



HELLENIC REPUBLIC  
Ministry of rural development and food  
DIRECTORATE-GENERAL FOR FISHERIES

## Greek Fishing Fleet

### Report 2017

Pursuant to Article 22 of Regulation (EU) 1380/2013 of the European Parliament and of the Council



**MAY 2018**  
ATHENS

## **TABLE OF CONTENTS**

### ***SUMMARY OF REPORT***

#### **CHAPTER I**

##### **Description OF FLEET and VESSEL USE INDICATORS**

###### **1. DESCRIPTION OF THE GREEK FISHING FLEET**

- *Vessels that fish with static gear*
- *Vessels that fish with towed gear.*
- *Vessels that fish with encircling nets.*

###### **2. ANALYSIS OF THE BALANCE BETWEEN FISHING CAPACITY AND FISHING**

###### **OPPORTUNITIES**

###### **3. REDUCTION IN FISHING CAPACITY**

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

###### **5. FLEET MANAGEMENT SYSTEM-COMPLIANCE WITH THE FLEET POLICY**

###### **INSTRUMENTS**

###### **6. ADMINISTRATIVE PROCEDURES ADAPTED TO FLEET MANAGEMENT**

#### **CHAPTER II**

##### **SOCIOECONOMIC DATA ON MARINE FISHERIES**

#### **CHAPTER III**

##### **BIOLOGICAL SUSTAINABILITY INDICATORS**

## EXECUTIVE SUMMARY

The Greek fishing fleet is characterised by a large number of **fishing vessels** ( 14.977 vessels at 31.12.2017) with low tonnage and engine power (**71.099,90 GT and 426 600.51 kW**), targeting coastal stocks along the extended coastline of the mainland and numerous Greek islands.

Most of the fleet (95.11 %) are vessels fishing multiple species near the coast with static gear. Only 1.60 % of the vessels (239 vessels) carry the first purse seine gear (PS) and pelagic species, mainly anchovy and sardine, and 1.70 % (256 vessels) are using bottom otter trawls (OTB) and target demersal species, mainly striped mullet, red mullet, hake and crustaceans.

As regards the state of fish stocks, as well as the quantification of the impact of fishing activities, account has been taken of past data and data resulting from the implementation of the 2014, 2015, 2016, 2017 National Fisheries Data Collection Programme and other available scientific data. In this respect, we remind you that following the interruption in the implementation of the national programme for the collection of fisheries data between 2009 and 2011, the implementation of the programme has been gradually resumed since 2012.

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 from the Operational Programmes for Fisheries. According to data from Module 3, the highest percentage of reduction is observed on smaller vessels (total length < 12 m).

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

### CHAPTER I

## FLEET DESCRIPTION

### 1. DESCRIPTION OF THE FISHING FLEET

According to data from the National Register of Fishing Vessels (see **Figure 18/5/2018**), in total **14.977** fishing vessels with a total <sup>tonnage</sup> of **71.099,90 GT and 426 600.51 kW** power were included in the **Greek fishing** fleet register (**Figure**).

The Greek fishing fleet, as at 31.12.2017, is presented by category of length in the table below, according to the acceptance accepted by the OECD.

Overall LENGTH (m)	NUMBER OF VESSELS	GROSS TONNAGE (GT)
0,00-5,99	5.187	3.502,84
6,00-11,99	8.930	25.194,14
12,00-17,99	443	7.856,43
18,00-23,99	239	11.615,65
24,00-29,99	147	15.722,84
30,00-35,99	28	5.969,00
36,00-44,99	3	1.239,00
45,00-59,99	—	—
60,00-74,99	—	—
75 & more	—	—
No engine (of the above)	200	95,74

Almost all of the Greek fishing fleet operates in the Mediterranean Sea as the largest fleet in the European Union, in terms of the number of vessels. It is classified into three (3) broad categories depending on 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, there are also large vessels fully equipped to run multipurpose fishing trips outside the maritime areas of the country (Aegean, Ionian and Cretan Seas) and in most of its international waters. Mediterranean and use static gear.

#### B. Vessels 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, in particular in FAO/GFCM GSAs 20, 22 and 23, and in the waters of third countries under bilateral fisheries partnership agreements between the EU and third countries and under private agreements.

#### C. Vessels with encircling nets

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

### DETAILS

#### A. VESSELS WITH STATIC GEAR

Vessels in this category operate mostly in coastal waters and account for most of the Greek fleet (**95,11 %**) in terms of the number of **vessels** ( 14.245).

By overall length, break down as follows:

- *Small vessels: 13.916 coastal **fishing** vessels less than 12 metres in overall length, with a total gross tonnage of 27.671,43 **GT** and total engine power of **261 905.67 kW**.*
- *Vessels of an overall length of 12 metres or more, comprising 329 fishing vessels with a total*

*gross tonnage of 5.793,63 GT and total engine power of 29 940.88 kW.*

Coastal fishing is practised 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). Fishing activities are important for coastal zones, as they help maintain the socio-economic fabric of coastal and island communities.

Fishing is practised by professional fishermen holding a professional fishing licence for the vessels they own.

This includes **242** fishing vessels which in their licence contain ' seine nets operated from a vessel at anchor' or 'trawl nets' or '**winch trawls**' (**SB**). Winch trawls are operating under management plan established by MINISTERIAL DECISION 6719/146097/29-12-2016 (GOVERNMENT GAZETTE, B' 4348), pursuant to Article 19 of Regulation (EC) No 1967/2006 concerning certain technical measures in the Mediterranean Sea. This tool was not active in the 1st quarter of 2017, since its operation is possible only by way of derogation from the Regulation provided for in Article 13.

The derogation for the operation of the tool was adopted, as required, by the Commission Implementing Regulation (EC) No 2017/929 of 31 May 2017, which was published in the Official Journal of the EU on 1 June 2017 (No L 141 series) and entered into force on the third day following its publication, namely 3/6/2017 and 3 years.

Out of the **242** vessels referred to above, **165** vessels were issued, and then **only 157 vessels were authorised to work** in 2017, and operated from 1/10/2017 to 31/12/2017.

B. VESSELS THAT FISH WITH TOWED GEAR

#### — Vessels using bottom trawl nets (trawlers)

During the year 2017, vessels fishing mainly with bottom trawl nets (trawlers), which on 31.12.2017 were in numerical **256**, total 24.054,20 **GT** and 74 246.53 kW **engine power**.

Although these vessels represent a small portion of the Greek fishing fleet ( **only 1.70 %**), they account for some 25 % of the total annual fishing yield.

This is a widespread fishery in all three (3) GSA regions (Ionian Sea (GSA 20), Aegean (GSA 22), and Cretan Sea (GSA 23)), which exploited fishing grounds which cover mainly the continental shelf and the first section of the slope (to a depth of approximately 300 metres) in the territorial and international waters of the Mediterranean.

Species found mainly or exclusively on the continental shelf, 150-200 metres such as striped mullet (*Mullus barbatus*), striped red mullet (*Mullus surmuletus*), hake (*Merluccius merluccius*), various cephalopods (*Octopus vulgaris*, *Eledona moschata*, *Loligo vulgaris*), crustaceans (*Peneus kerathurus*, *Nephrops norvegicus*), sea bream (*Diplodus annularis*), etc. they constitute a significant proportion of the catch, which amounts to 15-20 %.

In 1/3 some of the fishing vessels in this category ( **94 vessels**) allocate to the second purse seine gear (PS), with which they do not fish (with very few exceptions).

The management rules are based on EU regulations for the Common Fisheries Policy (CFP), national legislation provides for more measures, relating to time and to local bans, aimed at the sustainable exploitation and protection of fish stocks.

A management plan for fishing with bottom trawl nets (trawlers) has been put in place since the beginning of 2014 in the whole territory, which was approved by the European Commission. The management plan in question makes the following provisions:

- The rules governing fishing with the fishing gear,
- an additional period of time;
- annual scientific monitoring of the status of target species, in relation to benchmarks, so that they are always within safe biological limits, on the basis of a monitoring programme,
- the granting of a fishing authorisation (annual) using the net bottom trawl net which completes the vessel's fishing licence.

A **total of 2017** annual fishing licences were granted in 245 for the use of bottom trawl nets (trawlers).

In addition, a management plan has been established and put in place from 1-1-2017 to reduce discards of demersal species for which a minimum size is applied (e.g.: species of the Mediterranean hake, striped mullet and prawns), in accordance with Regulation (EU) 2017/86/20-10-2016 (EUOJ L 14/4/18-01-2017).

#### **- Vessels fishing in the waters of third countries and Mediterranean international waters**

This is the smallest segment of the Greek fishing fleet. According to data from the National Register of Fishing Vessels, 31.12.2017 included **seven (7) fishing vessels** with an overall length of more than 20 metres, **with a total gross tonnage of 1.984,00 GT and total engine power of 4 156.35 kW**, fishing using bottom trawl nets (trawlers). Of the seven (7) vessels, only four (4) have fishing activities.

The vessels are in possession of a fishing licence, supplemented, where appropriate, by a licence to fish in third country waters, normally for a period of 3 months, within the framework of fisheries partnership agreements concluded by the EU with third countries, or under a private agreement with the authorities of a third country. The fleet in this category has shrunk significantly in recent years, with further contraction trends, as the possibilities for fishing activities of these vessels have been substantially reduced.

Under current fishing agreements, Greece has fishing opportunities to catch fish and cephalopods using bottom otter trawls only in the fishing zones of **Guinea Bissau**. The agreement was not implemented in 2013 because of the political situation in that country, but was reactivated in October 2014 and in 2017 **two (2) vessels engaged** in fishing there.

In 2016 **a (1) fishing vessel was activated in Sierra Leone** under a private agreement which also worked in 2017.

In addition, **one (1) fishing vessel was also active in Madagascar** in 2017 for which the operational status of Madagascar is under investigation.

The fishing vessels operating in international waters of the Mediterranean mainly use bottom trawl nets (trawlers), purse seines and drift longlines. Fishing licences are granted in so far as there is compliance with national and EU legislation, as well as with international rules on the maintenance and management of fish stocks.

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

- From 24 May to 15 July every year in all sub-regions; and
- From 16 July to 1 October in part of sub-region 22.

For **2017** a **total** of **365** annual fishing licences were granted for international waters of the Mediterranean.

#### C.VESSELS THAT FISH WITH ENCIRCLING NETS

##### — Vessels fishing with gear

This category comprises 239 vessels fishing mainly with purse seines, with a total gross tonnage of 10.143,69 **GT** and total engine power of **43 037.85 kW**. Vessels using purse seines as their main gear target mainly small pelagic species, operate only in good weather and do not make long fishing trips (rarely more than 48 hours), due to the vulnerability of the main target species.

The management rules are based on EU Common Fisheries Policy (CFP) regulations, while national legislation provides for additional measures relating to temporal and local closures, aiming at the sustainable exploitation and protection of fish stocks.

A management plan for fisheries for anchovy (*Engraulis encrasicolus*) and sardine (*Sardina pilchardus*) using purse seines has been put in place since February 2012.

The management plan makes the following provisions:

- The rules governing fishing with the fishing gear,
- a plan for scientific monitoring of the status of target species with reference to benchmarks to establish the status of target stocks;
- the granting of a 'fishing licence for small pelagic species (anchovy — sardine)', which supplements the vessel's fishing licence.

A total of **2017** annual fishing licences for small pelagic species (anchovy — sardine) were granted in **292**.

A management plan is being implemented as part of an obligation to reduce discards of small pelagic species (anchovy and sardine) in accordance with Regulation (EU) No 1392/2014/20-10-2014 (EU.OJ L 370/21/30-12-2014).

#### D.FISHING WITH ANNUAL FISHING AUTHORISATIONS

##### **D1. CORAL FISHING**

There is an institutional framework in place which allows for a nine (9) months fishing authorisation in a given fishing zone while the zones are rotated every five years.

No applications were submitted in 2017 and no harvesting licence was granted for red coral harvesting.

## **D2. FISHERIES TARGETING LARGE PELAGIC SPECIES**

For large pelagic fish species: Bluefin tuna (*Thunnus thynnus*), swordfish (*Xiphias gladius*) and albacore (*Thunnus alalunga*), which are covered by a special management system, shall be fished by vessels which, in addition to the fishing licence, have also been authorised to fish the species listed, in which the authorised fishing gear is laid down.

In 2017, a total of 304 licences were granted for fishing for swordfish (*Xiphias gladius*) and albacore (*Thunnus alalunga*) with LLD, LHM & PS gears, of which only 21 are fishing for albacore using purse seines (PS).

The country's quota was 218,70 tonnes for bluefin tuna (*Thunnus thynnus*) fisheries. Forty-four (44) fishing licences were issued, using hooks and lines.

The fishing activity was carried out in the period 13-2-2017 to 18-5-2017 when the corresponding country's corresponding available quota was caught at a rate close to 95.62 %, i.e. when 209.11 t (live weight of landing) was fished.

Following an allocation of tuna quota from Spain, twenty 20 tonnes of bluefin tuna were additionally allocated to Greece and fishing took place between 11/12/2017 and 30/12/2017.

Therefore, for 2017, the country's total bluefin tuna fishing quota was set at 238,70 tonnes, which amounted to 98.64 % of the quota.

Our department has cross-checked the total live landing 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.



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

### Comments on the state of the stocks

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.

On that basis, by comparative analysis of the **data available** in recent years and the data obtained from the implementation of the **2016** National Fisheries Data Collection Programme, we conclude on the main segments of the fleet as follows, taking into account biological and socio-economic factors, and updating, to the extent possible, as soon as data of the 2017 National Fisheries Data Collection Programme are available.

### Small pelagic species

Acoustic surveys carried out in June 2016 in the Aegean Sea and in September 2016 in the Ionian Sea produced the following results as regards the distribution and state of stocks of **small pelagic** species:

#### **Aegean Sea:**

Anchovy stock levels in June 2016 are significantly higher than in June 2014 (70 %) and September 2013. However, due to the lack of data for 2015 and other relevant data as well as the short time series, no conclusion can be reached as to whether this is a stable rising trend or just down to temporary fluctuations. A breakdown by length and age shows 1 to be the predominant age of the anchovy stock. The spatial distribution of the anchovy is generally widespread with the highest biomass concentrations identified mainly in the Thracian, Strymonate, Gulf of Thermaikos and B.Gulf of the Gulf of Evia

Sardine stock biomass levels in June 2016 are higher than in June 2014 (47 %) and September 2013. Due to the lack of data for 2015 combined with the short time series and the absence of data on year-on-year changes, no firm conclusions can be reached on the state of the stock. The spatial distribution of the sardine stock shows the highest biomass concentrations in the Thracian Sea and in particular to the east and west of Thasos, within the Thermaikos Gulf and in the northern part of B.Gulf of Evia. A breakdown by length and age shows 1 to be the predominant age of the sardine stock.

#### **Ionian Sea:**

In 2016 the largest biomass concentrations of anchovy were mainly found in the Ambracian Gulf, the Gulf of Patras, the Inner Ionian sea towards the mainland and the Gulf of Corfu. The largest concentrations of sardine were mainly found in the Ambracian Gulf, and to a much lesser extent in the Gulf of Corfu and the Gulf of Patras.

Anchovy stock levels were higher in September 2016 than in 2015, 2014 and 2013, but the increase is not as significant as that seen in the Aegean. The anchovy stock thus seems to have remained largely stable over the three-year period, whereas Sardine stocks were as abundant in September

2016 as they were in 2015, but lower than in 2014 and at levels similar to 2013. The length and age composition of the anchovy and sardine stock showed a small age range, both of the general public for both species (0 to 3), with the prevailing ages 0 and 1. The sardine stock in general appears to vary significantly from anchovy. As the area had not been previously investigated, 4 years of assessments are not sufficient for a reliable valuation of the state of the stocks.

In the Ambracian Gulf of 2016, very similar abundance and density were observed in the Ambracian Gulf of 2015, up to a depth of 15 metres. No shoals were observed at greater depths. As in 2014, reduced oxygen levels or even hypoxia were observed at greater depths, meaning that any concentration of fish is necessarily found at more shallow depths.

