



HELLENIC REPUBLIC
MINISTRY OF RURAL DEVELOPMENT AND FOOD
DIRECTORATE-GENERAL FOR FISHERIES

Greek Fishing Fleet 2018 Annual Report

Pursuant to Article 22(4) of Regulation (EU) No 1380/2013
of the European Parliament and of the Council



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SUMMARY

The Greek fishing fleet consists of a large number of fishing vessels (**14,123 vessels as at 31 December 2018**) with small overall tonnage (**66,748.11 GT**) and engine power (**395,170.51 kW**) engaged in fishing coastal stocks along the extensive shoreline of the Greek mainland and the numerous Greek islands.

The largest segment of the fleet (96.54%) is made up of vessels fishing multiple species near the coast with static gear. Only **1.69%** of the fleet (239 vessels) target pelagic species, mainly anchovy and sardine, with purse seines (PS) as their principal gear, and **1.77%** (250 vessels) target benthic species, mainly striped mullet, red mullet, hake and crustaceans, with bottom otter trawls (OTB) as their principal gear.

To assess the state of fish stocks and quantify the impact of fishing activities, account was taken of older data combined with data obtained by means of the National Fisheries Data Collection Programme for the years from 2014 to 2018 and other available scientific data. It should be noted here that implementation of the National Fisheries Data Collection Programme was gradually resumed from 2012 after an interruption between 2009 and 2011.

The resulting estimates as regards fishing activities and the state of fishable biological stocks are set out by fleet segment in the individual chapters of this report.

Since 2003 the Greek fishing fleet has grown significantly smaller as a result of applying the rules of the Common Fisheries Policy, and in particular the measure providing for permanent cessation of fishing activities with financial assistance under the Operational Programmes for Fisheries. As set out in section 3, the greatest reduction concerns smaller vessels (overall length <12 m).

Moreover, as can be seen from section 4, the Greek fishing fleet has complied fully with both the entry-exit regime and the reference levels.

CHAPTER I FLEET DESCRIPTION

1. DESCRIPTION OF THE FISHING FLEET

According to the National Register of Fishing Vessels (**extract taken on 29 May 2019**), on 31 December 2018 the Greek fishing fleet comprised **14,123** active fishing vessels, with a total gross tonnage of **66,748.11 GT** and total engine power of **395,170.51 kW**.

The situation of the Greek fishing fleet as at 31 December 2018, broken down according to OECD-approved length categories, is illustrated in the table below.

OVERALL LENGTH (m)	NUMBER OF VESSELS	GROSS TONNAGE (GT)
0.00-5.99	4,493	3,371.61
6.00-11.99	8,325	22,630.05
12.00-17.99	392	6,990.91
18.00-23.99	238	11,587.65
24.00-29.99	147	15,620.84
30.00-35.99	25	5,308.00
36.00-44.99	3	1,239.00
45.00-59.99	-	-
60.00-74.99	-	-
75 or above	-	-
No engine (of the above)	198	92.93

The Greek fishing fleet, which operates almost exclusively in the Mediterranean, is the EU's largest fleet in terms of the number of vessels. It falls into three broad categories according to the fishing gear used:

A. Vessels fishing with static gear

These are mainly fishing vessels operating year-round along the coast of the Greek mainland and around the islands with a variety of gear depending on the time of year and the target species. However, some vessels operating with static gear are large vessels that are fully equipped to carry out fishing trips lasting for several days outside Greek waters (the Aegean, Ionian and Cretan Seas) and across most of the international waters of the Eastern Mediterranean.

B. Vessels fishing with towed gear

These are vessels fishing with bottom otter trawls (OTB) and operating in Greek and international waters of the Aegean, Ionian and Cretan Seas, mainly in FAO/GFCM geographical sub-areas (GSAs) 20, 22 and 23, and in the waters of third countries under bilateral fisheries partnership agreements between the EU and third countries or private agreements.

C. Vessels fishing with encircling nets

These are vessels operating in Greek and international waters of the Aegean and Ionian Seas, fishing with purse seines and targeting various pelagic species.

DETAILED INFORMATION

A. VESSELS FISHING WITH STATIC GEAR

Vessels in this category operate mostly in coastal waters and account for most of the Greek fleet (**96.54%**) in terms of the number of vessels (**13,634**).

The vessels can be broken down as follows in terms of overall length:

- *Small vessels: **13,318** fishing vessels of an overall length of less than 12 metres, with a total gross tonnage of **26,001.71 GT** and total engine power of **245,697.28 kW**.*
- *Larger vessels: **307** fishing vessels of an overall length of 12 metres or more with a total gross tonnage of **5,284.21 GT** and total engine power of **29,214.68 kW**.*

Coastal fishing is carried out by small-capacity vessels fishing coastal stocks with relatively high-selectivity and low-yield fishing methods and gear (such as nets, longlines, traps and dredges). These fishing activities are vital for coastal areas of Greece as they help maintain the socio-economic fabric of coastal and island communities.

Fishing is carried out by professional fishers holding a professional fishing licence for vessels they own.

Moreover, **242** fishing vessels in this category have a licence that additionally includes 'seine nets operated from a vessel at anchor', 'trawls' or '**winch trawls**' (**SB**). Fishing with winch trawls is subject to a management plan laid down by Ministerial Decision No 6719/146097 of 29 December 2016 (Government Gazette [GG], Series II, No 4348) pursuant to Article 19 of Regulation (EC) No 1967/2006, which provides for certain technical measures in the Mediterranean Sea. Use of this gear requires a derogation from the provisions of Article 13 of the said Regulation. A derogation allowing its use, applicable for 3 years from 3 June 2017, was laid down by Commission Implementing Regulation (EU) 2017/929 of 31 May 2017 establishing a derogation from Council Regulation (EC) No 1967/2006 as regards the minimum distance from coast and the minimum sea depth for boat seine fishing in territorial waters of Greece.

A positive opinion was issued for **167** of the **242** vessels referred to above. These engaged in fishing from 1 January to 31 March 2018 and from 1 October to 31 December 2018.

B. VESSELS FISHING WITH TOWED GEAR

- Vessels fishing with bottom otter trawls

In 2018 there were **250** vessels operating mainly with bottom otter trawls, with a total gross tonnage as at 31 December 2018 of **24,850.20 GT** and total engine power of **74,603.83 kW**.

Although these vessels make up a small portion of the Greek fishing fleet (**only 1.77%**), they account for some **25%** of the total annual fishing yield.

Bottom trawling is a widespread method of fishing in all three GSAs, i.e. the Ionian Sea (GSA 20), the Aegean Sea (GSA 22) and the Cretan Sea (GSA 23), mainly in fishing grounds covering the continental shelf and the first section of the slope (to a depth of around 300 metres) in Greek and international waters of the Mediterranean.

Species found mainly or exclusively on the continental shelf (to depths of 150-200 metres) account for a significant portion (some 15-20%) of catches, including striped mullet (*Mullus barbatus*), red mullet (*Mullus surmuletus*), hake (*Merluccius merluccius*), various cephalopods (*Octopus vulgaris*, *Eledona moschata*, *Loligo vulgaris*), crustaceans (*Peneus kerathurus*, *Nephrops norvegicus*) and sea bream (*Diplodus annularis*).

Around a third of the fishing vessels in this category (**84 vessels**) carry a purse seine (PS) as a second set of gear, which is used only in exceptional cases.

Management rules are based on EU Common Fisheries Policy (CFP) regulations, and additional measures in the form of temporary bans or area restrictions are laid down under national legislation to ensure sustainable exploitation and the protection of fish stocks.

A management plan for fishing with bottom otter trawls, approved by the European Commission, has been in force since early 2014 and is being implemented throughout Greece. The management plan covers the following:

- rules for fishing with the gear in question;
- additional time restrictions;
- annual scientific monitoring of the state of the target species in relation to reference indicators, based on a monitoring programme, to ensure they are kept within safe biological limits;
- granting of (annual) licences to fish with bottom otter trawls in addition to the vessel's general fishing licence.

A total of **245 annual fishing licences were granted in 2018** for the use of bottom otter trawls.

A management plan, in force since 1 January 2017, has been established with the aim of reducing discards of demersal species subject to minimum sizes (e.g. species of Mediterranean hake, striped mullet and prawn) as required by Regulation (EU) No 2017/86 of 20 October 2016 (OJ L 14, 18.1.2017, p. 4).

– Vessels fishing in third-country and international waters of the Mediterranean

This is the smallest segment of the Greek fishing fleet. According to the National Register of Fishing Vessels, as at 31 December 2018 it consisted of **five vessels** of an overall length of more than 20 metres fishing with bottom otter trawls, with a total gross tonnage of **1,494.00 GT** and total engine power of **3,274.23 kW**. Of those five vessels, **only one engaged in fishing activity**.

Each vessel has a fishing licence supplemented by an appropriate licence to fish in the waters of third countries, typically issued for three months, under a fisheries partnership agreement between the EU and the third country or under a private agreement with the authorities of a third country. This part of the fleet has shrunk considerably in recent years and continues to do so, as fishing opportunities for such vessels have declined significantly.

In 2018 Greece exchanged fishing opportunities to catch shellfish using bottom otter trawls in Mauritanian fishing areas under a fisheries partnership agreement. Only one fishing vessel carried out fishing in 2018.

Fishing vessels operating in international waters of the Mediterranean mainly use **bottom otter trawls, purse seines** and **drifting longlines**. Fishing licences are granted under the proviso that national and EU legislation, as well as international rules on the maintenance and management of fish stocks, are complied with.

Specifically with regard to fishing with bottom otter trawls, licences to fish in international waters cannot be used in FAO/GFCM/GSA sub-areas 20, 22 and 23:

- from 24 May to 15 July every year in all sub-areas; and
- from 16 July to 1 October in part of sub-area 22.

For **2018** a total of **356 annual fishing licences** were granted for international waters of the Mediterranean, covering all types of gear.

C. VESSELS FISHING WITH ENCIRCLING NETS

– Vessels fishing with purse seines

This segment is made up of **239** vessels fishing mainly with purse seines, with a total gross tonnage of **10,402.73 GT** and total engine power of **44,498.96 kW**. Vessels using purse seines as their principal gear target mainly small pelagic species, operate only in good weather and, due to the vulnerability of the main target species, do not make long fishing trips (rarely more than 48 hours).

Management rules are based on EU Common Fisheries Policy (CFP) regulations, and additional measures in the form of temporary bans or area restrictions are laid down under national legislation to ensure sustainable exploitation and the protection of fish stocks.

A management plan for fishing small pelagic species, i.e. anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*), using purse seines was put in place as early as February 2012.

The management plan covers the following:

- rules for fishing with the gear in question;
- a plan for scientific monitoring of the target species based on reference indicators to assess the state of the target stocks,
- granting of a 'fishing licence for small pelagic species (anchovy and sardine)' in addition to the vessel's general fishing licence.

For **2018** a total of **282** one-year fishing licences were granted for small pelagic species (anchovy and sardine), including, in some cases, to vessels equipped with a purse seine without this being their main gear.

A management plan is being implemented to reduce discards of small pelagic fisheries (anchovy and sardine) as required by Commission Delegated Regulation (EU) 2018/161 of 23 October 2017 establishing a *de minimis* exemption to the landing obligation for certain small pelagic fisheries in the Mediterranean Sea (OJ L 30, 2.2.2018).

D. FISHING WITH ANNUAL FISHING LICENCES

D1. CORAL FISHING

Under the institutional framework in place, a fishing licence of nine months may be granted for a given fishing area, and the areas are rotated every five years.

No fishing licence was granted for harvesting red corals in 2018, as no applications were submitted.

D2. FISHERIES TARGETING LARGE PELAGIC SPECIES

Fisheries targeting large pelagic species: Bluefin tuna (*Thunnus thynnus*), swordfish (*Xiphias gladius*) and albacore (*Thunnus alalunga*), which are covered by a specific management regime, are fished by vessels which, in addition to a general fishing licence, have also been granted a licence to fish the species in question with specific authorised fishing gear.

In **2018** a total of **325** licences were granted for catching **swordfish** (*Xiphias gladius*) and **albacore** (*Thunnus alalunga*) using LLD, LHM and PS gear, **28** of which concerned albacore using purse seines (PS) only.

Additional national measures have been adopted to protect **swordfish** (*Xiphias gladius*). Specifically, Ministerial Decision No 3265/60504/2018 (GG, Series II, No 5674) banned the use of drifting longlines to catch swordfish during the month of December 2018.

Greece's fishing quota for **bluefin tuna** (*Thunnus thynnus*) was **257.70 tonnes** in 2018. A total of **52** fishing licences were issued for using hooks and lines.

Nearly **93.3%** of Greece's available quota, i.e. **240.40 tonnes** (live landed weight), was caught in the period from **1 February** to **10 May 2018**. After Greece and Croatia agreed to exchange **14.00 tonnes** of tuna, the total available quota increased to **271.70 tonnes**.

Because two different applications are used to record catches of bluefin tuna (BFT), i.e. the electronic logbook (ERS) and the e-BCD application, there are some discrepancies in the records.

Our department enters all the data in a table, and one column (Q2) specifically shows the final weight per catch based on the highest assumed weight for each individual fish, which gives a total fishing yield of **267,082 tonnes**. This is the final quantity that was submitted to DG MARE via the ACDR and that will also be submitted to ELSTAT.

Lastly, our department cross-checks the total live landed weight with the data entered in the Port Authorities' landing inspection reports, first buyers' sales notes and the tuna catch document (BCD) to ascertain that the quota has not been exceeded.

D3. FISHING FOR SEA CUCUMBERS

Presidential Decree 48/2018 lays down regulatory measures for fishing sea cucumbers of the genus '*Holothuria spp*', which can be caught by professional fishers only for use as bait in professional and recreational fishing or for human consumption. The decree entered into force on 22 May 2018. It was amended by Article 78(4) of Law 4582/2018, which entered into force on 11 December 2018.

The decree lays down measures for the rational management of sea cucumber stocks (of the genus *Holothuria spp.*), terms and conditions for the fishing activity, authorised periods and fishing grounds, minimum weight, the maximum number of individuals that can be caught, a recording obligation, conservation measures and penalties.

A total of **98 fishing licences** were issued in Greece for the genus *Holothuria spp* for the fishing season that lasted from 1 November 2018 to 30 April 2019.

2. ANALYSIS OF THE BALANCE BETWEEN FISHING CAPACITY AND FISHING OPPORTUNITIES

Stock status assessment

It should be noted that it has been particularly difficult to assess the balance between fishing capacity and fishing opportunities due to missing relevant data as a result of time series interruptions.

The conclusions for the main fleet segments set out below are thus based on a comparative analysis of **available data** from recent years and data obtained by means of the National Fisheries Data Collection Programme, also taking into account biological and socio-economic factors. These will, as far as possible, be updated based on more recent available data from the 2018 National Fisheries Data Collection Programme.

The following section also includes information from the 2018 report on the implementation of the landing obligation under Regulation (EU) 2015/812.

Small pelagic species

Estimating anchovy and sardine biomass in the Aegean and Ionian Seas

(Research surveys at sea - MEDIAS)

A research trip was carried out in **November 2018 in the Ionian Sea (GSA 20)** under the programme. The data collected was used to:

- estimate the abundance and biomass of anchovy and sardine stocks with a methodology unrelated to fishing, i.e. the acoustic method.
- The trip focused on estimating the biomass of anchovy and sardine stocks and establishing their distribution across the Ionian Sea.

Hydrographic sampling.

Sampling was carried out across a network of 80 stations in the Ionian Sea (see Figure A.3.1b.1). At each station, temperature and salinity were measured for each metre below the surface down to the bottom with a SeabirdElectronics SBE-19 plus conductivity-temperature-depth (CDT) device.

Estimating the abundance of anchovy and sardine stocks using acoustic sampling.

Under the programme, the size and geographical distribution of anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) stocks in the Ionian Sea were estimated using the acoustic method. The methodology followed is in line with the MEDIAS protocol, thus ensuring compatibility with acoustic surveys carried out elsewhere in the Mediterranean and comparability of the results.

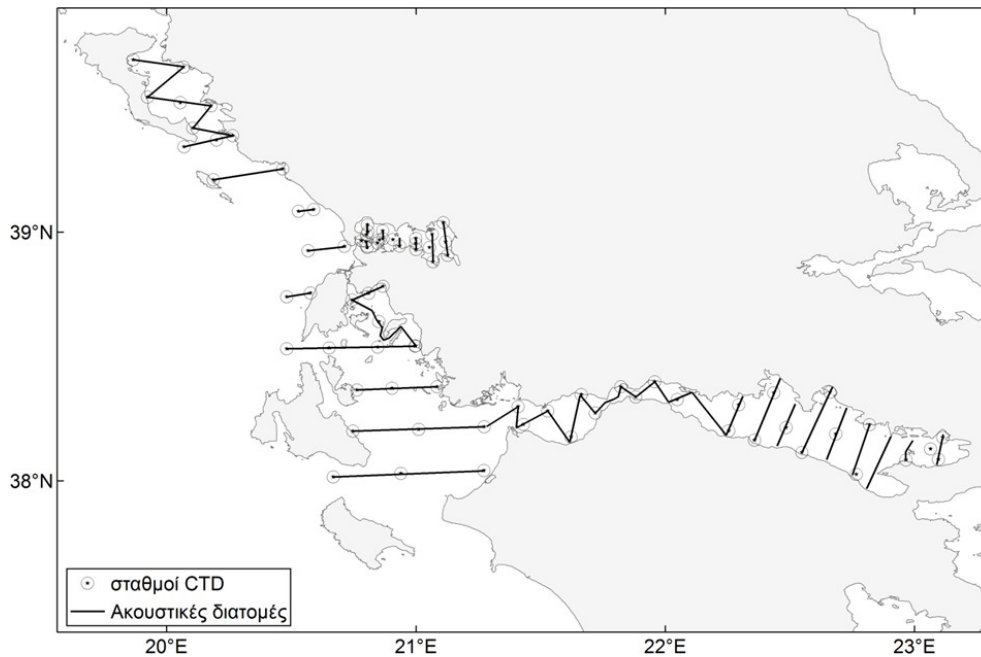


Figure A3.1b.1. Predefined acoustic cross-sections in the Ionian Sea, November 2018.

Key:

Σταθμοί CTD = CTD stations

Ακουστικές διατομές = Acoustic cross-sections

The acoustic data was collected in November 2018 along 44 pre-defined cross-sections in the Ionian Sea (Figure A3.1b.1) using a 38 kHz split beam sonar. The sonar used was Simrad ES38-7.

The size of the elementary sampling distance unit (ESDU) was one nautical mile. The reflected sound was broken down by fish species on the basis of the characteristic sound-refraction potential of each species in combination with the sonograph image. The research trip covered 9,785 km² of the Ionian Sea.

Estimating the abundance of anchovy and sardine using the acoustic method requires knowledge of the length-weight ratio and of the breakdown of the species by length in each area. Eight pelagic trawls were deployed along the cross-sections and in areas where large concentrations of fish had been detected.

The average frequency of each length was assessed in four sub-areas (the Patraikos Gulf, the southern and northern parts of the Ionian Sea and the Amvrakikos Gulf).

The average frequencies of each length class were estimated using the following formula:

$$f_j = \frac{\sum_{k=1}^M \left(\frac{n_{jk}}{t_k} \right)}{\sum_{k=1}^M \left(\frac{N_k}{t_k} \right)}$$

where f_j is the mean frequency of anchovy [*sic*] of length class j ; n_{jk} is the number of anchovy/sardine of length class j in haul k ; N_k is the total number of anchovy/sardine in haul k ; t_k is the duration of haul k and M is the number of hauls in the area (MacLennan and Simmonds, 1992).

For each sub-area the following ratio was also calculated: $\dot{W} = a\dot{L}^b$

where W is the total weight; L is the total length and a and b are constants that are estimated by regression analysis.

Subsequently, the density of targets (F) from the observed echo integrals was estimated according to the equation $F=(K/\langle\sigma\rangle)E$, where K is the calibration factor, $\langle\sigma\rangle$ is the mean cross-section and E is the echo integral after partitioning the sound for anchovy and sardine, respectively (MacLennan and Simmonds, 1992).

$\langle\sigma\rangle$ was calculated for the mean total fish length of each sub-area according to the equation

$$\langle\sigma\rangle = 4\pi \sum_i f_i 10^{TS/10}$$

where f_i is the corresponding length frequency as deduced from the fishing samples (MacLennan and Simmonds, 1992).

The abundance of Q was estimated separately for each sub-area. The abundance of Q in each elementary statistical sampling area was calculated from the average density within each sub-area according to the equation:

$$Q = A_k \sum_i F_i / N_k$$

where F_i is the I sample; A_k is the area of each elementary statistical sampling area and N_k transects in A_k . The variance V was estimated as

$$V = \sum_i (AF_i - Q)^2 / [N_i(N_i - 1)]$$

The data was log transformed and the means and variances of F estimated according to the following equations:

$$\bar{F} = \exp(m) G_N[0.5 S / (n-1)]; V = F^2 - \exp(2m) G_N[S(n-2) / (n-1)^2];$$

where m = average (lnF); S = variance (lnF) and n = independent observations of F.

The total abundance Q_t and its variance were obtained by summing the results for each region $Q_t = Q_1 + Q_2 + \dots$, and $V_t = V_1 + V_2 + \dots$. Standard error of Q_t is the square root of V (MacLennan and Simmonds, 1992).

Initial results

Figures A3.1.b.2. to A3.1b.4. show the distribution by EDSU of the overall Nautical Area Scattering Coefficient (NASC) values (m^2/nm^2) for fish, for anchovy and for sardine in the Ionian Sea in November 2018.

