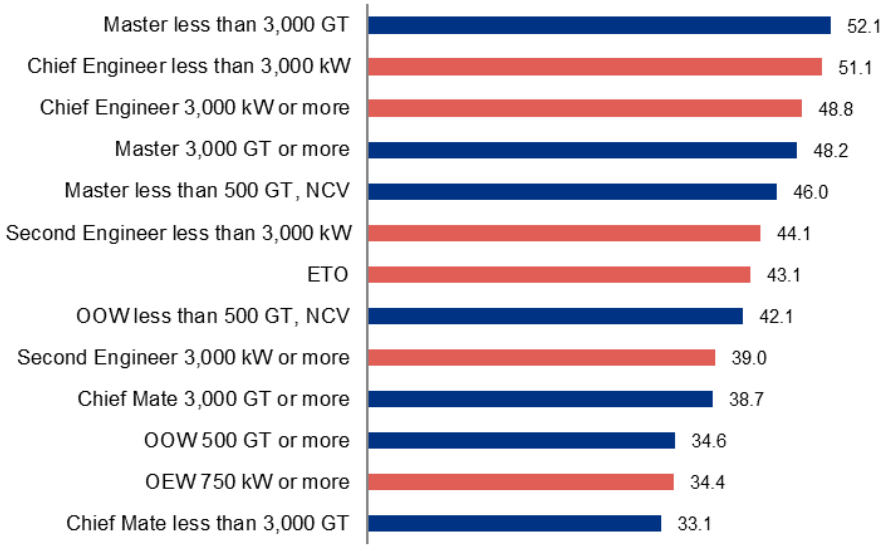


Figure 4-13 Average age of masters and officers available to serve on board EU Member State flagged vessels per deck and engine capacities

A variation ranging between 0.3 and 2.1 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 the exception of the Chief Mates, OEWs and Second Engineers, the highest average age was found in holders of CoCs issued by EU Member States.

5. Ratings holding valid certificates of proficiency in 2022

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 2022 in the 16 EU Member States reporting such data was 77,322 with 5.42% 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.

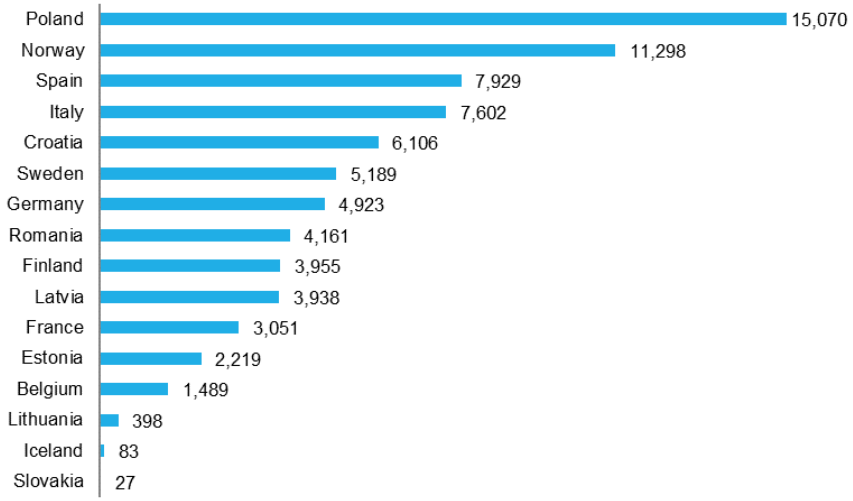


Figure 5-1 Ratings holding valid CoPs per EU Member State

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 93.53% higher than the number of ratings entitled to serve in the Engine Department (Chapter III of the STCW Convention). It also shows that 5.20% of them were qualified under Chapter VII, Alternative Certification, of the STCW Convention.

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

[9] The 16 EU Member States that voluntarily provided data on ratings are listed in figure 2-52.

5.4 Distribution by capacity

The distribution of ratings by capacity is illustrated in Table D-1Table 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 per department.

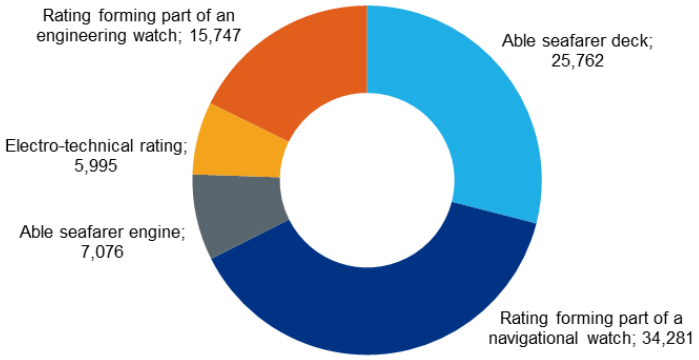


Figure 5-3 Distribution of ratings holding valid CoPs by capacity

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 67.10% for deck and 59.65% for engine.

5.5 Gender distribution

The information on gender was made available for 63,285 ratings representing 81.85% 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 4.16% ± 0.22%.

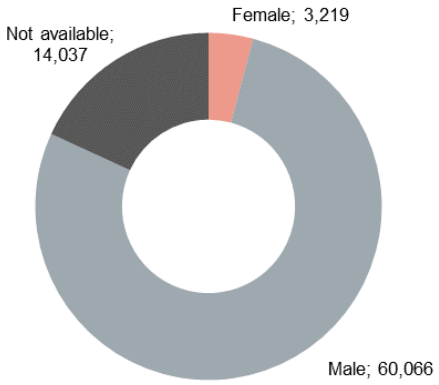


Figure 5-4 Gender distribution of ratings holding valid CoPs

5.6 Distribution by nationality

The review of the data showed that, except for 11.42% where nationality was not available, ratings holding valid CoPs were nationals from 106 countries (28 EU Member States and 78 non-EU countries). The review also showed that 86.03% 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 25-34 and 60+, all other groups registered similar distributions between 8.41% and 10.25%. The average age for female ratings was 32.5 years, while that for male ratings was 41.8 years. 79.19% of all female ratings were younger than 40 years of age while the percentage of male ratings in the same age group was 48.88%.

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

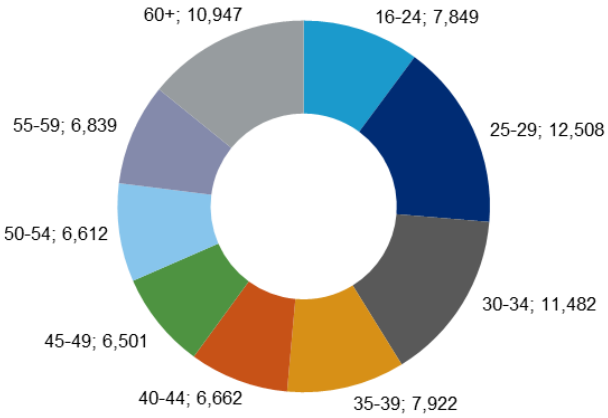


Figure 5-5 Age distribution of ratings holding valid CoPs

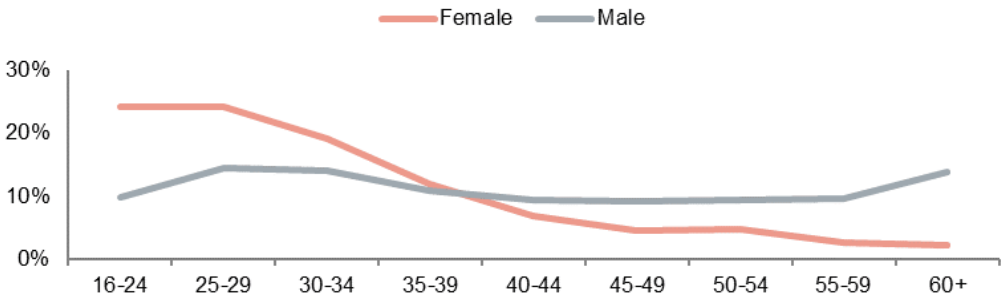


Figure 5-6 Age profile of ratings holding valid CoPs per gender

6. Masters and officers - summary overview 2014-2022

This section presents a compilation of the data received during the last nine 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 and forecasts are made using linear regression and exponential triple smoothing (ETS) algorithm methods[10]. Related values calculated can be found in Appendix D.