**Table A3.1b.4. Estimated anchovy biomass in the Aegean and Ionian Seas by age group, based on the results of acoustic surveys carried out in June and September 2016, respectively.**

Aegean			Ionian		
Age	Number of persons	Biomass (t)	Age	Number persons	Biomass (t)
0	4 602 312	9.79	0	7 212 225	27.00
1	14 839 527 721	75 876.17	1	2 662 211 994	19 980.51
2	163 711 022	1 644.53	2	9 246	0.14
3	30 440	0.64	3	0	0.00
Sum a	15 007 871 495	77 531.13	Sum	2 669 433 465	20 007.64

**Table A3.1b.6. Estimated sardine biomass in the Aegean and Ionian Seas by age group, based on the results of acoustic surveys carried out in June and September 2016, respectively.**

Aegean			Ionian		
Age	Number of persons	Biomass (t)	Age	Number persons	Biomass (t)
0	966 972 951	9 860.10	0	138 747 942	1 249.11
1	1 066 843 733	13 852.79	1	156 220 986	1 926.70
2	486 774 409	7 364.39	2	29 602 203	581.87
3	0	0.00	3	0	0.00
Sum	2 520 591 093	31 077.28	Sum	324 571 131	3 757.68

For a complete assessment of the state of the stocks compared to the reference points, the acoustic survey data needs to be assessed in relation to data on monthly landings and discards, including the demographic composition of the landings, which is not available for 2015 but only for 2014 and 2016.

### Demersal

Estimates show that the hake stock is in a precarious state, as according to the preliminary estimates of experts of the National Fisheries Data Collection Programme regarding the biological indicators for demersal species in the Aegean (GSA 22), the F/F<sub>msy</sub> 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 appears 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 that use net and longline and bottom otter trawls as fishing gear and that target this specific species among others, could help achieve this objective.***

***The 2014-2020 Fisheries and Maritime Operational Programme for permanent cessation of fishing activities was activated in 2017, in line with the Action Plan submitted in the 2016 Fleet Report and the inclusion of a significant number of vessels, while the implementation of the scrapping will take place in 2018.***

According to the information available from the analysis of the economic viability of the small coastal fleet (vessels smaller than 12 m) regardless of the gear, under the National Fisheries Data Collection Programme with the reference year 2015, it appears that the return on investment for this category of the fishing fleet is negative on the basis of the return on investment index for this category of the fishing fleet.

Over time, the 'observation-based' technical indicator shows a downward trend for small-scale coastal fishing in the period from 2009 to 2016. Prices fetched in 2016, compared to 2009 prices, have fallen by 13.49 %, 13.68 % and 33.08 %, respectively, for fleet segments VL0006, VL0612 and VL1218.

For 2016 the 'observation-based' indicator value for fleet segment VL0.65 is 0.006, which is a sign of under-exploitation ('red light') and possibly of redundant technical capacity.

For fleet segment VL0612 the indicator value for 2016 is 0.73, which is largely considered to correspond to a consistent level of activity ('green light').

It should be noted that this specific indicator fluctuates at values close to 'red light' levels.

The economic crisis in Greece (reduced fishing effort due to the cost of fuel and the fall in 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 higher age of the fishermen, who may therefore be less able or motivated to make regular fishing trips.

## VESSEL USE INDICATORS

Frankfurt-Hahn	Fleet cat.	Length class	Technical Indicator (obs.)	Technical Indicator (Theor.)
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

### 3. REDUCTION IN FISHING CAPACITY

The total number of Greek fishing vessels has decreased significantly over the past years, and continues to decrease until now.

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.

***The 2014-2020 Fisheries and Maritime Operational Programme for permanent cessation of fishing activities was activated in 2017, in line with the Action Plan submitted in the 2016 Fleet Report and the inclusion of a significant number of vessels, while the implementation of the scrapping will take place in 2018.***

According to data from the OP Special Managing Service, under the **2017 to 2020 Maritime and Maritime Operational Programme for the & the Sea Operational Programme**, there was no exit with financial support from the Greek fishing fleet, and therefore we had no reduction in the fishing capacity of the fleet in this case.

In total, between 01-01-2003 and 31-12-2017, the fishing fleet was reduced, both with financial support and without financial support, by **3.981 vessels** ( 20,99 %) and fishing capacity decreased by **29.88 %** and **27.52 %** in terms of gross tonnage (GT) and engine power (kW).

In application of the rules of the Common Fisheries Policy, the country manages the fishing capacity of the fishing fleet in such a way that the (kW) capacity (GT) and tonnage (GT) of its vessels relative to the reference levels are kept at controlled levels.

The entry of new fishing capacity, without financial support, is always accompanied by the mandatory withdrawal of a corresponding capacity without financial support.

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

In order to assess compliance with the entry-exit regime, as provided for in Article 7 of Regulation (EC) No 1013/2010, please find below the tables showing the calculation of the reference basis, the entry-exit regime, and the reference levels at 31-12-2017, according to the latest update of the data in the National Register of Fishing Vessels held by the Directorate of Fisheries Control of the Ministry of Shipping & Island Policy.

##### A. Calculation of baseline (GT<sub>03</sub> and KW<sub>03</sub>) on 1-1-2003

GTFR (1-1-2003)	GT <sub>1</sub>	GT <sub>2</sub>	GT <sub>3</sub>	GT <sub>4</sub>	GT <sub>03</sub>
101.401	0	0	4.526	0	105.927

KWFR (1-1-2003)	KW <sub>1</sub>	KW <sub>2</sub>	KW <sub>3</sub>	KW <sub>4</sub>	KW <sub>03</sub>
588.554	0	0	1.234	0	589.788

##### B. Entry/exit management 31-12-2017

		GT		KW	
1	Fishing capacity as of 1-1-2003	GTFR	101.401	KWFR	588.554
2	AI. Fishing capacity for the entry/exit regime	GT <sub>03</sub>	105.927	KW <sub>03</sub>	589.788
3	Vessels entered in the public sector 100 GT with public aid	GT <sub>100</sub>	0	KW <sub>100</sub>	0
4	Other entry or capacity increase (not included in 3 & 5)		19.101		105.919
5	Increase in GT tonnage for safety reasons	GTS	13		
6	TOTAL ENTRIES (3 + 4 + 5)		19.114		105.919
7	Exit with public aid before 1-1-2007	* GTa1	11.339	KWa	60.827
8	Exits with public aid after 1-1-2007	* GTa2	16.484		76.880
9	Other exits (not included in 7 or 8)		21.592		130.165
10	TOTAL EXITS (7 + 8 + 9)		49.415		267.872
11	Engine power replaced with public support and involving a reduction in power			KWr	0
12	Fishing capacity of the fleet on 31-12-2017 (1 + 6-10)	GTt	71.100	KWt	426.601
13	Upper limit (ceiling) at 31-12-2017		78.886		452.081

Lines 1, 3, 4, 5, 7, 8, 9, 11, 12: the data entered in the National Register of Fishing Vessels Row 13 are presented: Ceiling of GT = 2-35 % 3 + 5-99 % 7-96 % 8 and KW = 2-35 % 3-7-8-20 % 11

Based on the table, the available fishing capacity of the Greek fishing fleet is 7.786 GT and 25.480 kW.

### C. Reference levels at 31-12-2017

		GT		KW	
1	Reference levels as of 1-1-2003	R (GT) 03	119.910	R (kW) 03	653.497
2	Entry of vessels of over 100 GT with public aid	GT <sub>100</sub>	0	KW <sub>100</sub>	0
3	Increase in tonnage to GT for safety reasons	GTS	13		
4	Exit with public aid up to 31-12-2006	GTa1	11.339	KWa	60.827
5	Exit with public aid after 1-1-2007	GTa2	16.484		76.880
6	Engine power replaced			KWr	0
7	AI.fleet capacity in 31-12-2017	GTt	71.100	KWt	426.601
8	Reference levels at 31-12-2017	R (GT) 03	92.873	R (kW) 03	515.790

Situation according to the data recorded, the National Fisheries Register line 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 in order to minimise delays.*

The results of the above table show that the reference levels of the Greek fishing fleet were met on 31-12-2017.

It 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).

*In addition, it should be mentioned that inactive fishing vessels have been found to be inactive, but they continue to appear actively in the IPU, and which are being gradually removed, through a slow and lengthy administrative process, at the end of which the above mentioned fleet capacity would be further reduced.*



## 5. FLEET MANAGEMENT SYSTEM

The Greek fishing fleet is the largest in the EU in terms of numbers and consists mainly of small coastal vessels with extensive use of selective gear, as well as a large variety of gear depending on location and time.

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/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;
- the use of information technology and modern technology for the completeness and reliability of data on vessels' fishing activities, inspections, the point system, the exchange of data with other Member States and their use in real time, the improvement of the system of monitoring & controls on tuna fishing and the implementation of the monitoring and control system for swordfish fishing.
- 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. ADMINISTRATIVE PROCEDURES ADAPTED TO FLEET MANAGEMENT

The organisational structure and responsibilities of the single audit authority and the fisheries sector audit authorities in our Ministry have improved since 2015, and the Ministry of Shipping & Island Policy, the upgrade of the Fisheries Monitoring Centre (FMC), the full operation of the Integrated Fisheries Monitoring System (OSPA), the complete procurement and financing of the VMS and ERS equipment used on the fishing vessels, the preparation/or adaptation to the EU provisions on the control of the marketing and the introduction of a point system, the implementation and electronic recording and monitoring of bluefin tuna catches, as well as the provision of information and training for users of control authorities and operators in the new systems.

The following actions were also carried out:

- 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 programme for the use of instruments under the coordination of 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 were carried out using 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.

In the above reasoning we refer, by way of illustration, to the reasons given above.6719/146097/29-12-2016 Decision of the Ministry of Rural Development and Food (Government Gazette, Series II, No 4348) setting up a Management Plan for fishing using boat seines or winch trawls (SB), fishing for picarel (*Spicara smaris*) and bogue (*Boops boops*) in specific areas of Greece but has not yet been published in the Official Journal of the European Union. Commission for the purpose of derogation from the minimum distance from the coast and depth, necessary for its entry into force, by way of derogation.

The problem encountered at this stage of 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 they do not include the time series required for full scientific documentation.

In addition, also due to the administrative procedure in place for the submission and official 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 later assessed in order 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 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, the data in question is incomplete as neither the recorded landings nor the fishing effort correspond to a full year. The data in question cannot therefore be used to draw up the relevant chapter.

This creates a major problem when it comes to drawing up the chapter on Greece to be included in the annual STECF report<sup>1</sup>. The report mentions the fact that the data submitted by Greece is incomplete, which creates difficulties in terms of further analysis.

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

This was done in order to solve these problems, which was achieved during the implementation of the programme for the year 2014 — as pointed out by the competent services of the European Commission. Commission — and the inclusion of the Programme for funding in the 2014-2020 Fisheries and Maritime Operational Programme, so that the smooth implementation of the programme and its implementation since the beginning of each year significantly improve the situation of the sector and the management of the fishing fleet.

## **CHAPTER II**

### **SOCIOECONOMIC DATA ON MARINE FISHERIES**

The data presented in this report is the most recent available, based on the 2017 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 have been calculated on the basis of economic data collected under the National Programme for the Collection, Processing and Use of Data in the Fisheries Sector and **pertain to 2016**. The detailed financial data used for the calculation of the accounts are included in the annual report of the programme for 2017 and sent to the Ministry of Rural Development and Food.

The socio-economic data collected mainly concerns fishing vessel expenditure, in particular 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).

---

<sup>1</sup> 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.

In addition, socio-economic data relate to repair and maintenance costs, other variable costs excluding fuel and labour costs (e.g.: costs of food and bait, marketing costs, etc.), non-variable costs (e.g. accountant, ship security cost, and annual depreciation of capital costs).

### 1. Return on investment versus next best alternative

The RoFTA index has been calculated for each fleet segment as follows:

#### **ROFTA (%) = net profits/value of fixed assets**

The net profit is obtained by subtracting crew expenses, unpaid labour, energy costs, repair and maintenance costs, other variable costs, non-variable costs and depreciation from landing revenue<sup>2</sup>. The value of fixed assets is the replacement value of the vessel, since there are no estimates for intangible assets.

Then, as can be seen from the figures in the table below, the return on investment is compared with the long-term low risk long-term investment rate calculated by the European Central Bank in accordance with Directives COM (2014) 545, at a rate of 8.36 %.

According to the figures in the table, the return on investment is positive and higher than the long-term low risk interest rate only in traps of less than 6 metres in length. However, it should be noted that in most categories, the return on investment is positive but lower than the long-term low risk rate (with the exception of nets nets of 0-6 m).and 12-18 m, bottom trawls 18-24 mand purse seines 12-18 m)

### 2. Current income to income income ratio

The zero profit income (NPI) is calculated as follows:

#### **NPI = (fixed costs)/(1- [variable costs/current income])**

Variable costs include crew expenses, unpaid labour, energy costs, repair and maintenance costs and other variable costs. Fixed costs include non-variable costs and depreciation. Finally, current income refers to revenue from landings.

As a next step the current income to NPI ratio is calculated.

The NPI and the current income to NPI ratio have also been calculated net of depreciation.

As shown in the table, the ratio is positive for the majority of fleet segments, with the exception of segments nets of 0-6 m.and 12-18 m, and purse seines 12-18 m

The same result arises in the case of the current income to zero-cost income ratio (excluding depreciations) where the ratio between the remaining segments is positive but less than the unit.

<sup>2</sup> should be noted that in the context of the National Programme for the Collection, Management and Use of Data in the Fisheries Sector, the economic data are collected using the random sampling method and that due to the late start of the programme, in some segments the sample of vessels that is finally collected is very small. The number of collected questionnaires is shown in Table 1.

**Table 1.: Estimated economic indicator values for segments of the Greek fishing fleet in 2016 \***

Vessel category	DFN0006	DFN0612	DFN1218	DTS1824	DTS2440	FPO0006	FPO0612	HOK0006	HOK0612	HOK1218	PGP0006	PGP0612	PS1218	PS1824	PS2440
ROFTA (%)	— 3,88	0,16	— 0,35	— 0,20	0,63	12,55	1,89	0,77	0,29	1,08	0,22	0,32	— 0,49	0,35	2,71
Return on investment — long-term risk-free interest rate	— 12,24	— 8,20	— 8,71	— 8,56	— 7,73	4,19	— 6,47	— 7,59	— 8,07	— 7,28	— 8,14	— 8,04	— 8,85	— 8,01	— 5,65
NPI	— 2.242.641	90.264.121	— 20.085.702	83.458.841	22.104.524	94.105	2.054.730	7.657.403	28.312.076	3.128.676	226.994	223.183	— 16.741.035	28.471.066	3.180.042
Ratio (current income/NPI)	— 9,47	1,30	— 0,29	0,31	3,23	39,36	6,43	3,00	1,94	5,12	1,67	2,27	— 0,73	2,12	11,59
NPI (net of depreciation)	— 691.268	24.552.557	— 1.817.895	6.221.922	2.684.151	19.944	544.820	1.574.229	2.677.965	198.380	55.973	11.071	— 2.058.534	5.052.859	256.271
Ratio (current income/NPI net of depreciation)	— 30,73	4,79	— 3,21	4,10	26,61	185,71	24,24	14,60	20,47	80,76	6,75	45,80	— 5,90	11,96	143,78
Collected questionnaires *	23	80	7	7	10	7	37	16	41	8	4	2	3	9	8

\* The number of questionnaires to be collected is very small, due to the late start of implementation of the programme in 2017.

### 1. Structure of the Greek fleet, fishing effort, employment and production <sup>34</sup>

it appears from the data in Table 1 that the register of fishing vessels in 2016 includes 15.182 vessels with a total gross tonnage of 71.751 GT and total power of 430.793 kW, while the average age of the vessels amounts to 29,43 years. In terms of both 2015 and 2012, the number of vessels, the total tonnage and total power show a slight decrease (3-4 %) and the average age is increased by 1.27 %. It should be noted that for 2017, the number of vessels has been reduced by 197 vessels (14.985 vessels) and a further reduction of 766 coastal fishing vessels is under way through the implementation of Measure 6.1.10 'Permanent cessation of fishing activities', Operation of the Operational Programme & Sea fishing 2014-2020<sup>345</sup>.

The Greek fleet in 2016 comprises 14.207 companies and it is worth noting that 94 % of Table 1. Structure of the Greek fishing fleet, employment, fishing effort and production 2012-2016.