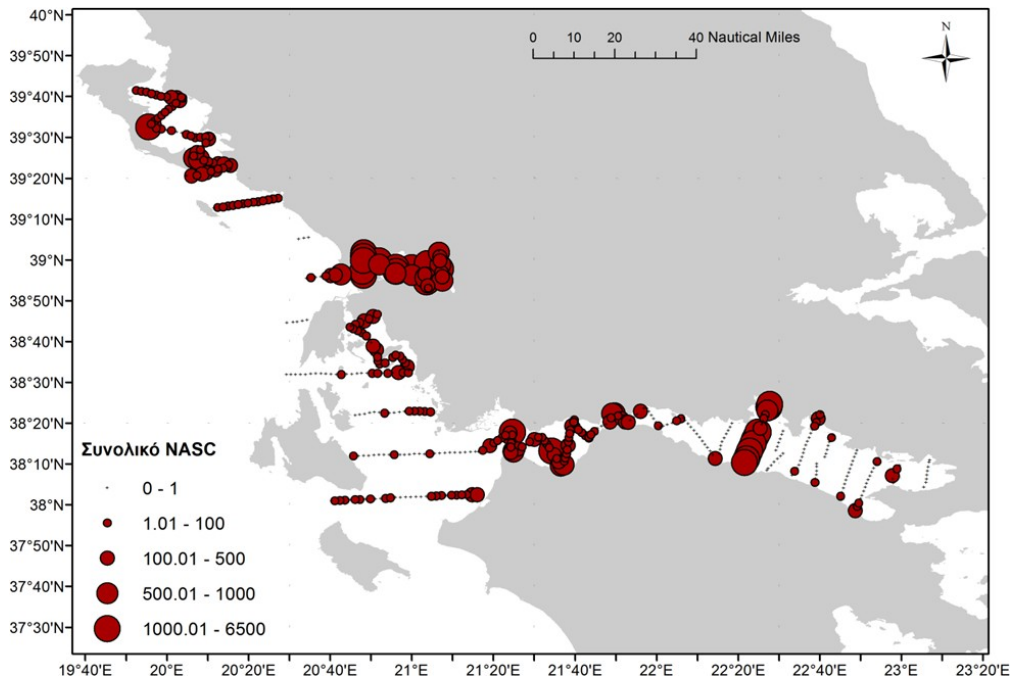


Figure A3.1b.2. Distribution by EDSU of the overall NASC values (m^2/nm^2) for fish in the Ionian Sea, November 2018.

Key:

Συνολικό NASC = Overall NASC

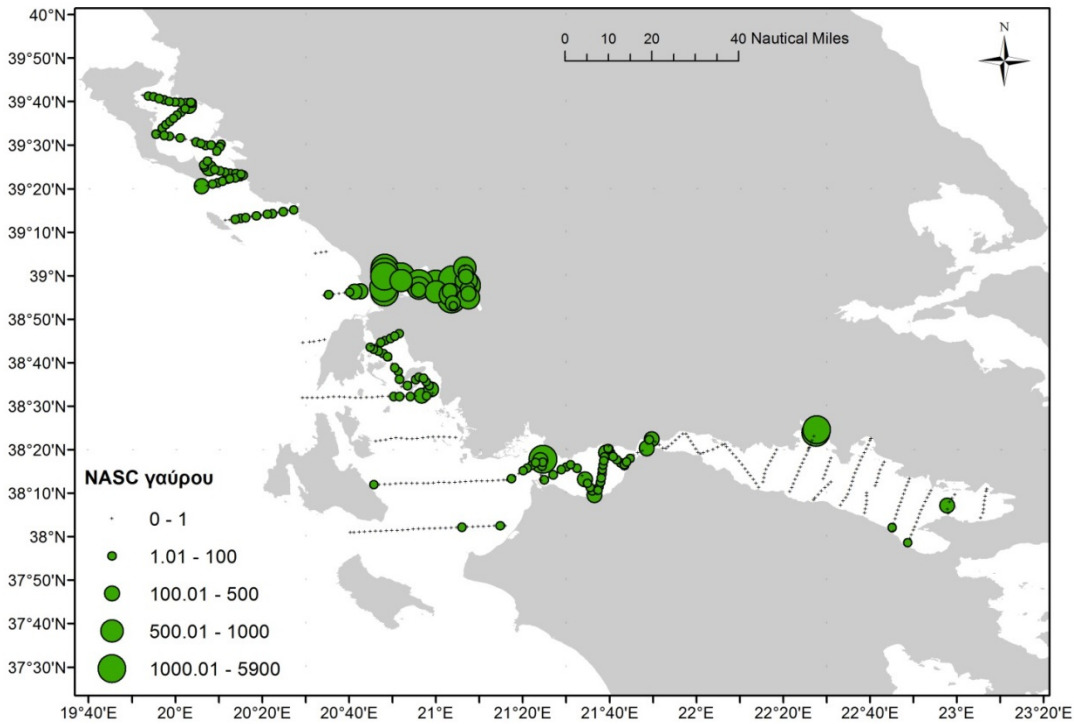


Figure A3.1b.3. Distribution by EDSU of the overall NASC values (m^2/nm^2) for anchovy in the Ionian Sea, November 2018.

Key:

NASC γαύρου = NASC for anchovy

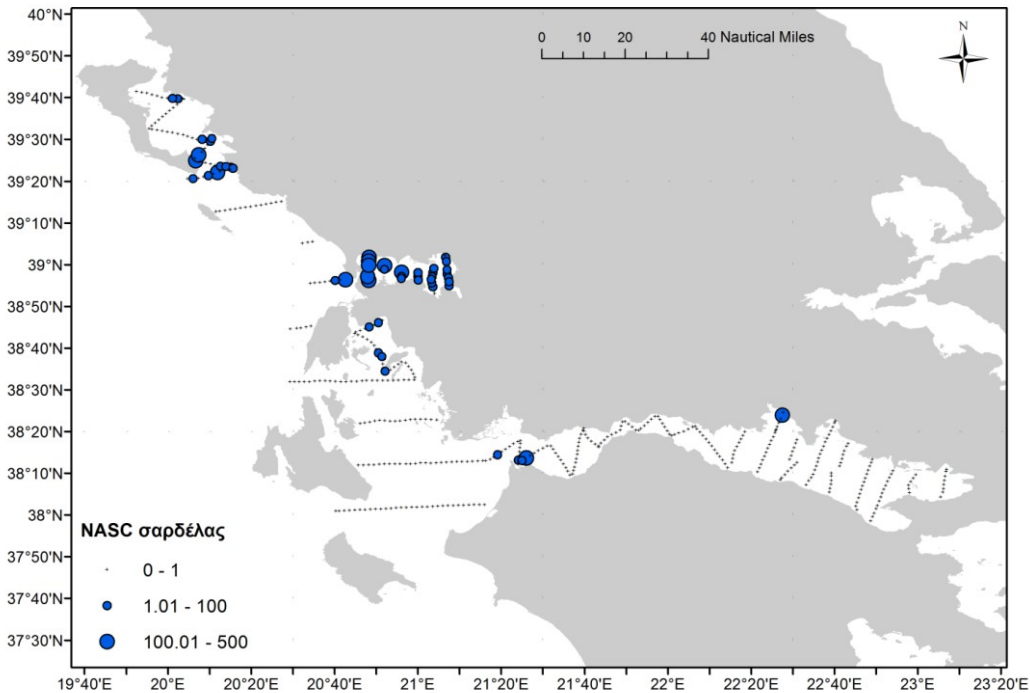


Figure A3.1b.4. Distribution by EDSU of the overall NASC values (m^2/nm^2) for sardine in the Ionian Sea, November 2018.

Key:

NASC σαρδέλας = NASC for sardine

Demersal species

Estimates show that the hake stock is in a precarious state. According to the experts' preliminary assessment, based on data from the National Fisheries Data Collection Programme of previous years regarding the biological indicators for demersal species in the Aegean (GSA 22), the F/F_{msy} ratio for this species is higher than 1 (maximum permissible exploitation ratio).

An indicator value above 1 means that, on average, a fleet segment depends for its revenue on fishing opportunities which in structural terms have been set above the levels of exploitation allowing maximum sustainable yields (MSY) to be achieved. This may be a sign of imbalance if it occurs for three successive years.

In accordance with the precautionary approach, which is a basic principle of the Common Fisheries Policy, and to pursue the CFP objectives of conserving living aquatic resources, protecting marine ecosystems and promoting their sustainable exploitation, appropriate management measures should be taken based on adequate scientific evidence.

Reducing fishing capacity by scrapping vessels targeting this specific species among others using nets and longlines and bottom otter trawls as fishing gear could help achieve this objective.

In 2017, in line with the action plan submitted together with the 2016 fleet report, use was made of the 'permanent cessation of fishing activities' option provided for by the 2014-2020 Fisheries and Maritime Operational Programme. The measure covered a significant number of vessels, **which were actually scrapped in 2018.**

The economic viability of the fleet segment consisting of small coastal vessels (less than 12 metres in length), irrespective of gear, has been analysed under the National Fisheries Data Collection Programme. The data available from the results of the analysis show that, based on the return on investment indicator versus the next best alternative (RoFTA), return on investment for this segment of the fleet is negative.

Over time, the 'observation-based' technical indicator shows a downward trend for small-scale coastal fishing in the period from 2009 to 2018. The values for **2016**, compared to the **2009** values, fell by 13.49%, 13.68% and 33.08%, respectively, for fleet segments VL0006, VL0612 and VL1218.

In **2018** the values fell by 17.82% and 16.16%, respectively, for fleet segments VL0006 and VL0612, whereas for VL1218 they remain low despite a 41.35% increase.

The 'observation-based' indicator value for fleet segment **VL0006** was **0.62** in **2018**, which is even lower than the 2016 value of 0.66 and a sign of continued under-exploitation ('red light') and possibly of redundant technical capacity.

For fleet segment **VL0612** the indicator value for **2018** was **0.71**, which is even lower than the 2016 value of 0.73 but remains at a level largely considered to correspond to a consistent level of activity ('green light'). It should be noted that this indicator fluctuates at values close to 'red light' levels.

The economic crisis in Greece (reduced fishing effort due to the cost of fuel and reduced sales prices for catches) is likely to have contributed to the above indicator values.

Another factor that is likely to have influenced the indicator's negative trend is the rising age of fishers, who may therefore be less able or motivated to make regular fishing trips.

VESSEL USE INDICATORS

Year	Fleet	Length	TECHNICAL INDICATOR (obs.)	TECHNICAL INDICATOR (theor.)
2018	OTB	VL1218	0.32	0.23
		VL1824	0.77	0.71
		VL2440	0.82	0.78
	PS	VL1218	0.38	0.28
		VL1824	0.59	0.54
		VL2440	0.78	0.69
	Coastal	VL0006	0.62	0.46
		VL0612	0.71	0.61
		VL1218	0.50	0.39
2016	OTB	VL1218	0.34	0.25
		VL1824	0.80	0.73
		VL2440	0.84	0.80
	PS	VL1218	0.40	0.30
		VL1824	0.58	0.53
		VL2440	0.79	0.68
	Coastal	VL0006	0.66	0.45

		VL0612	0.73	0.59
		VL1218	0.24	0.20
2015	OTB	VL1218	0.41	0.25
		VL1824	0.83	0.74
		VL2440	0.86	0.81
	PS	VL1218	0.41	0.32
		VL1824	0.65	0.55
		VL2440	0.88	0.71
	Coastal	VL0006	0.68	0.43
		VL0612	0.75	0.56
		VL1218	0.25	0.19
2014	OTB	VL1218	0.36	0.23
		VL1824	0.74	0.68
		VL2440	0.76	0.75
	PS	VL1218	0.36	0.29
		VL1824	0.61	0.50
		VL2440	0.73	0.64
	Coastal	VL0006	0.72	0.41
		VL0612	0.81	0.53
		VL1218	0.34	0.18
2013	OTB	VL1218	0.38	0.24
		VL1824	0.77	0.70
		VL2440	0.77	0.79
	PS	VL1218	0.38	0.30
		VL1824	0.63	0.51
		VL2440	0.74	0.66
	Coastal	VL0006	0.75	0.42
		VL0612	0.83	0.55
		VL1218	0.35	0.19
2012	OTB	VL1218	0.37	0.24
		VL1824	0.77	0.71
		VL2440	0.79	0.76
	PS	VL1218	0.38	0.30
		VL1824	0.63	0.52
		VL2440	0.75	0.66
	Coastal	VL0006	0.75	0.42
		VL0612	0.85	0.56
		VL1218	0.36	0.19
2011	OTB	VL1218	0.38	0.24
		VL1824	0.77	0.70
		VL2440	0.78	0.76
	PS	VL1218	0.37	0.30
		VL1824	0.63	0.53
		VL2440	0.74	0.68
	Coastal	VL0006	0.75	0.43

		VL0612	0.85	0.56
		VL1218	0.35	0.19
2010	OTB	VL1218	0.37	0.24
		VL1824	0.76	0.72
		VL2440	0.80	0.79
	PS	VL1218	0.37	0.30
		VL1824	0.64	0.51
		VL2440	0.76	0.66
	Coastal	VL0006	0.76	0.42
		VL0612	0.84	0.54
		VL1218	0.35	0.19
2009	OTB	VL1218	0.38	0.24
		VL1824	0.76	0.72
		VL2440	0.78	0.78
	PS	VL1218	0.37	0.30
		VL1824	0.64	0.53
		VL2440	0.74	0.68
	Coastal	VL0006	0.76	0.43
		VL0612	0.85	0.56
		VL1218	0.35	0.19

Information from the report on the implementation of the landing obligation

The following information concerning Greek-registered vessels was submitted for the purposes of the 2018 report on the implementation of the landing obligation to be drawn up by the European Commission in accordance with Regulation (EU) 2015/812:

I. For 2018:

(a) Small pelagic species for which a minimum size is laid down in Annex III to Regulation (EC) No 1967/2006, specifically anchovy, sardine, mackerel and horse mackerel:

Commission Delegated Regulation (EU) No 1392/2014 established a discard plan, including *de minimis* exemptions under Article 15(5)(c) of Regulation (EU) No 1380/2013. That Regulation has been replaced by Regulation (EU) 2018/161.

Under the discard plan it is permitted, by way of derogation from Article 15(1) of Regulation (EU) No 1380/2013, to discard quantities of up to 3% of the total annual catches of the aforementioned species caught using purse seines in the Ionian Sea. The same derogation applies to the same species caught using purse seines in the Aegean Sea and off Crete.

(b) Bluefin tuna, which is subject to a catch limit:

Under a derogation from Article 15(2) of Regulation (EU) No 1380/2013 laid down by Commission Delegated Regulation (EU) 2015/98 with regard to bluefin tuna, fishing vessels targeting tuna are allowed to retain on board, tranship, transfer, land, transport, store, sell, etc. by-catches of up to 5% of the total tuna catch per landing, in terms of the number of individuals, of a minimum size of between 8 kg and 30 kg or between 75 cm and 115 cm.

(c) Certain species typical of demersal fisheries:

Commission Delegated Regulation (EU) 2017/86 established a discard plan, including *de minimis* exemptions.

According to the discard plan, quantities of up to **6%** of the total annual catches of the aforementioned species caught using trawlers in the Ionian Sea, the Aegean Sea and off Crete could be discarded in 2018 by way of derogation from Article 15(1) of Regulation (EU) No 1380/2013.

In addition, a derogation for the same areas and species allows discards of up to **1%** of the total annual catches of coastal vessels fishing with gillnets and trammel nets (GTN, GNS, GTR).

(d) Swordfish, which is subject to a catch limit:

Since 1 January 2017 there has been a catch limit on Mediterranean swordfish (MedSWO) (ICCAT Recommendation 16-05). It allows fishing vessels targeting Mediterranean swordfish to retain on board, tranship, transfer, land, transport, store, sell, etc. by-catches of swordfish of up to 5%, by weight or by the number of individual swordfish in the total catch per landing, of a minimum size of less than 11.4 kg (whole weight) or 10.2 kg (gilled and gutted weight) or less than 100 cm in length. The above provisions of ICCAT Recommendation 16-05 were incorporated into EU law by Regulation (EU) 2018/191.

Additional national measures have been taken to protect swordfish; in particular, under Ministerial Decision No 3265/60504/2018 (GG, Series II, No 5674) the use of drifting longlines to catch swordfish was banned during the month of December 2018.

III. [sic] Data collection phase**(a) ERS data**

The electronic recording system (ERS) now provides the option of recording in the fishing logbook and the landing declaration (creation of different lots) any normal and undersized quantities (and individuals, where required) of catches. Specifically for bluefin tuna (BFT), records are based on the weight and length of each individual. The following data is extracted from the ERS:

i) Species subject to a catch limit**a) Bluefin tuna (BFT)**

According to the preliminary ERS data available, in 2018 the quantities (live weight) of normal and undersized individuals of bluefin tuna are as follows:

TOTAL WEIGHT (KG) (Weight_Q)	258,606
TOTAL NUMBER OF INDIVIDUALS	4,784
WEIGHT (KG) OF NORMAL INDIVIDUALS (LARGER THAN THE MINIMUM SIZE)	258,606
NUMBER OF INDIVIDUALS	4,784

PERCENTAGE OF TOTAL WEIGHT	100%
PERCENTAGE OF ALL INDIVIDUALS	100%
WEIGHT OF UNDERSIZED INDIVIDUALS	0
NUMBER OF INDIVIDUALS	0
PERCENTAGE OF TOTAL WEIGHT	0
PERCENTAGE OF ALL INDIVIDUALS	0

b) Swordfish (SWO)

According to the preliminary ERS data available, in 2018 the (landed) quantities of normal and undersized individuals of swordfish are as follows:

TOTAL WEIGHT (KG)	326,100
TOTAL NUMBER OF INDIVIDUALS	17,948
WEIGHT (KG) OF NORMAL INDIVIDUALS (LARGER THAN THE MINIMUM SIZE)	324,596
PERCENTAGE OF TOTAL WEIGHT	99.54
WEIGHT OF UNDERSIZED INDIVIDUALS	1,504
PERCENTAGE OF TOTAL WEIGHT	0.46

The competent port authorities carry out inspections on all quantities of bluefin tuna and swordfish upon landing.

It should be noted that under Decision No 3265/160504 of 7 December 2018 of the Ministry of Rural Development and Food, Greek-registered vessels were banned from fishing swordfish until 31 December 2018 to prevent catches of undersized fish.

ii) Small pelagic species

The (preliminary) ERS data available for 2018 with respect to anchovy, sardine, mackerel and horse mackerel is presented below:

SPECIES	CODE	CATCHES (kg)	DISCARDS (kg)	PERCENTAGE (%)
ANCHOVY	ANE	13,625,434	0	0.00
HORSE MACKEREL	JAX	1,294,103	959	0.07
MACKEREL	MAC-MAS	1,746,937	0	0.00
SARDINE	PIL	11,851,072	2,421	0.02

iii) Species typical of demersal fisheries

We refer to our letter ref. 1129/140137 of 29 December 2017, in which we informed the Commission that, in accordance with Commission Delegated Regulation (EU) 2017/86 establishing a discard plan for certain demersal fisheries in the Mediterranean Sea, in particular the criteria for the landing obligation set out in the relevant Annex to the Regulation, and taking into account:

- the available data; the fact that the Integrated Fisheries Monitoring System (OSPA) became operational on 20 August 2015; and
 - the multi-species fishing conditions in the Mediterranean,
- no Greek-registered fishing vessel is subject to a detailed recording requirement.

The (preliminary) ERS data available for 2018 with respect to hake, striped mullet and deepwater rose shrimp is presented below:

SPECIES	CODE	CATCHES (kg)	DISCARDS (kg)	PERCENTAGE (%)
Hake	HKE	2,111,847	2,090	0.10
Striped mullet	MUT	1,120,734	5,190	0.46
Deepwater rose shrimp	DPS	2,114,050	317	0.01

(b) Data from the National Data Collection Programme

Preliminary discard estimates for 2018 are set out in the following tables:

Small pelagic species

Central and Southern Ionian Sea	
GSA 20	Discards (%)
Anchovy (<i>Engraulis encrasicolus</i>)	0.23
Sardine (<i>Sardina pilchardus</i>)	1.67
Atlantic chub mackerel (<i>Scomber colias</i>)	0.03
Atlantic mackerel (<i>Scomber scombrus</i>)	0.79
Aegean Sea	
GSA 22	Discards (%)
Anchovy (<i>Engraulis encrasicolus</i>)	0.26
Sardine (<i>Sardina pilchardus</i>)	1.21
Atlantic chub mackerel (<i>Scomber colias</i>)	0.12
Atlantic mackerel (<i>Scomber scombrus</i>)	1.08
Aegean/Cretan Sea combined	
GSA 22-23	Discards (%)
Anchovy (<i>Engraulis encrasicolus</i>)	0.18
Sardine (<i>Sardina pilchardus</i>)	0.65
Atlantic chub mackerel (<i>Scomber colias</i>)	0.08
Atlantic mackerel (<i>Scomber scombrus</i>)	1.02

Benthic species

Central and Southern Ionian Sea	
GSA 20	Discards (%)
Hake (<i>Merluccius merluccius</i>)	4.12
Striped mullet (<i>Mullus barbatus</i>)	2.53
Deep-water rose shrimp (<i>Parapenaeus longirostris</i>)	5.1

Aegean Sea	
GSA 22	Discards (%)
Hake (<i>Merluccius merluccius</i>)	3.97
Striped mullet (<i>Mullus barbatus</i>)	1.76
Deep-water rose shrimp (<i>Parapenaeus longirostris</i>)	4.12
Aegean/Cretan Sea combined	
GSA 22-23	Discards (%)
Hake (<i>Merluccius merluccius</i>)	3.53
Striped mullet (<i>Mullus barbatus</i>)	1.03
Deep-water rose shrimp (<i>Parapenaeus longirostris</i>)	3.23

Based on preliminary processing of the data, the discard rate for the species in question appear to be below the maximum limits allowed.

IV. The derogations help minimise the socio-economic impact as well as the impact of the landing obligation (separate stowage and storage of undersized fish; extra staff to manage it, etc.) on the safety of Greek-registered vessels.