Nevertheless, as already mentioned, the pragmatic approach adopted by Administrations relating to the certification of seafarers to circumvent the COVID-19 outbreak might have distorted the figures on certified masters and officers. To this effect, the movements since 2021 need to be interpreted in this light, while related forecasts and underlying assumptions would need to be tested and confirmed in the coming years in order to resume consistency in trends.

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

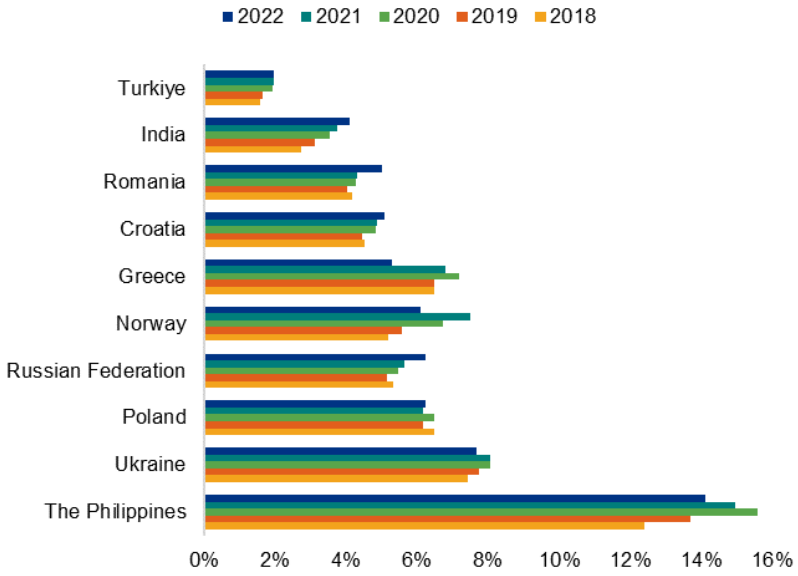


Figure 6-1 Top 5 EU and top 5 non-EU countries issuing the original CoCs

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 2-58 above) have retained the top spots throughout the last nine years. The total percentage of these masters and officers among those available to serve on board EU Member State flagged vessels has varied, over the years, between 26% (in 2017) and 34% (since 2020).

For EU Member States, the situation has been more fluid, with the top five spots being occupied by the same nine Member States since this data has been collected. Figure 6-1 features the five Member States that occupied the top ranking in 2022. It is to be noted that Poland has always been in this top 5 spot list and that, upon introduction of its data, Norway made the ranking too.

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

[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).

what was previously estimated – a slight decrease regarding Poland and an increase for Greece and Norway continues to be suggested.

As regards the 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 in this respect. However, and contrary to what was referred in the two last reports, the current conflict in Ukraine did not lead to deviations from these estimations in 2022. Factors like difficulties with seafarer repatriation (and disembarkation) and with certificate renewal and related training could still possibly affect seafarer availability and recruitment by shipowners; this will continue to be kept in mind and analysed in future reports.

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.

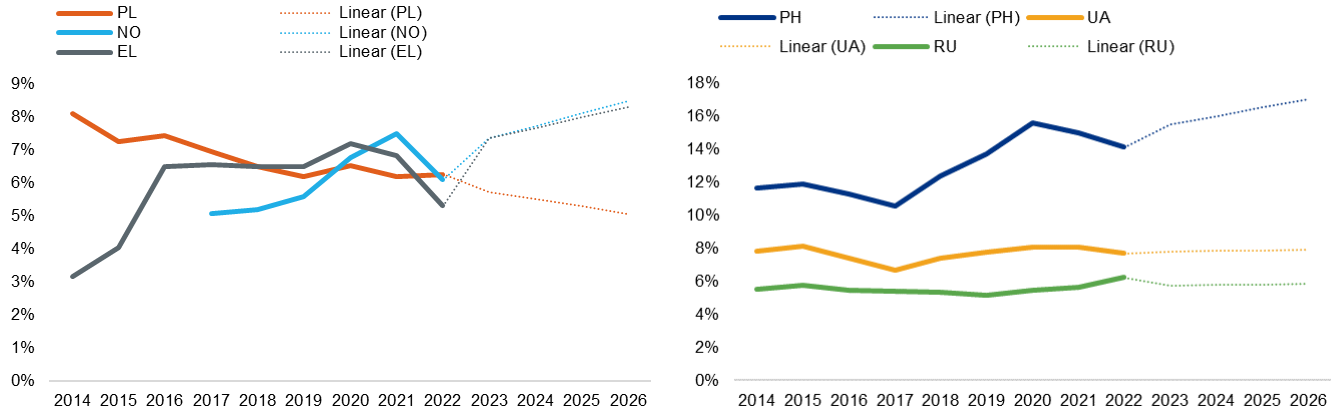


Figure 6-2 Overview with forecast for the next years of masters and officers holding CoCs issued by the top 3 EU and top 3 non-EU countries

6.2 Department - level of responsibility

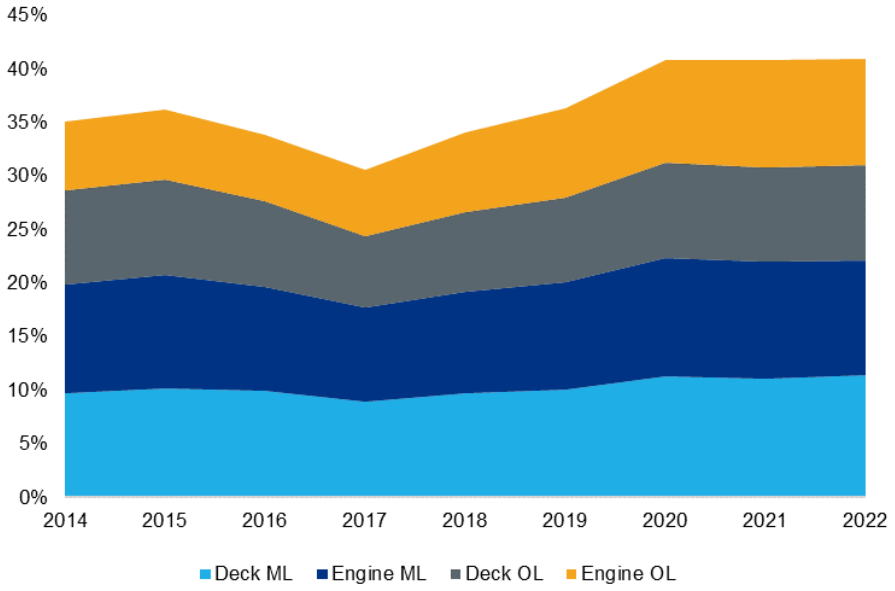


Figure 6-3 Officers at management and operational level holding CoCs issued by non-EU countries

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 has been 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 was estimated in the last four years, a slight increase is still expected for officers entitled to serve in the engine department at operational level.

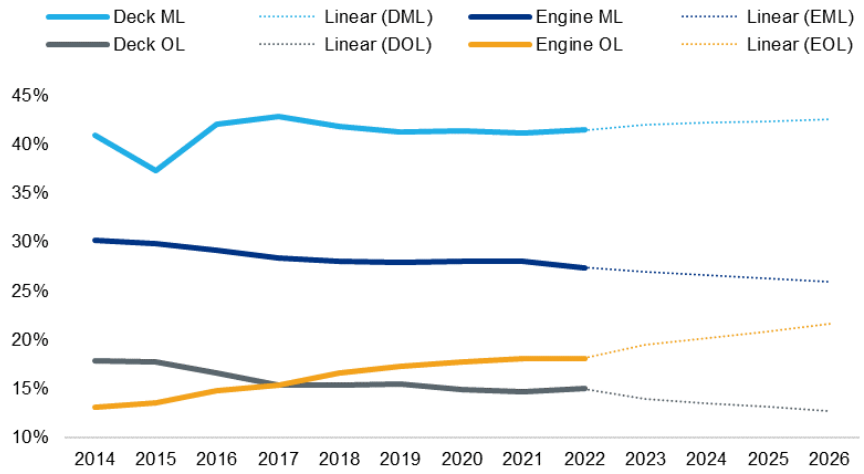


Figure 6-4 Overview with forecast for the next years of officers at management and operational level available to serve on board EU Member State flagged vessels

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.