Variable				2014	2015	2016	% D 2016-15	% D 2016-12	
	Number of vessels	16.063	15.954	14.755	15.624	15.182	2.83 %	D	5.5 %
	Number of inactive vessels	1.531	1.202	1.155	1.210	1.535	26.86 % FEMALES 71		0.3 % FEMALES:
	Average age of vessel (years)	26,78	27,61	28,26	29,06	29,43	1.27 % FEMALES 71		9.9 % FEMALES:
	Gross tonnage (GT)	76.211	75.566	72.843	74.699	71.751	3.95 %	D	5.9 %
	Total capacity (kW)	455.640	454.565	431.166	446.239	430.793	3.46 %	D	5.5 %
	Number of enterprises	13.918	13.871	13.666	12.594	14.207	12.81 % FEMALES 7		2.1 % FEMALES:
		Total number of employees	27.559	24.486	23.232	25.407	24.975	1.70 %	D
FTE (full-time equivalents)		23.945	22.546	20.780	23.431	21.098	9.96 %	D	11.9 %
Average yearly wages per employee		5.967	7.575	6.127	6.274	7.465	18.98 % FEMALES 7		25.1 % FEMALE S:
Average yearly wages per FTE		6.868	8.227	6.850	6.803	8.837	29.89 % FEMALES 7		28.7 % FEMALE S:
Fishing effort	Days at sea (total)	2.815.808	2.843.714	1.921.836	2.603.840	2.040.825	21.62 %	D	27.5 %
	Energy costs	109.056.322	108.188.604	92.446.711	84.432.443	75.789.015	10.24 %	D	30.5 %
	Energy consumption (litres)	115.096.554	113.673.414	107.319.701	107.015.700	104.897.542	1.98 %	D	8.9 %
	Energy cost relative to catch value (EUR)	0,2549	0,2588	0,2639	0,2232	0,1631	26.91 %	D	36.0 %
	Energy consumption relative to catch value (EUR)	0,269	0,2719	0,3064	0,2828	0,2258	20.16 %	D	16.1 %
Production	Sales receipts	427.837.048	418.072.659	350.261.580	378.350.308	464.594.132	22.79 % FEMALES 7		8.6 % FEMALES:

enterprises have only one vessel. The figures in the table also show that the overall number of employees has been declining in recent years (down by 9.4 % compared with 2012), although the decrease between 2015 and 2016 is very low.

The capital<sup>5</sup> was drawn up at the Institute of Rural Economy and Sociology (INP.GOROK). Scientific supervisor: Dr Tzourmani Irini, the researcher: Dr Xinis Alexandra external: Dr Liotakis Angelos, Cooperative of INEDIVIM Michel Barroumfeel

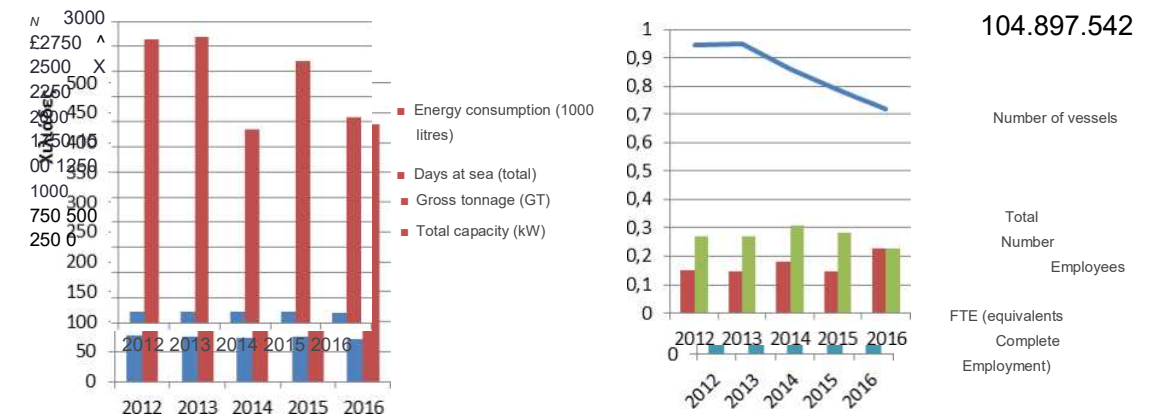
<sup>4</sup> we would like to thank the correspondents who collected the socio-economic data, their assistance and cooperation and their observations and comments. We also thank the fishermen who participated in the survey for their communication and cooperation with correspondents.

<sup>5</sup> see <http://www.alieia.gr/assets/uploads/2018/02/APOFASI-ENTAXIS-METRO-ORISTIKIS-PAFSIS.pdf>

Note also that, on the basis of the figures in Table 1, there is underemployment in the sea fisheries sector, since the total number of persons employed is quite different from the full-time equivalents.

As regards fishing effort, the collected data shows that the total number of days at sea for the Greek fishing fleet as a whole reached 2.040.825 days in 2016. It should be noted that this variable concerns only the period March-December in the case of coastal fishing (March-December). It should also be noted that in 2014 the variable covered only nine months out of the 12 months of the year (April-December). This variable therefore covers the whole year, only in the cases of 2012, 2013 and 2015, which were collected through the socio-economic data collection questionnaire rather than by transversal variables, as provided for in Regulation (EU) No 1224/2009.

finally, the total quantity of fuel consumed by the Greek fishing fleet in the same year is estimated at 104.897.542



litres, a marginal decrease compared to 2015 and a decrease of 8.9 % compared to 2012.

value  
Landings at sea (1000C) Energy consumption per catch  
fuel price

**Figure 1. Structure, Employment of fishing effort and production of the Greek fleet for the years 2012-2016**

By contrast, energy costs for 2016 reached EUR 75.789.015, a significant decrease from 2015 compared to 2012 (10 % and 30 % respectively). Mainly due to lower fuel prices but also to reduced fishing effort.

The decrease in the price of fuel between 2012 and 2016 is reflected in Figure 1. It is clear from the figures in Table 1 that energy costs per catch value (0,163) dropped significantly (36 % compared to 2012 and 27 % compared with 2015).

As far as the revenue from sales of fish is concerned, these are estimated at EUR 464.594.132 enough to be higher than in previous years (please note that the landings of January and February are not included in the landings of January and February of the coastal fishing vessels). The precise reasons why the value of landings appear so increased shall not be determined as it is necessary to collect the transversal variables in the prescribed procedure and for the whole year so that all data relating to the species, weight and price of landings are known.

## 2. Expenditure and financial results

As can be seen from the data in Table 2, the revenue of sea fishing is almost exclusively the result of the sale of fish. Direct subsidies make up less than 1 % of the total revenues and relate to petroleum duty refunds in cases where petroleum is not purchased directly at a duty-free price. Note that, in accordance with Commission Decision 2010/93, reduced duties on inputs such as fuel are not regarded as direct subsidies, Whereas refunds of fuel duties are counted as such. It is also noted that there is no revenue from using the vessel for activities other than fishing (e.g.: Fishing tourism), as this requires a specific licence<sup>6</sup>.

Variable	FAKS: 2014 2015 2016					% D	
	2014	2015	2016	2016	2016	2016	2016
	427.837.048	418.072.659	350.261.580	378.350.308	464.594.132	22,79	71 8,59
value of landings							
Direct subsidies	03.747.195		5.075.829	2.635.936	2.768.528	5,03	7
<b>Δαπάνες</b>							
Wages and salaries of crew of real value unpaid labour	73.367.684	105.420.429		67.278.063	77.354.959	91.281.222	18,00 7 24,42
Repair and maintenance costs	40.144.431	43.168.187	34.308.680	35.636.500	32.995.944	— 7,41	— 17,81
Other variable costs	83.917.813	77.604.070	74.033.627	78.249.174	77.901.956	— 0,44	O — 7,17
Non-variable costs	7.749.586	6.747.994	7.139.387	6.482.234	6.476.903	— 0,08	O — 16,42
Annual depreciation	53.514.201	58.675.084	26.844.329	24.206.436	36.283.271	49,89	7 — 32,20
Gross value added	186.968.896	186.110.999	147.409.004	176.185.893	274.198.841	55,63	7 46,65
<b>Οικονομικά αποτελέσματα</b>							
Gross profit	22.511.726	632.551	5.067.950	16.780.701	87.757.511	422,97	7 289,83
Net profit	— 31.002.475	— 58.042.533	— 21.776.379	— 7.425.735	51.474.240	NR	NR
Profit and remuneration of imputed value of labour	60.087.011	22.015.486	53.286.612	74.624.498	146.634.349	99,01	7 144,04
Depreciated replacement value of physical capital (EUR)	226.071.892	242.619.052	113.968.237	99.787.479	151.622.928	51,95	7 — 32,93
Value of investments (EUR)	30.207.167	24.111.423	26.140.333	27.767.435	25.718.634	— 7,38	— 14,86
Financial position	2,92	1,54	0,55	0,37	0,50	34,09	7 — 83,01
<b>Value capital</b>							
Value of investments (EUR)	30.207.167	24.111.423	26.140.333	27.767.435	25.718.634	— 7,38	— 14,86
Financial position	2,92	1,54	0,55	0,37	0,50	34,09	7 — 83,01
<b>Δ</b> (%)							
	91.089.486	80.058.019	75.062.991	82.050.233	95.160.109	15,98	7 4,47
	109.056.322	108.188.604	92.446.711	84.432.443	75.789.015	—	—

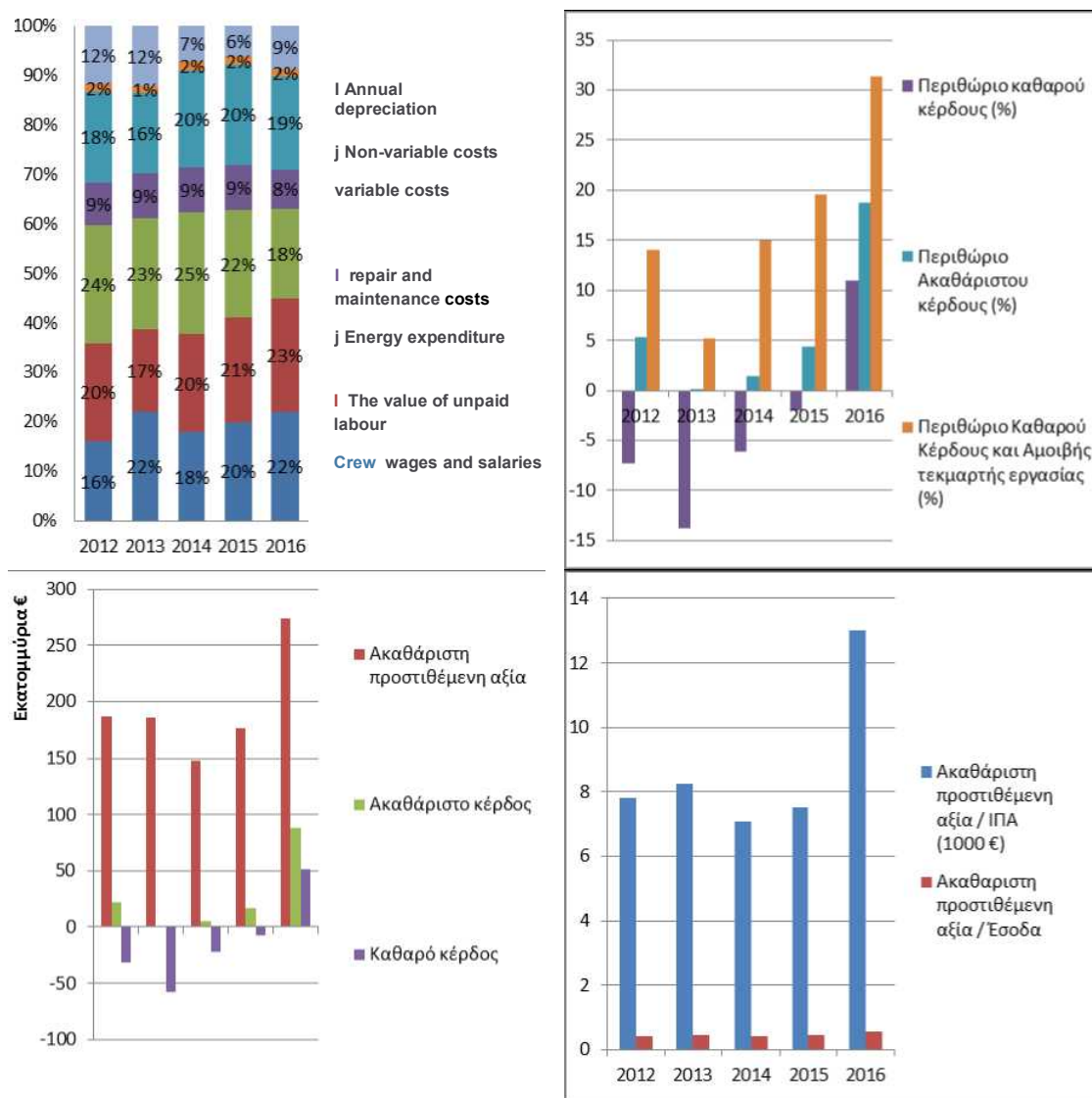
<sup>6</sup> the possibility of licensing the use of fishing tourism is provided for in 2015 through JMD No.414/2354/12-1-2015, however very few vessels have so far taken an authorisation and none of them were among the 262 vessels in the sample.



<b>Economic indicators</b>	Net profit margin (%)	- 7,25	- 13,76	- 6,13	- 1,95	11,42	NR	NR
	ROFTA (%)	- 13,71	- 23,92	- 19,11	- 7,44	35,19	NR	NR
	Gross value added/FTE	7.808	8.255	7.094	7.519	12.996	72,84	71 66,44
	Gross profit margin (%)	5,26	0,15	1,43	4,40	18,78	326,31	71 256,86
	Gross value added/income	0,44	0,44	0,41	0,46	0,59	26,87	7 34,25
	Water Margin							
	Profit and wages for imputed value of labour (%)	14,04	5,22	15,00	19,59	31,37	60,18	7 123,4

the overall revenue of the Greek fishing fleet in 2016 amounted to EUR 467.362.660. The figures in Table 2 show for the first time in recent years a net profit for the fishing vessels for the year 2016 (EUR 51.474.240). However, it should be noted that the economic results of the fleet show a continuous improvement after 2013.

Figure 2. Expenses, expenses and financial results of the Greek fleet for the years 2012-2016.



The improvement in profitability compared to 2015, as shown in the table, is due to the high increase in the value of landings. It is also pointed out that, as in previous years, the income reflecting the economic situation and standard of living of the fishermen (net profit and value of unpaid work) is quite high.

The total expenditure of the fleet is EUR 415.888.420. As shown in Table 2 and Figure 2, the most important expenditure for the Greek fleet is the imputed unpaid labour costs of EUR 95.160.109 (23 % of total costs) followed by crew salaries and wages of EUR 91.281.222 (22 % of total costs). Although this expenditure has been quite significant in recent years, it has not exceeded the energy costs that have always been the most significant costs. This is due both to the increase in the level of these costs and to the reduced price of fuel, but also to lower consumption. It is worth noting that since 2012, energy expenditure is constantly decreasing, with an overall reduction of 30 %. In fact, energy expenditure is now the 4th in terms of materiality, as other variable costs are now marginally bigger by participating with 19 % in total expenditure.

Non-variable costs and repair and maintenance costs are slightly lower than in 2015 and, finally, the annual depreciation of the principal amounts to 36,3 million. EUR 10 000 000, showing a significant increase.

As regards the economic results, the gross value added shows a very significant increase of 55 %, following the strong upward trend of the previous year. Gross profit is also positive at EUR 87.757.511 (around five times that compared to 2015), while for the first time since 2012, the marine fishery sector has a net profit. The invested capital in the fisheries (total depreciated replacement value of physical capital) amounts to EUR 151.622.928, up from 2015. The financial position, i.e. the debt ratio relative to the value of the capital, for all active vessels in the fleet is estimated at 0.50 %, while the total investment for 2016 is estimated at EUR 25.718.634, decreasing slightly compared to 2015.

Finally, the remaining financial indicators in Table 2 show a very significant improvement compared to 2015, due to a large increase in gross income. In particular the net profit margin and RoFTA is changing and becomes positive. Also: gross margin added, (b) gross value added per FTE, (c) gross value added per revenue as well as (d) the net profit margin without taking into account the remuneration of the imputed labour as output, shows a significant increase taking the highest value in the period 2012-2016.

### 3. Structure and financial data concerning small and large-scale fishing in Greece

The figures relating to the structure, fishing effort, employment and production of small and large scale fishing in Greece respectively are summarised in Tables 3 and 4<sup>7</sup>. As can be seen from the tables, 94 % of all the vessels in the fleet engage in small-scale fishing. The figures in the table also show that there is a tendency to reduce the number of coastal fishing vessels for the period 2012-2016 while the vessels in the middle fisheries show a standstill. In addition, there is a slight increase in the number of inactive vessels in both categories. Vessels engaging in small-scale fishing are older on average, whereas in terms of total capacity and engine power the trend is largely the same for all vessels.

The total number of employees shows a slight decrease in small-scale fisheries, and there is an increase in the case of large-scale fishing. It is important to note that the underemployment phenomenon is increased in both categories of sea fisheries, although in the case of average fishing, this is clearly less. This is of particular importance as it reflects the efforts made to improve the use of available resources during the crisis years. Finally, there is an increase in average wages per employee and per FTE than in 2015, both in the coastal and in the middle fisheries.