As regards port infrastructure and equipment on board vessels, catches by purse seiners and trawlers will be landed in designated ports, as provided for by Article 22 of Regulation (EC) No 1967/2006, with the exception of the quantities which, by way of derogation, are allowed to be discarded. The same applies to catches of bluefin tuna (Article 30 of Regulation (EU) 2016/1627) and swordfish (paragraph 31 of Recommendation 16-05), with the exception of discards.

Undersized bluefin tuna (BFT) of 8-30 kg in weight or 75-115 cm in length, and swordfish (SWO) of less than 11.4 kg or 100 cm, may be sold provided that the necessary conditions laid down in Regulation (EU) 2016/1627 for bluefin tuna and in Recommendation 16-05 for swordfish are met.

3. REDUCTION IN FISHING CAPACITY

The overall number of Greek fishing vessels has dwindled in recent years, and this downward trend continues.

The withdrawal of vessels with financial support, as provided for by Council Regulation (EC) No 1198/2006, is the main reason the number of vessels in the Greek fleet has fallen over the past years.

In 2017, in line with the action plan submitted together with the 2016 fleet report, use was made of the 'permanent cessation of fishing activities' option provided for by the 2014-2020 Fisheries and Maritime Operational Programme. The measure covered a significant number of vessels,

which were actually scrapped in 2018. According to data provided by the Special Managing Authority for the 2014-2020 Fisheries and Maritime Operational Programme and the corresponding entries in the National Register of Fishing Vessels, **647 fishing vessels** were

withdrawn from the Greek fishing fleet **with financial support in 2018**, meaning that the fleet's fishing capacity was significantly reduced for this reason.

Specifically, in 2018 the fleet's fishing capacity was reduced by 3,407.40 GT and 26,365.67 kW on account of financial support.

Overall, between **1 January 2003** and **31 December 2018** the size of the fishing fleet was reduced, due to permanent cessation of fishing activities with and without financial support, by **3,320** vessels (down **15.06%**), and fishing capacity fell by **27.05%** in terms of gross tonnage (GT) and by **24.75%** in terms of engine power (kW) (since 1 July 1991, the first compilation date, the fleet has been reduced by 23%).

In its management of the fleet's fishing capacity, Greece ensures, as required by the Common Fisheries Policy, that engine power (kW) and tonnage (GT) are kept in check in relation to the reference levels.

Any new fishing capacity added to the fleet without financial support is always accompanied by the mandatory withdrawal of corresponding capacity without financial support.

4. COMPLIANCE WITH THE ENTRY-EXIT REGIME AND REFERENCE LEVELS

Compliance with the entry-exit regime provided for in Article 7 of Regulation (EC) No 1013/2010 is assessed on the basis of the following tables, which show the calculated baseline of the entry-exit regime and the reference levels as at **31 December 2018**, based on the most recent update of the National Register of Fishing Vessels kept by the Directorate for Fisheries Control of the Ministry of Shipping and Island Policy.

A. Calculation of the 1 January 2003 baseline (GT₀₃ and kW₀₃)

GT _{FR} (1 January 2003)	GT ₁	GT ₂	GT ₃	GT ₄	GT ₀₃
101,401	0	0	4,526	0	105,927

kW _{FR} (1 January 2003)	kW ₁	kW ₂	kW ₃	kW ₄	kW ₀₃
588,554	0	0	1,234	0	589,788

B. Management of entries/exits, 31 December 2018

		GT		kW	
		GT _{FR}		kW _{FR}	
1	Fishing capacity, 1 January 2003	GT _{FR}	101,401	kW _{FR}	588,554
2	Fishing capacity under the entry-exit regime	GT ₀₃	105,927	kW ₀₃	589,788
3	Entry of vessels of over 100 GT with public support	GT ₁₀₀	0	kW ₁₀₀	0
4	Other entries or capacity increase (not included in 3 or 5)		12		85

5	Increase in GT tonnage for safety reasons	GT_s	13		
6	TOTAL ENTRIES (3+4+5)		25		85
7	Exit with public support before 1 January 2007	*GT_{a1}	11,339	kW_{a1}	60,827
8	Exits with public support after 1 January 2007	*GT_{a2}	19,829	kW_{a2}	103,246
9	Other exits (after 1 January 2003 not included in 7 or 8)		507		2,177
10	TOTAL EXITS (7+8+9)		31,675		166,250
11	Engine power replaced with public support subject to a reduction in power			KW_r	0
12	Fleet fishing capacity, 31 December 2018 (1+6-10)	GT_t	69,751	kW_t	422,389
13	Upper limit (ceiling), 31 December 2018		75,679		425,715

Rows 1, 3, 4, 5, 7, 8, 9, 11, 12: data from the National Register of Fishing Vessels

Row 13: GT ceiling = 2-35%3+5-99%7-96%8 and kW ceiling = 2-35%3-7-8-20%11

According to the above table, in terms of the difference between the capacity ceiling and fishing capacity as at 31 December 2018, the Greek fleet has available fishing capacity equivalent to **5,928 GT** and **3,326 kW**.

C. Reference levels, 31 December 2018

		GT		kW	
1	Reference levels, 1 January 2003	R(GT)₀₃	119,910	R(kW)₀₃	653,497
2	Entry of vessels of over 100 GT with public support	GT₁₀₀	0	kW₁₀₀	0
3	Tonnage increase in GT for safety reasons	GT_s	13		
4	Exit with public support up to 31 December 2006	GT_{a1}	11,339	kW_{a1}	60,827
5	Exit with public support after 1 January 2007	GT_{a2}	19,829	kW_{a2}	103,246
6	Engine power replaced			KW_r	0
7	Fleet fishing capacity, 31 December 2018	GT_t	69,751	kW_t	422,389
8	Reference levels, 31 December 2018	R(GT)_t	89,662	R(kW)_t	489,424

Situation according to the data in the National Register of Fishing Vessels

Row 8: R(GT)_t=1-35%2+3-99%4-96%5 and R(kW)_t=1-35%2-4-5-20%6

It should be noted that the National Fisheries Register (NFR) is updated by entering data from a large number of local port authorities; any changes approved by the administration may therefore appear in the CFR with a certain delay. The process is being constantly improved to minimise delays.

Based on the above table, the Greek fishing fleet was in compliance with the reference levels as at 31 December 2018.

The table also shows that the fishing capacity of the Greek fleet does not exceed the maximum fishing capacity limits set out in Annex II to Regulation (EU) No 1380/2013 (84,123 GT and 469,061 kW).

It should also be noted that a number of fishing vessels that appear as active in the National Fisheries Register (NFR) have been found to be inactive and are gradually being removed from the register. This is a rather lengthy procedure, but once completed the above fleet capacity will have been further reduced.

5. FLEET MANAGEMENT SYSTEM

In terms of numbers the Greek fishing fleet is the largest in the EU. It is mainly made up of small coastal vessels that largely use selective gear, although the gear varies significantly depending on time and location.

Inspecting the fishing activity of small coastal vessels is particularly challenging and costly, as vessels are spread widely across the country's coastal and island regions.

To ensure compliance with the requirements of the revised Common Fisheries Policy and the provisions on the control of fishing activities (Council Regulation (EC) No 1224/2009), the organisational structure of the inspection services is frequently updated with a view to modernising the national penalty system and improving and/or extending the use of new technologies.

The action plan on inspections launched in 2011 focuses on the following priority areas:

- modernising the structure and organisation of inspection authorities and improving their coordination; participation of fishery authorities in inspections, especially in markets, and therefore increasing the number of inspectors and means of inspection (patrol vessels); providing information and training to inspectors;
- updating fishery legislation;
- using IT and modern technology systems to ensure the completeness and reliability of data on vessel fishing activities, inspections, the point system, exchange of data with other registers and their use in real time, improving the monitoring and control system for tuna catches and implementing the monitoring and control system for swordfish catches;
- financing actions, systems, means, equipment, organisations and training of inspectors;
- designing and implementing programmes for the monitoring of fishing activities, tuna and swordfish species and marketing, and performing administrative checks on the import and re-export of fishery products from and to third countries.

6. ADAPTING ADMINISTRATIVE FLEET MANAGEMENT PROCEDURES

Since 2015 improvements have been made with respect to the organisational structure and competences of the single control authority and the fisheries inspection authorities of this Ministry and the Ministry of Shipping and Island Policy; upgrade of the Fisheries Monitoring Centre (FMC); full operation of the integrated fisheries monitoring system (IFMS) for the electronic registration and monitoring of data on fishing activities and marketing, which is currently being extended and upgraded; continued procurement and financing of VMS and ERS equipment for fishing vessels; preparation and/or harmonisation with EU rules on marketing control and the setting up of a points system; implementation of electronic registration and monitoring of tuna catches and information/training on new systems provided to users at inspection authorities and other institutions.

Action was also taken with regard to:

- inspection and control programmes relating to fishing activities on board the vessels, in port, at ports where fish products are landed and traded and in auction halls operating throughout Greece. Where infringements were found, penalties were imposed as provided for in each case, such as fines, suspension of the vessel's and master's fishing licence for a certain number of days and confiscation of products;
- a special control and inspection programme for tuna and participation in the joint deployment programme coordinated by the European Fisheries Control Agency (EFCA), performing checks and inspections on fishing activities carried out by fishing vessels and other economic operators and implementing joint inspection and monitoring activities. The aforementioned actions required a sufficient number of operational means (sea/air/land) and a corresponding number of inspectors, responsible for the monitoring, control and surveillance of fishing activities.

Improving the management system

Apart from setting up and operating an effective and reliable management system, which to a large extent has been achieved, improving the management of the fishing fleet also requires continuous recording of data to allow management measures to be designed in such a way that they respond to actual needs.

One measure that has been implemented with this in mind is the permanent ban on fishing juvenile hake in a region considered important for their breeding. Specifically, Presidential Decree No 24 of 5 March 2018 (GG, Series I, No 51 of 21 March 2018) established a fishing ban in a sea area south of the island of Thassos for the protection of juvenile hake (*Merluccius merluccius*).

One problem encountered in our endeavours to improve the management of the fishing fleet is that - due to the delay in implementing the National Fisheries Data Collection Programme over the past few years – the available data is not complete because it does not include the time series required for full scientific documentation.

This problem persists, although the situation is constantly improving.

In particular, due among other things to the administrative procedure in place for submitting and taking receipt of the relevant report, the results from the previous year are not available at the

time of assessing the situation of the fleet. This means that the action plan is not included when the annual fleet report is submitted, although the results are then assessed to draw up the relevant measures.

Against this background, please note that the financial results and economic indicators presented in this analysis have been calculated on the basis of the latest available information, obtained from a survey collecting socio-economic data.

Under Commission Decision 2010/93/EU and the National Fisheries Data Collection Programme, data on the value of landings (weight and price of catches) and the fishing effort (days at sea) must be collected on a monthly basis using the transversal variables methodology.

Due to the delay in implementing the national programme in previous years, the data in question is incomplete as neither the recorded landings nor the fishing effort correspond to a full year. The data cannot, therefore, be fully relied on to draw up the relevant chapter.

This issue has been raised in earlier STECF reports¹, which highlight the difficulties created in terms of further analysis by the fact that the data submitted by Greece is incomplete.

Data on the value of landings collected by means of the socio-economic questionnaire cannot be used in those reports since it is not collected in line with the transversal variables methodology.

CHAPTER II

SOCIO-ECONOMIC DATA ON THE SEA FISHERIES SECTOR

This report presents the most recent data available, based on the **2018** report of the National Fisheries Data Collection Programme combined with an analysis of data from previous years.

The economic indicators for the Greek sea fishing fleet presented below were calculated on the basis of economic data collected under the National Programme for the Collection, Management and Use of Fisheries Data and **pertain to 2017**. The detailed economic data used to calculate the economic indicators, as submitted to the Ministry of Rural Development and Food, was included in the 2018 annual report for that Programme.

The socio-economic data collected mainly concerns fishing vessel expenditure, in particular on energy (cost of fuel) and labour costs. Labour costs are made up of crew salaries and wages and the imputed value of unpaid labour carried out on board by the vessel's owner(s).

Moreover, account is taken of socio-economic data pertaining to repair and maintenance costs, variable costs other than fuel and labour costs (such as expenses for food and bait, marketing costs etc.), non-variable costs (accountant fees, vessel insurance costs, etc.) and the cost of annual depreciation.

¹ See the 2016 report: Scientific, Technical and Economic Committee for Fisheries (STECF), The 2016 Annual Economic Report on the EU Fishing Fleet (STECF 16-11); Publications Office of the European Union, Luxembourg, EUR 27428 EN, JRC 97371, 434 pp.

II.A: ASSESSMENT OF THE FISHERIES SECTOR

A.1: Economic and cross-cutting variables

A.1.a: Socio-economic data on the sea fisheries sector²³

A.1.a.1. Introduction

Collection of economic variables

Socio-economic data on the sea fisheries sector for the 2017 reference year was collected in the context of the 2017-2019 National Fisheries Data Collection Programme in accordance with the requirements of Regulation (EC) No 199/2008 and Implementing Decision 2016/1251. The data collected mainly relates to fishing vessel expenditure, in particular on energy (cost of fuel) and labour costs. Labour costs are made up of crew salaries and wages and the imputed value of unpaid labour carried out on board by the vessel's owner(s).

Data on repair and maintenance costs, variable costs other than fuel and labour costs (such as expenses for food and bait, marketing costs etc.), non-variable costs (accountant fees, vessel insurance costs, etc.) and the cost of annual depreciation is also collected.

Economic data collected under the national programme includes the value of physical capital and investments in physical capital in the reference year (2017). Moreover, data is collected on employment in fisheries (engaged crew and national/harmonised full-time equivalents (FTE)).

The economic variables were collected by means of a structured questionnaire, as described in detail in the deliverable 'Instructions for filling in the socio-economic questionnaire on the sea fisheries sector and for entering the data in the database, 2017'. The data was collected from a sample of vessels selected using the sampling method set out in the national work plan⁴, as summarised in the following paragraph. Data on the fishing fleet's annual fuel consumption, which is a transversal variable, is also collected by means of the socio-economic questionnaire.

The results of the collection of socio-economic data on sea fishing are presented below, including a description of how businesses in the fishing fleet are structured in terms of how many vessels they own. Data regarding the number of vessels per category, the average total length of vessels (in metres), gross tonnage (GT), total engine power (kW) and the average age of vessels (in years) is also assessed and presented as transversal variables. These variables are calculated on the basis of entries in the register of fishing vessels corresponding to the reference year.

Note that this report also presents data on the revenue of fishing vessels, in particular the gross value of landings and revenue from direct subsidies⁵. The variables (a) 'gross value of landings', (b) 'average value by species caught' and (c) 'days at sea' are transversal variables collected on a monthly basis per fish species. However, as the sampling carried out in 2017 did not sufficiently cover all of Greece, the value of landings by vessels using polyvalent passive gear⁶ (PGP) and of

² This chapter was co-authored by the Agricultural Economics Research Institute (AGRERI). Scientific supervisor: Dr Eirini Tzouramani Researcher: Dr Alexandra Sintori External contractors: Dr Angelos Liotakis, Stamatis Mantziaris and Dr Georgios Valakas AGRERI employee: Magdalena Bardounioti.

³ We would like to thank the researchers who collected the socio-economic data for their assistance and cooperation as well as for their observations and comments. We also thank the fishers who participated in the survey for their availability and cooperation with the researchers.

⁴ The work plan can be found here:

https://datacollection.jrc.ec.europa.eu/documents/10213/1245809/GRC_WP_2019_text.pdf/bd124220-7e6d-427c-b4b6-9dd2318e0d03?version=1.0&download=true

⁵ Note that data on revenue from the renting of quotas or other fishing rights and from using vessels for activities other than fishing is also collected under the programme; however, this type of revenue is statistically negligible in Greece.

⁶ This includes vessels mainly fishing with unusual gear such as handlines, trolling lines and dredges.

vessels using drift lines (HOK), nets (DFN) and traps (FPO) as their main gear presented in this report was collected from a questionnaire of the Agricultural Economics Research Institute (AGRERI). Therefore, this data is presented with reservations. Moreover, for purse seiners (PS) and trawlers (DTS 1824 and DTS 2440) the data presented is derived from OSPA data processed with the assistance of industry experts.

In the following paragraphs socio-economic data on Greece's sea fisheries sector is initially presented for the entire fleet. The data is then broken down by small-scale and large-scale fishing and by category of fishing vessel. The conclusions drawn from the analysis of the economic data are set out at the end of the chapter, highlighting the most important issues encountered in implementing the survey.

Sampling

The Register of Fishing Vessels, which in 2017 included 14,985 vessels, was used as a sampling basis for the selection of the sample of vessels from which economic data was collected. The sample was selected by stratified random sampling. The population was stratified by means of two variables: vessel length and main fishing gear. Table A.1.a.1 shows the stratification of the population based on the aforementioned variables.

Table A.1.a.1. Sampling basis: Stratification of the fleet according to geographical area, vessel length and main fishing gear

Main fishing gear	Length	Population
Nets	<6	3,643
Nets	>=6 <12	6,379
Nets	>=12 <18	207
Pots and traps	<6	66
Pots and traps	>=6 <12	345
Longlines	<6	1,455
Longlines	>=6 <12	2,062
Longlines	>=12 <18	120
Polyvalent passive gear	<6	26
Polyvalent passive gear	>=6 <12	28
Winch trawl	>=6 <12	132
Winch trawl	>=12 <18	31
Bottom trawl	>=18 <24	99
Bottom trawl	>=24 <40	150
Purse seines	>=12 <18	85
Purse seines	>=18 <24	129
Purse seines	>=24 <40	28
TOTAL		14,985

Table A.1.a.2 shows the number of active vessels in the sample and the number of questionnaires collected per stratum. Note that in most categories the coverage rate in the sample is sufficient for the purposes of the survey.

Table A.1.a.2. Number of vessels in the sample and collected questionnaires by stratum

Main fishing gear	Length	Number of active vessels in sample	Collected questionnaires
Nets	<6	3,292	72
Nets	>=6 <12	5,734	166
Nets	>=12 <18	179	39
Pots and traps	<6	61	11
Pots and traps	>=6 <12	319	45
Longlines	<6	1,303	53
Longlines	>=6 <12	1,829	96
Longlines	>=12 <18	99	28
Polyvalent passive gear	<6	24	8
Polyvalent passive gear	>=6 <12	26	12

Winch trawl	>=6 <12	124	24
Winch trawl	>=12 <18	27	13
Bottom trawl	>=18 <24	90	21
Bottom trawl	>=24 <40	141	28
Purse seines	>=12 <18	70	28
Purse seines	>=18 <24	118	35
Purse seines	>=24 <40	28	11
TOTAL		13,464	690

Implementation of the survey

The data used to assess the economic variables in the sea fisheries sector, as set out in the following paragraphs, was collected from a random sample of vessels using a structured socio-economic questionnaire. The sampling process described in the previous paragraph constitutes the first stage of the survey, followed by training of the researchers, with a presentation of the questionnaire and the database in which the data collected through the questionnaires is recorded. The training took place online due to the delay in launching the programme and the limited time available to conduct the survey. The researchers were given the necessary clarifications with respect to collecting socio-economic data and using the database. As part of their training, the researchers were asked to fill in a pilot questionnaire, which was then assessed and used for drafting the final version.

Quality checks and further processing of the socio-economic data took place where this was deemed necessary, using the appropriate methodological framework (see 'methodological framework' for more details). The framework includes the use of specific evaluation indicators⁷. The relevant economic variables were then assessed for the fleet as a whole as well as for its individual segments.

Some additional socio-economic indicators were also calculated in the context of this report to help paint a clearer picture of the sea fisheries sector and draw conclusions on the sector's viability and importance for the national economy.

A.1.a.2. Structure of the Greek fleet, fishing effort, employment and fishing yield

As can be seen from the data in Table A.1.a.3, in 2017 the Fishing Vessels Register comprised 14,985 vessels with an overall tonnage of 71,085 GT and total engine power of 426,683 kW. The average age of the vessels was 30.22 years. The number of vessels, overall tonnage and total engine power fell slightly compared to both 2016 and 2012, whereas the average age of the vessels increased by 2.7%. Note that in 2018 the number of vessels in the Register fell by 751 (to 14,234 vessels), mainly due to the implementation of Measure 6.1.10 'Permanent cessation of fishing activities', under the heading 'Scrapping of fishing vessels', of the 2014-2020 Fisheries and Maritime Operational Programme⁸.

In 2017 the Greek fleet comprised 13,972 businesses. It should be noted, however, that 94% of these businesses owned only one vessel. As can also be seen from the table, the total number of workers has been on a downward trend over the past few years (down 18% compared to 2012), although it fell only slightly between 2016 and 2017 (-1.7%). Note also that the figures in Table A.1.a.3 point to underemployment in sea fishing, since the overall number of workers differs considerably from the number of full-time equivalents in this sector. Specifically, one worker corresponds to 0.88 FTEs.

⁷ Examples include: crew size per stratum, fuel consumption and cost per day at sea, salary per crew member etc.

⁸ See <http://www.alieia.gr/assets/uploads/2018/02/APOFASI-ENTAXIS-METRO-ORISTIKIS-PAFSIS.pdf>

With regard to fishing effort, the total quantity of fuel consumed by the Greek fleet in 2017, based on the data collected, is estimated at 94,118,510 litres, which is 2% lower than in 2016 and 18% lower than in 2012. As regards the total number of days at sea for the Greek fishing fleet as a whole, this variable was not calculated at national level for all segments of the fishing fleet, but only for trawlers and purse seiners due to the late start of the programme. Note also that in 2014 this variable was based on only nine months of the year (April-December). The variable therefore covers the whole year only with respect to 2012, 2013 and 2015, for which data was collected using the socio-economic questionnaire rather than the transversal variables method provided for by Regulation (EU) No 1224/2009.