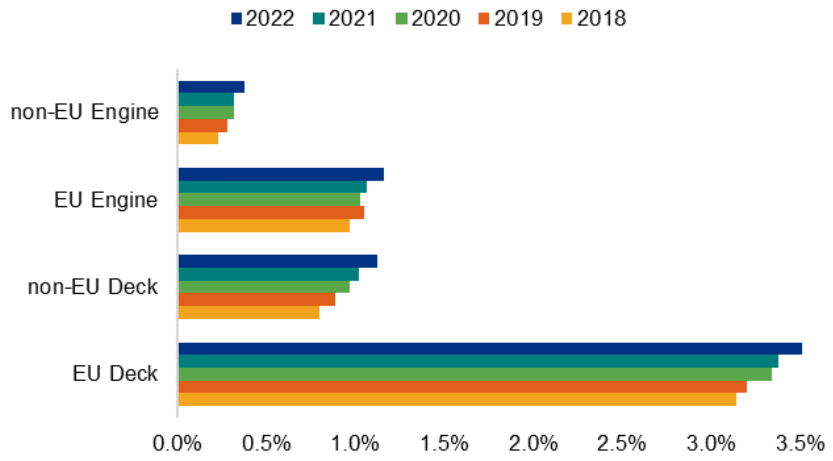


Figure 6-5 Female officers per department holding CoCs issued by EU and non-EU countries

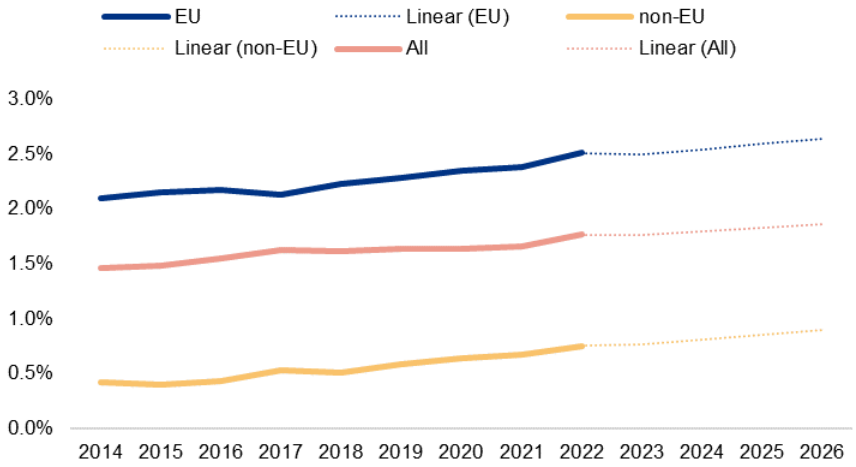


Figure 6-6 Overview with forecast for the next years of female officers available to serve on board EU Member State flagged vessels

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, 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

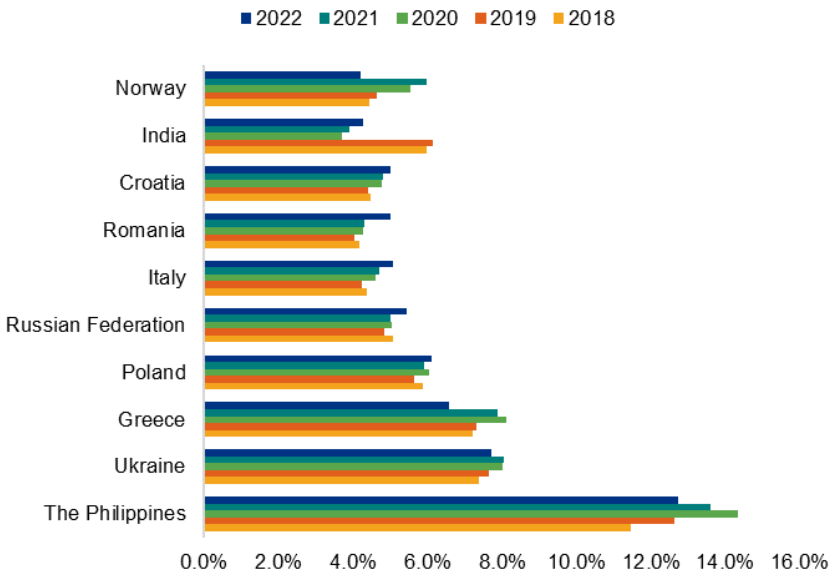


Figure 6-7 Top 10 nationalities of masters and officers available to serve on board EU member State flagged vessels

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 five years.

Figure 6-8 below continues to indicate a certain stability in the coming years related to the geographical region according to the nationality of the masters and officers. 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.

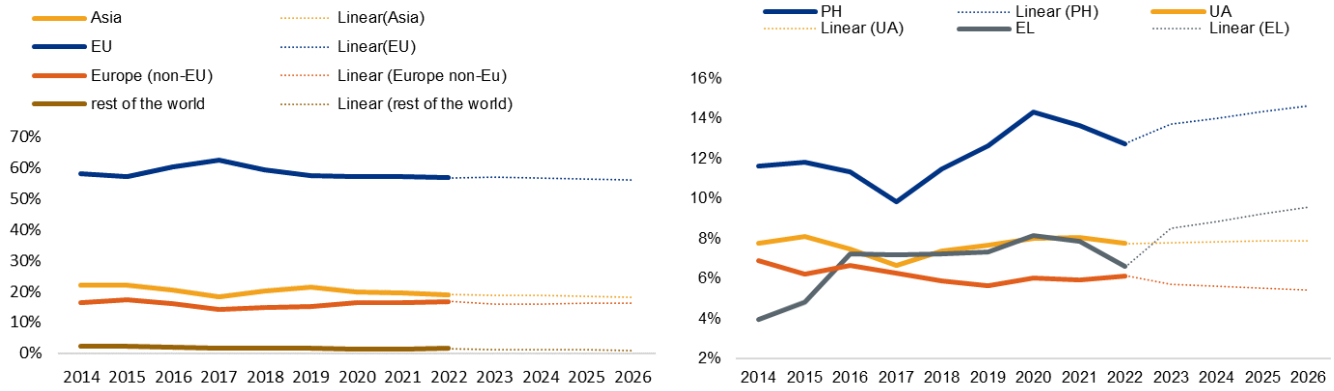


Figure 6-8 Overview with forecast for the next years of the nationalities of masters and officers available to serve on board EU Member State flagged vessels

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 prospects to continue, without any indication of an increase in the coming years.

Figure 6-10 suggests that, as already foreseen in the last four years, 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 the seafaring career.

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

The reasons for the continuous indication of increase in the average age of the officers holding CoCs at operational level, already mentioned in the two previous years' reports, might be of interest to further explore. Whether 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, whether they follow a longer path to a management level CoC, could be an area for further research and analysis in the future.

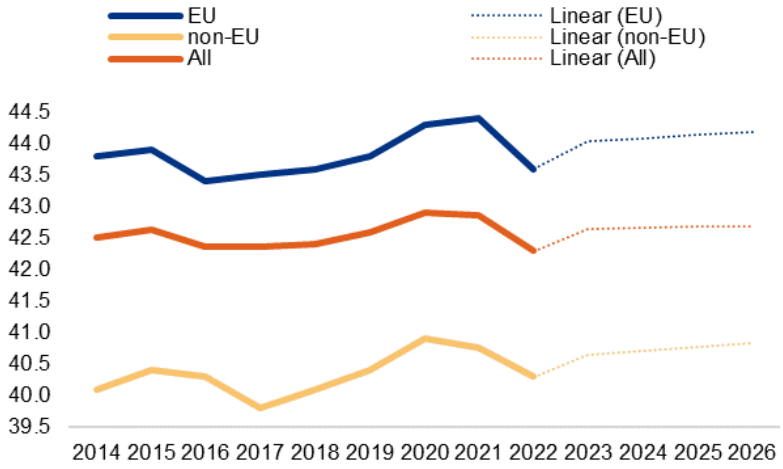


Figure 6-9 Overview with forecast for the next years concerning the average age of masters and officers available to serve on board EU Member State flagged vessels