**Table 3. Structure of the fleet of small-scale fishing in Greece for the years 2012-2016, fishing effort, employment and production**

Variable			2014	2015	2016	% D 2016-15	% D 2016-12
Number of vessels	15.139	15.038	13.850	14.708	14.319	— 2,6 ^	— 5,4
Number of inactive vessels	1.488	1.159	1.088	1.141	1.447	26,8 71	— 2,8
Average age of vessel (years)	27	28	28	29	30	2,6 7	11,3
Gross tonnage (GT)	30.138	29.897	27.613	29.406	29.061	— 1,2 ^	— 3,6
Total capacity (kW)	287.564	285.456	265.919	280.366	274.826	— 2,0 ^	— 4,4

Employment							
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	— 7,5
	Energy consumption (litres)	50.283.598	48.705.410	45.752.146	47.823.940	45.029.099	— 5,8
	Energy cost relative to catch value (EUR)	0,244	0,259	0,259	0,220	0,192	— 12,9
	Energy consumption relative to catch value (EUR)	0,213	0,210	0,226	0,215	0,191	— 11,3
Production	Sales receipts	235.877.167	232.288.624	202.868.115	222.546.553	236.329.149	6,2 7

<sup>7</sup> Small-scale fishing involves vessels less than 12 m in length. Large-scale fishing involves vessels with a length of 12 m and above.

Variable							% D	% D	
							2016-15	D2016-12	
							— 5,8 ^	— 6,6	
	Number of vessels decision No 43 43	924	916	905 <sup>67</sup>	916 <sup>69</sup>	863 <sup>88</sup>	FAKS: 27,5	104,7	
	Average age of vessel (years)	26	27	28			71	14,0	
	Cooperative capacity 46.072 (GT)		45.669	45.231	45.292	42.690	FAKS: 1,9	— 7,3	
	Total power (kW)	168.076	169.109	165.246	165.873	155.966		— 7,2	
Employment	Total Number 5.031 Employees	4.778		5.010	4.987	5.362	7,5 7	6,6	
	FTE s4.221 (full Employment)	4.661	4.998		4.941	4.823	— 2,4 ^	14,3	
	Non-cash salary per employed		12.119 10.635	8.714	8.992	10.746	19,5 7	— 11,3	
	Annual salary/FTE	10.168	10.375	8.693	8.910	11.947	FAKS: 32,9 7	— 1,4	
Al o AA financial effort	Days-at-sea (total)			160.423		111.989	— 30,2 ^	NR	
	Cost of Energy consumption (in litres)	Energy	51.499.144	47.942.322	39.878.772	35.423.069	30.443.938	— 14,1 ^	— 40,9
	Kilowatt action per EUR catch	0,268	0,258	0,271	0,171	0,133	7	— 50,3	
	Consumption of energy EUR per catch	0,418	0,286	0,262			— 8,4 ^	— 22,3	
	Revenue from sales catches	185.784.035	147.393.465	206.681.704	228.264.984		FAKS: 10,4 7	18,9	

The most important cost category for small-scale fisheries is the imputed value of unpaid labour (38 %), followed by energy costs (19 %) and payroll costs (17 %).

Unpaid labour is showing a significant increase, highlighting the strategy of coastal fishermen, making greater use of available family labour, in order to: (a) increase their family income; and (b) improve the liquidity of their business.

Moreover, energy expenditure is decreasing, and finally, while the average wage per employee has been slightly increasing, the average wage per FTE is quite high.

For fishing effort, there is a decrease in consumption as well as the cost of energy per euro of catch in both categories of fisheries. Finally, revenues from sales of fish have increased significantly in 2016, particularly in the case of average fisheries.

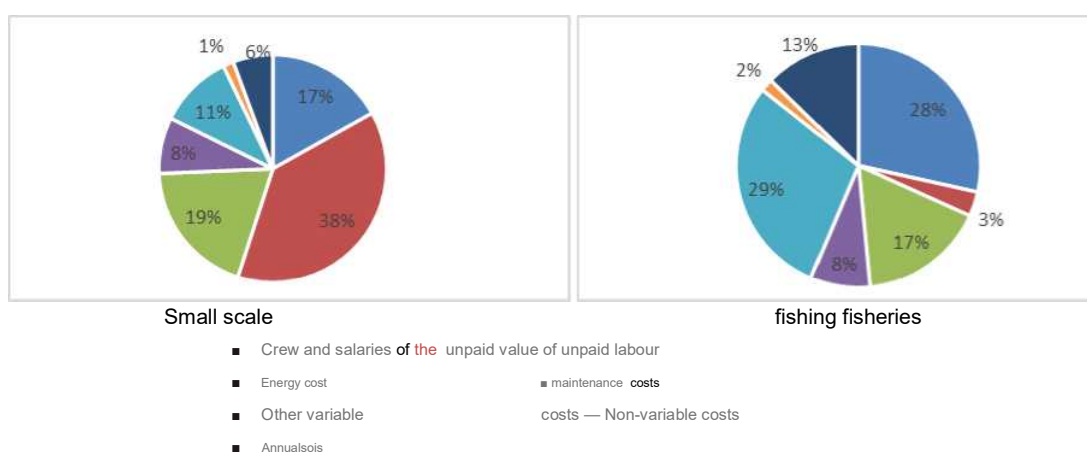


Figure 4 Participation of each category of expenditure in total expenditure (a) in small-scale fisheries; and (b) in the middle of the fishery;

Table 5. Expenditure and financial results of small-scale fisheries in 2012-2016.

Variable			2014	2015	2016	% D 2016-15	% D 2012-16	
	Sales receipts	235.877.167	232.288.624	202.868.115	222.546.553	236.329.149	6,2	71
	Direct grants	—	3.611.349	4.476.639	2.402.045	2.490.956	3,7	71
Expenditure	Wages and salaries of crew	24.613.785	61.542.925	29.542.208	39.096.183	39.564.077	1,2	7
	Imputed value of unpaid labour	88.688.818	74.366.188	69.244.763	75.875.157	89.255.089	17,6	0,6
	Repair and maintenance costs	57.557.178	60.246.282	52.567.939	49.009.374	45.345.077	—7,5	—21,2
	Variable costs	26.488.344	30.462.503	22.393.893	23.808.484	18.657.345	—21,6	—29,6
	Non-variable costs	34.739.510	32.643.116	30.393.627	31.660.887	24.756.687	—24,9	—28,7
	Annual depreciation	3.854.803	4.163.533	4.182.432	3.923.889	3.461.654	—11,8	—10,2
			31.792.823	34.181.973	13.109.737	13.670.111	13.247.910	—3,1
Finances results	Dry.adding value	113.237.333	108.384.539	97.806.863	116.545.964	146.599.342	25,8	7
	Gross Profit Net Profit	—65.270	—27.524.574	—980.108	1.574.625	17.780.176	1029,2	7
	Profit and remuneration imputed labour	—31.858.093	—61.706.547	—14.089.845	—12.095.487	4.532.266	NR	NR
Value capital	Depreciated value replacement of physical capital (EUR)	56.830.725	12.659.641	55.154.918	63.779.670	93.787.355	47,0	7
	Value of investments (EUR)	137.536.291	143.896.490	58.234.707	57.740.682	56.085.651	—2,9	—59,2
	Financial/(%) position (%)	25.069.059	19.024.071	20.829.880	21.254.460	16.126.887	—24,4	—35,7
Economic indicators	Dumping margin/Prof.profit (%)	0,25	0,08	0,44	0,34	0,91	169,1	7
	ROFTA (%)	—13,51	—26,16	—6,80	—5,38	1,90	NR	NR
	Gross value added/FTE	—23,16	—42,88	—24,19	—20,95	8,08	NR	NR
	Gross profit margin (%)	5,741	6,060	6,197	6,303	9,008	42,9	7
	Gross value added/revenue	—0,03	—11,67	—0,47	0,70	7,45	963,6	7
	Net profit and remuneration of imputed value of labour margin (%)	0,48	0,46	0,47	0,52	0,61	18,5	7
		24,09	5,37	26,60	28,35	39,27	38,5	7
								63,0

Variable			2014	2015	2016	% D 2016-15	% D 2012-16		
		Value of loads	191.959.881	185.784.035	147.393.465	206.681.704	228.264.984	10,4	18,9
	Direct grants	—	135.846	599.190	233.892	277.571	18,7	NR	
Expenditure	Wages and salaries of crew	48.753.899	43.877.504	37.735.856	38.258.777	51.717.144	35,2	7	6,1
	Imputed value of unpaid labour	2.400.668	5.691.831	5.818.228	6.175.076	5.905.020	—	4,4	146,0
	Energy costs	51.499.144	47.942.322	39.878.772	35.423.069	30.443.938	—	14,1	—
	Repair and maintenance costs	13.656.087	12.705.684	11.914.787	11.828.015	14.338.600	21,2	7	5,0
	Variable costs	49.178.303	44.960.954	43.640.001	46.588.287	53.145.269	14,1	7	8,1
	Non-variable costs	3.894.783	2.584.461	2.956.955	2.558.345	3.015.249	17,9	7	—
	Annual depreciation	21.721.379	24.493.111	13.734.592	10.536.324	23.035.361	118,6	7	6,0
Finances results	Dry adding value	73.731.564	77.726.460	49.602.141	110.517.879	127.599.500	15,5	7	73,1
	Gross profit	22.576.998	28.157.125	6.048.057	66.084.026	69.977.335	5,9	7	209,9
	Net profit	855.619	3.664.015	—	7.686.535	55.547.702	46.941.975	—	5386,3
	Profit and remuneration of imputed value of labour	3.256.287	9.355.846	—	1.868.306	61.722.778	52.846.994	—	1522,9
Value capital	Depreciated value replacement of physical capital (EUR)	88.535.601	98.722.562	55.733.531	42.046.797	95.537.276	127,2	7	7,9
	Value of investments (EUR)	5.138.108	5.087.352	5.310.453	6.512.975	9.591.746	47,3	7	86,7
	Financial/(%) position (%)	11,60	3,93	1,91	0,54	6,05	1010,5	7	—
Economic indicators	Dumping margin/Prof.profit (%)	0,45	1,97	—	5,19	26,85	20,54	—	4508,1
	ROFTA (%)	0,97	3,71	—	13,79	132,11	49,13	—	4984,2
	Gross value added/FTE	17.468	16.677	9.924	22.365	26.455	18,3	7	51,4
	Gross profit margin (%)	11,76	15,14	4,09	31,94	30,62	—	4,1	160,3
	Gross value added/revenue	0,38	0,42	0,34	0,53	0,56	4,5	7	45,4
	Net profit and remuneration imputed labour (%)	1,70	5,03	—	1,26	29,83	23,12	—	22,5

On the other hand, as regards large-scale fishing, the main expenditure category is the other variable costs (mainly marketing) at 29 %, followed by crew salaries and wages (28 %). It is also worth noting that energy expenditure represents a significant decrease of only 17 % of total expenditure.

Finally, it should be noted that the financial results and economic indicators relating to small-scale fisheries show a significant improvement. More specifically, in the case of small scale fisheries, for the first time there is a net profit, a positive profit margin and RoFTA.

In the case of average fisheries, economic indicators have a positive sign if they are worse than in 2015.

As already noted, these results are without prejudice, taking into account the lack of data collection due to the long delay at the start of the programme.

## 5. Fleet composition

Table 7 shows the 17 segments/strata into which the Greek fishing fleet can be divided according to the main fishing gear and the length of vessels. The same table illustrates the percentage of inactive vessels per segment/stratum<sup>8</sup>. Table 8 shows the average length of vessels, gross tonnage, total power and average age of active vessels of each segment of the fleet.

**Table 7. Segmentation of the Greek fleet based on the main fishing gear and length of the fleet vessels.**

Fleet segments	Main fishing gear	Length (metres)	Activity rate%
DTS 6-12 m.	Winch trawl	6-12	5.61 % FEMALES:
DTS 12-18 m	Winch trawl	12-18	100.00 % FEMALES:
DTS 18-24 m	Bottom trawl	18-24	0.00 % FEMALES:
DTS 24-40 m	Bottom trawl	24-40	0.00 % FEMALES:
DFN 0-6 m	Nets	0-6	9.63 % FEMALES:
DFN 6-12 m	Nets	6-12	10.14 % FEMALES:
DFN 12-18 m	Nets	12-18	13.58 % FEMALES:
FPO 0-6 m.	Traps and churns	0-6	10.50 % FEMALES:
FPO 6-12 m.	Traps and churns	6-12	11.33 % FEMALES:
HOK 0-6 m	Longlines	0-6	17.25 % FEMALES:
HOK 6-12 m	Longlines	6-12	7.69 % FEMALES:
HOK 12-18 m	Longlines	12-18	7.69 % FEMALES:
PGP 0-6 m	Other diverse passive gears	0-6	9.28 % FEMALES:
PGP 6-12 m	Other diverse passive gears	6-12	9.72 % FEMALES:
PS 12-18 m	Purse seine	12-18	5.61 % FEMALES:
PS 18-24 m	Purse seine	18-24	100.00 % FEMALES:
PS 24-40 m	Purse seine	24-40	0.00 % FEMALES:

Segment	Number of active vessels	GT	kW	Middle Age	Length Average
DFNVL0006	3.349	2.225	30.745	32,66	4,91
DFNVL0612	5.638	15.556	135.966	26,59	7,83
DFNVL1218	178	2.840	15.494	23,01	13,58
FPOVL0006	65	40	724	30,52	4,91
FPOVL0612	317	883	9.100	25,38	7,96
HOKL0006	1.353	945	12.931	33,65	4,92
HOKL0612	1.915	5.453	47.566	28,56	7,73
HOKL1218	101	2.146	10.371	23,85	14,63
PGPVL0006	24	16	236	29,78	4,79
PGPVL0612	26	76	599	25,68	7,73
DDTSL0612	185	937	9.359	50,69	9,42
DDTSL1824	100	5.029	26.613	35,38	21,47
DDTSL2440	150	20.437	48.992	22,53	28,23
PSVL1218	83	1.814	11.270	40,22	15,81
PSVL1824	135	6.479	27.727	26,61	20,96
PSVL2440	28	2.494	6.542	17,43	26,23
INACTIVEVL0006	526	355	4.882	32,92	4,91
INACTIVEVL0612	921	2.575	22.718	27,37	7,82
INACTIVEVL1218 *	88	1.451	8.956	34,71	13,65

\* all winch trawls with a length of 12-18 m have been integrated into this category.

<sup>8</sup>According to Commission Decision 2010/93, vessels that have not performed the fishing activity in the reference year are characterised as "inactive" (2015).

To calculate the basic economic variables for each segment of the fishing fleet, the respective variables in the sample of the fishing vessels of each segment of the fleet segment were initially calculated. The extrapolation of the variables to the population has taken into account the total population of vessels in each segment and its degradation rate. The findings of this analysis are presented in Table 9. In addition, the participation rate of each expense category in total cost is shown in Figure 4, for each segment of the fleet.

The following paragraphs comment on the results of the analysis and highlight the most important costs as well as the financial results and indicators for each of the fleet segments. It should be noted that for winch trawls of a length of 6-12 m, it was not possible to collect cost data, but only the value of landings (EUR 1.843.631)<sup>9</sup>, while all seiners with a length of 12-18 m were considered ineffective.

#### *Bottom trawls of length 24-40 m.(DTS24-40)*

This includes 150 vessels, with a total capacity of 20.437 GT and total power to 48.992 kW. The average age of vessels in this segment is small and reaches 22,53 years. The total value of landings of vessels in this segment amounts to EUR 71.438.081 and total FTEs at 1081. This category covers 15.4 % of total landings of the fleet and 4.7 % of total employment.

The main cost elements of the vessels in this category are other variable costs, salaries and crew wages and energy costs at approximately 23 % each. An annual depreciation of up to 18 % is also significant, while the other costs together account for a total of 12 % of the total costs.

The value of the natural capital in this category is very significant, accounting for 24.8 % of the total value of the fleet. Moreover, the level of investment for 2016 amounts to 5.4 % of the total fishing fleet.

The importance of this part of the fleet is demonstrated by its high shares of participation in the overall value of the sector's landings (15.4 %). The labour productivity characteristic of this segment of the fleet (EUR 39.616) is also high. It appears from the data in Table 9 that trawlers in this category show significant profits in 2016 compared with the 2015 slight negative profits. This improvement is mainly due to the large increase in landings (around 40 %).