Total energy costs in 2017 reached €69,414,243, a significant drop in relation to both 2016 and 2012 (down 10.2% and 36.4%, respectively). This is mainly due to lower fuel prices, but also to reduced fishing effort. The fall in fuel prices in the period from 2012 to 2017 is also reflected in Figure A.1.a.1. Moreover, Table A.1.a.3 shows that the cost of energy relative to catch value (0.148) has dropped significantly (by -42% compared to 2012 and -27% compared to 2016).

Table A.1.a.3. Structure, employment, fishing effort and fishing yield of the Greek sea fishing fleet, 2012-2017

Variable		2012	2013	2014	2015	2016	2017	% change 2017-16	% change 2017-12
Structure	Number of vessels	16,063	15,954	14,755	15,624	15,182	14,985	-1.3%	↓ -6.7%
	Number of inactive vessels	1,531	1,202	1,155	1,210	1,535	1,521	-0.9%	↓ -0.7%
	Average age of vessel (years)	26.78	27.61	28.26	29.06	29.43	30.22	2.7%	↗ 12.9%
	Gross tonnage (GT)	76,211	75,566	72,843	74,699	71,751	71,085	-0.9%	↓ -6.7%
	Total capacity (kW)	455,640	454,565	431,166	446,239	430,793	426,683	-1%	↓ -6.4%
	Number of businesses	13,918	13,871	13,666	12,594	14,207	13,972	-1.7%	↓ 0.4%
Employment	Total number of workers	27,559	24,486	23,232	25,407	24,975	22,592	-9.5%	↓ -18.0%
	FTE (full-time equivalent)	23,945	22,546	20,780	23,431	21,098	19,874	-13.7%	↓ -17.0%
	Average yearly wages per worker	5,967	7,575	6,127	6,274	7,465	7,687	3%	↗ 28.8%
	Average yearly wages per FTE	6,868	8,227	6,850	6,803	8,837	8,738	-1.1%	↓ 27.2%
Fishing effort	Days at sea (total)	2,815,808	2,843,714	1,921,836	2,603,840	2,040,825	-	-	-
	Energy costs	109,056,322	108,188,604	92,446,711	84,432,443	75,789,015	69,414,243	-8.4%	↓ -36.4%
	Energy consumption (litres)	115,096,554	113,673,414	107,319,701	107,015,700	104,897,542	94,118,510	-10.3%	↓ -18.2%
	Energy cost relative to catch value (€)	0.2549	0.2588	0.2639	0.2232	0.1631	0.148	-9.2%	↓ -41.9%
	Energy consumption relative to catch value (€)	0.269	0.2719	0.3064	0.2828	0.2258	0.201	-11%	↓ -25.3%
Fishing yield	Sales revenue from catches	427,837,048	418,072,659	350,261,580	378,350,308	464,594,132	468,539,588	0.9%	↓ 9.5%

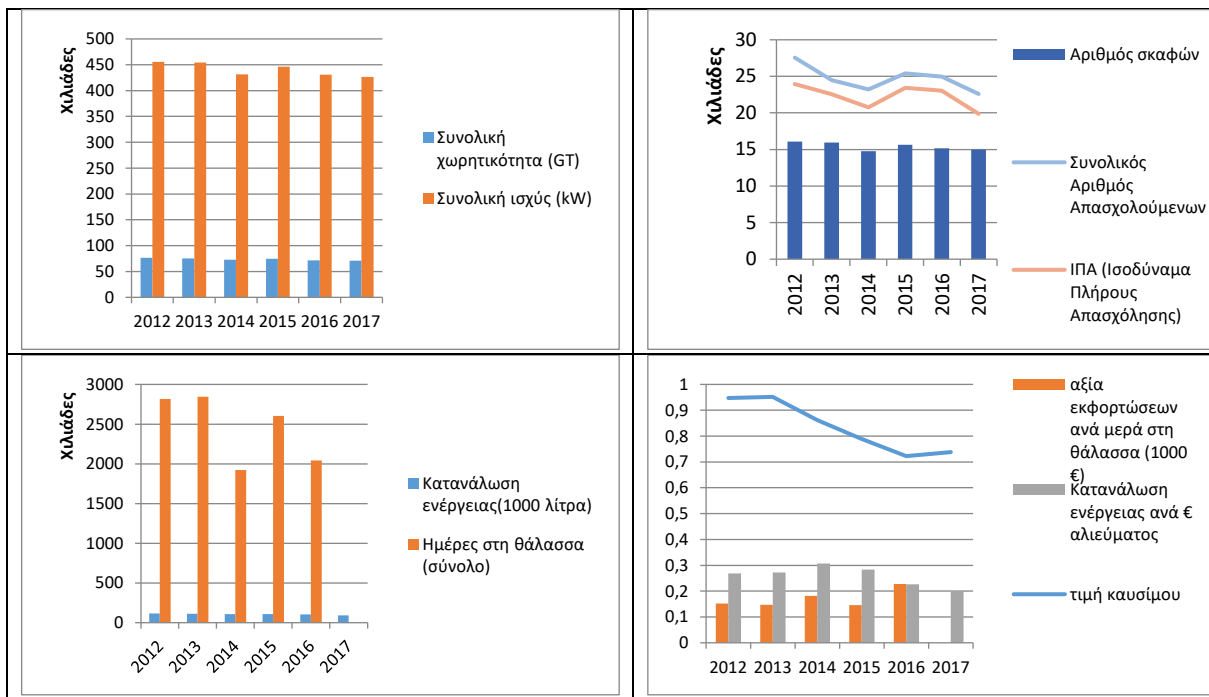


Figure A.1.a.1. Structure, employment, fishing effort and fishing yield of the Greek fleet, 2012-2017

Key:

Χιλιάδες = Thousands

Συνολική χωρητικότητα (GT) = Total tonnage (GT); Συνολική ισχύς (kW) = Total engine power (kW)

Αριθμός σκαφών = Number of vessels; Συνολικός Αριθμός Απασχολούμενων = Total number of workers; ΙΠΑ (Ισοδύναμα Πλήρους Απασχόλησης) = Full-time equivalents (FTEs)

Κατανάλωση ενέργειας (1000 λίτρα) = Energy consumption (1,000 litres); Ημέρες στη θάλασσα (σύνολο) = Days at sea (total)

Αξία εκφορτώσεων ανά μέρα στη θάλασσα (€ 1,000) = Value of landings per day at sea (€ 1,000); Κατανάλωση ενέργειας ανά € αλιεύματος = Energy consumption relative to catch value (per €); Τιμή καυσίμου = Cost of fuel

Sales revenue from catches is estimated at €468,539,588, which is a marginal increase compared to 2016 but a significant increase compared to previous years. The exact reasons for this substantial increase in the value of landings cannot be determined, as this would require the relevant transversal variables to be collected according to the prescribed procedure for the whole year, in order for all the data regarding the species, weight and price of landings to be known. It should be borne in mind that the transversal variables collected in 2017 concern a very short period of time and only some geographical areas.

A.1.a.3. Expenditure and financial results

As can be seen from Table A.1.a.4, the sea fishing fleet draws its revenue almost exclusively from the sale of catches. Direct subsidies make up just a fraction of total revenues and relate to fuel duty refunds in cases where fuel is not purchased directly at a duty-free price. Note also that there is no revenue from using the vessel for activities other than fishing (e.g. fishing tourism), as this would require a special licence⁹.

⁹ Under Joint Ministerial Decision No 414/2354 of 12 January 2015, it has been possible to carry out fishing tourism with a licence since 2015, but very few vessels have obtained a licence so far, and none of them were among the vessels in the sample.

Table A.1.a.4. Expenditure and financial results in the fisheries sector, 2012-2017

Variable		2012	2013	2014	2015	2016	2017	% change 2017-2016	% change 2017-2012
Revenue	Value of landings	427,837,048	418,072,659	350,261,580	378,350,308	464,594,132	468,539,588	0.85	↗ 9.51
	Direct subsidies	0	3,747,195	5,075,829	2,635,936	2,768,528	1,701,601	-38.54	↘ -
Expenditure	Crew wages and salaries	73,367,684	105,420,429	67,278,063	77,354,959	91,281,222	74,123,474	-18.80	↘ 1.03
	Imputed value of unpaid labour	91,089,486	80,058,019	75,062,991	82,050,233	95,160,109	99,534,130	4.60	↗ 9.27
	Energy costs	109,056,322	108,188,604	92,446,711	84,432,443	75,789,015	69,414,243	-8.41	↘ -36.35
	Repair and maintenance costs	40,144,431	43,168,187	34,308,680	35,636,500	32,995,944	28,269,340	-14.32	↘ -29.58
	Other variable costs	83,917,813	77,604,070	74,033,627	78,249,174	77,901,956	57,250,926	-26.51	↘ -31.78
	Non-variable costs	7,749,586	6,747,994	7,139,387	6,482,234	6,476,903	8,331,749	28.64	↗ 7.51
	Annual depreciation	53,514,201	58,675,084	26,844,329	24,206,436	36,283,271	36,492,379	0.58	↗ -31.81
Financial results	Gross value added	186,968,896	186,110,999	147,409,004	176,185,893	274,198,841	306,974,931	11.95	↗ 64.19
	Gross profit	22,511,726	632,551	5,067,950	16,780,701	87,757,511	133,317,327	51.92	↗ 492.21
	Net profit	-31,002,475	-58,042,533	-21,776,379	-7,425,735	51,474,240	96,824,948	88.10	↗ -412.31
	Profit and remuneration of imputed value of labour	60,087,011	22,015,486	53,286,612	74,624,498	146,634,349	196,359,078	33.91	↗ 226.79
Capital value	Depreciated replacement value of physical capital (€)	226,071,892	242,619,052	113,968,237	99,787,479	151,622,928	160,303,189	5.72	↗ -29.09
	Value of investments (€)	30,207,167	24,111,423	26,140,333	27,767,435	25,718,634	30,387,903	18.16	↗ 0.60
	Financial position (%)	2.92	1.54	0.55	0.37	0.50	1.35	172.84	↗ -53.64
Economic indicators	Net profit margin (%)	-7.25	-13.76	-6.13	-1.95	11.42	20.59	86.95	↗ -384.15
	RoFTA (%)	-13.71	-23.92	-19.11	-7.44	35.19	60.40	77.92	↗ -540.45
	Gross value added / FTE	7,808	8,255	7,094	7,519	12,996	15,446	29.79	↗ 97.82
	Gross profit margin (%)	5.26	0.15	1.43	4.40	18.78	28.35	50.99	↗ 438.81
	Gross value added/revenue	0.44	0.44	0.41	0.46	0.59	0.65	11.27	↗ 49.38
	Net profit margin and remuneration of imputed value of labour (%)	14.04	5.22	15.00	19.59	31.37	41.76	33.09	↗ 197.32

In 2017 the overall revenue of the Greek fishing fleet was €468,539,588. As can be seen from the figures in Table A.1.a.4, the vessels made net profits for the second consecutive year (€96,824,948). It is worth noting, however, that the fleet's financial results have been on a continuing upward trend since 2013. The higher profitability compared to 2016, as can be seen from the table, is due to lower expenses. Note also that, as in previous years, the income reflecting the fishers' economic situation and living standards (net profit and remuneration of the imputed value of labour) is quite high.

The fleet's total revenue reached €373,416,242, and most types of expenditure have fallen significantly compared to 2016. This reflects the strategy employed by fishing businesses of reducing the use of inputs as much as possible to improve their liquidity. This is corroborated by the fact that the only expenditure showing an increase is the value of imputed labour, which indicates that Greek fishers seek to replace certain costs (mainly paid work but also service provision) with their own work. As can be seen from Table A.2.a.4 and Figure A.1.a.2, the main expenditure items of the Greek fleet are the imputed cost of unpaid labour at around €100 million (27% of total expenditure), followed by crew salaries and wages at around €74 million (20% of total expenditure). These costs had been quite high in recent years but had not so far exceeded energy costs, which were always the largest expenditure item. This development is due both to those costs having increased and to the reduced price of fuel and slightly lower fuel consumption. It is worth noting that energy costs have been falling constantly since 2012, with an overall reduction of 36%. The fourth largest expenditure item, after energy costs, are other variable costs which account for 15% of total expenditure.

Repair and maintenance costs were slightly lower than in 2016, non-variable costs have increased and, lastly, the annual depreciation of capital value has remained stable at around €36 million.

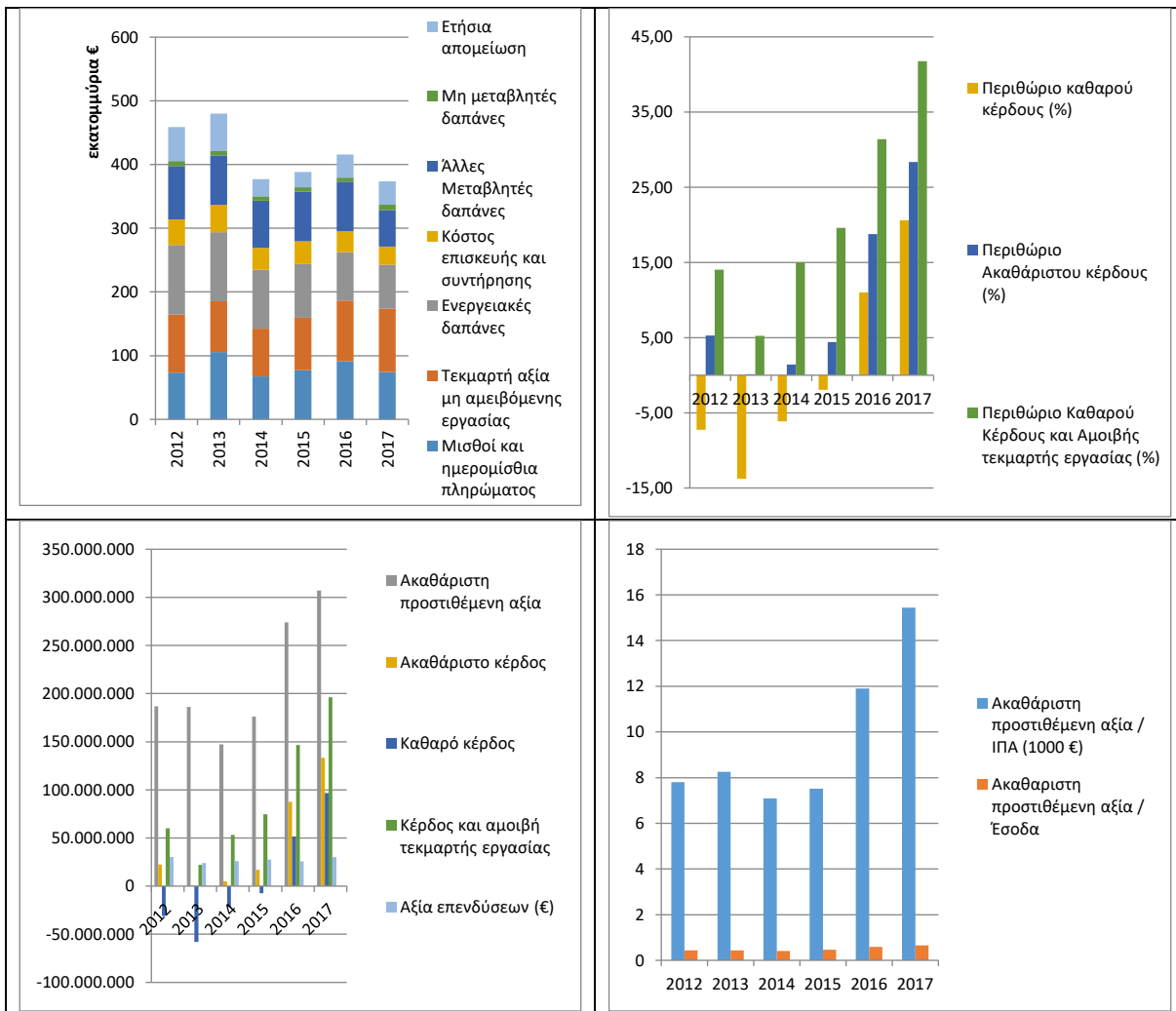


Figure A.1.a.2. Revenue, expenditure and financial results of the Greek fishing fleet, 2012-2017

Key:

Εκατομμύρια € = € million

Ετήσια απομείωση = Annual depreciation; Μη μεταβλητές δαπάνες = Non-variable costs; Άλλες μεταβλητές δαπάνες = Other variable costs; Κόστος επισκευής και συντήρησης = Repair and maintenance costs; Ενεργειακές δαπάνες = Energy costs; Τεκμαρτή αξία μη αμειβόμενης εργασίας = Imputed value of unpaired labour; Μισθοί και ημερομίσθια πληρώματος = Crew salaries and wages

Περιθώριο καθαρού κέρδους (%) = Net profit margin (%); Περιθώριο Ακαθάριστου κέρδους (%) = Gross profit margin (%); Περιθώριο Καθαρού Κέρδους και Αμοιβής τεκμαρτής εργασίας (%) = Net profit and remuneration of imputed value of labour margin (%)

Ακαθάριστη προστιθέμενη αξία = Gross added value; Ακαθάριστο κέρδος = Gross profit; Καθαρό κέρδος = Net profit; Κέρδος και αμοιβή τεκμαρτής εργασίας = Profit and remuneration of imputed value of labour; Αξία επενδύσεων (€) = Value of investments (€)

Ακαθάριστη προστιθέμενη αξία / ΙΠΑ (1000 €) = Gross added value / FTE (€1,000); Ακαθάριστη προστιθέμενη αξία / Έσοδα = Gross added value / revenue

With regard to financial results, a substantial increase in gross value added of 12% continued the strong upward trend of the previous year. Gross profits reached €133 million (a 50% increase compared to 2016), and the sea fisheries sector made net profits for the second consecutive year.

The invested capital (total depreciated replacement value of physical capital) in the fisheries sector amounts to €160 million, a slight increase compared to 2016, whereas total investments in 2017 are estimated at €30 million, which is slightly higher than in 2016. Lastly, a very significant improvement compared to 2016 can be noted for the other economic indicators in Table A.1.a.4, owing to the much higher gross income.

A.1.a.4. Structure of and financial data on small-scale and large-scale fishing in Greece

Tables A.1.a.5 and A.1.a.6 sum up data on the structure, fishing effort, employment and yield of small-scale and large-scale fishing in Greece, respectively¹⁰. As can be seen from the tables, 94% of all the vessels in the fleet engage in small-scale fishing.

The table also shows a downward trend in the number of vessels engaged in coastal fishing in the period from 2012 to 2017, whereas the number of vessels engaged in mid-distance fishing is stable. Vessels engaged in small-scale fishing are older on average, whereas in terms of overall tonnage and engine power the trend is largely the same for all vessels.

The overall number of workers has increased significantly in small-scale fishing but has fallen in large-scale fishing. It is worth pointing out that while underemployment continues to be an issue in small-scale fishing it has all but disappeared in mid-distance fishing. Finally, average wages per worker and per FTE have fallen compared to 2016, in both coastal and mid-distance fishing.

Table A.1.a.5. Structure of the small-scale Greek fishing fleet in 2012-2017, fishing effort, employment and fishing yield

Variable	2012	2013	2014	2015	2016	2017	% change 2017-15	% change 2017-12	
Structure	Number of vessels	15,139	15,038	13,850	14,708	14,319	14,126	-1.3 ↘	-6.7
	Number of inactive vessels	1,488	1,159	1,088	1,141	1,447	1,425	-1.5 ↘	-4.2
	Average age of vessel (years)	27	28	28	29	30	31	4.4 ↗	16.3
	Capacity (GT)	30,138	29,897	27,613	29,406	29,061	28,714	-1.2 ↘	-4.7
	Power (kW)	287,564	285,456	265,919	280,366	274,826	272,248	-0.9 ↘	-5.3
Employment	Total number of workers	22,529	19,708	18,222	20,420	19,613	22,471	14.6 ↗	-0.3
	FTE (full-time equivalent)	19,724	17,885	15,782	18,490	17,999	20,542	15.4 ↗	4.1
	Yearly wages per worker	5,744	7,599	6,260	6,218	6,568	5,773	-12.1 ↘	0.5
	Yearly wages per FTE	5,029	6,896	5,421	5,630	7,915	6,315	-12.7 ↘	25.6
Fishing effort	Days at sea (total)			1,921,836	2,603,840	1,928,836		-25.9 ↘	NR
	Energy costs	57,557,178	60,246,282	52,567,939	49,009,374	45,345,077	37,325,894	-17.7 ↘	-35.1
	Energy consumption (litres)	50,283,598	48,705,410	45,752,146	47,823,940	45,029,099	35,702,516	-20.7 ↘	-29.0
	Energy cost relative to catch value (€)	0.244	0.259	0.259	0.220	0.192	0.169	-11.9 ↘	-30.7
	Energy consumption relative to catch value (€)	0.213	0.210	0.226	0.215	0.191	0.162	-15.1 ↘	-24.1
Fishing yield	Sales revenue from catches	235,877,167	232,288,624	202,868,115	222,546,553	236,329,149	220,743,073	-6.6 ↘	-6.4

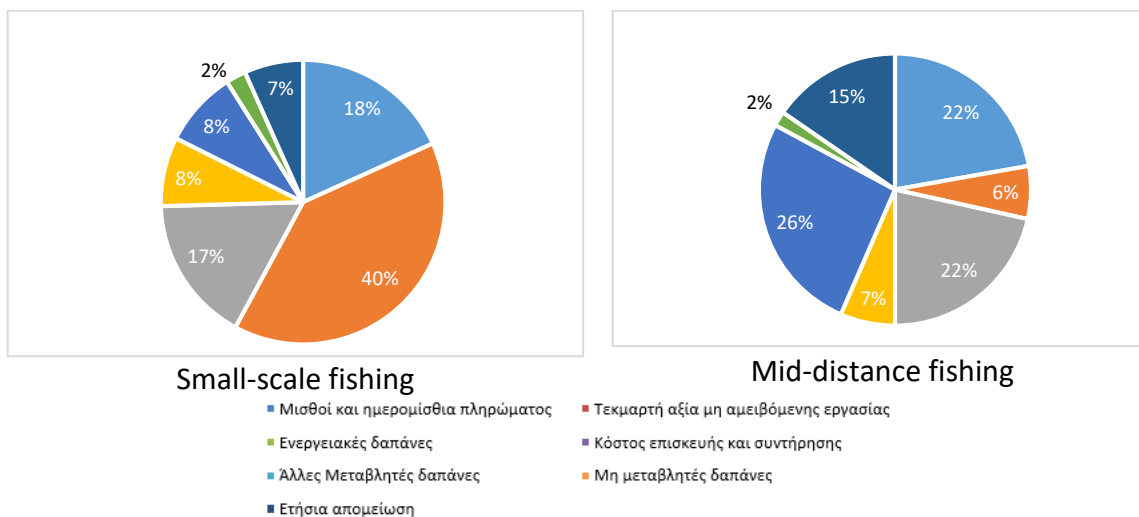
¹⁰ Small-scale fishing involves vessels less than 12 m in length. Large-scale fishing involves vessels with a length of 12 m and above.