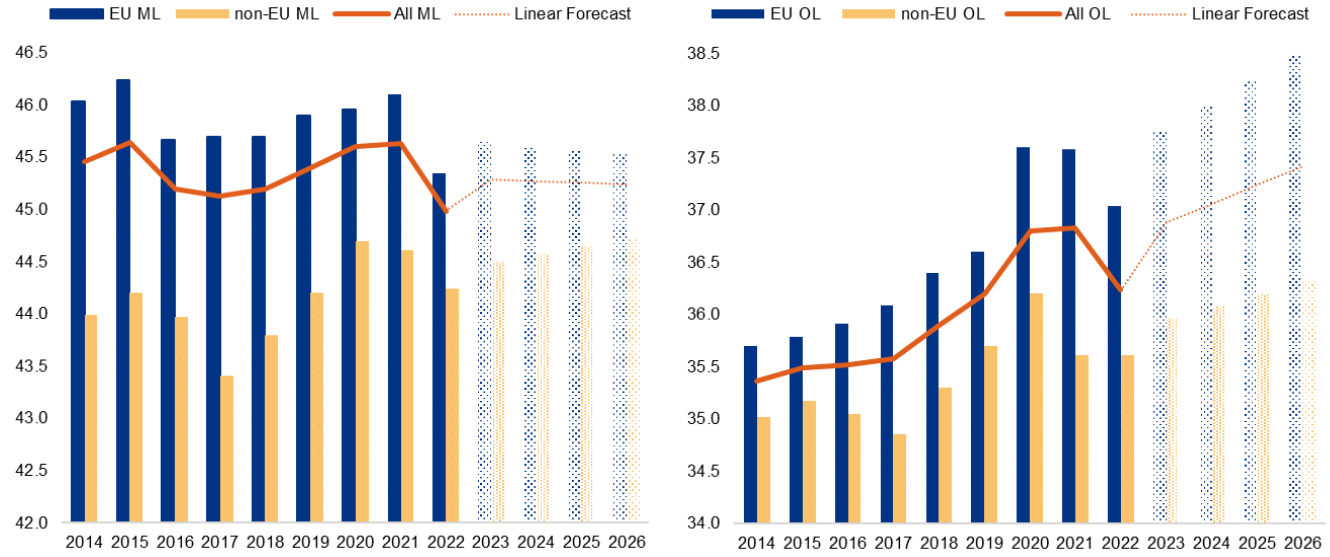


Figure 6-10 Overview with forecast for the next years concerning the average age of officers at management and operational level available to serve on board EU Member State flagged vessels

7. Crew overview 2017-2022

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 36% of the whole EU fleet and 32% 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 year's report, 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.

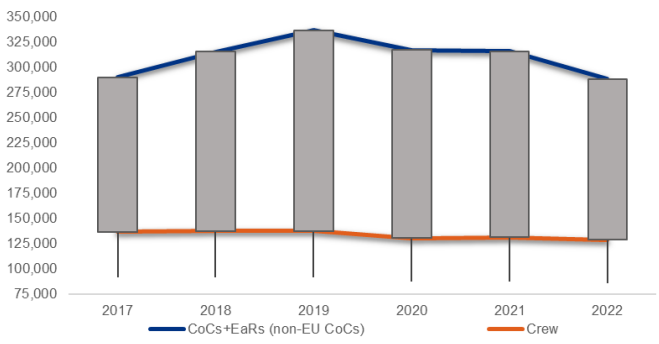


Figure 7-1 Overview concerning the number of officers available to serve on board EU Member State flagged vessels and the estimated number of those needed to crew the EU fleet

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. In 2022 the difference decreased to 30%

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

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 engaged on board the EU fleet (even if on their own, they were not 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.

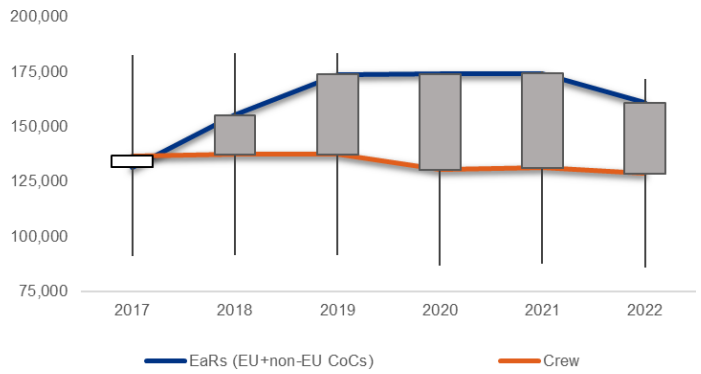


Figure 7-2 Overview concerning the number of officers holding EaRs issued by EU Member States and the estimated number of those needed to crew the EU fleet

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.

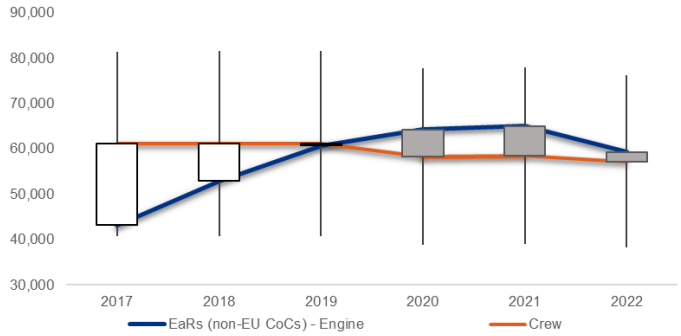


Figure 7-3 Overview concerning the number of engineer officers holding EaRs issued by EU Member States recognising non-EU CoCs and the estimated number of those needed to crew the EU fleet

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 in 2022 accounted 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.

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 engage within their crews officers holding EaRs.

Pursuant to these results, 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 85 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 Croatia representing 79% 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 the percentage of 26% of EU nationals or less was verified on board vessels flying the flags of Belgium, Cyprus, Latvia, Luxembourg, Malta, Poland and Portugal. On the other hand, on board vessels flying the flags of Croatia, Finland, Italy, Lithuania, Romania and Spain, 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%.

7.2.2 EU nationals on board the non-EU fleet

The information on nationality in the crew lists of vessels belonging to the non-EU fleet which represented approximately 32% of the vessels of said fleet, was available for 99% of the officers reported in the lists. The analysis focused on crews of vessels that reported having EU nationals on board, which vessels flew the flags of 95 non-EU countries. On board these vessels, the officers for which nationality was known were nationals of 28 EU Member State countries (nationals from Luxembourg were not reported) and of 142 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 9% ± 1%.

The list of EU countries whose nationals represented more than 0.5% of the total number of those officers whose nationality was known were, by order of magnitude, Poland, Greece, Romania, Croatia, Latvia and Bulgaria representing 80% of the total number of EU nationals serving on board vessels flying the flag of non-EU countries.

When breaking down the non-EU fleet by non-EU Member State flagged vessels (vessels of 95 flags) the indication was that a percentage of 9% of EU nationals or less was identified on board vessels flying half of the flags reporting as having EU nationals on board their vessels. On the other hand, on board vessels of the Faroe Islands, Falkland Islands, Mauritania, Oman, Seychelles and Uruguay, there was an indication that 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 2022, – 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 2022 there were around 84,000 EU nationals actively serving on board ships (±34,250 on board the EU fleet and 49,750 on board the non-EU fleet). These numbers might indicate that EU nationals actively serving on board represented roughly 50% of the total number of EU nationals that in 2022 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 data as may possibly be available, in relation to the employment of seafarers in the EU maritime industry and worldwide.

8. Main conclusions

From 2016 until 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 at least until 2022, still in the wake of the COVID-19 pandemic. Consequently, this is a topic that warrants further analysis in the coming years.

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.

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 unchanged in 2021 and 2022. 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.