The significance of this fleet segment for the economy is also demonstrated by its gross value added (GVA), amounting to EUR 42.825.821. Finally, the ratio of GVA to revenues, which shows the proportion of revenues that this segment contributes to the national economy, through inputs (labour and capital) is equal to 0,60. In addition, this part of the fleet indicates a high average wage of fishermen (EUR 10.708).

#### *Bottom trawls of length 18-24 m(DTS 18-24):*

100 active vessels, with a total tonnage of 5.029 GT and total power of 26.613 kW, are included in the fleet segment in question. The average age of vessels in this segment reaches 35,38 years. The overall value of landings is estimated at EUR 25.566.275 and total FTEs are 629. This segment of the fleet covers 5.5 % of total landings and 2.8 % of total employment.

As in the case of larger trawlers, basic expenditure is the cost of fuels representing 31 % of the total costs of the vessels, whereas the cost of imputed labour and the costs of non-variable costs constitute a low percentage of the total expenditure of the fleet (1 % of each cost category) (see Picture 4). Significant cost elements of vessels in this category are also

<sup>9</sup>The landings are for the months January & February 2016 and are based on the results of the study "Fishing seine fishing plan for research purposes".



other variable costs and wage costs representing 23 % and 19 % of the total cost, respectively.

In terms of the value of the natural capital of vessels in the fleet, this represents 10 % of the total value of the fleet's capital, while investment amounts to up to 6.41 % of the total investment of the fleet. In contrast to 2015, vessels in this category show a negative net profit mainly due to an increase in the wage bill and energy expenditure.

Finally, the average salary of fishermen is calculated for this category at EUR 10.807, with a significant increase (21 %) compared to 2015, whereas the gross value added is 15 % down on 2015 (EUR 7.757.704). Labour productivity (-8.5 %), which amounts to EUR 12.333, also shows a corresponding decrease.

#### *Nets with a length of 0-6 m(DFN0-6):*

Vessels in this category belong to small-scale fisheries and consist of a total of 3.349 (active vessels). This is the second largest fleet with a total tonnage of 2.225 GT and a total power of 30.745 kW. The average age of vessels in this category is 32,7 years. The overall value of landings in this category comes to EUR 21.240.892 and corresponds to 4.6 % of the total value of landings in Greece. This category employs a total of 3.639 FTEs, which, according to the data collected, relate mainly to the labour of the owner (s). This category has a 18.65 % participation in the total employment of the fishing sector. The aforementioned data on the participation of this category in the overall income of the fisheries sector and the overall FTE number demonstrate the significance of this segment of the fleet for the marine fishery sector. For vessels in this category, the imputed value of unpaid labour is the imputed value of unpaid labour (remuneration of work by the owner (s)) which amounts to EUR 21.222.467 and constitutes 53 % of the total costs. Therefore, although the net business profit of the vessels in this category is negative (- EUR 17.783.941), the income of owners (profit and value of unpaid labour) is positive (EUR 3.438.527). It is also worth noting that the average salary of fishermen is quite low and amounts to EUR 5.552, since this part of the fleet is also characterised by significant underemployment (see: (see Table 9).

Fuel costs represent 18 % of the total cost, and show a slight decrease compared to 2015 (linked to a corresponding decrease in fuel consumption). The average oil price is EUR 1,26/litre and is almost stable compared to the corresponding value for 2015 (EUR 1,23/litre). It should also be noted that vessels in this category share 3.25 % of the total value of capital, while their participation rate in total investments is 5 %. Corresponding shares in the total value of capital and total investment are applicable to vessels in this category throughout the period 2012-2015.

#### *Nets 6-12 m(DFN 6-12):*

This is the **largest part of the Greek fleet**, with a total of 5.638 active vessels for 2016. Vessels have a total gross tonnage of 15.556 GT and total engine power of 135.966 kW. The average age of vessels is 26,59 years.

Vessels belonging to this segment have a total landings value of EUR 117.652.105 and offer 9.585 FTE (25 % and 41.4 % contribution to the overall landings value and employment equivalents of the fishing industry). The basic cost for vessels in this category is the imputed cost of labour which amounts to 35 % of the total costs, while the wage bill amounted to 19 %. In addition, in terms of energy costs, it accounts for 21 % of total expenditure and is particularly high due to the high purchase price of fuels reaching on average EUR 0,94/litre. However, compared to 2015, there is an increase in energy consumption (2.9 %), which is not offset by an increase in energy costs (0.5 %).

Unlike the previous category, the net business profit is shown positive and equal to EUR 2.758.647 (while in 2015, this category was loss-making) whereas revenues can provide very substantial income to owners. In addition, this section produces the highest gross value added by all segments of the fishing fleet (EUR 69.720.014), which illustrates its enormous economic importance. In addition, considering that a high percentage of these vessels operate in remote areas, where the presence of other economic activities is limited, the importance of this segment becomes even greater.

#### *Nets 12-18 m(DFN12-18):*

This category includes a total of 178 active vessels. The total tonnage of these vessels amounts to 2.840 GT and the total capacity of 15.494 kW. In addition, the average age of vessels in this segment amounts to 23 years.

Vessels in this segment show an increased overall value of landings than in 2015 (EUR 5.837.461), and are involved with a low percentage of the overall value of marine fishing landings. The FTEs of this category amount to 483, representing 1.86 % of the fleet's total FTEs.

The most important cost category of vessels in this stratum are crew salaries and wages (24 %), followed by energy costs (18 %) and other variable costs (16 %). Finally, it should be noted that vessels in this category show a negative business profit, but also negative income (taking into account the value of the imputed labour).

#### *Traps and pots 0-6 m(FPO0-6):*

This category includes a small number of active vessels (65), with a total gross tonnage of 40 GT and total power 724 kW. The average age of vessels in this category is high and 30,52 years old. The total value of landings of vessels of this segment amounts to EUR 3.703.720, representing only 0.8 % of total revenue. In addition, as shown from the data in Table 9, there are a total of 64 full-time equivalent units in this segment, representing 0.3 % of total FTEs of Greece's marine fishery sector.

The basic expenditure of this part of the fleet is the remuneration of imputed labour at a rate of 49 % of the total costs, followed by energy costs at 23 % (see: Picture 4). Wage costs are also significant, representing 10 % of total expenditure.

Vessels in this category show a net profit of 2.697.443 which increases to 3.195.157 if imputed value of labour is added to this value.

#### *Traps and pots length 6-12 m.(FPO6-12):*

This fleet segment comprises 317 active fishing vessels with a total tonnage of 883 GT, an overall power of 9.100 kW and an average age of 25,38 years. The value of landings in the segment is EUR 13.206.855 and total FTE is EUR 463. Both the value of landings and FTE in the segment represent a small percentage of total landings and FTE in the country (2.5 % and 5 %, respectively).

The most important costs for vessels in this section are both remuneration for imputed value of labour as energy costs (33 % and 24 % of vessels' total costs, respectively). The wage cost of vessels in the category (11 %) of total expenditure is also significant.

Finally, it should be noted that vessels in this category show a positive net profit of EUR 5.311.252, whereas the average wage of fishermen amounts to this category of EUR 7.745, showing a significant increase compared to 2015 (18 %).

*Long lines with a length of 0 to 6 m. (HOK0-6):*

This category is the fourth largest category of vessels in the Greek fleet, since it comprises 1.353 active vessels, according to the data in Table 8. The total tonnage of vessels amounts to 945 GT and total power output of 12.931 kW. The average age of vessels in this category is 33,65 years. The total value of landings in this category is EUR 22.981.076, representing 5 % of the total value of landings in the country. This category has a 7.8 % participation in the total employment of the fishing sector.

As in the corresponding category of small vessels that the main fishing gear is the net, so in the case of longlines, the most basic cost is the remuneration of imputed value of labour (43 % of total expenditure), which amounts to EUR 8.556.034. Energy costs and non-variable costs followed by 15 % of total fleet costs. The net entrepreneurial profit of vessels in this category is positive (EUR 3.668.129) while the income of owners (profit and value of unpaid labour) is rather higher (EUR 12.244.163).

Also, the average salary of fishermen is almost equal to the corresponding category of small vessels which use nets and reaches EUR 5.618, while labour productivity reaches EUR 13.295.

Finally, the data collected shows that the category holds 3.4 % of the total value of capital and 7.36 % of the total investment.

*Long lines with length 6-12 m (HOK6-12):*

This section is the third largest part of the Greek fleet, comprising a total of 1.915 active vessels, with a total gross tonnage of 5.453 GT and total power of 47.566 kW. The average age of vessels is 28,56 years.

Vessels in this segment have total landings of up to EUR 54.815.839 and employs 2.802 FTEs. In total value of landings of the fleet, the category is 11.85 % and in total employment with 11.22 %, confirming the importance of this category for the sea fishing sector.

The main cost for vessels in the category is the imputed cost of labour, which amounts to 31 % of the total costs, while the contribution of the wage bill is significant, with 20 % of the total costs. It follows energy costs and other variable costs of 17 % and 14 %, respectively.

The net business profit of the vessels in this category appears to be positive (EUR 5.922.988), while adding the value of the imputed labour, a significant income (EUR 21.309.206). Therefore, vessels can provide a significant income to the owners. This segment generates gross value added in the order of EUR 36.204.403 which emphasises its economic significance. In addition, this section covers a significant proportion (14.5 %) of the value of the natural capital of the Greek sea fishing fleet.

*Long lines with length 12-18 m (HOK12-18):*

This category comprises 101 active vessels with a total tonnage of 2.146 GT, total power 10.371 kW and average age of 23,85 years. The total value of landings of vessels in this category is EUR 16.020.411, which corresponds to 3.46 % of the total value of marine fishing landings. The FTE of the category reaches 290, representing 1.16 % of the fleet's FTE.

The most important cost category of vessels in this segment are the other variable costs of up to 35 % of the total cost, and also significant cost items are the wage costs and energy costs, corresponding to 16 % and 14 % of total costs, respectively.

Finally, it should be noted that vessels in this category show positive net profit (EUR 6.355.084) and high labour productivity (EUR 36.410).

*Other multiple passive gears 0-6 m (PGP 0-6):*

The category includes vessels that cannot be classified under some of the previous categories because they are dealing with highly specialised fishing (e.g.: shellfish fishing). It includes a very small number of active vessels (24), with a total gross tonnage of 16 GT and total power 236 kW. The average age of vessels in this category is 29,78 years. The total value of landings by vessels of this segment amounts to only EUR 378.000, while it employs 29 FTEs.

The basic expenditure of this part of the fleet is the remuneration of imputed labour with a participation rate of 47 % in total expenditure, followed by energy costs at 19 %. Vessels in this category show a net profit of EUR 12.464, which increases to EUR 182.864 if the value of imputed labour is added to this value.

*Other passive passive gears 6-12 m (PGPP 6-12):*

Like the previous fleet category, this category includes a very small number of vessels (26 active vessels) active in highly specialised fishing segments. The value of landings in the segment is EUR 507.000 and total FTE is EUR 22. By far the most important cost of this category is the remuneration of imputed labour at 73 %. Vessels in this category, as in previous years, show a net profit of EUR 81.652, while the average yearly wage per FTE is EUR 14.731, highlighting the specialisation of labour required in this segment.

*Purse seiners with a length of 12-18 m (PS 12-18):*

The active vessels belonging to this category are in total 83 and have a total tonnage of 1.814 GT, total power 11.270 kW and high average age (40,22). The overall value of landings in this specific segment of the fleet comes to EUR 12.138.707, accounting for a 2.62 % participation to the total value of the sector's landings. This category has a total of 775 FTEs, participating by 3.36 % in the sector's employment rate.

There are two main cost elements for vessels in this segment, wage costs and other variable costs, corresponding to 35 % and 33 % of the total cost, respectively. Note that energy costs are relatively low (10 %) due to the low purchase price of fuel, as is the case for bottom trawlers.

Vessels in this category show losses in the order of EUR 2.790.554 in 2016, unlike in 2015, where they showed a net profit.

*Purse seiners with a length of 18-24 m (PS 18-24):*

The number of vessels in this category is 135, with a total gross tonnage of 6.479 GT and total power of 27.727 kW. The average age of vessels in this segment reaches 26,6 years.

The total value of purse seine landings of this length is EUR 60.446.216, representing 13 % of the total value of landings by the fleet. This specific segment of the fleet has a total of 1.574 FTEs, participating by 6.8 % in the sector's employment rate.

As indicated in the purse seines of the previous category, wage costs and other variable costs, corresponding to 38 % and 35 % of the total cost, are a basic cost element for vessels in this category. According to the data collected for 2016 and following the trend of the previous year, vessels in this category show a positive net profit (EUR 5.404.192). The gross value added, produced by this segment of the fleet is particularly significant (EUR 32.084.276), while labour productivity is one of the highest in the sea fisheries sector (EUR 20.387).

*Purse seiners with a length of 24-40 m (PS24-40):*

This category has 28 vessels. The total capacity of these vessels is 2.494GT and the total capacity of 6.542 kW. Vessels in this category have low average age (17,43 years). The total value of landings amounts to EUR 36.846.404, representing 8 % of the total value of the landings in the sector. This specific fleet segment employs 410 FTEs, representing 1.8 % of total FTEs.

The basic costs for vessels of this category are other variable costs and wage costs, which account for 43 % and 26 % of the total cost, respectively. Vessels in this category, and purse seiners in the previous category show a very high net profit for 2016 (EUR 21.081.588). In fact, this category indicates a higher average salary of fishermen (EUR 11.004).

Table 9. Basic economic variables per category of the Greek fleet for the year 2016.