Table A.1.a.6. Structure of the mid-distance Greek fishing fleet in 2012-2017, fishing effort, employment and fishing yield

Variable		2012	2013	2014	2015	2016	2017	% change 2016-15	% change 2016-12
Structure	Number of vessels	924	916	905	916	863	859	-0.5	↘ -7.0
	Number of inactive vessels	43	43	67	69	88	96	9.1	↗ 123.3
	Average age of vessel (years)	24	25	26	27	28	29	4.7	↗ 20.7
	Gross tonnage (GT)	46,072	45,669	45,231	45,292	42,690	42,371	-0.7	↘ -8.0
	Total capacity (kW)	168,076	169,109	165,246	165,873	155,966	154,435	-1.0	↘ -8.1
Employment	Total number of workers	5,031	4,778	5,010	4,987	5,362	4,339	-19.1	↗ -13.8
	FTE (full-time equivalent)	4,221	4,661	4,998	4,941	4,823	4,329	-17.4	↗ 2.6
	Yearly wages per worker	12,119	10,635	8,714	8,992	10,746	9,391	-12.6	↗ -22.5
	Yearly wages / FTE	10,168	10,375	8,693	8,910	11,947	9,414	-14.3	↗ -22.3
Fishing effort	Days at sea (total)	-	-	93,699	160,423	111,989	-	-	↘ -
	Energy costs	51,499,144	47,942,322	39,878,772	35,423,069	30,443,938	30,785,345	1.1	↘ -40.2
	Energy consumption (litres)	64,812,957	64,968,004	61,567,555	59,191,759	59,868,443	57,455,359	-4.0	↗ -11.4
	Energy cost relative to catch value (€)	0.268	0.258	0.271	0.171	0.133	0.124	-6.6	↘ -53.7
	Energy consumption relative to catch value (€)	0.338	0.350	0.418	0.286	0.262	0.232	-11.5	↘ -31.3
Fishing yield	Sales revenue from catches	191,959,881	185,784,035	147,393,465	206,681,704	228,264,984	247,796,515	8.6	↗ 29.1

The main expenditure items for small-scale fishing are the imputed value of unpaid labour (40%), followed by wage costs (18%) and energy costs (17%). Unpaid labour has remained at constant levels since 2016, a development indicating that in recent years coastal fishers have endeavoured to make greater use of available family labour to (a) increase their family income and (b) improve the liquidity of their business. Finally, the fact that energy costs have fallen reflects efforts made by fishing businesses to reduce their costs to maintain a certain level of liquidity.

As regards fishing effort, both the consumption and the cost of energy has fallen relative to the value of catches in both fishing categories. Lastly, compared to 2016, sales revenue from catches fell slightly in coastal fishing but increased slightly in mid-distance fishing.

**Figure A.1.a.4: Share of each type of expenditure in total expenditure of (a) small-scale fishing and (b) mid-distance fishing****Key:**

Μισθοί και ημερομίσθια πληρώματος = Crew salaries and wages; Ενεργειακές δαπάνες = Energy costs; Άλλες Μεταβλητές δαπάνες = Other variable costs; Ετήσια απομείωση = Annual depreciation; Τεκμαρτή αξία μη αμειβόμενης εργασίας = Imputed value of unpaid labour; Κόστος επισκευής και συντήρησης = Repair and maintenance costs; Μη μεταβλητές δαπάνες = Non-variable costs

Table A.1.a.7. Expenditure and financial results in small-scale fishing, 2012-2017

Variable		2012	2013	2014	2015	2016	2017	% change 2016-15	% change 2012-16
Revenue	Sales revenue from catches	235,877,167	232,288,624	202,868,115	222,546,553	236,329,149	220,743,073	-6.6	↘ -6.4
	Direct subsidies	-	3,611,349	4,476,639	2,402,045	2,490,956	1,897,882	-23.8	↘
Expenditure	Crew wages and salaries	24,613,785	61,542,925	29,542,208	39,096,183	39,564,077	40,861,452	3.3	↗ 66.0
	Imputed value of unpaid labour	88,688,818	74,366,188	69,244,763	75,875,157	89,255,089	88,871,423	-0.4	↘ 0.2
	Energy costs	57,557,178	60,246,282	52,567,939	49,009,374	45,345,077	37,325,894	-17.7	↘ -35.1
	Repair and maintenance costs	26,488,344	30,462,503	22,393,893	23,808,484	18,657,345	17,610,492	-5.6	↘ -33.5
	Variable costs	34,739,510	32,643,116	30,393,627	31,660,887	24,756,687	19,285,510	-22.1	↘ -44.5
	Non-variable costs	3,854,803	4,163,533	4,182,432	3,923,889	3,461,654	5,114,891	47.8	↗ 32.7
	Annual depreciation	31,792,823	34,181,973	13,109,737	13,670,111	13,247,910	15,014,048	13.3	↗ -52.8
Financial results	Gross value added	113,237,333	108,384,539	97,806,863	116,545,964	146,599,342	141,406,287	-3.5	↘ 24.9
	Gross profit	-65,270	-27,524,574	-980,108	1,574,625	17,780,176	11,673,411	-34.3	↘ 17,984.8
	Net profit	-31,858,093	-61,706,547	-14,089,845	-12,095,487	4,532,266	-3,340,637	NR	-89.5
	Profit and remuneration of imputed value of labour	56,830,725	12,659,641	55,154,918	63,779,670	93,787,355	85,530,786	-8.8	↘ 50.5
Capital value	Depreciated replacement value of physical capital (€)	137,536,291	143,896,490	58,234,707	57,740,682	56,085,651	63,007,525	12.3	↗ -54.2
	Value of investments (€)	25,069,059	19,024,071	20,829,880	21,254,460	16,126,887	20,089,833	24.6	↗ -19.9
	Financial position (%)	0.25	0.08	0.44	0.34	0.91	-	-	-
Economic indicators	Net profit margin	-13.51	-26.16	-6.80	-5.38	1.90	-1.50	NR	-88.9
	RoFTA (%)	-23.16	-42.88	-24.19	-20.95	8.08	-5.30	NR	-77.1
	Gross value added / FTE	5,741	6,060	6,197	6,303	9,008	6,884	-16.4	↘ 19.9
	Gross profit margin (%)	-0.03	-11.67	-0.47	0.70	7.45	5.24	-29.6	↘
	Gross value added / revenue	0.48	0.46	0.47	0.52	0.61	0.64	3.5	↗ 32.3
	Net profit margin and remuneration of imputed value of labour (%)	24.09	5.37	26.60	28.35	39.27	38.42	-2.2	↘ 59.4

Table A.1.a.8. Expenditure and financial results in large-scale fishing, 2012-2017

Variable		2012	2013	2014	2015	2016	2017	% change 2016-15	% change 2012-16
Revenue	Value of landings	191,959,881	185,784,035	147,393,465	206,681,704	228,264,984	247,796,515	8.6	↗ 18.9
	Direct subsidies	-	135,846	599,190	233,892	277,571	963,846	247.2	↗ -
Expenditure	Crew wages and salaries	48,753,899	43,877,504	37,735,856	38,258,777	51,717,144	31,773,768	-38.6	↘ 6.1
	Imputed value of unpaid labour	2,400,668	5,691,831	5,818,228	6,175,076	5,905,020	8,975,549	52.0	↗ 146.0
	Energy costs	51,499,144	47,942,322	39,878,772	35,423,069	30,443,938	30,785,345	1.1	↗ -40.9
	Repair and maintenance costs	13,656,087	12,705,684	11,914,787	11,828,015	14,338,600	9,330,073	-34.9	↘ 5.0
	Variable costs	49,178,303	44,960,954	43,640,001	46,588,287	53,145,269	37,683,708	-29.1	↘ 8.1
	Non-variable costs	3,894,783	2,584,461	2,956,955	2,558,345	3,015,249	2,500,541	-17.1	↘ -22.6
	Annual depreciation	21,721,379	24,493,111	13,734,592	10,536,324	23,035,361	22,025,010	-4.4	↘ 6.0
Financial results	Gross value added	73,731,564	77,726,460	49,602,141	110,517,879	127,599,500	167,496,849	31.3	↗ 73.1
	Gross profit	22,576,998	28,157,125	6,048,057	66,084,026	69,977,335	126,747,531	81.1	↗ 209.9
	Net profit	855,619	3,664,015	-7,686,535	55,547,702	46,941,975	104,722,521	123.1	↗ 5,386.3
	Profit and remuneration of imputed value of labour	3,256,287	9,355,846	-1,868,306	61,722,778	52,846,994	113,698,070	115.1	↗ 1,522.9
Capital value	Depreciated replacement value of physical capital (€)	88,535,601	98,722,562	55,733,531	42,046,797	95,537,276	96,252,094	0.7	↗ 7.9
	Value of investments (€)	5,138,108	5,087,352	5,310,453	6,512,975	9,591,746	7,440,557	-22.4	↘ 86.7
	Financial position (%)	11.60	3.93	1.91	0.54	6.05	-	-	-
Economic indicators	Net profit margin	0.45	1.97	-5.19	26.85	20.54	42.10	105.0	↗ 4,508.1
	RoFTA (%)	0.97	3.71	-13.79	132.11	49.13	108.80	121.4	↗ 4,984.2
	Gross value added / FTE	17,468	16,677	9,924	22,365	26,455	38,695	58.9	↗ 39.4

Gross profit margin (%)	11.76	15.14	4.09	31.94	30.62	50.95	66.4	↗	160.3
Gross value added / revenue	0.38	0.42	0.34	0.53	0.56	0.67	20.6	↗	45.4
Net profit margin and remuneration of imputed value of labour (%)	1.70	5.03	-1.26	29.83	23.12	45.71	97.7	↗	1,263.1

In large-scale fishing, on the other hand, the main expenditure items are other variable costs (mainly marketing costs) at 26%, followed by crew salaries and wages and energy costs, each accounting for 22%.

Lastly, note that while the financial results and economic indicators improved considerably for mid-distance fishing, the indicators fell for coastal fishing. This is due to the fact that last year was the only year in which the coastal fishing fleet achieved net profits.

A.1.a.5. Fleet composition

Table A.1.a.9 shows a breakdown of the Greek fleet into 17 segments/strata according to main fishing gear and vessel length.

Table A.1.a.9. Breakdown of the Greek fleet based on main fishing gear and vessel length

Fleet segment	Main fishing gear	Length (metres)	Inactivity rate (%)
DTS 6-12 m	Winch trawl	6-12	6.06%
DTS 12-18 m	Winch trawl	12-18	12.90%
DTS 18-24 m	Bottom trawl	18-24	9.09%
DTS 24-40 m	Bottom trawl	24-40	6.00%
DFN 0-6 m	Nets	0-6	9.63%
DFN 6-12 m	Nets	6-12	10.14%
DFN 12-18 m	Nets	12-18	13.58%
FPO 0-6 m	Pots and traps	0-6	7.69%
FPO 6-12 m	Pots and traps	6-12	7.69%
HOK 0-6 m	Longlines	0-6	10.50%
HOK 6-12 m	Longlines	6-12	11.33%
HOK 12-18 m	Longlines	12-18	17.25%
PGP 0-6 m	Other polyvalent passive gear	0-6	9.28%
PGP 6-12 m	Other polyvalent passive gear	6-12	9.72%
PS 12-18 m	Purse seines	12-18	17.65%
PS 18-24 m	Purse seines	18-24	8.53%
PS 24-40 m	Purse seines	24-40	0.00%

The table also shows the percentage of inactive vessels per segment/stratum¹¹. Table A.1.a.10 shows the vessels' average length, gross tonnage, total engine power and the average age of active vessels in each segment of the fleet.

Table A.1.a.10. Main characteristics of the fishing fleet by segment, 2017

Fleet segment	Number of active vessels	GT	kW	Average age	Average length
DFNVL0006	3,292	2,199	30,422	33.45	4.92
DFNVL0612	5,734	15,979	139,586	27.65	7.85
DFNVL1218	179	2,910	15,721	24.28	13.64
FPOVL0006	61	667	6,653	51.72	9.63
FPOVL0612	319	408	2,966	49.87	13.13
HOKVL0006	1,303	4,491	23,907	35.67	21.44
HOKVL0612	1,829	19,211	46,052	23.53	28.23
HOKVL1218	99	38	676	29.95	4.89
PGPVL0006	24	894	9,134	26.37	7.97
PGPVL0612	26	910	12,574	34.48	4.91
DTSVL0612	124	5,206	45,748	29.46	7.73
DTSVL1218	27	2,066	10,127	24.73	14.58
DTSVL1824	90	16	231	31.31	4.80
DTSVL2440	141	76	584	27.21	7.91

¹¹ Under Commission Decision 2010/93, a vessel is considered 'inactive' if it has not been engaged in fishing during the reference year (2016).

PSVL1218	70	1,534	9,588	41.64	8.75
PSVL1824	118	5,638	24,098	27.56	20.98
PSVL2440	28	2,494	6,542	18.43	26.23
INACTIVEVL0006	510	345	4,785	33.72	4.92
INACTIVEVL0612	914	2,570	22,700	28.30	7.83
INACTIVEVL1218	68	1,235	7,013	29.80	14.24
INACTIVEVL1824	20	975	4,637	31.21	21.19
INACTIVEVL2440	9	1,226	2,940	23.53	28.23

To calculate the basic economic variables for each segment of the fleet, the various variables were first calculated on the basis of the vessels in the sample from each segment. To extrapolate the variables to the population, account was taken of the overall population of vessels in each segment and its rate of inactivity. The findings of this analysis are presented in Table A.1.a.11. Figure A.1.a.4 shows, for each segment of the fleet, the overall expenditure share of each cost category.

Table A.1.a.11. Basic economic variables per segment of the Greek fleet, 2017

	DFN0006	DFN0612	DFN1218	DTS0612	DTS1218	DTS1824	DTS2440	FPO0006	FPO0612	HOK0006	HOK0612	HOK1218	PGP0006	PGP0612	PS1218	PS1824	PS2440
Employment																	
Engaged crew	4,298	8,757	441	388	110	501	871	72	447	1,451	2,629	361	36	54	568	1,113	374
Full-time equivalent	2,985	8,757	441	345	100	501	871	69	444	914	2,629	361	31	39	568	1,113	374
Average salary per worker	5,785	7,782	8,105	5,506	6,169	11,343	11,608	8,057	9,051	5,915	7,938	10,278	4,639	6,305	7,588	8,548	8,474
Average wages per FTE	8,330.85	7,781.72	8,111.93	6,186.64	6,752.78	11,333.25	11,605.15	8,432.40	9,107.75	9,390.53	7,937.62	10,288.17	5,345.40	8,773.98	7,594.65	8,551.38	8,469.70
Fishing effort																	
Fuel consumption (litres)	4,044,085	19,927,770	2,024,811	631,263	281,423	11,399,143	28,601,479	155,550	1,581,283	1,899,655	7,337,605	3,294,893	23,517	101,788	2,247,536	6,627,891	2,978,182
Revenue	29,940,723	116,483,712	10,959,294	7,192,148	2,364,660	25,429,999	77,297,767	986,980	7,839,606	13,939,924	45,131,166	16,103,736	335,700	355,767	13,471,635	63,241,556	38,932,699
Sales revenue from catches	29,821,098	115,771,927	10,956,540	7,184,914	2,362,583	25,429,999	77,297,767	977,220	7,702,027	13,871,087	44,732,768	16,103,736	326,700	355,333	13,471,635	63,241,556	38,932,699
Direct subsidies	119,625	711,785	2,754	7,233	2,077	-	-	9,760	137,579	68,838	398,398	-	9,000	433	-	-	-
Expenditure (€)	36,588,438	114,133,413	8,921,211	4,132,498	1,481,653	19,969,582	46,922,994	867,692	7,939,649	15,533,845	44,057,719	12,364,615	273,609	556,847	11,749,640	29,621,107	12,043,192
Crew wages and salaries	6,361,254	24,221,746	2,008,835	1,201,205	389,429	4,210,414	8,220,995	58,560	1,125,157	1,462,057	6,228,877	2,159,671	50,606	151,990	3,710,413	8,230,128	2,843,884
Imputed value of unpaid labour	18,502,480	43,925,788	1,565,405	935,270	289,125	1,472,400	1,889,165	521,550	2,920,764	7,120,063	14,640,607	1,550,683	116,400	188,500	599,550	1,283,897	325,325
Energy costs	4,991,157	20,499,882	1,332,008	587,167	171,913	5,865,199	14,746,989	146,877	1,633,449	2,125,883	7,234,548	2,153,771	34,423	72,509	1,270,292	3,712,454	1,532,720
Repair and maintenance costs	2,916,264	8,963,285	671,264	238,037	64,948	1,351,321	3,649,844	47,691	551,396	1,104,723	3,731,870	747,804	29,627	27,600	505,000	1,510,202	829,691
Other variable costs	1,951,872	8,695,797	1,044,580	176,528	268,137	3,777,024	9,038,589	27,862	591,934	2,089,448	5,681,198	3,587,140	19,903	50,969	4,473,942	10,949,041	4,545,255
Non-variable costs	855,554	2,535,770	285,996	180,306	49,815	347,293	625,436	14,296	191,790	440,291	883,140	350,068	3,570	10,173	203,623	494,990	143,322
Annual depreciation	1,009,857	5,291,146	2,013,124	813,985	248,287	2,945,932	8,751,976	50,855	925,160	1,191,379	5,657,478	1,815,480	19,080	55,107	986,821	3,440,396	1,822,995
Invested capital																	
Depreciated replacement value (€)	3,835,220	18,698,633	8,275,366	2,813,946	887,915	11,275,168	35,124,529	201,666	3,726,119	4,506,940	22,458,089	7,397,842	74,580	233,619	3,614,998	13,559,513	7,734,858
Total investments (€)	3,590,731	10,233,435	835,301	397,453	102,600	744,720	2,145,174	24,836	807,940	836,209	4,153,659	820,558	17,880	27,690	807,545	1,657,681	326,978
Financial position (€)	0.00	3,083,099.79	299,570.02	113,912.17	0.00	47,970.12	967,868.10	0.00	0.00	0.00	624,578.49	393,399.63	0.00	0.00	119,242.83	610,844.03	0.00
Economic Indicators (€)																	
Gross value added *	19,225,876	75,788,978	7,625,446	6,010,110	1,809,848	14,089,162	49,236,910	750,254	4,871,037	8,179,579	27,600,410	9,264,954	248,177	194,517	7,018,779	46,574,870	31,881,711
Gross profit	-5,637,858	7,641,444	4,051,207	3,873,634	1,131,294	8,406,348	39,126,750	170,144	825,117	-402,542	6,730,925	5,554,601	81,171	-145,973	2,708,815	37,060,845	28,712,502
Net profit	-6,647,715	2,350,298	2,038,083	3,059,649	883,007	5,460,416	30,374,774	119,288	-100,043	-1,593,921	1,073,447	3,739,121	62,091	-201,081	1,721,995	33,620,449	26,889,507
Profit and remuneration of imputed value of labour	11,854,765	46,276,087	3,603,487	3,994,919	1,172,132	6,932,816	32,263,939	640,838	2,820,721	5,526,142	15,714,054	5,289,803	178,491	-12,581	2,321,545	34,904,346	27,214,832
Profitability indicators (€)																	
GVA/income	0.64	0.65	0.70	0.84	0.77	0.55	0.64	0.76	0.62	0.59	0.61	0.58	0.74	0.55	0.52	0.74	0.82
Labour productivity**	6.442	8.654	17.306	17.404	18.011	28.098	56.518	10.906	10.965	8.950	10.498	25.690	7.943	5.012	12.368	41.862	85.204
RoFTA (%)***	-1.67	0.19	0.31	1.15	1.05	0.54	0.92	0.65	0.03	-0.29	0.11	0.57	0.89	-0.80	0.54	2.54	3.54
Net profit margin****	-22.20	2.02	18.60	42.54	37.34	21.47	39.30	12.09	-1.28	-11.43	2.38	23.22	18.50	-56.52	12.78	53.16	69.07

*Gross value added: Revenue - (energy costs + repair and maintenance costs + other variable costs + non-variable costs)

Labour productivity: Gross value added / FTE *RoFTA (%) (return on assets): (revenue - expenditure) / depreciated replacement value