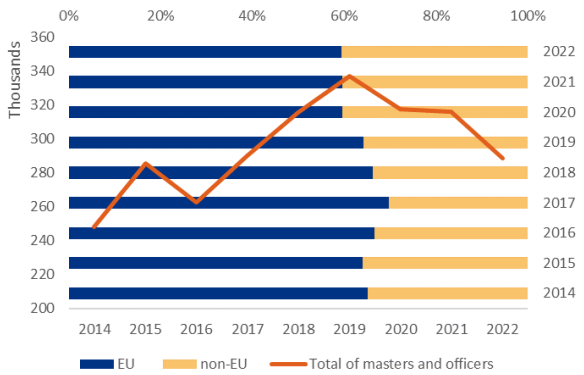


Figure 8-1 Masters and officers available at EU level over the years per country issuing the original CoC

Apart from that, when reviewing the numbers of masters, officers and ratings per type of certificate held, the figures remained stable in terms of distribution by department, capacity, gender and age. In general terms, a certain stability in the European maritime labour market still prevails, suggesting a continued ability of such market to attract new entrants who have replaced those leaving the seafaring career. As such, in 2022 and within the EU, there was an indication that over 3,500 officers acquired a CoC as ‘OOW 500 GT or more’ or ‘OEW 750 kW or more’ 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 hypothetically, the EU supply of masters and officers could in principle be sufficient to satisfy the demand by EU Member State fleets. Although a significant number of masters and officers holding CoCs issued by non-EU countries are engaged on board the EU Member States’ fleet.

As far as concerns 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 9% 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 2022, EU nationals actively serving on board would appear to represent roughly 50% of the total number of EU nationals who in 2022 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 out of the industry; without additional information it is difficult to ascertain in which field of activity are they working or even if they are 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 ninth review presents a snapshot of the number of seafarers holding valid certificates and endorsements in 2022. 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 2022.

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 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 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. This factor is mentioned in the sections of the report, whenever deemed relevant and necessary.

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 the

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

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 2022 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 2022

Table B-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	1244	0	0	0	0	0	0	0	0	1335	0	0	0	0	0	0	0
Deck	1496	2561	1999	12	4355	4003	1134	8894	7508	1850	9714	7497	3	690	414	8533	725	3065	132	7059	12093	9757	387	7141	3523	196	23
Engine	665	3460	1718	18	1807	2323	1019	6395	4280	1262	3443	7170	10	388	193	5895	647	3237	13	4779	5510	8283	262	7290	1383	115	24
Total[16]	**2158**	**6019**	**3717**	**30**	**6102**	**6191**	**2153**	**15287**	**11287**	**3094**	**11689**	**14659**	**13**	**1075**	**599**	**14357**	**1370**	**6301**	**145**	**9553**	**17563**	**18036**	**649**	**14428**	**4793**	**310**	**47**

Table B-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	596	1941	1323	11	2575	1739	520	2290	1696	952	1432	3137	0	287	167	3719	162	1159	48	2652	6288	4505	143	2461	1480	79	5
Chief Mate 3,000 GT or more	212	579	507	1	500	259	214	2011	662	272	579	1006	0	159	11	1132	206	739	16	842	902	2109	85	1916	604	16	1
Master less than 3,000 GT	22	31	18	0	13	357	29	228	2084	14	233	549	2	5	123	624	0	97	1	515	637	135	19	21	127	31	0
Chief Mate less than 3,000 GT	15	3	1	0	2	375	21	3738	1896	3	258	181	0	10	2	72	16	40	0	2249	1876	130	9	25	605	2	0
OOW 500 GT or more	390	6	150	0	547	98	295	479	1170	571	629	1902	1	135	29	2671	326	941	66	26	295	2822	120	2682	0	68	17
Master less than 500 GT, NCV	223	1	0	0	640	615	50	148	0	28	6419	547	0	94	81	264	10	81	0	533	2095	0	7	36	631	0	0
OOW less than 500 GT, NCV	38	0	0	0	78	560	5	0	0	10	164	175	0	0	1	51	5	8	1	242	0	56	4	0	76	0	0
Total	**1496**	**2561**	**1999**	**12**	**4355**	**4003**	**1134**	**8894**	**7508**	**1850**	**9714**	**7497**	**3**	**690**	**414**	**8533**	**725**	**3065**	**132**	**7059**	**12093**	**9757**	**387**	**7141**	**3523**	**196**	**23**

[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 B-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	233	1482	1039	8	1234	895	590	1838	1801	553	1403	2242	7	122	149	2592	138	1216	0	1865	3675	3633	98	2273	840	49	2
Second Engineer 3,000 kW or more	59	633	493	0	276	257	181	1264	398	78	580	951	0	87	10	763	172	734	0	2341	586	1470	20	1501	248	16	1
Chief Engineer less than 3,000 kW	111	46	0	0	7	183	38	152	924	48	274	519	1	5	12	359	1	109	0	71	109	118	10	8	9	10	0
Second Engineer less than 3,000 kW	19	15	2	0	0	28	8	163	406	7	76	192	0	16	1	43	11	52	0	496	0	80	3	8	24	4	0
OEW 750 kW or more	243	436	182	0	217	562	125	2805	700	441	1042	1392	0	90	19	1869	240	815	13	6	0	1435	108	1737	262	17	17
Electro-technical Officer	0	848	2	10	73	398	77	173	51	135	68	1874	2	68	2	269	85	311	0	0	1140	1547	23	1763	0	19	4
Total	**665**	**3460**	**1718**	**18**	**1807**	**2323**	**1019**	**6395**	**4280**	**1262**	**3443**	**7170**	**10**	**388**	**193**	**5895**	**647**	**3237**	**13**	**4779**	**5510**	**8283**	**262**	**7290**	**1383**	**115**	**24**

Table B-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	96	13	48	0	272	195	26	356	706	141	591	59	0	38	8	243	14	42	11	225	466	77	32	130	218	1	1
Male	2062	6006	3669	30	5830	5996	2127	14931	10581	2953	11098	14600	13	1036	591	14114	1356	6259	134	9310	17097	6328	616	14298	4575	309	46
Not available	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	18	0	11631	1	0	0	0	0

Table B-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	45	1	3	0	3	8	0	0	29	5	58	28	0	26	0	1	0	0	0	3	0	59	4	0	0	0	0	**273**
Americas	133	0	1	0	2	2	1	0	31	2	5	10	0	4	0	1	0	1	0	18	4	0	9	0	0	0	0	**224**
Asia	3	0	2	0	0	9	0	0	1	3	1	10	0	20	0	0	0	0	1	14	2	6	0	0	1	0	0	**73**
Europe (non-EU)	6	24	3	0	29	82	341	0	14	6	15	41	0	45	1	0	65	267	2	7	10	101	0	31	2	2	0	**1094**
Oceania	0	0	0	0	1	2	0	0	0	1	0	0	0	7	0	0	0	2	0	2	0	1	0	0	0	0	0	**16**
Total	**187**	**25**	**9**	**0**	**35**	**103**	**342**	**0**	**75**	**17**	**79**	**89**	**0**	**102**	**1**	**2**	**65**	**270**	**3**	**44**	**16**	**167**	**13**	**31**	**3**	**2**	**0**	**1680**

[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 B-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	3	42	0	57	87	29	1141	138	102	514	189	0	59	2	748	118	101	24	800	639	46	13	114	38	10	0
25≤age<30	335	263	290	0	489	672	150	3992	1044	316	1260	1410	0	181	16	2155	382	579	33	1609	2199	1434	93	1412	346	28	3
30≤age<35	408	621	633	0	913	836	233	3221	1370	435	1791	2104	0	157	40	2362	317	816	34	1220	2240	2014	88	2604	541	28	15
35≤age<40	281	906	445	1	985	572	311	3076	1273	389	1679	2026	0	170	51	1831	279	1022	20	962	1842	2542	92	2711	561	42	10
40≤age<45	210	898	172	1	721	527	237	1361	1525	390	1661	2244	0	131	45	1392	129	891	9	851	1770	2564	74	1936	540	30	4
45≤age<50	188	1038	82	1	552	644	215	775	1858	390	1506	2023	0	122	51	1431	54	761	8	937	1851	2173	66	1590	564	39	3
50≤age<55	218	854	90	3	566	707	222	463	1407	309	1508	1436	0	112	72	1304	34	625	4	1043	2139	1737	55	1671	590	32	1
55≤age<60	232	690	430	3	667	825	281	499	1406	339	1080	1404	6	63	101	1308	20	592	1	1022	1786	1781	43	1169	626	37	6
age≥60	243	746	1533	21	1152	1321	475	759	1266	424	690	1823	7	80	221	1826	37	914	12	1109	3097	3745	125	1221	987	64	5
Total	**2158**	**6019**	**3717**	**30**	**6102**	**6191**	**2153**	**15287**	**11287**	**3094**	**11689**	**14659**	**13**	**1075**	**599**	**14357**	**1370**	**6301**	**145**	**9553**	**17563**	**18036**	**649**	**14428**	**4793**	**310**	**47**