	DFN0006	DFN0612	DFN1218	DTS1824	DTS2440	FPO0006	FPO0612	HOK0006	HOK0612	HOK1218	PGP0006	PGP0612	PS1218	PS1824	PS2440
<b>Employment</b>															
Person engaged	4.659	9.585	483	629	1.110	84	463	1.945	2.802	290	36	39	775	1.665	410
Full time equivalents	3.639	9.585	483	629	1.081	64	463	1.195	2.802	290	29	22	775	1.574	410
Average wage/employed	5.552	6.490	6.166	10.807	10.708	7.136	7.745	5.618	8.959	9.516	5.827	8.333	7.699	13.647	11.004
Average Wage per FTE	7.108	6.490	6.164	10.814	10.991	9.318	7.750	9.144	8.957	9.503	7.270	14.731	7.702	14.438	11.018
<b>Fishing effort</b>															
Oil consumption (lt)	5.548.914	26.331.081	2.181.771	15.771.429	23.349.375	240.500	1.585.223	2.610.952	8.652.979	1.636.983	51.000	8.450	3.130.760	10.155.000	3.643.126
Days at sea	329.218	1.078.023	22.906	15.414	29.505	28.557	59.025	160.596	273.417	10.064	TO	TO	8.667	18.940	6.493
<b>Revenue</b>	<b>21.759.259</b>	<b>118.428.035</b>	<b>5.837.461</b>	<b>25.566.275</b>	<b>71.438.081</b>	<b>3.703.720</b>	<b>13.353.390</b>	<b>23.463.082</b>	<b>55.383.987</b>	<b>16.020.411</b>	<b>378.000</b>	<b>507.000</b>	<b>12.387.707</b>	<b>60.446.216</b>	<b>36.846.404</b>
Sales receipts	21.240.892	117.652.105	5.837.461	25.537.704	71.438.081	3.703.720	13.206.885	22.981.076	54.815.839	16.020.411	378.000	507.000	12.138.707	60.446.216	36.846.404
Direct Subsidies	518.367	775.930		28.571			146.505	482.006	568.148				249.000	—	—
<b>Costs (EUR)</b>	<b>39.543.200</b>	<b>115.669.388</b>	<b>8.381.174</b>	<b>28.331.127</b>	<b>49.237.853</b>	<b>1.006.277</b>	<b>8.042.139</b>	<b>19.774.953</b>	<b>49.460.999</b>	<b>9.665.327</b>	<b>365.536</b>	<b>425.348</b>	<b>15.178.261</b>	<b>55.042.024</b>	<b>15.764.816</b>
Wages and salaries of crew	4.643.607	21.757.253	2.037.464	6.437.571	11.261.625	101.679	922.491	2.370.625	9.716.062	1.565.603	39.360	13.000	5.299.173	20.976.870	4.138.838
Imputed value of unpaid labour	21.222.467	40.447.012	940.857	360.000	624.750	497.714	2.663.243	8.556.034	15.386.219	1.193.946	170.400	312.000	667.362	1.745.250	372.855
Energy costs	6.988.781	24.732.637	1.504.761	8.750.500	11.072.160	233.582	1.903.291	2.939.815	8.467.261	1.374.807	69.570	10.140	1.565.380	4.701.300	1.475.030
Repair and maintenance costs	2.693.761	10.761.533	582.314	3.271.429	4.629.000	77.536	618.578	1.440.099	3.049.988	647.663	14.550	1.300	848.444	3.330.750	1.029.000
Other variable costs	2.246.742	11.436.401	1.344.866	5.486.571	11.703.225	25.443	982.957	2.866.246	7.121.278	3.341.002	52.920	24.700	5.035.931	19.475.895	6.757.779
Non-variable costs	538.752	1.777.450	178.381	300.071	1.207.875	14.904	252.315	329.371	541.058	97.793	4.620	3.185	216.658	853.995	160.475
Annual depreciation	1.209.090	4.757.102	1.792.529	3.724.984	8.739.218	55.420	699.264	1.272.763	5.179.134	1.444.513	14.116	61.023	1.545.314	3.957.964	1.830.840
<b>Invested capital</b>															
Depreciated replacement value	4.586.351	16.816.690	7.339.722	14.100.899	35.073.324	214.851	2.814.051	4.805.155	20.516.377	5.873.211	55.511	256.699	5.701.395	15.557.068	7.768.143
Total investments (EUR)	1.278.444	9.656.132	828.463	1.645.714	1.386.000	403.929	532.903	1.891.663	2.355.216	146.703	6.000	2.600	1.853.667	2.449.500	1.281.700
Financial position (%)	4,35	1,48	0,00	3,59	9,07	0,00	0,00	0,00	1,46	0,00	0,00	0,00	27,51	1,53	0,63
<b>Economic Indicators (EUR)</b>															
Gross or added value	9.291.223	69.720.014	2.227.138	7.757.704	42.825.821	3.352.256	9.596.249	15.887.551	36.204.403	10.559.146	236.340	467.675	4.721.294	32.084.276	27.424.121
Gross Profit Margin	16.574.851	7.515.748	— 751.184	960.133	30.939.446	2.752.863	6.010.515	4.960.892	11.102.122	7.799.597	26.580	142.675	— 1.245.240	9.362.156	22.912.428
Net profit	17.783.941	2.758.647	— 2.543.713	— 2.764.851	22.200.228	2.697.443	5.311.252	3.688.129	5.922.988	6.355.084	12.464	81.652	— 2.790.554	5.404.192	21.081.588
Profit and remuneration of imputed value of labour	3.438.527	43.205.659	— 1.602.855	— 2.404.851	22.824.978	3.195.157	7.974.495	12.244.163	21.309.206	7.549.030	182.864	393.652	— 2.123.192	7.149.442	21.454.443
<b>Profitability Indicators (EUR)</b>															
GVA/income	0,43	0,59	0,38	0,30	0,60	0,91	0,72	0,68	0,65	0,66	0,63	0,92	0,38	0,53	0,74
Labour productivity **	2.553	7.274	4.610	12.342	39.600	52.116	20.742	13.296	12.919	36.364	8.192	21.197	6.095	20.387	66.970
ROFTA (%) ***	— 3,88	0,16	— 0,35	— 0,20	0,63	12,55	1,89	0,77	0,29	1,08	0,22	0,32	— 0,49	0,35	2,71
Net profit margin ****	— 81,73	2,33	— 43,58	— 10,81	31,08	72,83	39,77	15,72	10,69	39,67	3,30	16,10	— 22,53	8,94	57,21

\*Gross value added: Revenue — Energy costs + repair and maintenance costs + Other variable costs + Non-variable costs) \*\*Labour productivity: Gross Value Added/FTE

\*\*\* RoFTA (%) (Capital productivity): (revenue — Expenditure)/Reimbursed replacement value \*\*\*\* Net profit margin: Profit/Income (%)

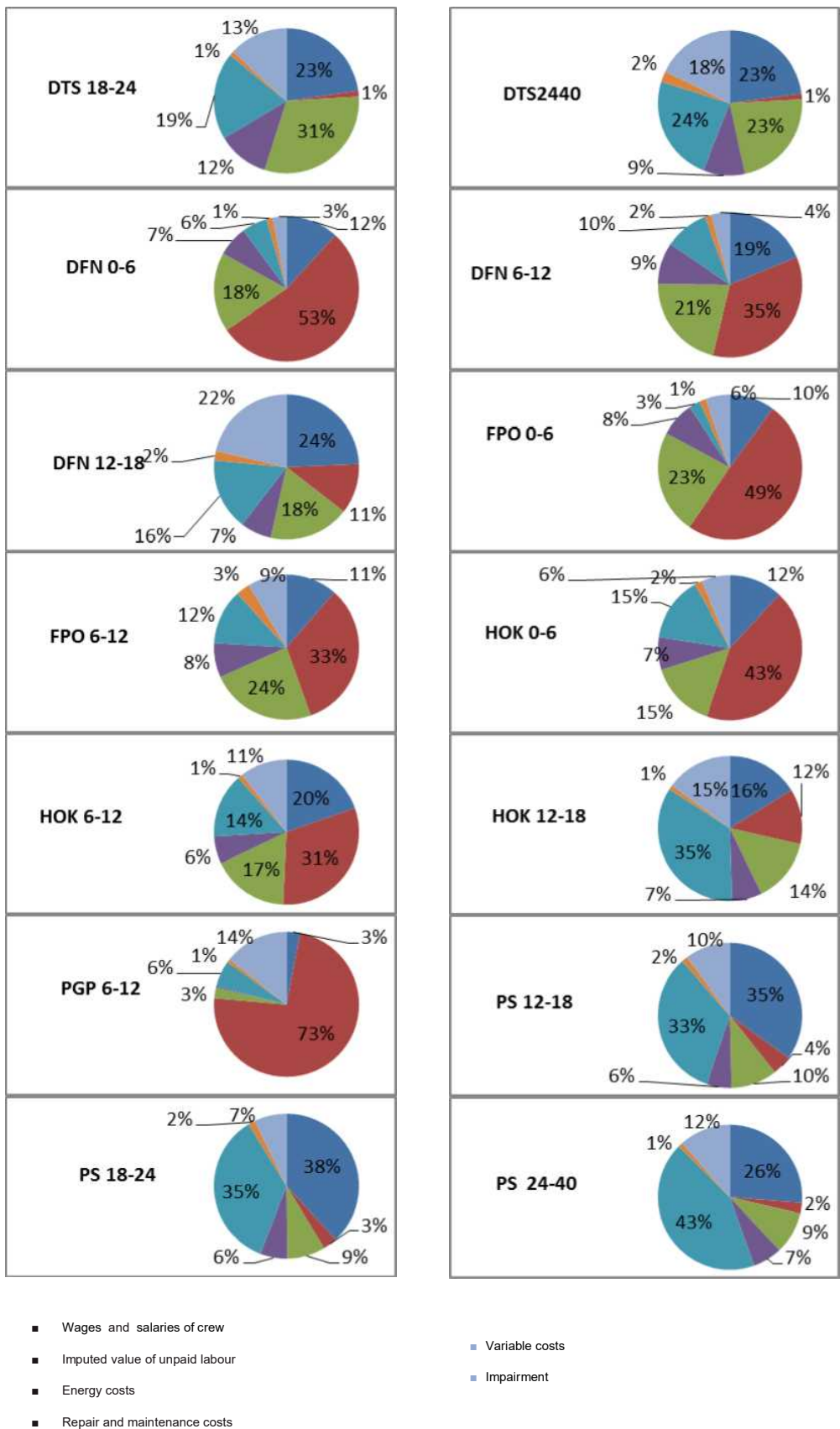


Figure 5. Distribution of expenses for each segment of the Greek fleet

### 5. Major catches for fishermen’s revenue

This section presents the catches with the greatest contribution to fisheries income formation, as a whole (see Figure 6) and gear level (see: Picture 7).

	Code	Commercial Name	Scientific Name	Value	Contribution %
10 %	FAO	Anchovy	Engraulis encrasicolus	43.308.672	9.3 %
FEMA	ANE	Sardine	Sardina pilchardus	38.983.295	8.4 %
	PIL	Hake	Merluccius merluccius	38.814.766	8.4 %
LES:	HKE	Lesser striped mullet	barbatus	29.949.211	6.5 %
	CUT	Shrimp	Penaeus kerathurus	23.153.522	5.0 %
9 %	LBE	Red mullet	Mullus surmuletus	20.291.503	4.4 %
	SBX	Pagrus	Pagrus pagrus	19.044.546	4.1 %
FEMAL	RPG	Octopus	Octopus vulgaris	18.786.747	4.1 %
	OCC	Prawns	Parapenaeus longirostris	15.748.609	3.4 %
ES:	DPS	Pagellus	erythrinus	15.130.885	3.3 %
	SBR	Cuttlefish	Sepia officinalis	14.396.070	3.1 %
8 %	CTC	Bogue	Boops boops	13.042.529	2.8 %
	BOG	White	Diplodus sargus	9.418.205	2.0 %
FEMA	SWA	Swordfish	Xiphias gladius	8.959.615	1.9 %
	SWO	Dentex	dentex	7.997.398	1.7 %
LES:	DEC	Sea Sparus	Sparus aurata	7.872.179	1.7 %
	SBG	Diagnus	Diplodus vulgaris	6.232.242	1.3 %
7 %	CTB	Bonito	Sarda sarda	6.219.963	1.3 %
FEMAL	CLU	Albacore	Thunnus alalunga	6.181.614	1.3 %
	ALB	Albacore	Sole Solea solea	5.972.985	1.3 %

**Figure 6. Catch types contributing to 75 % of the fishery income in the total fishing fleet (ranking in descending order of importance in the modulation of revenue from fisheries).**

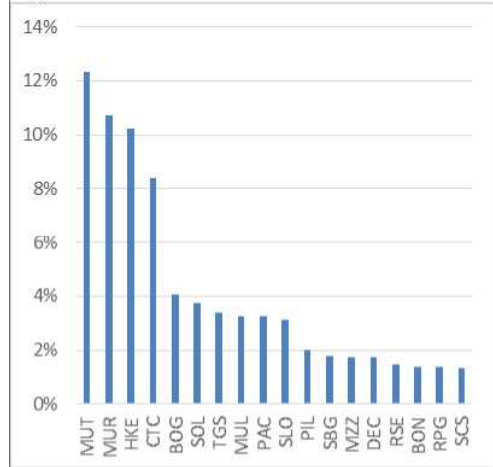
As shown in Figure 6, in setting up 75 % of the revenues of the fishing fleet, 20 different catch types are contributing to this. This is a special feature of Greece’s fisheries, highlighting the diversity of Greek catches. The most important species on the revenue side is anchovy with a participation rate of 9.3 % followed by sardine and hake with 8.4 %. The income from these 3 species exceeds 120 million EUR.

Figure 6 shows the most significant catches per gear category. As can be seen from this figure, vessels in most categories of fishing gear support 75 % of their income in several species, particularly vessels using nets. In this category, only three species participate with more than 10 % (red mullet, red mullet, cod). In the ‘longline’ fishing gear, the predominant type in terms of commercial value is buckwheat, while 75 % of the income followed by an additional eight species with a contribution of less than 10 %. In the ice pot tool, octopus is the main catch in terms of commercial value, contributing to 85 % of the gross catch value.

With regard to average fishing, purse seine revenue is based mainly on anchovy and sardine, with 38 % and 32.6 % respectively, and 4.9 % of the income is involved in the 75 % figure. Finally, in the case of “bottom trawls”, nine species are involved in the formation of 75 % of the revenue, four out of which (shrimp, cod, prawns, and striped mullet) are higher than 10 %.

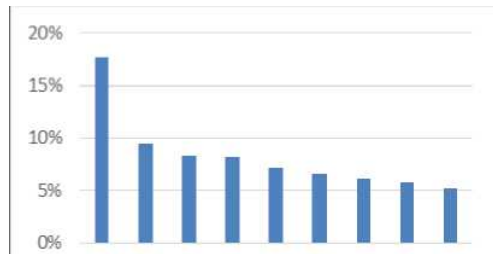


**Δίκτυα**



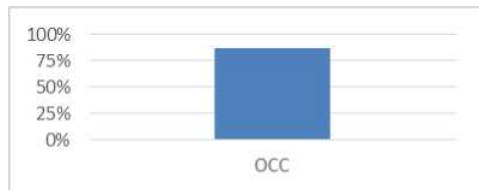
Code FAO	Commercial name	Scientific Name	Contribution value	Participation
CUT	Striped red mullet	Mullus barbatus	17.871.964	12.3 %
SBX	Red mullet	Mullus surmuletus	15.526.109	10.7 %
HKE	Cod	Lamna nasus	14.820.917	10.2 %
CTC	Cuttlefish	Sepia officinalis	12.161.290	8.4 %
BOG	Bogue	Boops boops	5.846.410	4.0 %
SOL	Language	Solea solea	5.406.522	3.7 %
LBE	Shrimp	Penaeus kerathurus	4.907.161	3.4 %
MUL	Red mullet	Mugilidae	4.741.439	3.3 %
SBR	Seabream	Pagellus erythrinus	4.690.666	3.2 %
SLO	Lobster	Painurus elephas	4.533.057	3.1 %
PIL	Sardine	Sardina pilchardus	2.901.839	2.0 %
SBG	Gilthead	Sparus aurata	2.583.620	1.8 %
PEL	Bony fishes	Thunnini	2.539.085	1.8 %
DEC	Seabream	Dentex dentex	2.516.976	1.7 %
RSE	Coriander	Scorpaena scrofa	2.140.305	1.5 %
CLU	Skipjack	Sarda sarda	2.006.560	1.4 %
RPG	Red seabream	Pagrus pagrus	1.976.739	1.4 %
SCS	Coriander	Scorpaena spp.	1.958.713	1.4 %

**Longlines**



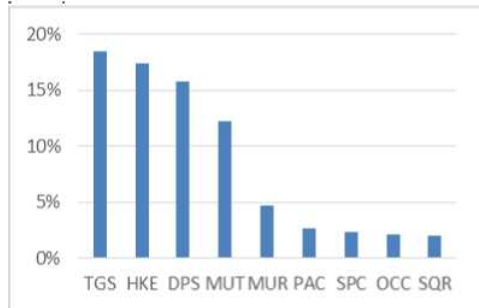
Code FAO name	Commercial name	Science Name	Value	Participation
RPG	Red seabream	Pagrus pagrus	16.620.953	17.7 %
SWO	Swordfish	Xiphias gladius	8.873.894	9.5 %
SWA	White sea	Diplodus sargus	7.861.682	8.4 %
SBR	Seabream	Pagellus erythrinus	7.738.152	8.2 %
HKE	Hake (Merluccius merluccius)	Merluccius spp.	6.761.619	7.2 %
ALB	Tuna	Thunnus alalunga	6.181.614	6.6 %
NRL	Zfuffils	Epinephelus fasciatus	5.750.569	6.1 %
DEC	Seabream	Dentex dentex	5.400.606	5.8 %
CTB	Curve	Diplodus vulgaris	4.863.755	5.2 %

**Traps**



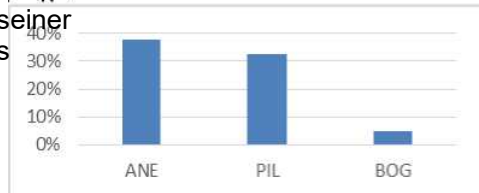
Code FAO name	Commercial name	Scientific Name	Value	Participation
OCC	Octopus	Octopus vulgaris	14.694.434	86.9 %

**Winch trawls**



Commercial FAO code	Scientific Name	Value contribution	Participation
LBE	Shrimp	Penaeus kerathurus	18.5 %
HKE	Cod	Merluccius spp.	17.4 %
DPS	Prawns	Parapenaeus longirostris	15.8 %
CUT	Striped red mullet	Mullus barbatus	12.2 %
SBX	Red mullet	Mullus surmuletus	4.7 %
SBR	Seabream	Pagellus erythrinus	2.7 %
SPC	Picarel	Spicara smaris	2.3 %
OCC	Octopus	Octopus vulgaris	2.2 %
SQR	Squid	Loligo vulgaris	2.0 %

**Purse seiners**



Code FAO	Commercial name	Scientific Name	Value	Participation
ANE	Anchovy	Engraulis encrasicolus	41.539.476	38.0 %
PIL	Sardine	Sardina pilchardus	35.636.230	32.6 %
BOG	Bogue	Boops boops	5.407.570	4.9 %

**Figure 7. Catch types contributing to 75 % of the fishery income per fishing gear (ranking in descending order of importance in the modulation of revenue from fisheries).**

## 6. Recording of fishermen's problems

As part of the socio-economic data collection for the marine fishery sector, fishermen were invited to report on the main problems they are facing. Table 10 shows the 10 problems which received most positive responses from the fishermen concerned.