****Net profit margin: profit/revenue (%)

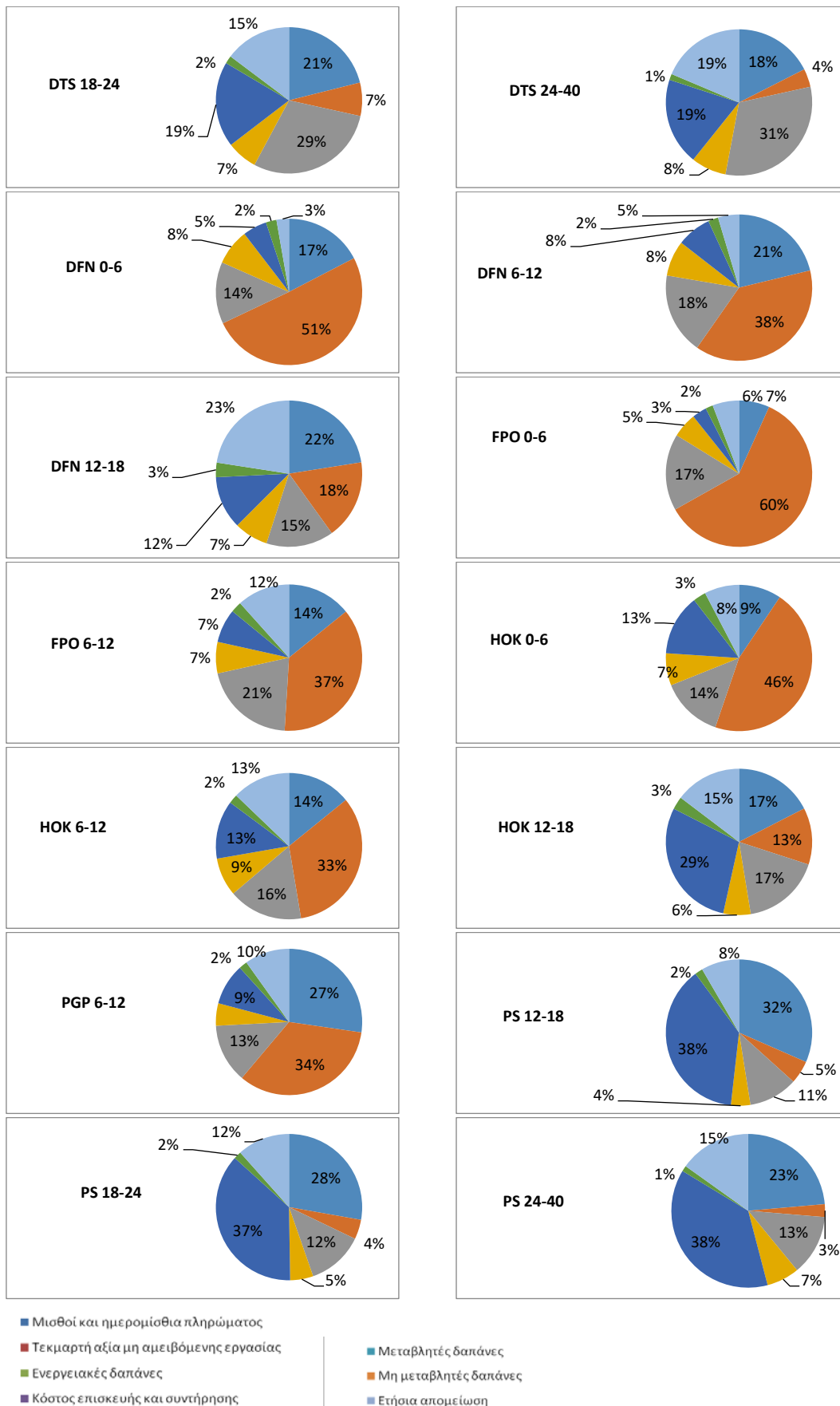


Figure A.1.a.5. Breakdown of expenses for each segment of the Greek fleet

Key:

Μισθοί και ημερομίσθια πληρώματος = Crew salaries and wages; Τεκμαρτή αξία μη αμειβόμενης εργασίας = Imputed value of unpaid labour; Ενεργειακές δαπάνες = Energy costs; Κόστος επισκευής και συντήρησης = Repair and

maintenance costs; Μεταβλητές δαπάνες = Variable costs; Μη μεταβλητές δαπάνες = Non-variable costs; Ετήσια απομείωση = Annual depreciation

A.1.a.6. Problems reported by fishers

As part of the collection of socio-economic data in the sea fisheries sector, fishers were asked to report the key problems they face. Tables A1.a.12 and A1.a.13 show the ten problems most frequently reported by the surveyed fishers in coastal and mid-distance fishing, respectively.

Table A.1.a.12. Ten main problems faced by coastal fishers according to the results of the survey.

No	Problem	Total affirmative reply rate
1	Damage to fishing gear caused by mammals	82%
2	Competition from recreational and retired fishers	62%
3	Reduced fish stocks due to overfishing	62%
4	Reduced catch price	60%
5	Reduced purchasing power among consumers	51%
6	Young fishers lacking incentives to set up	42%
7	Expensive fuel	42%
8	Damage to fishing gear by other animals (e.g. crabs)	41%
9	High cost of buying gear	41%
10	High cost of supplies	39%

Table A1.a.12 shows that fishers consider fishing gear being damaged by protected species to be the most serious issue by far (82%), followed by competition from recreational fishers and dwindling fish stocks on account of overfishing (62% each). They also rate a number of market-related issues, such as lower catch prices, falling demand due to reduced purchasing power among consumers, the high cost of buying fishing gear and the high prices of fuels and other supplies, as major problems. Lastly, young fishers lacking incentives to set up (42%) is also seen as a major issue.

Table A.1.a.13. Ten main problems faced by fishers in mid-distance fishing according to the results of the survey.

	Problem	Total affirmative reply rate
1	Reduced catch price	75%
2	Reduced purchasing power among consumers	67%
3	High cost of buying gear	67%
4	High cost of supplies	65%
5	Damage to fishing gear caused by mammals	58%
6	Young fishers lacking incentives to set up	58%
7	Red tape	50%
8	High taxes and social security contributions	45%
9	Insufficient training of fishers – Lack of fishery schools	44%
10	Area closures	41%

Fishers engaged in mid-distance fishing (see Table A.1.a.13) face many of the same problems, but there are fairly significant differences compared to the previous table in how the issues are ranked, as well as some minor differences in the type of problem faced. Market-related issues, in particular the reduced price of catches, the high cost of buying fishing gear and supplies and reduced purchasing power among consumers, are ranked highest. The list also includes a number of management and policy issues, in particular young fishers lacking incentives, red tape, high taxes and social security contributions and area closures. Interestingly, fishers in mid-distance fishing rank insufficient training of fishers in the sector and the lack of fishery schools as very

important. Finally, damage to fishing gear, which is now ranked fifth rather than first in coastal fishing, is among the top ten issues in the ranking.

A.1.a.6. Conclusions and problems of the survey

This report sets out the basic economic variables for the Greek fishing fleet with respect to 2017. The variables were collected under the 2018 National Fisheries Data Collection Programme. The economic variables were collected from a sample of fishing vessels using a structured questionnaire.

The sample was selected by stratified random sampling as provided for by the national programme. The 2017 Register of Fishing Vessels was used as a sampling basis and stratification of the population was based on vessel length and main fishing gear. The Greek fishing fleet was divided into 17 segments, nine of which concern vessels engaged in small-scale fishing, i.e. all vessels of less than 12 metres in length.

The above analysis shows a downward trend in the number of vessels and the total number of workers in the period from 2012 to 2017. The fishing yield increased significantly in mid-distance fishing but fell significantly in coastal fishing compared to 2016. As regards individual fleet segments, it is worth noting that 13 of the 17 segments achieved net profits, which was also the case for the fleet as a whole. This result could be interpreted to mean that the least profitable vessels have left the sea fishing fleet, or that the vessels in operation have become more efficient mainly by reducing their consumption of inputs. However, the improved economic results and economic indicators only concern mid-distance fishing. In coastal fishing, on the other hand, there has been an accumulation of small losses, although five of the nine individual segments (including the very important DFN0612 and HOK0612) achieved a net profit. Moreover, the sum of profits and remuneration of imputed labour is positive in all coastal fishing segments and quite high overall, indicating that fishers can earn a positive income from this activity.

II. B: REPORT ON SOCIAL VARIABLES, 2017

1. Introduction

Social data pertaining to the sea fisheries sector for the 2017 reference year was collected under the 2017-2019 National Fisheries Data Collection Programme in accordance with the requirements of Regulations (EC) Nos 199/2008 and 2017/1004. The social data collected concern employment as described in the regulation: number of co-owners, paid crew by vessel and by gender, unpaid crew by vessel and by gender, working hours put in on board by paid crew broken down by gender, working hours put in on board by unpaid crew broken down by gender, and months of activity of the vessel.

The following demographic and socio-economic data was also collected: gender, age and nationality of the crew, their education level and employment status, percentage of time worked on land and main tasks carried out on land.

Some variables that help describe fishers' households are also collected, including the type of any parallel activity, membership of a collective body, family status of the master and size of the master's household, age and education level of the master's children and members of the master's household engaged in fishing.

This report analyses the social profile of the Greek fishing fleet, based in particular on the following social variables: employment by gender, full-time equivalents (FTEs)¹² by gender, employment by age, employment by level of education, employment by nationality, unpaid work by gender and employment by employment status.

The business profile of Greek fishing businesses is then mapped by means of a pair of indicators on the basis of the social variables examined. This involves classifying fleet segments according their business model, i.e. whether their fishing activity is family-run or business-oriented. At the end of the chapter some conclusions are drawn on the social and business profile of Greek fishing businesses, based on the analysis.

The social variables were collected by means of a structured questionnaire as described in detail in the deliverable 'Instructions for filling in the socio-economic questionnaire on the sea fisheries sector and for entering the data in the database, 2018'.

The data was collected from a sample of vessels selected using the sampling method set out in the report on the methodological framework for socio-economic variables. The social variables were collected using the same sampling basis as that used for the economic variables.

2. Analysis of the social profile of the fishing fleet as a whole and of small-scale and large-scale fishing¹³

In this section, each social variable is analysed for the fishing fleet as a whole and separately and for each of the two categories (large-scale and small-scale). Each variable is first assessed at the level of the sample separately for each fleet segment, and then at the level of the population using extrapolation factors. It should be stressed here that the picture emerging from the social variables examined at fleet level essentially reflects the situation in small-scale fishing, given that this category accounts for 94% of vessels and 81% of workers and thus dominates the fishing fleet in terms of numbers.

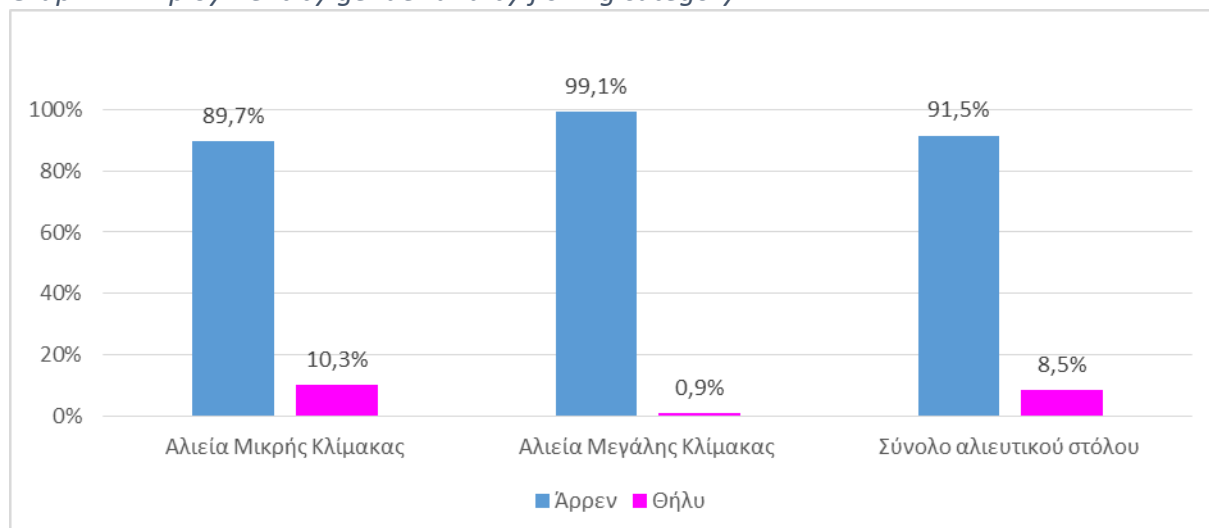
2.1 Employment by gender

Employment broken down by gender shows that 89.7% of workers in small-scale fishing are men and 10.3% are women; in large-scale fishing the corresponding figures are 99.1% and 0.9%, reflecting the fact that this type of fishing activity is more labour-intensive and takes place under more severe conditions. A breakdown of the workforce at fishing fleet level shows that 91.5% are men and 8.5% are women.

¹² 1 FTE (full-time equivalent) = 1,750 man-hours/year (GG, series II, No 1181 of 9 June 2011).

¹³ Fishing by vessels of a length of up to 12 metres is considered small-scale fishing, and fishing by vessels of a length above 12 metres is considered large-scale fishing.

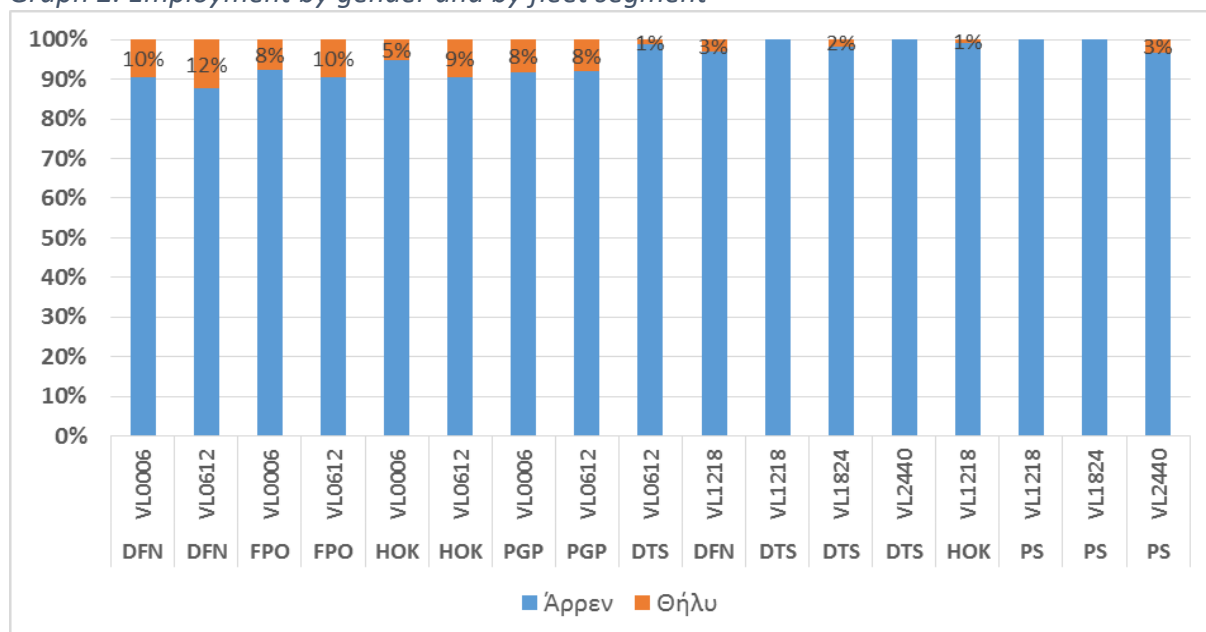
Graph 1. Employment by gender and by fishing category

Key:

Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Άρρεν = Men; Θήλυ = Women

As regards individual fleet segments, in small-scale fishing the biggest share of women is found in the 6-12 m netter (DFN) segment, and the smallest share is found in the 6-12 m trawler (DTS) segment (see Graph 2). With respect to large-scale fishing the biggest share of women is found in the 12-18 m netter (DFN) segment and the 24-40 m purse seiner (PS) segment, whereas there are no women workers in the 12-18 m and 24-40 m trawler (DTS) segments or in the 12-18 m and 18-24 m purse seiner (PS) segments.

Graph 2. Employment by gender and by fleet segment

Key:

Άρρεν = Men; Θήλυ = Women

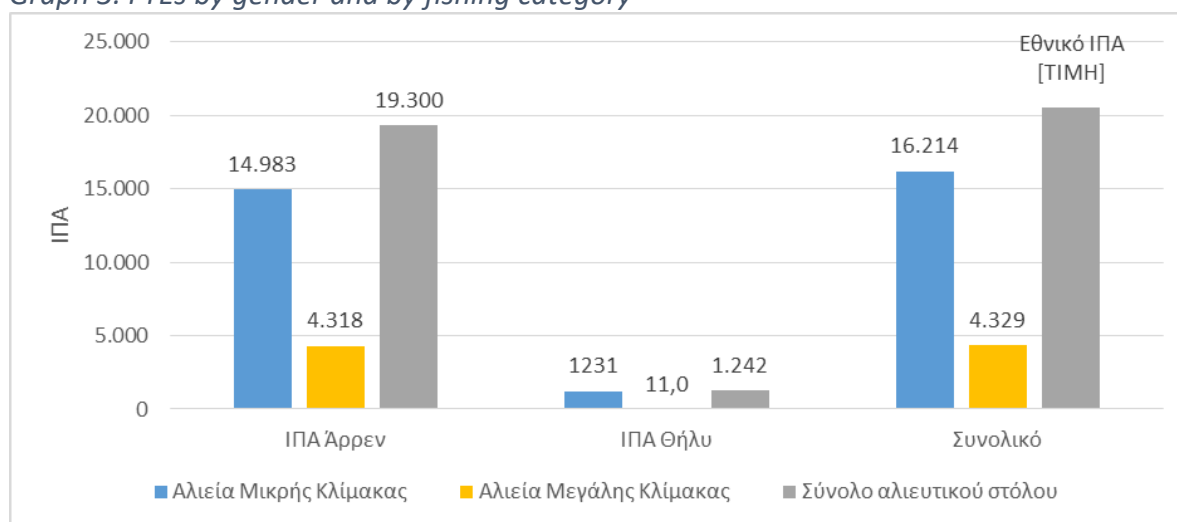
2.2 Full-time equivalents by gender

The number of full-time equivalents (FTEs) in small-scale fishing is estimated at 14,983 units for the male workforce and 1,231 units for the female workforce, with men accounting for 92.4% and women for 7.6% of the total. In large-scale fishing, the number of FTEs is estimated at 4,318 units for the male workforce and 11 units for the female workforce, or 99.7% and 0.03%, respectively.

By extension, FTE National is estimated at 20,542 units, with men accounting for 94% and women for 6% of the total.

Concerning the composition of FTE National, small-scale fishing accounts for the largest proportion (79%) due to the significant number of vessels in the national fishing fleet belonging to this category (94%). Large-scale fishing nevertheless accounts for 21% of the fleet's total FTEs, which is quite significant considering the small number of vessels (6%). This reflects a high average number of fully employed workers in this type of fishing activity.

Graph 3. FTEs by gender and by fishing category

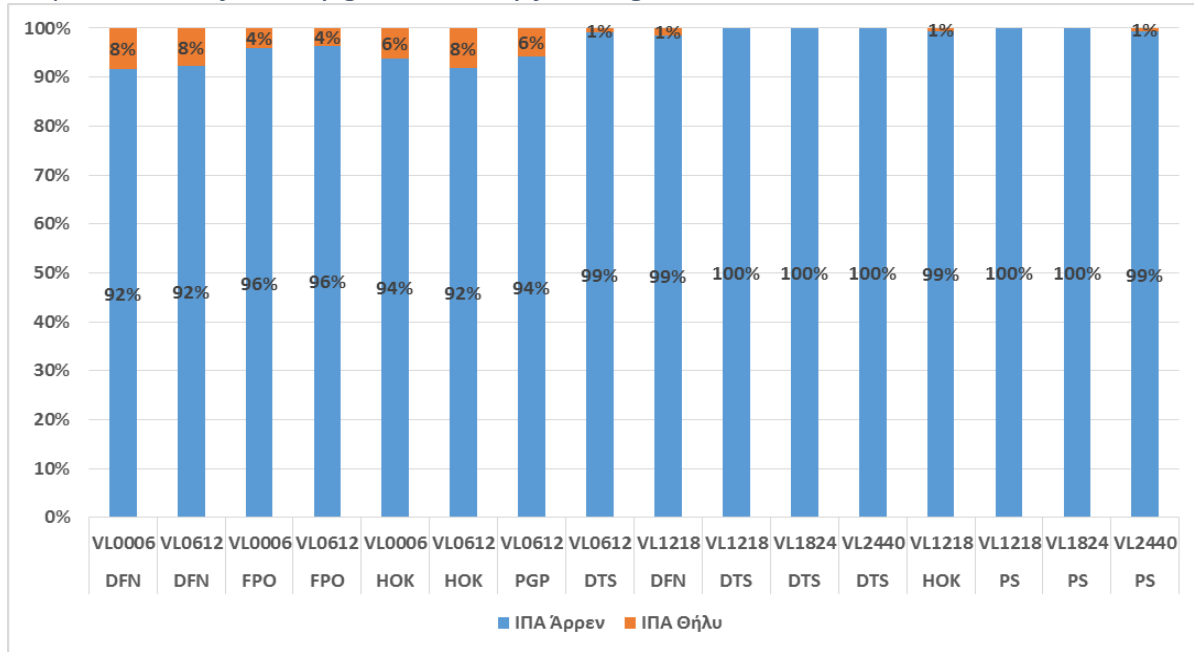


Key:

ΙΠΑ = FTEs; Εθνικό ΙΠΑ [ΤΙΜΗ] = FTE National [VALUE]; ΙΠΑ Άρρεν = Male FTE; ΙΠΑ Θήλυ = Female FTE Συνολικό = Total; Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet

Graph 4 shows that in small-scale fishing, women account for the highest share of FTEs in the 0-6 m and 6-12 m netter (DFN) segments and in the 6-12 m longliner (HOK) segment. Conversely, the lowest share is found in the 6-12 m trawler (DTS) segment. In large-scale fishing women account for the highest share of FTEs in the 24-40 m purse seiner (PS) segment and the 12-18 m longliner (HOK) segment. In the remaining large-scale fishing segments women have no share in the total number of FTEs.