Table B-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	441	981	624	235	137	76	53	19	14	**2580**
Deck	3496	12980	15577	14889	12491	11350	10127	9665	14126	**104701**
Engine	2202	9063	10307	9678	8203	7887	7330	6955	9945	**71570**
Total[18]	**5057**	**20691**	**25026**	**24067**	**20303**	**18915**	**17189**	**16403**	**23888**	**171539**

[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 B-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	8	531	3040	6082	6481	6372	5251	5216	8378	**41359**
Chief Mate 3,000 GT or more	71	2233	4510	3429	1826	1134	807	610	920	**15540**
Master less than 3,000 GT	2	60	303	491	648	864	963	990	1593	**5914**
Chief Mate less than 3,000 GT	1678	4352	2133	1053	666	525	407	330	383	**11527**
OOW 500 GT or more	1109	4694	4062	2232	1257	863	741	708	770	**16436**
Master less than 500 GT, NCV	511	908	1353	1413	1460	1452	1836	1647	1916	**12496**
OOW less than 500 GT, NCV	117	202	187	193	158	142	131	174	170	**1474**
Total	**3496**	**12980**	**15577**	**14889**	**12491**	**11350**	**10127**	**9665**	**14126**	**104701**

Table B-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	6	397	1947	3909	4414	4699	4347	4141	6113	**29973**
Second Engineer 3,000 kW or more	632	2455	3182	2221	1141	872	791	713	1112	**13119**
Chief Engineer less than 3,000 kW	4	51	186	247	328	438	528	587	755	**3124**
Second Engineer less than 3,000 kW	68	132	211	207	202	199	187	216	232	**1654**
OEW 750 kW or more	1255	5188	3304	1691	1057	698	545	480	555	**14773**
Electro-technical Officer	237	840	1477	1403	1063	985	936	819	1178	**8938**
Total	**2202**	**9063**	**10307**	**9678**	**8203**	**7887**	**7330**	**6955**	**9945**	**71570**

Table B-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	306	1051	970	603	396	311	210	95	67	**4009**
Male	4715	18483	22699	21979	18362	17210	15839	15193	21399	**155879**
Not available	36	1157	1357	1485	1545	1394	1140	1115	2422	**11651**
Total	**5057**	**20691**	**25026**	**24067**	**20303**	**18915**	**17189**	**16403**	**23888**	**171539**

Appendix C Data on masters and officers holding valid EaRs in 2022

Table C-1 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	1655	0	7171	743	3292	152	1703	71	440	1056	24	312	5	362	54	2825	126	17531	2695	3825	15	4562	1	386	28
non-EU country	2663	3	19373	1540	8223	65	5374	108	299	1452	49	249	7	2192	160	2311	443	45229	8105	12997	#N/A	14199	1	435	0
Not available	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Total[19]	**4315**	**3**	**26532**	**2282**	**11515**	**217**	**7075**	**178**	**739**	**2507**	**73**	**559**	**12**	**2553**	**214**	**5133**	**569**	**62757**	**10796**	**16819**	**15**	**18748**	**2**	**821**	**28**

Table C-2 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	24021	54.66%	20006	45.52%	43950
non-EU country	57696	49.32%	59324	50.71%	116990
Total[21]	**81676**	**50.77%**	**79305**	**49.30%**	**160872**

Table C-3 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	692	0	5365	383	1608	46	967	25	165	297	19	110	1	599	33	918	62	10425	2007	3082	3	3705	1	148	5
Second Engineer 3,000 kW or more	413	0	2188	197	902	7	720	7	61	194	8	48	0	178	31	484	43	5811	954	1257	1	1529	0	46	2
Chief Engineer less than 3,000 kW	82	0	1	22	29	15	1	3	5	23	0	4	0	18	12	53	41	495	320	315	0	0	0	0	0
Second Engineer less than 3,000 kW	36	0	13	7	17	2	1	1	2	2	1	1	0	51	4	23	11	401	44	48	0	0	0	0	2
OEW 750 kW or more	625	0	3265	285	2596	20	1127	45	86	489	12	28	3	491	24	580	38	9362	1180	2357	0	2211	0	97	1
Electro-technical Officer	403	0	2281	275	78	9	1319	4	18	332	5	6	0	396	18	399	3	4863	205	1345	0	1471	0	44	0
Total	**2250**	**0**	**13109**	**1169**	**5227**	**99**	**4135**	**85**	**337**	**1337**	**45**	**197**	**4**	**1733**	**122**	**2454**	**198**	**31317**	**4710**	**8396**	**4**	**8913**	**1**	**335**	**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 C-4 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	780	0	5735	106	1211	36	833	29	114	222	13	135	1	201	29	1184	152	11554	1484	1894	7	4076	0	244	8
Chief Mate 3,000 GT or more	465	0	2918	323	1366	20	875	0	47	298	6	113	3	107	32	615	84	6741	2581	3268	4	2321	1	39	2
Master less than 3,000 GT	60	0	21	30	29	9	0	3	7	24	0	12	1	14	6	78	41	280	0	0	0	0	0	0	2
Chief Mate less than 3,000 GT	50	0	49	26	34	6	2	2	3	12	0	6	0	7	1	50	14	957	0	66	0	0	0	0	6
OOW 500 GT or more	686	3	4712	629	3518	18	1231	66	202	613	9	97	2	293	24	729	79	11685	1965	3151	0	3446	0	202	0
Master less than 500 GT, NCV	34	0	0	3	100	28	0	2	24	5	0	1	1	175	0	25	1	257	45	0	0	0	0	2	2
OOW less than 500 GT, NCV	2	0	0	2	35	2	0	1	5	0	0	0	0	25	0	5	0	29	18	54	0	0	0	0	0
Total	**2076**	**3**	**13432**	**1119**	**6290**	**119**	**2941**	**103**	**402**	**1173**	**28**	**364**	**8**	**822**	**92**	**2685**	**371**	**31457**	**6092**	**8427**	**11**	**9842**	**1**	**487**	**20**

Table C-5 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	78	11	5	0	58	2	0	200	0	0	0	15	0	604	1	80	228	3	0	26	0	1	0	**1198**
Bulgaria	223	0	454	24	32	0	42	0	0	46	0	1	0	109	0	71	1	1944	110	109	0	364	0	0	0	**3169**
Croatia	495	0	472	99	211	0	59	16	1	79	0	2	0	0	0	881	2	1916	362	640	0	337	0	1	1	**4787**
Cyprus	0	0	0	1	2	0	1065	0	0	1	0	0	0	0	0	1	0	828	1	1	0	13	0	1	0	**1715**
Czechia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	8	0	0	0	**17**
Denmark*	7	0	24	8	0	0	0	1	1	1	0	0	1	0	2	3	0	40	117	162	0	1	0	63	0	**423**
Estonia	12	0	187	14	28	0	1	1	324	1	0	4	0	2	16	10	71	103	174	86	0	162	0	10	0	**1062**
Finland	0	0	43	1	18	72	14	0	0	0	0	0	0	0	0	0	9	30	14	102	0	14	1	188	0	**485**
France	40	0	62	4	0	0	0	12	0	0	0	0	1	0	0	158	0	191	53	8	0	9	0	2	0	**527**
Germany	14	0	124	0	102	28	0	1	1	1	0	0	0	84	0	25	0	265	131	17	0	214	0	18	1	**940**
Greece	2	0	875	1	3	0	0	0	1	0	0	1	0	2	0	6	0	4373	12	2	0	36	0	1	0	**5207**
Hungary	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	1	0	0	3	0	0	0	**9**
Iceland	0	0	1	0	17	11	0	0	0	1	0	0	0	0	7	0	0	8	10	48	5	0	0	4	0	**110**