**Table 10. The 10 main problems the fishermen face, based on the results of the survey.**

N/a	Problem	Total reply rate to total
1	Lack of subsidy — compensation for damage to fishing gear	64.5 % FEMALES:
2	Damage to fishing gear from mammals	60.1 % FEMALES:
3	Reduced catch price	59.9 % FEMALES:
4	Reduced purchasing power of consumers	59.2 % FEMALES:
5	Reduction in fish stock due to overfishing	54.6 % FEMALES:
6	Competition by amateur & fishermen who are retired	52.7 % FEMALES:
7	High cost of purchasing gear	46.6 % FEMALES:
8	Red tape	45.8 % FEMALES:
9	Lack of incentives for integration of young fishermen	43.5 % FEMALES:
10	Expensive Fuels	38.2 % FEMALES:

The table above illustrates the intensity of the problem of the destruction of the fishing gear by protected species, and the absence of compensation of fishermen for these disasters. In addition, market issues, namely reduced catch prices, reduced demand due to reduced purchasing power of consumers, high costs of purchasing fishing gear and high fuel prices are also considered important by fishermen. Reducing fishing opportunities on account of overfishing is also a serious problem for fishermen. Finally, problems related to competition with non-professional fishermen, red tape and the lack of incentives for integration of young fishermen in the profession are highlighted as important.

**Table 11. The 10 main problems the fisheries are facing, based on the results of the survey.**

	Problem	Total reply rate to total
1	Reduced catch price	69.8 % FEMALES:
2	Lack of subsidy — compensation for damage to fishing gear	66.0 % FEMALES:
3	Damage to fishing gear from mammals	61.5 % FEMALES:
4	Reduced purchasing power of consumers	56.6 % FEMALES:
5	Red tape	56.6 % FEMALES:
6	Reduction in fish stock due to overfishing	54.7 % FEMALES:
7	Temporal prohibitions	52.8 % FEMALES:
8	High cost of purchasing gear	50.9 % FEMALES:
9	High taxes and social contributions	49.1 % FEMALES:
10	Lack of incentives for integration of young fishermen	45.3 % FEMALES:

Tables 11 and 12 show the 10 problems which received the majority of positive responses for professional and coastal fishing fishermen respectively.

As can be seen from these tables, the problems encountered by fishermen in these two categories are largely common (8 common problems), although their prioritisation is changed.

In particular, the operators of the medium fisheries, unlike those in the coastal zone, integrate the time bans and high taxes and social security contributions to the top ten problems of the fishing industry, against the exact fuels and competition by recreational and retired fishermen.

**Table 12. The 10 main problems the coastal fishermen are facing, based on their responses.**

N/a	Problem	Total reply rate to total
1	Lack of subsidy — compensation for damage to fishing gear	64.1 % FEMALES:
2	Reduced purchasing power of consumers	59.8 % FEMALES:
3	Damage to fishing gear from mammals	59.7 % FEMALES:
4	Reduced catch price	57.4 % FEMALES:
5	Competition by amateur & fishermen who are retired	56.0 % FEMALES:
6	Reduction in fish stock due to overfishing	54.5 % FEMALES:
7	High cost of purchasing gear	45.5 % FEMALES:
8	Red tape	43.1 % FEMALES:
9	Lack of incentives for integration of young fishermen	43.1 % FEMALES:
10	Expensive Fuels	40.2 % FEMALES:

## **6. Conclusions and problems of the investigation**

This report presents the main economic variables for the Greek marine fisheries sector for the **year 2016**. These variables were collected under the National Programme for the Collection of Fisheries Data **for 2017**. The economic variables were collected using a structured questionnaire to a sample of fishing vessels.

As set out in the national programme, the sample was selected by stratified random sampling. The Register of Fishing Vessels for 2016 was used as a sampling frame and stratification of the population was based on vessel length and main fishing gear. The Greek fishing fleet has been divided into 15 segments, six of which are small-scale fishing, including all vessels with a length of less than 12 metres.

From the above analysis we conclude that in the period 2012-2016, the number of vessels, the total number of staff employed and fishing effort are on a downward trend. Instead, production has shown a strongly rising trend over the last two years. This contributed drastically to the emergence of a positive net profit of 11 out of 15 fleet segments but also to the fleet as a whole. One interpretation of these results may concern the removal of the least profitable vessels from the sea fisheries sector but also of improving the efficiency of active vessels.

The improvement of economic results and economic indicators is observed both in the coastal and in the middle fisheries sector. In particular in the case of coastal fishing, the net profit may be small but, as already pointed out, the sum of the profit and the remuneration of the imputed labour is quite high, which indicates that the activity offers fishermen a positive income.

It is also noteworthy that the analysis of the financial data for 2016 shows a decrease in energy costs compared to 2015, both in the coastal and in the average fisheries. This is mainly due to the reduced price of fuel, which is a positive development for the viability of the sector.

### CHAPTER III BIOLOGICAL SUSTAINABILITY INDICATORS

On the basis of the Regulation the calculation of indicators of 'sustainable harvesting' (Chapter) was done.10) for a series of demersal and small pelagic stocks in geographical areas (GSA) 20 (Ionian) and 22 (Aegean).

**The final weighted harvest indicators for the trawler, coastal and purse seiners are 0.76, 0.83 and 1.02 respectively.**

The values **F/F MSY** for the stocks of the species taken into account, as well as the weight of each stock based on the value of the catch, are shown below.

*The main species, which make up the majority of the catch and the highest economic value, have been taken into account in each case. In the case of purse seiners, 2 species were taken into account, for trawlers 5 and coastal vessels 8 species.*

#### Purse seine (PS)

GSA	Species	F/F	Catch Value
22	Anchovy (ANE)	0.99	38813
22	Sardinella (PIL)	1.06	39665
20	Anchovy (ANE)	0.76	982
20	Sardinella (PIL)	1.07	1461

#### Trawls table I (OTA)

GSA	Species	F/F	Catch Value
22	Take (HKE)	1.17	15207
22	Red mullet (cut)	0.33	9647
22	Stripped mullet (MUR)	0.38	4230
22	Pink shrimp (DPS)	0.39	15367
22	Caramote prawn (TGS)	0.93	16332
20	Take (HKE)	2.29	1557
20	Red mullet (cut)	0.34	1418
20	Stripped mullet (MUR)	0.20	125
20	Pink shrimp (DPS)	0.85	248
20	Caramote prawn (TGS)	0.88	1514

**Offshore vessels**

<b>GSA</b>	<b>Species</b>	<b>F/F</b>	<b>Catch Value</b>
22	Take (HKE)	1.17	13858
22	Red mullet (cut)	0.33	12677
22	Stripped mullet (MUR)	0.38	11627
22	Bogue (BOG)	0.20	5341
22	Octopus (OCC)	0.65	13981
22	Common pandora (PAC)	0.51	4449
22	Common cutter fish (CTC)	1.54	10240
22	Caramote prawn (TGS)	0.93	1215
20	Take (HKE)	2.29	7648
20	Red mullet (cut)	0.34	4721
20	Stripped mullet (MUR)	0.20	2560
20	Bogue (BOG)	0.30	490
20	Octopus (OCC)	0.76	2603
20	Common pandora (PAC)	0.53	1567
20	Common cutter fish (CTC)	0.91	3057
20	Caramote prawn (TGS)	0.88	3674

For a small number of stocks, the sustainability indicator calculations (F/F) are based on population estimates in the GFCM and the EU (STECF) working groups and in the context of a European cooperation programme developing 'data poor' methods for stock assessments.

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

In all cases, the lack of implementation of the DCF for a number of years has led to estimates involving a considerable degree of uncertainty and a wide margin of error due to the time gaps in the data and the subsequent adoption of a number of assumptions in the methods used.

*Therefore estimates may refrain from reality and it is estimated that their use for management purposes is precarious. Such labelling has also been made by the EU working groups that do not recommend the use of specific estimates for the development of management scenarios.*

**Fishing effort**

The following section presents the latest available monitoring and reporting data on the fishing effort based on the National Fisheries Data Collection Programme **for 2016**.

The marine geographical sub-areas of Greece do not have the same metiers. Table A.2.a.2 presents for each sub-region, the NRN carried out by the fishing fleet was considered significant and selected for sampling through the ranking system.

**Table A.2.a.2. Metiers of the Greek fishing fleet  
selected for each geographical sub-region and criteria for their selection**

Year reference	Geographical sub-area	Type of gear	Fisheries target	NRN code	Fishing effort HI(s)	Total landings (tonnes)	Total value <i>m</i>	Selection due to fishing effort	Selection due to landings	Selection due to value of catches
2014-15	GSA22	Sea seiners	White fish	PS SPF > = 14 0 0	22071	14726	47811596	N	M	M
2014-15	GSA22	Bottom trawl	Demersal species	ODTA DES > = 40 0 0	39153	11247	65629426	N	M	M
2014-15	GSA22	Gill nets	Demersal species	GNS DES > = 16 0 0	529.340	6152	43556991	M	M	M
2014-15	GSA22	Trammel nets	Demersal species	GTR DES > = 16 0 0	818.043	8152	69132131	M	M	M
2014-15	GSA22	Bottom-set longline	Demersal fish	LLS DEF 0 0 0	353.589	3284	36110382	M	M	M
2014-15	GSA22	Pantries	Demersal species	FPO DES 0 0 0	110355	2153	11022800	M	N	N
2014-15	GSA20	Gill nets	Demersal species	GNS DES > = 16 0 0	105807	1021	6754996	M	M	M
2014-15	GSA20	Sea seiners	White fish	PS SPF > = 14 0 0	3285	1453	3488077	N	M	M
2014-15	GSA20	Trammel nets	Demersal species	GTR DES > = 16 0 0	420471	2937	24705672	M	M	M
2014-15	GSA20	Bottom-set longline	Demersal fish	LLS DEF 0 0 0	81596	559	6294212	M	N	M
2014-15	GSA20	Bottom trawl	Demersal species	ODTA DES > = 40 0 0	7008	1155	9895030	N	M	M
2014-15	GSA23	Trammel nets	Demersal species	GTR DES > = 16 0 0	57844.80	529.33	3968841.36	M	M	M
2014-15	GSA23	Bottom trawl	Demersal species	ODTA DES > = 40 0 0	1527.96	523.80	3705034.41	N	M	M
2014-15	GSA23	Sea seiners	White fish	PS SPF > = 14 0 0	951.72	729.96	2654134.56	N	M	M
2014-15	GSA23	Bottom-set longline	Demersal fish	LLS DEF 0 0 0	19090.35	112.00	1402191.08	M	N	M
2014-15	GSA23	Gill nets	Demersal species	GNS DES > = 16 0 0	15578.08	72.60	389546.52	M	N	N
2014-15	BIL95	Foam longliners	Large pelagic fish	LLS LPF 0 0 0 (SWC)	7158	1012	7084000	M	M	M

For coastal fisheries, data were collected on a monthly basis for each type of gear and length category. These data shall estimate an average landing per working day for each gear category and vessel length class. The estimate of the total number of days spent by vessels as estimated in the chapter of the fishing effort has been used.

The estimate of total landings is obtained by multiplying landings per day of fishing effort by the total number of days worked by the number of vessels in the active fleet operating.

As regards the average fisheries the landings were calculated on the basis of the data recorded in the Integrated Fisheries Monitoring System (OSPA) and granted by the Directorate of Fisheries.

It is also noted that the estimates of landings by coastal vessels have been taken into account and data from OSPA which concern vessels with an overall length of more than 12 m.

The results of the estimates of landings are shown in Table A.1.b.2.1.

**table A.1.b.1.2. Fishing effort of coastal and medium-fishing fleet  
(days at sea, days \* GT, days \* kW) by geographical area and fleet category**

GEAR	LENGTH CLASS	QUARTER	GSA-20		GSA-22			GSA-23			
			DAYS * GT	DAYS * KW	ADDRESS	DAYS * GT	DAYS * KW	DAYS * GT	DAYS * KW		
FPO	YL0006	1	344	99	1368	4922	713	18897			
		2	1233	291	4016	13234	2037	54863			
		3				2584	250	2266			
		4	998	294	4060	5242	1101	18972			
	VL0612	1	958	1156	11952	6303	12123	120177			
		2	1013	2126	22137	20900	34287	560744			
		3				8001	17598	266521			
		4	3074	5089	47870	16083	27930	342026			
	VL1218	1				113	1725	11129			
		2				1250	7445	46405			
		3				533	8145	52281			
		4				797	5833	34049			
FPO Sum			7620	9055	91403	79962	119187	1528330			
GNS	VL0006	1			11756	14656	189291	471	1236	12388	
		2			31815	42975	479802	1638	5562	55748	
		3			30185	43106	819840				
		4	988	1419	15493	35685	34167	691477			
	VL0612	1	12524	39965	362007	27575	151022	1347619	907	16419	259200
		2	49683	150447	1315577	77085	329936	3071487	752	23127	196666
		3	48979	168801	1573485	109114	327650	3053683	959	26420	333500
		4	22748	112874	919888	87586	353327	3214375	671	11002	85226
	VL1218	1	146	101072	307704	302	128685	849763	13	44479	129070
		2	272	96535	558177	1060	659835	4265182			
		3	371	133083	787117	1951	543204	3422626			
		4	310	234189	845331	951	565089	3525430	15	31479	83114
GNS Sum			136021	1038385	6684779	415065	3193652	24930575	5426	159724	1154912
GTR	VL0006	1	10715	10080	111722	20143	15098	434307			
		2	25194	30159	300010	56469	43776	1490611			
		3	12173	16686	132579	43094	43192	1013198			
		4	14798	17801	175602	34094	42865	585011			
	YL0612	1	21462	38001	378370	42629	114169	1056746	2360	9170	67362
		2	68870	126921	1169205	133081	351736	3199446	14854	49242	385905
		3	76160	123945	1086458	95351	363832	2926597	7650	32290	250376
		4	76851	131295	1206415	83390	310613	2694685	16782	58615	612323
	VL1218	1	170	133904	461500	1131	224606	1379009	67	25684	166922
		2	251	159726	822658	5475	1151965	6084362	368	111695	535211
		3	596	319279	1483548	5606	1120979	6165242	436	206224	705645
		4	134	79064	475995	3067	909337	4351591	214	98854	288209
GTR Sum			307374	1186861	7804062	523530	4692168	31380805	42731	591774	3011953
LLS	VL0006	1	3798	3393	23245	6948	5127	99939	353	562	12908
		2	17054	15887	122826	21317	21835	281682	3199	3071	57779
		3	30397	23754	204391	27295	29249	357422	4293	2996	68844
		4	13883	11638	107312	24390	19258	236453	7669	5313	116859
	YL0612	1	1445	11951	104155	18182	109614	752151	691	6065	32705
		2	6855	47050	343449	62999	278480	2057398	3536	24165	148118
		3	10695	64700	395143	89756	317872	2428558	6667	43820	316775
		4	8855	52883	316563	60451	260084	1967924	3285	19620	126056
	VL1218	1	41	76264	335581	1005	324849	1877592	107	44268	150201



		2	269	387711	1478225	2117	1410734	7228888	305	91879	436089
		3	182	427331	2032366	2328	1114245	5784269	362	111191	585342
		4	174	249525	1041161	2837	1032182	4649161	337	69583	372670
LLS											
Sum			93648	1372087	6504417	319625	4926529	2772143730804		422533	2424346
OTB	VL1218	1				68	1637	9230			
		2				86	2443	17227			
		4				138	3956	28230			
	VL1824	1	1036	53517	274180	4396	230534	1233554	112	5107	18287
		2	442	23724	109584	2648	138864	729620	22	1073	3286
		3	150	7941	34362	715	38782	201424	3	120	734
		4	1015	52494	263721	4453	235233	1254385	128	5554	22412
	VL2440	1	1092	134043	303062	8720	1132756	2767269	524	71139	162742
		2	494	57990	140645	4995	648571	1578542	317	42381	100419
		3	205	30248	60762	2843	423293	932806	73	9911	21978
		4	941	116711	260049	8834	1161723	2805510	463	60247	148331
OTB											
Sum			5375	476668	1446364	37896	4017792	11557798	1643	195532	478190
PS	VL1218	1	44	1417	7605	873	18856	122477	30	840	6531
		2	408	11080	81149	2115	49855	293471	103	3006	21872
		3	495	11916	91031	2776	66061	392105	121	3487	25993
		4	122	3355	21970	1516	35840	221846	63	1744	14184
	VL1824	1	268	11228	57242	1311	69678	302616	1	53	162
		2	902	38796	201858	5178	273818	1183420	55	2857	9187
		3	1017	43299	218229	6540	351229	1518496	59	3305	9072
		4	603	26861	119085	3000	161563	676550	6	216	955
	VL2440	1				551	54151	146348	8	1044	1588
		2	27	2924	9953	1846	177381	487369	54	6560	10012
		3	88	10137	29295	2734	270444	758326	69	8552	13011
		4				1074	104684	263526	42	5160	7873
PS											
Sum			3975	161014	837417	29514	1633561	6366549	610	36824	120439

Please find below the latest available data up to and including the date of submission of the report, collected during the **year 2016**, in order to establish the state of the stocks on the basis of fixed benchmarks per species.