Graph 4. Share of FTEs by gender and by fleet segment

**Key:**

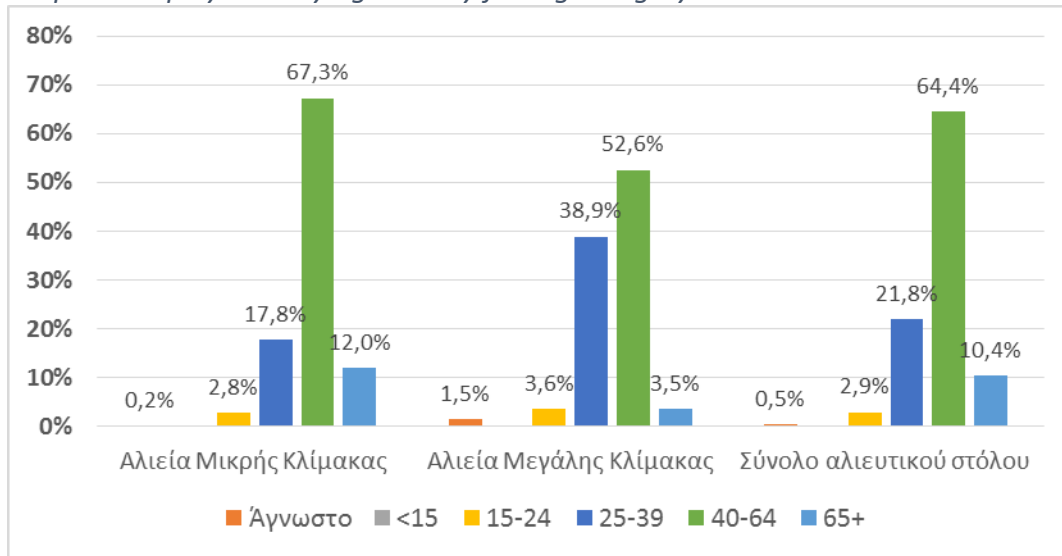
IPA Άρρεν = Male FTE; IPA Θήλυ = Female FTE

2.3. Employment by age

In terms of age distribution among crew in small-scale fishing, 2.8% were aged 15-24, 17.8% were aged 25-39 and the majority were aged 40 or above (67.3% in the 40-46 age group and 12% in the 65+ age group). 0.2% of respondents left the question unanswered. In the case of large-scale fishing the age distribution among crew was as follows: 3.6% were aged 15-24, 38.9% were aged 25-39 and the majority were aged 40 or above (52.6% in the 40-46 age group and 3.5% in the 65+ age group). As can be seen, the employment rates in the higher age groups (40-64 and 65+) are lower in large-scale fishing, reflecting the fact that this type of fishing activity is more labour-intensive and takes place under more severe conditions. 1.5% of respondents left the question unanswered.

At fleet level the age distribution among crew was as follows: 2.9% were aged 15-24, 21.8% were aged 25-39 and the majority were aged 40 or above (64.4% in the 40-46 age group and 10.4% in the 65+ age group). Lastly, 0.5% of respondents left the question unanswered.

Graph 5. Employment by age and by fishing category

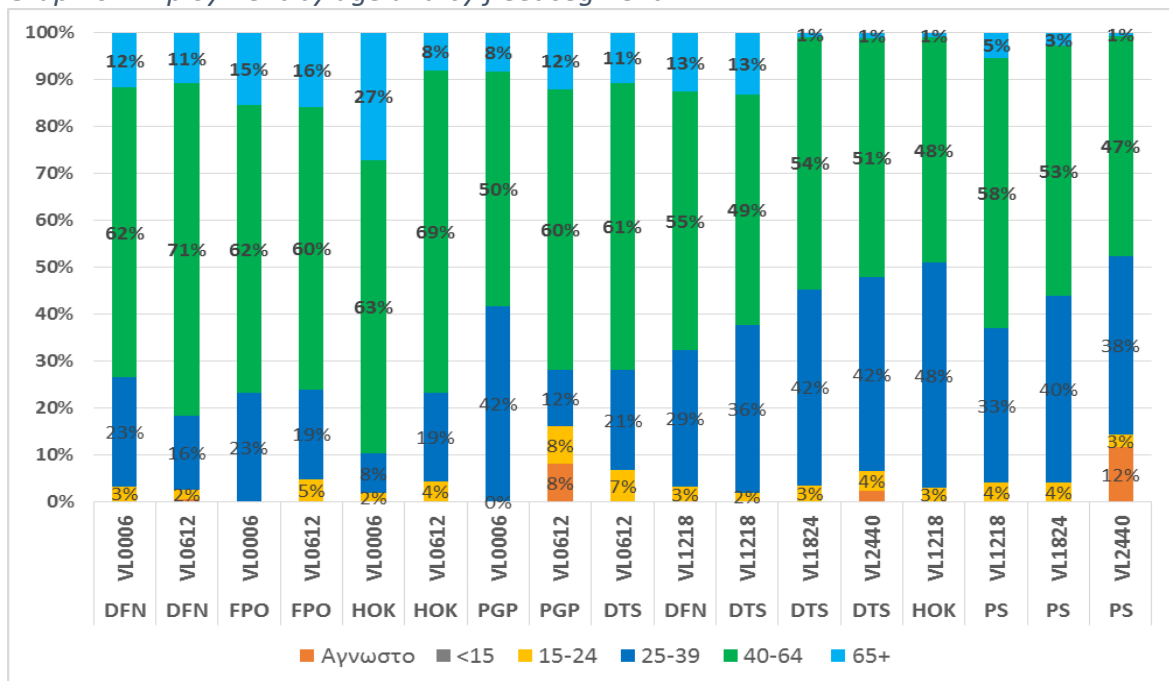


Key:

Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Άγνωστο = Not indicated

Graph 6 shows that in small-scale fishing, the highest concentration of the higher age groups can be found in the 0-6 m longliner (HOK) segment and the lowest concentration in the 0-6 m polyvalent passive gear (PGP) segment. In large-scale fishing, the highest concentration of the higher age groups can be found in the 12-18 m purse seiner (PS) segment and the lowest concentration in the 12-18 m longliner (HOK) segment.

Graph 6. Employment by age and by fleet segment



Key:

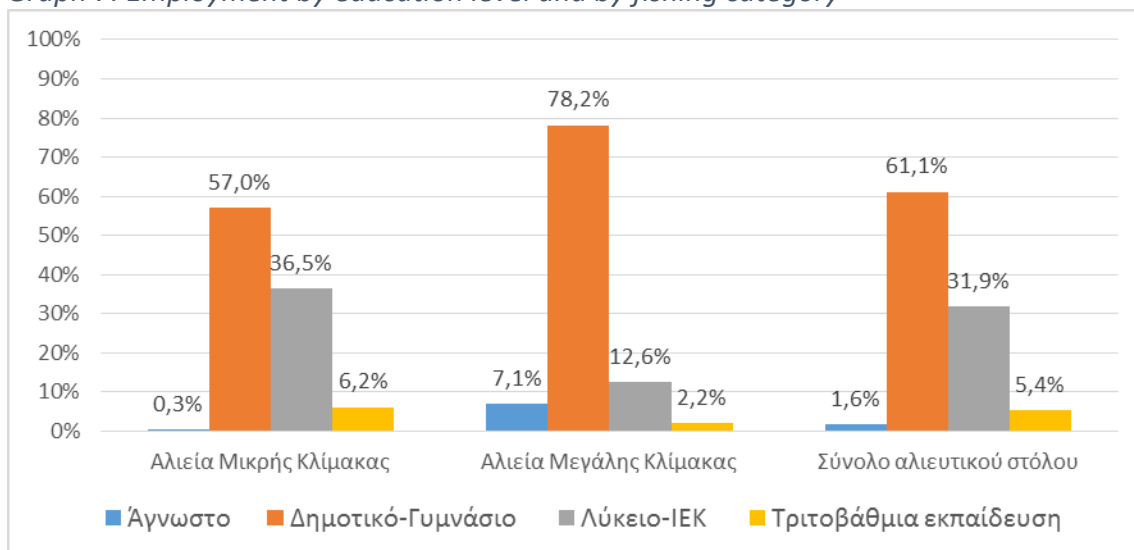
Άγνωστο = Not indicated

2.4. Employment by education level

With respect to education levels in small-scale fishing, 57% of workers had completed primary/lower secondary school, 36.5% had completed upper secondary school or vocational training and 6.2% were higher-education graduates; 0.3% of respondents left the question unanswered. In large-scale fishing, 78.2% of workers had completed primary/lower secondary school, 12.6% had completed upper secondary school or vocational training and 2.2% were higher-education graduates; 7.1% of respondents left the question unanswered. At fleet level, 61.1% of workers had completed primary/lower secondary school, 31.9% had completed upper secondary school or vocational training and 5.4% were higher-education graduates; 1.6% of respondents left the question unanswered.

The relatively high percentage of primary/lower secondary school leavers in large-scale fishing is, as discussed below, due to the high proportion of workers from countries outside the European Union/EEA¹⁴, who typically have only completed the most basic level of education.

Graph 7. Employment by education level and by fishing category



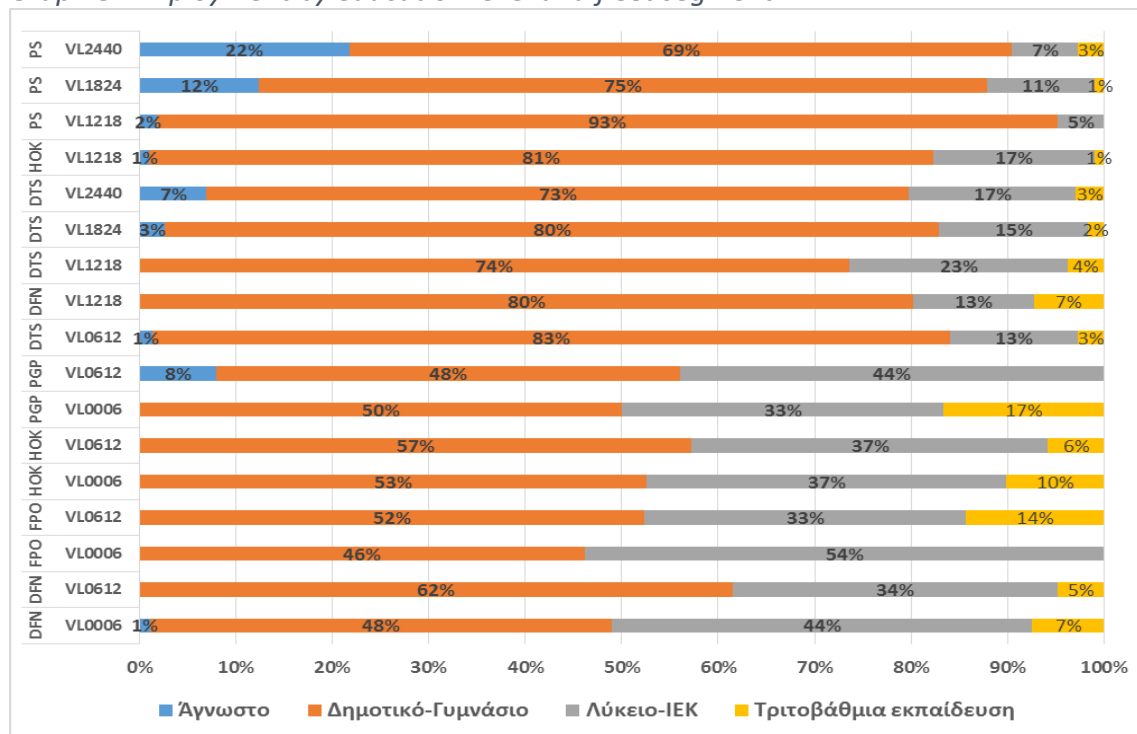
Key:

Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Άγνωστο = Not indicated; Δημοτικό-Γυμνάσιο = Primary/lower secondary; Λύκειο-IEK = Upper secondary/vocational; Τριτοβάθμια εκπαίδευση = Higher education

Graph 8 shows that the lowest concentration of workers with low education levels (primary and lower secondary school) can be found in the 0-6 m pots and traps (FPO) segment. Conversely, the highest concentration of workers with low education levels can be found in in the 6-12 m trawler (DTS) segment. With respect to large-scale fishing, the 12-18 m trawl (DTS) segment has the lowest concentration of workers with low levels of education, whereas the highest concentration is found in the 12-18 m purse seiners (PS) segment.

¹⁴ European Economic Area: Iceland, Liechtenstein, Norway

Graph 8. Employment by education level and fleet segment

**Key:**

Άγνωστο = Not indicated; Δημοτικό-Γυμνάσιο = Primary/lower secondary; Λύκειο-IEK = Upper secondary/vocational; Τριτοβάθμια εκπαίδευση = Higher education

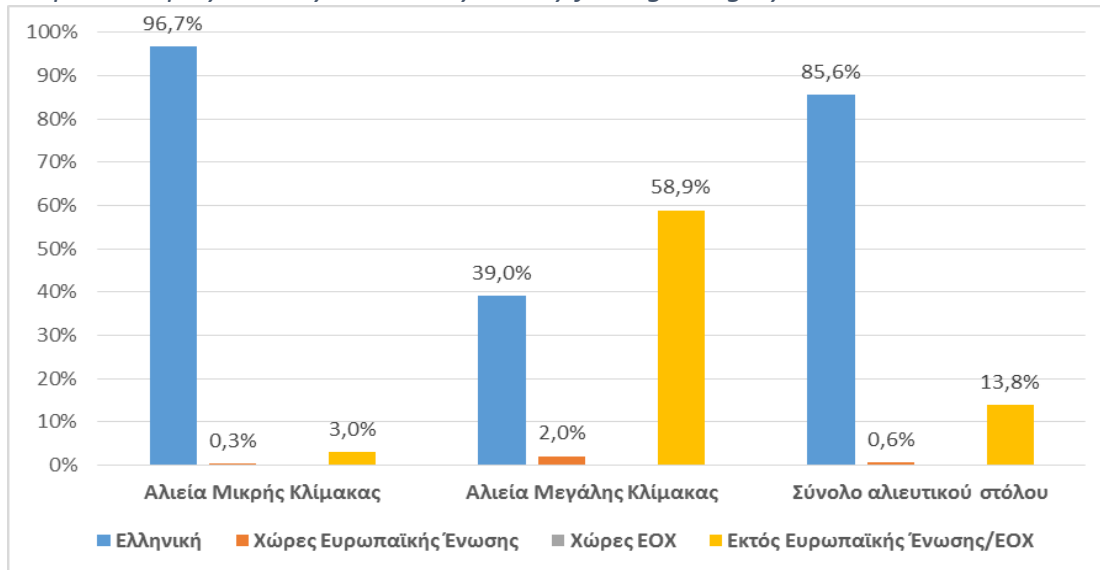
2.5 Employment by nationality

In small-scale fishing the predominant nationality is Greek, with Greeks accounting for 96.7% of the workforce, followed, in a distant second and third place, by nationals from countries outside the European Union/EEA (mainly Egyptians) with 3% and by European Union/EEA nationals with 0.3%. In large-scale fishing Greeks account for 39% of the workforce, 58.9% are from countries outside the European Union/EEA and 2% are European Union nationals.

The high proportion of workers from countries outside the European Union/EEA in large-scale fishing is due to a considerable need for low-cost, high-intensity labour that the structure of the domestic labour market is unable to meet.

At fleet level Greeks account for 85.6% of the workforce, 13.8% are from countries outside the European Union/EEA and 0.6% are European Union nationals.

Graph 9. Employment by nationality and by fishing category



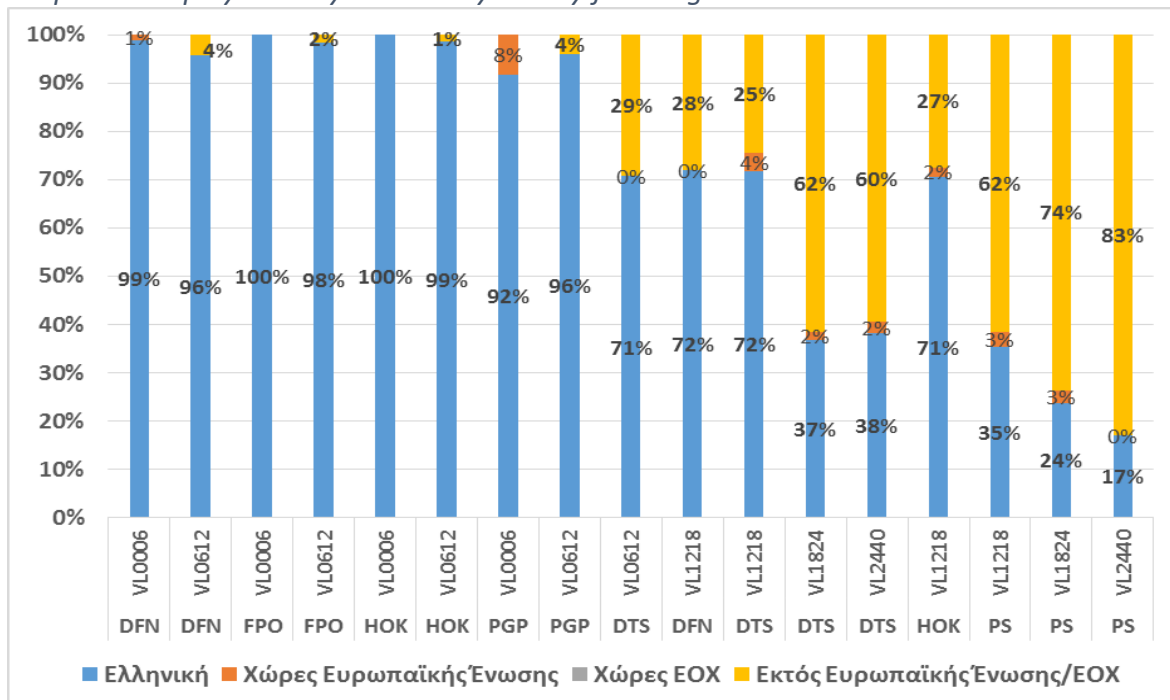
Key:

Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Ελληνική = Greek; Χώρες Ευρωπαϊκής Ένωσης = EU countries; Χώρες ΕΟΧ = EEA countries; Εκτός Ευρωπαϊκής Ένωσης/ΕΟΧ = Outside EU/EEA

Graph 10 shows that, in the case of small-scale fishing, the highest concentration of Greek nationals among the workers can be found in the 0-6 m pots and traps (FPO) segment and the lowest concentration in the 6-12 m trawler (DTS) segment.

In the case of large-scale fishing, the highest concentration of Greek nationals among the workers can be found on 6-12 m netters (DFN) and trawlers (DTS) and the lowest concentration on 24-40 m purse seiners (PS).

Graph 10. Employment by nationality and by fleet segment



Key: Ελληνική = Greek; Χώρες Ευρωπαϊκής Ένωσης = EU countries; Χώρες ΕΟΧ = EEA countries; Εκτός Ευρωπαϊκής Ένωσης/ΕΟΧ = Outside EU/EEA

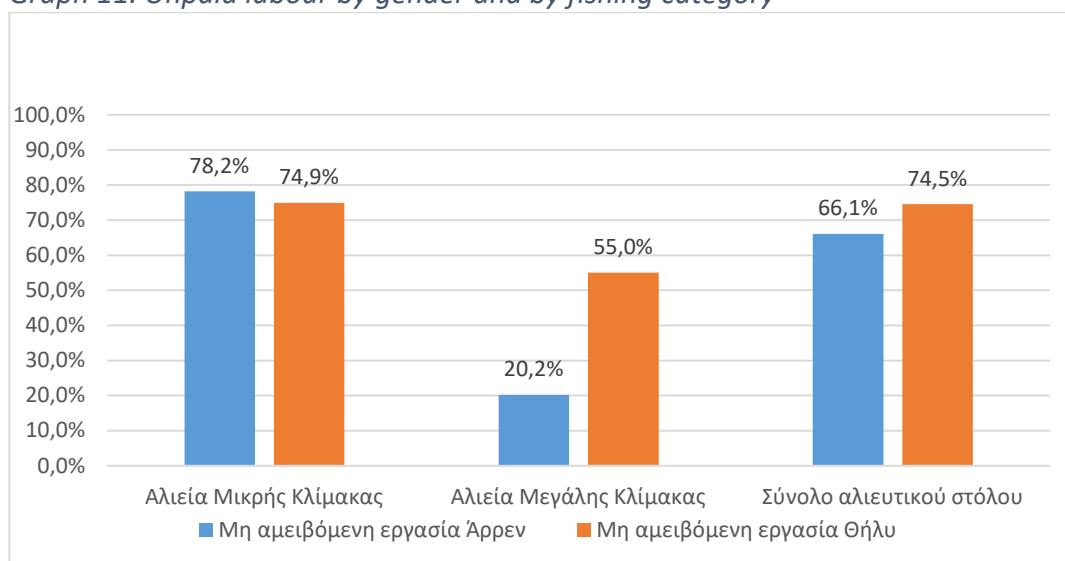
2.6 Unpaid labour by gender

In small-scale fishing the rate of unpaid labour, broken down by gender, is 78.2% for men and 74.9% for women. This points to the existence of a business model where fishing activity is family-run, based on unpaid labour to which an imputed value of labour can be attributed.

With regard to large-scale fishing, the rate of unpaid labour is 20.2% for men and 55% for women, which points to a business model where fishing activity is business-oriented and where family labour cannot meet the needs of more intensive fishing operations, with the result that paid crew make up the majority of the workforce.

In the fishing fleet as a whole, the rate of unpaid labour is 66.1% for men and 74.5% for women.