[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	1	0	34	0	9	0	0	0	0	0	0	0	0	0	0	0	0	30	19	12	1	3	0	5	0	**105**
Italy	3	0	120	6	4	0	0	7	1	10	1	0	0	0	0	47	0	898	27	8	0	77	0	0	0	**1165**
Latvia	65	0	367	24	337	27	14	7	5	86	3	3	0	31	18	41	0	756	302	486	0	253	0	23	0	**2493**
Lithuania	49	0	553	50	226	7	1	5	3	12	0	34	2	18	0	129	26	216	350	157	1	357	0	7	0	**1776**
Malta	0	0	1	0	1	0	10	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**13**
Netherlands	571	0	511	92	69	0	0	3	22	11	7	0	0	0	8	511	2	526	0	32	8	63	0	8	21	**2251**
Norway	1	0	77	1	8	0	0	0	13	0	0	0	0	0	0	6	0	67	19	0	0	8	0	25	0	**214**
Poland	118	0	2366	354	1155	0	11	1	11	62	3	263	1	0	1	125	12	2026	377	1173	0	1638	0	20	5	**8541**
Portugal	1	0	7	2	9	5	0	1	0	0	0	0	0	0	0	0	0	18	9	48	0	0	0	0	0	**98**
Romania	40	0	463	29	611	0	427	5	5	509	6	0	0	76	2	199	0	2891	300	91	0	839	0	6	0	**5691**
Slovakia	0	0	4	0	6	0	0	0	0	1	0	1	0	0	0	0	0	2	0	0	0	9	0	0	0	**22**
Slovenia	2	0	30	0	1	0	1	8	0	0	4	0	0	18	0	4	0	23	7	3	0	14	0	0	0	**99**
Spain	12	0	251	9	25	2	0	0	1	35	0	1	0	7	0	12	0	322	42	22	0	135	0	3	0	**825**
Sweden	0	0	66	13	417	0	0	1	51	0	0	2	0	0	0	0	0	60	32	617	0	5	0	0	0	**1238**

*Includes Faroe Islands

Table C-6 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	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**12**
Argentina	82	0	5	0	2	0	0	17	0	0	0	0	0	0	0	93	0	82	0	53	0	1	0	0	0	**318**
Australia	12	0	65	3	90	0	0	0	0	2	0	0	0	0	0	17	0	102	11	423	0	53	0	0	0	**743**
Azerbaijan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	308	0	0	0	5	0	0	0	**314**

[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	16	0	9	0	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	**48**
Brazil	0	0	5	1	133	0	41	0	0	0	0	0	0	0	0	20	0	0	0	249	0	16	0	0	0	**460**
Cabo Verde	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	**17**
Canada	2	0	7	0	7	0	1	0	0	2	0	0	0	0	0	0	0	22	5	42	0	1	0	0	0	**88**
Chile	0	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	**13**
China	0	0	240	22	191	0	24	0	17	0	0	0	0	0	0	12	0	923	94	513	0	181	0	0	0	**2126**
Cote D'Ivoire	0	0	0	0	0	0	0	0	0	77	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	**99**
Cuba	0	0	27	0	67	0	10	37	0	0	0	0	0	0	0	0	0	70	0	0	0	24	0	0	0	**205**
Egypt	0	0	286	6	11	0	0	0	0	31	0	0	0	0	0	119	1	425	0	0	0	113	0	0	0	**969**
Ethiopia	0	0	18	1	4	0	1	0	0	0	0	0	0	0	0	2	1	53	0	0	0	81	0	0	0	**151**
Georgia	7	0	163	2	13	0	108	0	0	6	0	0	0	8	0	0	0	648	0	0	0	68	0	0	0	**945**
Ghana	1	0	57	4	18	0	0	0	0	7	0	0	0	0	0	45	0	60	0	9	0	11	0	0	0	**194**
Hong Kong	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	0	**7**
India	365	0	732	0	2980	0	63	0	0	68	0	0	0	270	0	237	0	4224	55	1812	0	1423	0	0	0	**11839**
Indonesia	8	0	258	0	11	0	2	0	0	25	2	0	0	0	0	90	0	304	408	57	0	135	0	0	0	**1240**
Iran, Islamic republic of	1	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	**31**
Israel	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	0	**44**
Jamaica	85	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	7	0	3	0	0	0	**107**
Japan	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	**5**
Jordan	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153	0	0	0	4	0	0	0	**164**
Korea, Republic of	0	0	4	1	1	0	5	0	1	0	0	0	0	0	0	0	0	216	0	4	0	1	0	0	0	**232**
Lebanon	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	81	0	0	0	0	0	0	0	**83**
Madagascar	0	0	0	0	0	0	0	0	0	31	0	0	0	0	0	44	0	0	0	0	0	0	0	0	0	**56**
Malaysia	5	0	16	0	0	0	0	0	0	2	0	0	0	0	0	1	0	28	0	35	0	2	0	0	0	**88**
Mexico	1	0	31	6	28	0	0	2	0	0	0	0	0	0	0	4	0	0	0	0	0	2	0	0	0	**68**
Montenegro	1	0	269	2	19	0	14	0	0	0	0	0	0	0	0	21	0	758	19	51	0	236	0	0	0	**1243**

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	83	0	0	0	0	0	0	11	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	**94**
Myanmar	0	0	60	0	50	0	0	0	0	6	0	0	0	0	0	0	0	324	0	232	0	96	0	0	0	**730**
New Zealand	5	0	41	0	35	0	0	0	0	2	0	0	0	0	0	3	0	97	36	105	0	23	0	0	0	**326**
Nigeria	1	0	9	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**17**
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	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	128	0	0	0	22	0	0	0	**163**
Panama	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
Peru	0	0	72	0	0	0	0	16	0	0	0	0	1	0	0	2	0	256	0	6	0	323	0	0	0	**617**
Russian Federation	269	0	4287	326	371	44	378	0	27	90	0	167	1	31	127	292	306	5916	2757	1775	0	2956	0	2	0	**17967**
Senegal	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**6**
Serbia	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
Singapore	6	0	43	0	161	0	0	0	1	2	0	0	0	0	0	10	0	242	2	63	0	75	0	0	0	**585**
South Africa	0	0	6	2	99	0	0	0	0	0	0	0	0	0	0	28	0	0	6	5	0	11	0	0	0	**152**
Sri Lanka	3	0	91	0	54	0	0	0	0	0	0	0	0	0	0	0	0	418	0	17	0	214	0	0	0	**707**
The Philippines	421	1	6921	729	2521	0	3253	16	230	613	22	1	2	1681	0	436	0	14239	2018	5774	0	2639	0	430	0	**40795**
Tunisia	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	2	0	3	0	0	0	0	0	0	0	**19**
Türkiye	0	0	17	5	18	0	0	0	1	0	0	0	0	0	0	49	0	5360	5	15	0	462	0	0	0	**5717**
Ukraine	1236	2	4656	414	574	19	1457	0	12	386	25	14	3	4	33	641	133	8281	2304	857	0	4656	1	0	0	**22182**
United Kingdom	122	0	697	11	757	0	17	2	8	52	0	67	0	198	0	99	2	1344	291	505	0	289	0	3	0	**4263**
United States of America	5	0	18	5	8	0	0	0	0	0	0	0	0	0	0	0	0	55	1	12	0	0	0	0	0	**104**
Uruguay	0	0	3	0	0	0	0	13	0	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**21**
Viet Nam	0	0	82	0	0	0	0	0	0	0	0	0	0	0	0	3	0	84	81	20	0	43	0	0	0	**304**

Table C-7 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	1392	11364	16472	15853	11882	9709	5894	4566	4544	**81676**
Engine	1125	9084	14445	13778	10210	9168	8344	6730	6421	**79305**
Total[24]	**2512**	**20428**	**30890**	**29612**	**22080**	**18869**	**14226**	**11293**	**10962**	**160872**