Graph 11. Unpaid labour by gender and by fishing category



Key:

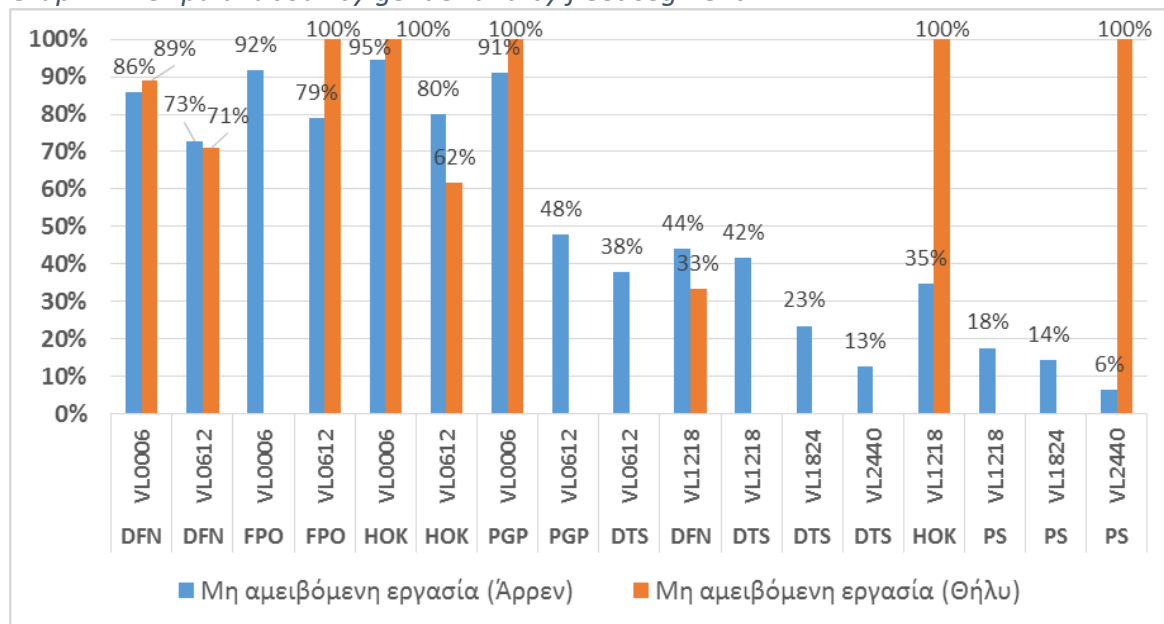
Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Μη αμειβόμενη εργασία Άρρεν = Unpaid labour (men); Μη αμειβόμενη εργασία Θήλυ = Unpaid labour (women)

Here it is worth noting that in small-scale fishing, the highest proportion of unpaid men can be found in the 0-6 m longliner (HOK) segment and the lowest proportion in the 6-12 m trawler (DTS) segment (see Graph 12). In large-scale fishing, the highest proportion of unpaid men can be found on 12-18 m netters (DFN) and the lowest proportion on 24-40 m purse seiners (PS).

With respect to women engaged in small-scale fishing, the highest rate of unpaid labour can be found in the 6-12 m pots and traps (FPO) segment and in the 0-6 m longliner (HOK) and polyvalent passive gear (PGP) segments, whereas the rate is zero in the 0-6 m pots and traps (FPO) segment and in the 6-12 m polyvalent passive gear (PGP) and trawler (DTS) segments.

In large-scale fishing, the highest proportion of unpaid women can be found on 12-18 m longliners (HOK) and 12-40 m purse seiners (PS) and the lowest proportion on 12-18 m netters (DFN).

Graph 12. Unpaid labour by gender and by fleet segment

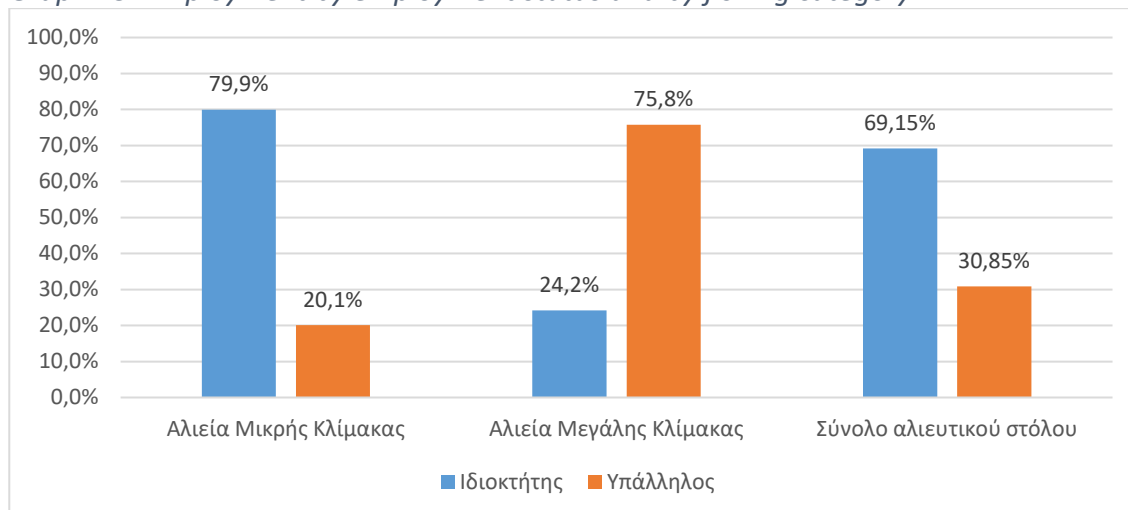
**Key:**

Μη αμειβόμενη εργασία (Άρρεν) = Unpaid labour (men); Μη αμειβόμενη εργασία (Θήλυ) = Unpaid labour (women)

2.7 Employment by employment status

In small-scale fishing, 79.9% of the workforce are owners of fishing businesses and 20.1% are employees. This explains the high rate of unpaid labour observed for both genders (66.1% for men and 74.5% for women), which is linked to the concept of an imputed value of labour. In large-scale fishing, on the other hand, 24.2% of the workforce are owners of fishing businesses and 75.8% are employees. A breakdown at fishing fleet level shows that 69.15% are owners and 30.85% are employees.

Graph 13. Employment by employment status and by fishing category

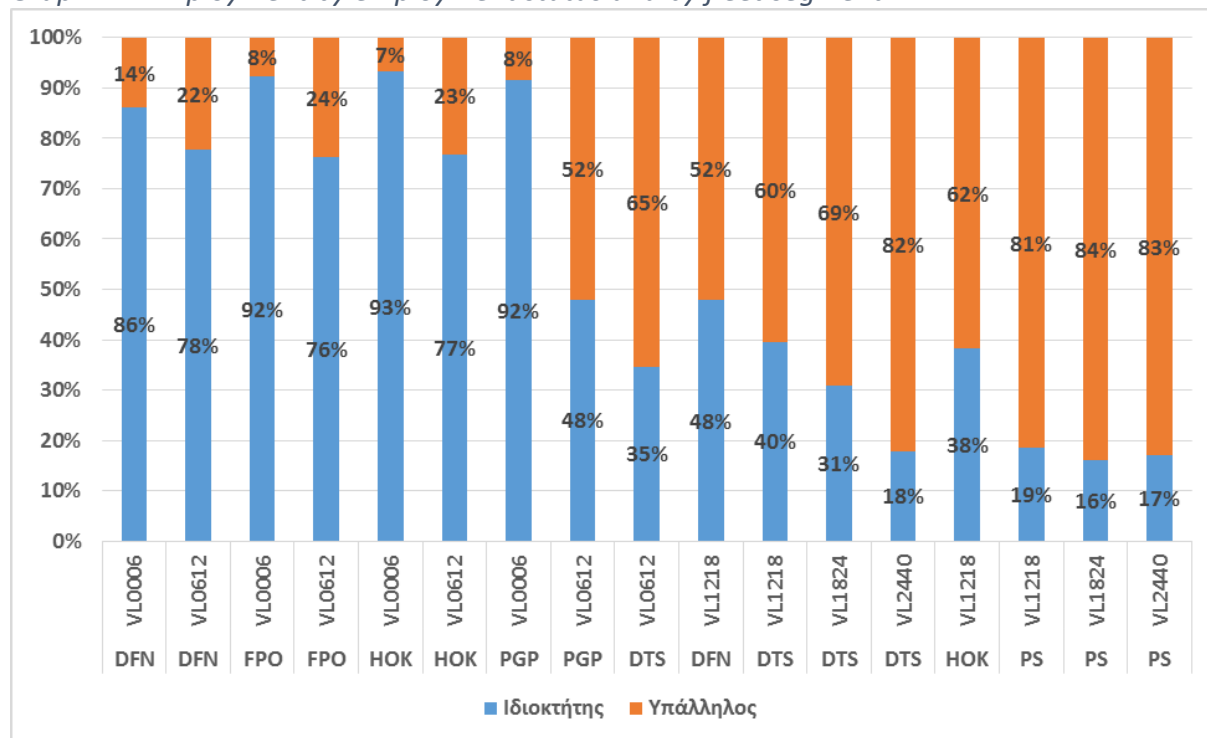
**Key:**

Αλιεία Μικρής Κλίμακας = Small-scale fishing; Αλιεία Μεγάλης Κλίμακας = Large-scale fishing; Σύνολο αλιευτικού στόλου = Whole fishing fleet; Ιδιοκτήτης = Owner; Υπάλληλος = Employee

Graph 14 shows that, in small-scale fishing, the highest concentration of owners can be found in the 0-6 m longliners (HOK) segment and the lowest concentration in the 6-12 m trawler (DTS) segment.

In large-scale fishing, the highest concentration of owners can be found in the 12-18 m netter (DFN) segment and the lowest concentration in the 18-24 m purse seiner (PS) segment.

Graph 14. Employment by employment status and by fleet segment



Key:

Ιδιοκτήτης = Owner; Υπάλληλος = Employee

3. Identification of the business model of the various fleet segments based on social variables

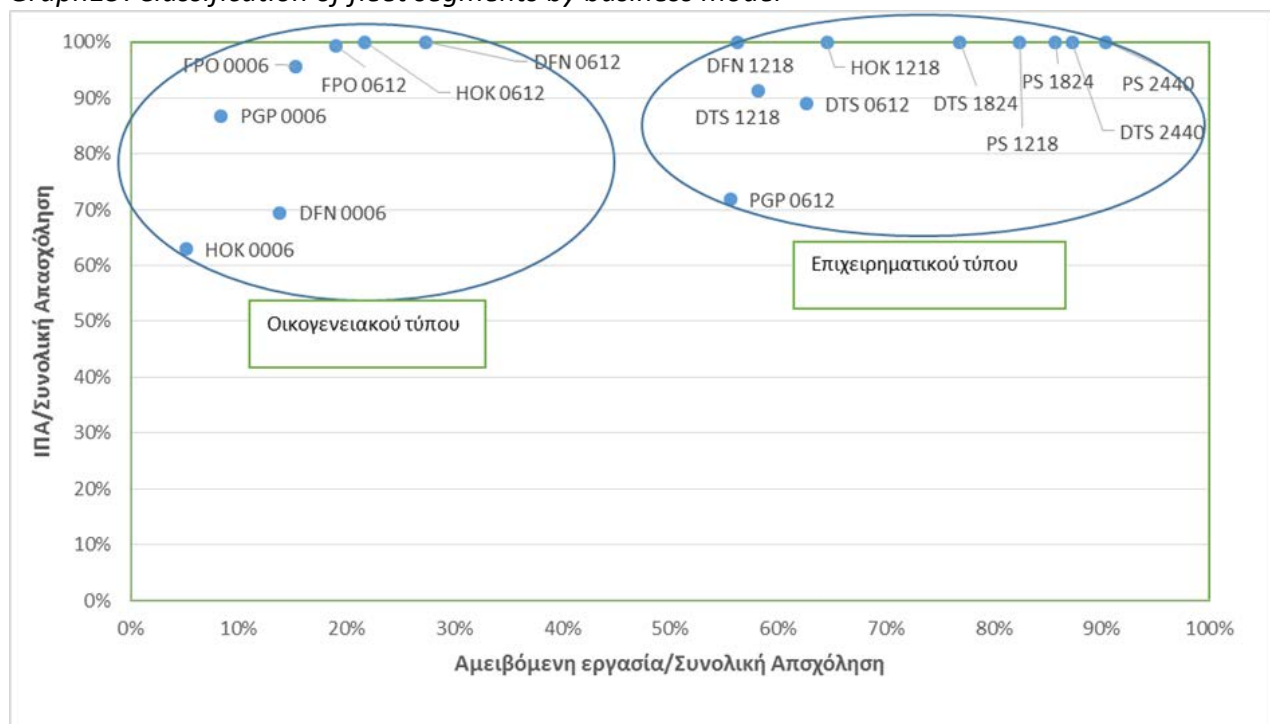
This section seeks to map Greek fishing businesses in terms of their business profile, by dividing them into two distinct groups, namely family-run and business-oriented, by means of a pair of indicators based on social variables. More specifically, the indicators used are: (1) remunerated work / total employment, and (2) FTE / total employment ratio. With respect to the first indicator, higher values indicate that a fishing business has a higher level of business activity, meaning that its fishing operations are too intensive for the required number of man-hours to be covered by family labour, with the result that the business needs to recruit paid workers. As regards the second indicator, higher values are also a sign that a fishing business has a higher level of business activity, given that a business-oriented activity needs to be organised in such a way that full and effective use is made of the available production factors, in this case the workforce.

This is illustrated by the graph below, which shows that segments close to the intersection of the coordinate axes tend to be of the family-run type, whereas segments further from the intersection tend to be of the business-oriented type. Moreover, 50% was set as the threshold between a family-run and a business-oriented fishing activity for each of the two indicators.

Two distinct groups can be observed, one of which is made up of fleet segments associated with small-scale fishing. More specifically, it consists of the segments 0-6 m netters (DFN), 0-6 m and 6-12 m pots and traps (FPO), 0-6 m and 6-12 m longliners (HOK) and 0-6 m polyvalent passive gear (PGP). Based on the criteria set, these fleet segments could be characterised as family-run.

The other group is made up of all the fleet segments associated with large-scale fishing as well as two segments associated with small-scale fishing, i.e. 6-12 m polyvalent passive gear (PGP), 12-18 m netters (DFN), 6-12 m, 12-18 m, 18-24 m and 24-40 m trawlers (DTS) and 18-24 m and 24-40 m purse seiners (PS). These fleet segments could therefore be characterised as business-oriented.

Graph15: Classification of fleet segments by business model



Key:

ΙΠΑ/Συνολική Απασχόληση = FTE / Total employment; Αμειβόμενη εργασία/Συνολική Απασχόληση = Paid labour / Total employment; Οικογενειακού τύπου = Family-run; Επιχειρηματικού τύπου = Business-oriented

4. Conclusions

Based on the social profile of the Greek fishing fleet outlined above, the conclusion could be drawn that the workforce is largely made up of men, although women account for a non-negligible share of the workforce especially in small-scale fishing.

Men and women account for 96% and 4%, respectively, of the total full-time equivalents. Small-scale fishing is the main contributor to FTE National due to the much larger number of vessels in the fleet engaged in this type of fishing. However, it should be noted that, in relation to the small number of vessels involved, large-scale fishing accounts for a considerable part of FTE National thanks to the significant number of full-time workers engaged in that part of the fleet.

As regards the social variable of employment by age, the majority of workers belong to high age groups. It is worth noting, however, that there are comparatively fewer workers in the higher age

groups (40-64 and 65+) in large-scale fishing, reflecting the fact that this type of fishing activity is more labour-intensive and takes place under more severe conditions.

The majority of workers have low levels of education (primary/lower secondary school leavers), and the highest proportion of workers having completed only primary/lower secondary school can be found in large-scale fishing due to the high number of workers from countries outside the European Union/EEA¹⁵, who typically have only completed the most basic level of education.

At fleet level the workforce is predominantly made up of Greek nationals, who account for 85.6% of the workforce, followed by nationals from countries outside the European Union/EEA (mainly Egyptians) with 13.6% and European Union/EEA nationals with 0.6%. It should be stressed, however, that in large-scale fishing the workforce is mainly made up of nationals from countries outside the European Union/EEA, due to a considerable need for low-cost, high-intensity labour that the structure of the domestic labour market is unable to meet.

The majority of workers, irrespective of gender, are involved in unpaid labour, indicating the important role of family labour and illustrating the link between unpaid work and the concept of its imputed value. In large-scale fishing, on the other hand, the majority of the workforce is remunerated, indicating the need to hire paid workers and thus the more business-oriented nature of large-scale fishing.

With regard to the social variable of employment by employment status, owners make up the majority of the workforce, which explains the high rate of unpaid work. In the case of large-scale fishing, however, employees are in the majority as too many man-hours are required for the owners to be able to cover them on their own.

Lastly, a pair of indicators were applied to the social variables examined to identify the business profile of the various fleet segments, classifying them as being either family-run or business-oriented. On the basis of this classification, almost all the fleet segments associated with small-scale fishing were found to engage in a family-run type of fishing activity, whereas the fishing activity of all the fleet segments associated with large-scale fishing were found to be business-oriented.

Among the fleet segments, the biggest gap in terms of business model was observed between 0-6 m longliners (HOK), which are, comparatively, the most family-run, and 24-40 m purse seines (PS), where fishing activity is, to the comparatively largest extent, business-oriented.

Identifying the business profile of fleet segments based on social variables can help policy-makers to design and implement appropriate fisheries policy measures by providing them with extra information in addition to financial results.

¹⁵ European Economic Area: Iceland, Liechtenstein, Norway

CHAPTER III BIOLOGICAL SUSTAINABILITY INDICATORS

A. Calculation of the 'sustainable harvest' indicator

The 'sustainable harvest' indicator (see Chapter 10 of the Regulation) has been calculated for a number of demersal and small pelagic stocks in geographical sub-areas (GSAs) 20 (Ionian Sea) and 22 (Aegean Sea).

The final weighted F/F_{msy} harvest indicators for trawlers, coastal vessels and purse seiners are 0.84, 0.90 and 1.024, respectively.

The F/F_{msy} values are shown below for the stocks taken into account, along with the weighting given to each stock based on its catch value.

In each case, account was taken of the main species, i.e. those making up the majority of the catch and with the highest economic value. Two species were taken into account for purse seiners, five for trawlers and eight for coastal vessels.

Purse seiners (PS)

GSA 20	Species:	F/F_{msy}	Catch value
22	Anchovy (ANE)	0.99	35,550
22	Sardine (PIL)	1.06	28,762
20	Anchovy (ANE)	1,077	1,054
20	Sardine (PIL)	1,021	2,906

Bottom otter trawls (OTB)

GSA 20	Species:	F/F_{msy}	Catch value
22	Hake (HKE)	1.12	11,083
22	Red mullet (MUT)	0.65	6,944
22	Striped mullet (MUR)	0.66	3,210
22	Pink shrimp (DPS)	0.39	6,797
22	Caramote prawn (TGS)	0.93	6,103
20	Hake (HKE)	2.29	1,062
20	Red mullet (MUT)	0.37	736
20	Striped mullet (MUR)	0.12	53
20	Pink shrimp (DPS)	0.85	125
20	Caramote prawn (TGS)	0.88	265

Coastal vessels

GSA 20	Species:	F/F_{msy}	Catch value
22	Hake (HKE)	1.12	14,765
22	Red mullet (MUT)	0.65	11,340
22	Striped mullet (MUR)	0.66	9,456
22	Bogue (BOG)	0.65	5,123
22	Octopus (OCC)	0.65	14,210
22	Common pandora (PAC)	0.51	5,130
22	Common cuttlefish (CTC)	1.54	11,659
22	Caramote prawn (TGS)	0.93	6,103
20	Hake (HKE)	2.29	2,987
20	Red mullet (MUT)	0.37	3,210
20	Striped mullet (MUR)	0.12	214
20	Bogue (BOG)	0.30	530
20	Octopus (OCC)	0.76	3,119
20	Common pandora (PAC)	0.53	1,287
20	Common cuttlefish (CTC)	0.91	2,897
20	Caramote prawn (TGS)	0.88	265

For a small number of stocks, the sustainable harvest indicator (F/F_{msy}) was calculated on the basis of population estimates by GFCM and EU (STECF) working groups, and in the context of a European cooperation programme financed by DG MARE (RECFISH).

For the remaining stocks the estimates were made specifically for the purposes of this report.

In all cases, as a result of the National Fisheries Data Collection Programme not having been implemented for a number of years, the estimates involve a large degree of uncertainty and considerable error margins due to time gaps in the data series, which required a number of assumptions to be made in the methods used.

It is possible, therefore, that the estimates do not reflect reality, and caution is required in their use for management purposes. This view has also been expressed by the EU working groups, which do not recommend using these estimates for the purpose of drawing up management scenarios.

B. Fishing effort

The section below presents the most recent available monitoring and recording data on fishing effort **for 2018**, based on the National Fisheries Data Collection Programme.

The geographical sub-areas of Greek waters are characterised by different metiers.

The metiers selected for sampling are in line with the reference list of metiers for the Mediterranean which was adopted in 2009 by the Mediterranean and Black Sea Regional Coordination Meeting and has since been updated annually. The selection of metiers was based on the classification system set out in Decision 2010/93/EU.

The data used for the classification of metiers was the average value of landings, the value of catches and the fishing effort for the years 2014 and 2016, for which data is available for the entire year.

Selected metiers by geographical sub-area

Metier	Target species	Code number	Area of data collection
Bottom trawl	Demersal species	OTB_DES_>=40_0_0	All geographical sub-areas
Purse seines used at night	Small pelagic fish	PS_SPF_>=14_0_0	All geographical sub-areas
Trammel nets	Demersal species	GTR_DES_>=16_0_0	All geographical sub-areas
Gill nets	Demersal species	GNS_DES_>=16_0_0	All geographical sub-areas
Set longline	Demersal fish	LLS_DEF_0_0_0	All geographical sub-areas
Surface longline	Large pelagic fish	LLD_LPF_0_0_0	All of Greece
Traps	Demersal species	FPO_DES_0_0_0	Only sub-area 22
Winch trawls (fishing activity chosen because it is included in a management plan)	Benthic species	SB_SV_DEF_0_0_0	Sub-areas 20 and 22