Table C-8 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	87	1508	4280	4780	5000	4663	3878	4188	**28384**
Second Engineer 3,000 kW or more	30	854	3762	3776	1825	1253	1035	736	615	**13886**
Chief Engineer less than 3,000 kW	0	18	89	179	161	201	235	230	270	**1383**
Second Engineer less than 3,000 kW	9	63	144	128	77	72	52	44	62	**651**
OEW 750 kW or more	898	7194	7065	3333	1693	1333	984	660	393	**23553**
Electro-technical Officer	190	943	2080	2258	1778	1393	1450	1231	958	**12281**
Total	**1125**	**9084**	**14445**	**13778**	**10210**	**9168**	**8344**	**6730**	**6421**	**79305**

Table C-9 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	2	111	1543	4748	5565	5624	3816	3241	3515	**28165**
Chief Mate 3,000 GT or more	50	1296	5732	5868	3215	2062	1137	710	552	**20622**
Master less than 3,000 GT	0	2	36	82	78	93	85	110	112	**598**
Chief Mate less than 3,000 GT	82	505	313	137	71	53	45	29	42	**1277**
OOW 500 GT or more	1254	9490	8990	5129	2997	1870	772	436	291	**31229**
Master less than 500 GT, NCV	2	23	92	118	109	96	93	86	69	**688**
OOW less than 500 GT, NCV	4	32	33	35	25	15	19	7	7	**177**
Total	**1392**	**11364**	**16472**	**15853**	**11882**	**9709**	**5894**	**4566**	**4544**	**81676**

[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 C-10 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	79	615	421	215	101	56	29	12	11	**1539**
Male	2433	19818	30473	29400	21979	18813	14200	11279	10950	**159345**
Not available	0	1	3	1	3	2	0	3	1	**14**
Total	**2512**	**20428**	**30890**	**29612**	**22080**	**18869**	**14226**	**11293**	**10962**	**160872**

Table C-11 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	557	8361	12909	11030	8339	7923	4953	3075	2038	**59185**
EU	536	5086	7409	7530	5905	4913	3956	3799	4816	**43950**
Europe (non-EU)	1385	6366	9360	10162	7227	5653	4959	4108	3749	**52969**
Rest of the World	35	631	1235	908	619	387	368	314	362	**4859**
Total	**2512**	**20428**	**30890**	**29612**	**22080**	**18869**	**14226**	**11293**	**10961**	**160871**

[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 2022

Table D-1 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	37	889	919	800	274	757	21	3523	91	1958	6933	5662	1237	2667	3
Rating forming part of a navigational watch	1146	2101	816	4744	971	1874	3075	54	2717	227	893	2624	10294	893	1842	11
Able seafarer engine	0	16	894	354	459	134	188	3	1246	18	728	1228	557	633	620	1
Rating forming part of an engineering watch	300	503	0	2787	739	1183	1394	30	1234	73	509	573	4574	1308	530	11
Electro-technical rating	0	130	73	182	405	207	1567	0	687	15	40	1243	390	849	208	1
Dual-purpose rating (VII)	83	2246	0	0	1693	0	0	0	0	0	0	0	0	0	0	0
Total[26]	**1489**	**4923**	**2219**	**7929**	**3955**	**3051**	**6106**	**83**	**7602**	**398**	**3938**	**11298**	**15070**	**4161**	**5189**	**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 2023 and 2024

Table E-1 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]	PH	UA	PL	RU	NO	EL	HR	RO	IN	TR
2023										
Linear Forecast	15.49%	7.81%	5.72%	5.75%	7.35%	7.36%	4.85%	4.84%	4.05%	1.81%
ETS Forecast	14.80%	7.88%	5.86%	6.27%	7.32%	5.79%	5.04%	4.71%	4.29%	1.97%
ETS Confidence bound (±)	2.14%	0.94%	0.63%	0.46%	1.14%	2.02%	0.40%	0.48%	0.55%	0.48%
2024										
Linear Forecast	16.01%	7.84%	5.49%	5.79%	7.72%	7.66%	4.87%	4.98%	4.25%	1.80%
ETS Forecast	15.32%	7.91%	5.64%	6.31%	7.69%	6.10%	5.06%	5.10%	4.50%	1.97%
ETS Confidence bound (±)	2.88%	0.95%	0.71%	0.58%	1.14%	2.72%	0.50%	0.48%	0.73%	0.64%

Table E-2 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
2023				
Linear Forecast	42.06%	26.96%	13.93%	19.53%
ETS Forecast	42.54%	27.12%	14.55%	18.25%
ETS Confidence bound (±)	2.90%	0.62%	0.99%	0.67%
2024				
Linear Forecast	42.24%	26.64%	13.53%	20.22%
ETS Forecast	42.71%	26.80%	14.16%	18.30%
ETS Confidence bound (±)	2.90%	0.83%	1.34%	1.20%

[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 E-3 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
2023			
Linear Forecast	2.49%	0.76%	1.76%
ETS Forecast	2.54%	0.82%	1.75%
ETS Confidence bound (±)	0.09%	0.05%	0.06%
2024			
Linear Forecast	2.54%	0.80%	1.79%
ETS Forecast	2.58%	0.81%	1.78%
ETS Confidence bound (±)	0.11%	0.05%	0.06%

Table E-4 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]	PH	UA	EL	PL	RU	IT	RO	HR	IN	NO
2023										
Linear Forecast	13.70%	7.80%	8.50%	5.70%	4.95%	4.92%	4.85%	4.77%	3.68%	5.30%
ETS Forecast	13.16%	7.87%	7.12%	5.84%	4.96%	4.83%	4.72%	4.96%	3.45%	5.15%
ETS Confidence bound (±)	2.19%	0.90%	1.88%	0.64%	0.45%	1.02%	0.48%	0.40%	1.20%	1.22%
2024										
Linear Forecast	14.02%	7.83%	8.86%	5.60%	4.88%	4.98%	5.00%	4.78%	3.33%	5.42%
ETS Forecast	13.47%	7.90%	7.48%	5.74%	4.90%	4.89%	5.11%	4.97%	3.11%	5.26%
ETS Confidence bound (±)	2.94%	0.91%	2.53%	0.72%	0.45%	1.03%	0.48%	0.50%	1.20%	1.22%

[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 E-5 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
2023				
Linear Forecast	18.87%	57.02%	16.03%	1.25%
ETS Forecast	19.05%	56.49%	16.74%	1.29%
ETS Confidence bound (±)	2.12%	3.48%	1.88%	0.20%
2024				
Linear Forecast	18.59%	56.73%	16.05%	1.16%
ETS Forecast	18.77%	56.20%	16.77%	1.19%
ETS Confidence bound (±)	2.13%	4.68%	2.53%	0.20%

Table E-6 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
2023			
Linear Forecast	44.0	40.7	42.6
ETS Forecast	44.1	40.7	42.7
ETS Confidence bound (±)	0.7	0.5	0.4
2024			
Linear Forecast	44.1	40.7	42.7
ETS Forecast	44.2	40.7	42.7
ETS Confidence bound (±)	0.7	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 E-7 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
2023						
Linear Forecast	45.7	44.5	45.3	37.7	36.0	36.9
ETS Forecast	45.7	44.6	45.3	37.8	36.0	37.0
ETS Confidence bound (±)	0.5	0.7	0.4	0.6	0.6	0.5
2024						
Linear Forecast	45.6	44.6	45.3	38.0	36.1	37.1
ETS Forecast	45.6	44.6	45.3	38.0	36.2	37.1
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 2017-2022

Table F-1 Estimated number of masters and officers to crew EU Member State flagged vessels

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

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

Appendix G COVID-19 - Masters and officers holding CoCs/EaRs expiring in 2021

Table G-1 Masters and officers holding CoCs and/or Ears expiring in 2021 that might have been extended by prerogative, in light of the IMO Circular Letter No.4204/Add.5/Rev.1

Cert. Type	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	Total[35]
CoC	223	377	266	5	876	1,058	360	1,055	328	1,442	7,465	1,228	29	310	68	1,025	263	0	1,451	11	1,519	8,237	1,756	65	1,697	666	91	41	**31,910**
EaR[36]	1,123	1	9,537	0	982	2,033	50	24	169	847	2,516	5	0	126	17	1,446	43	1,562	172	21,062	2,694	4,163	8	4,964	6	69	13	0	**49,494**

[35] The sum of the columns may not be equal to the total because some officers held CoCs or EaRs issued by different EU Member States
[36] These numbers encompass EaRs issued to holders of CoCs issued by both EU and non-EU countries

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