*Other species of the species Merluccius merluccius, Mullus barbatus, Mullus surmuletus, species Octopus vulgaris, Sepia officinalis, Boops boops, Penaeus kerathurus and, Pagellus erythrinus, who have a significant contribution in terms of volume and value of catches in coastal fisheries (more than 60 %), as well as other important species.*

*Merluccionus  
merluccius*

*Mercuuccyus me fitted  
us*

*Merfaucus merluccius*

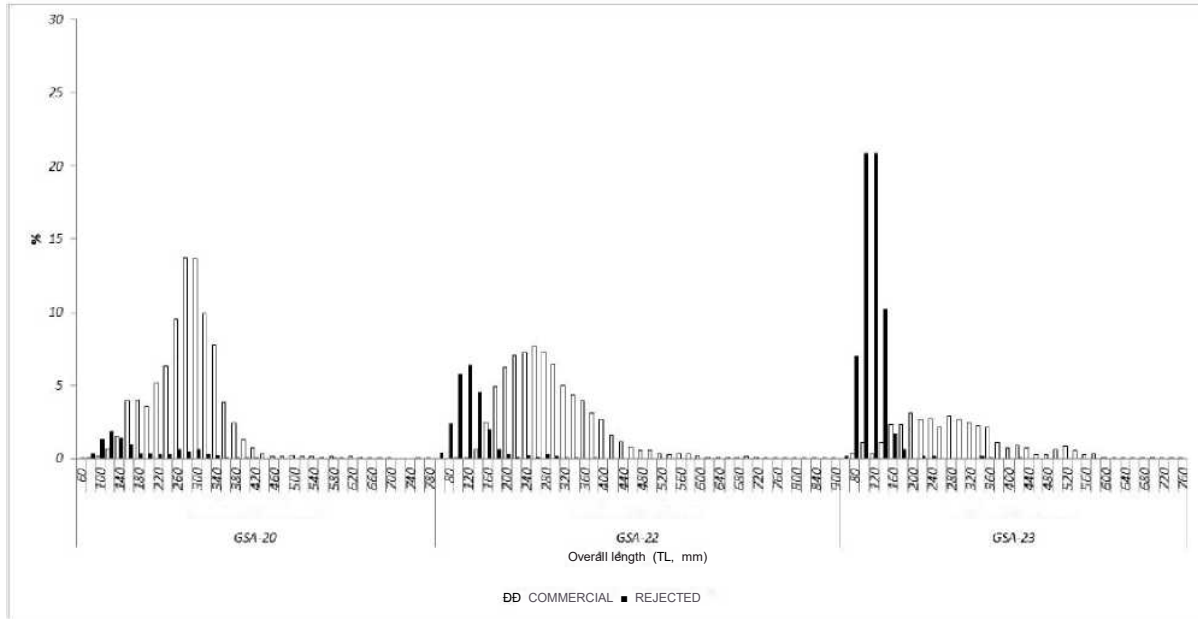
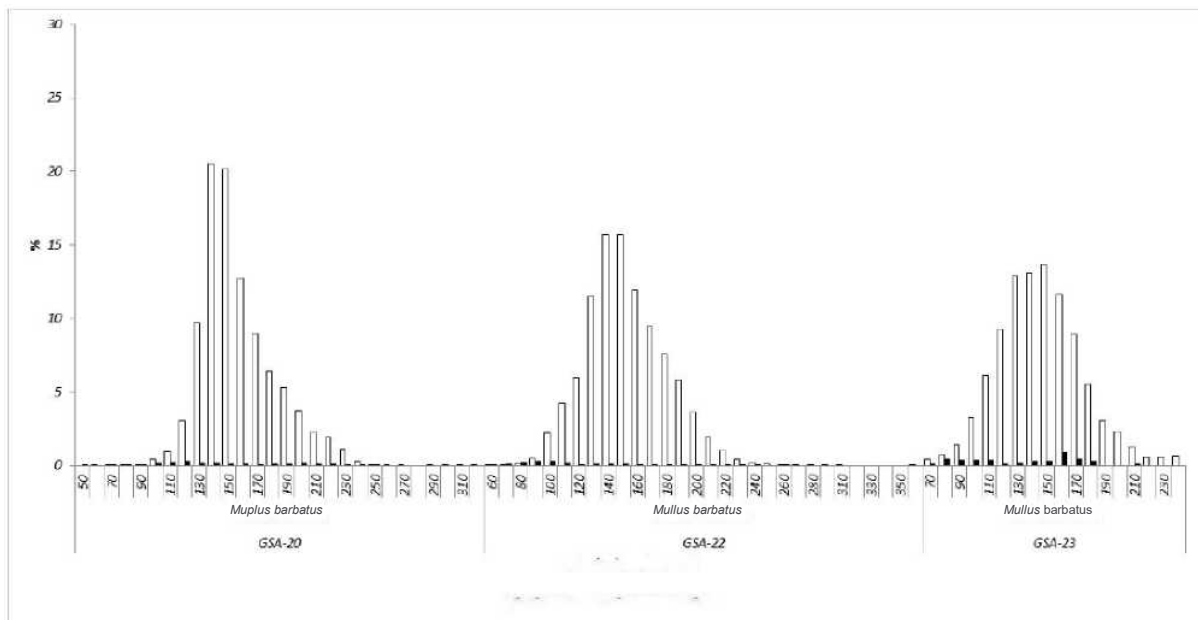


figure A.G.R.M. The composition of the fat content of the Limpia (*Merchm merklaccim*) by geographical sub-region; Total length (TL, mm)

□ EMI IUPIKA AIKJPPIMIUMbNA

Figure A. 2. 0.7



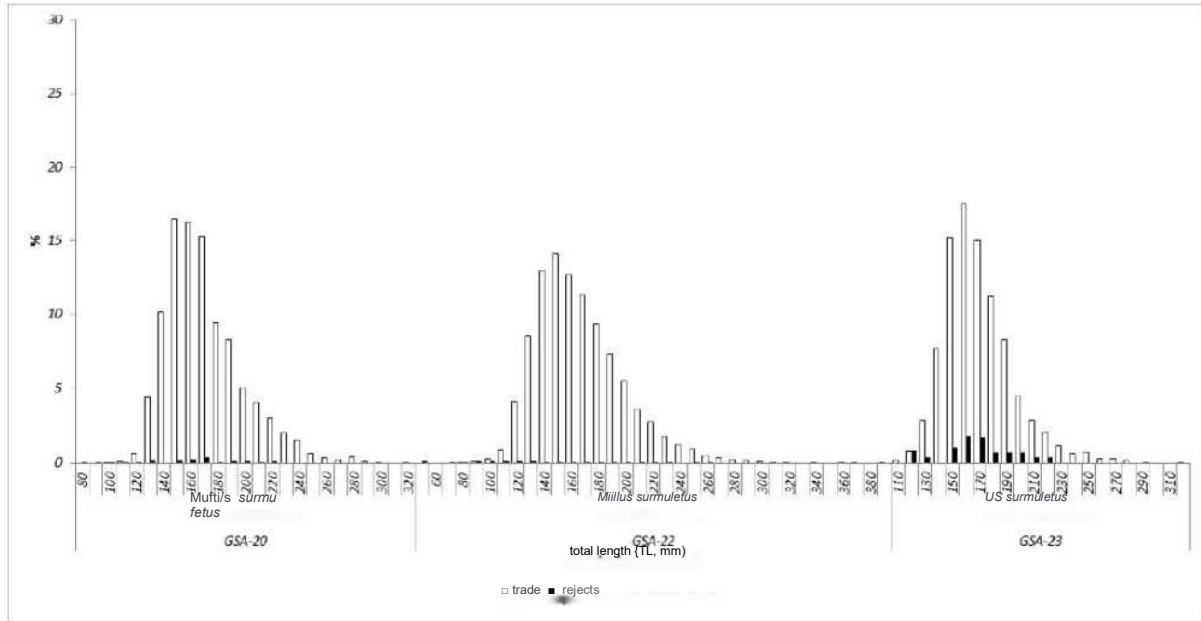


Figure A.2.0. S

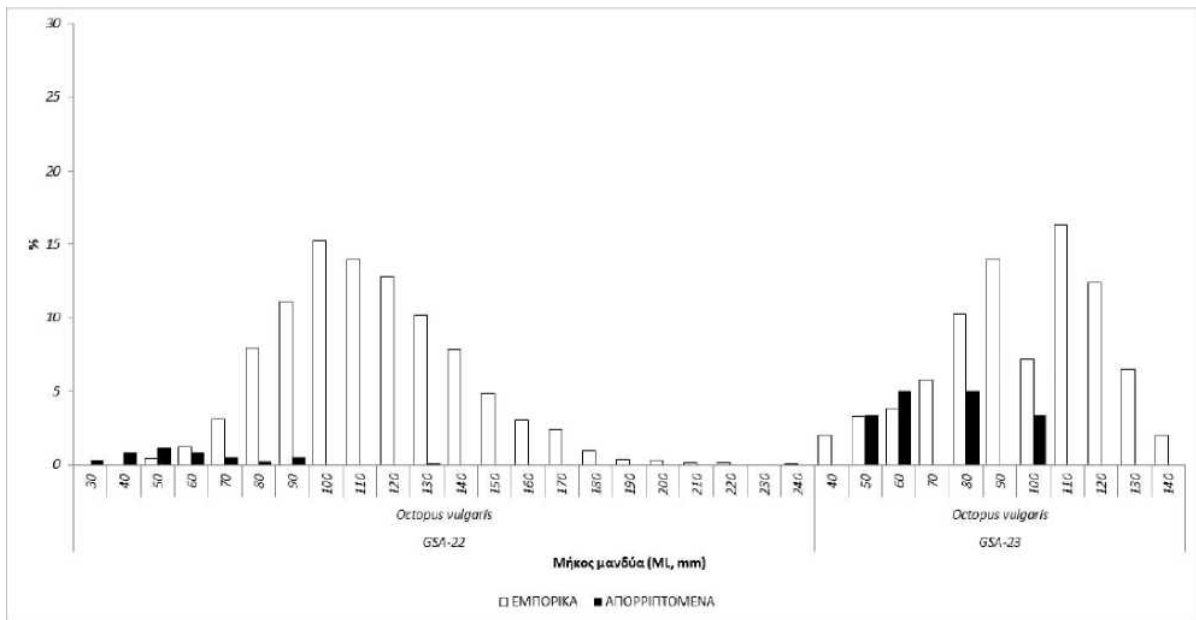


Figure A.2.a.24. length composition of the species *Hall (octopus)* (*Octopus vulgaris*)

Figure A2.a.30 Kara IHKOMW 's composition; Sudanese (Sepia officinalis) ova geographical subspace/h

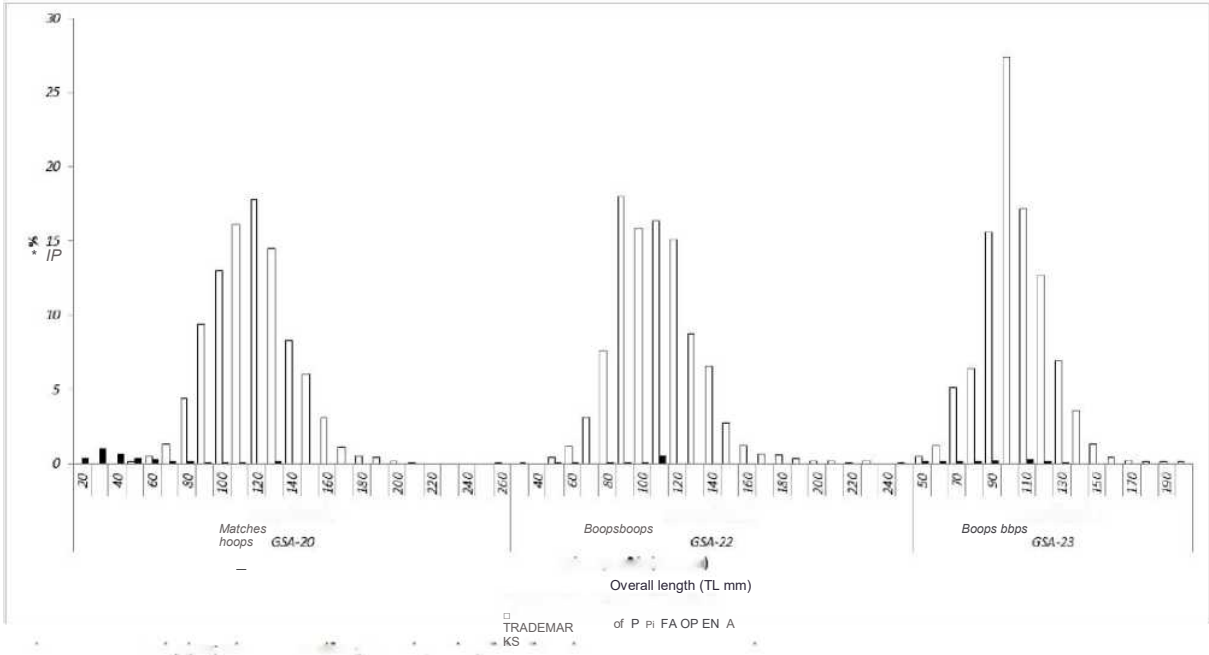
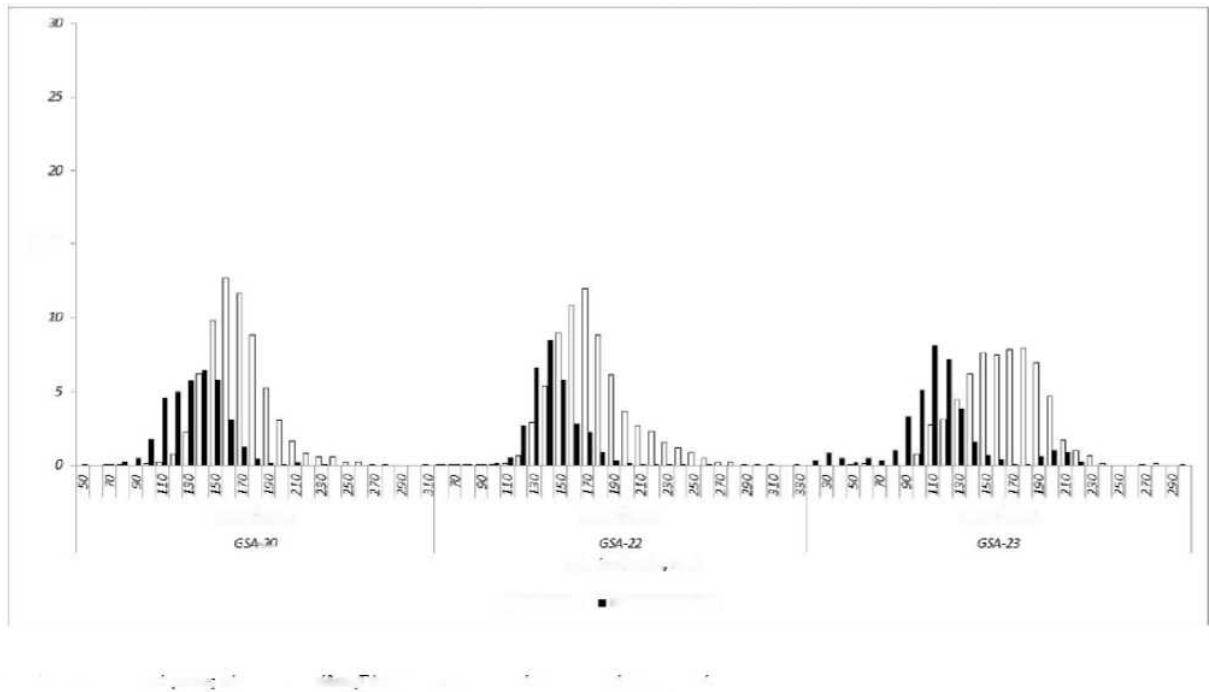


Figure A. 2.



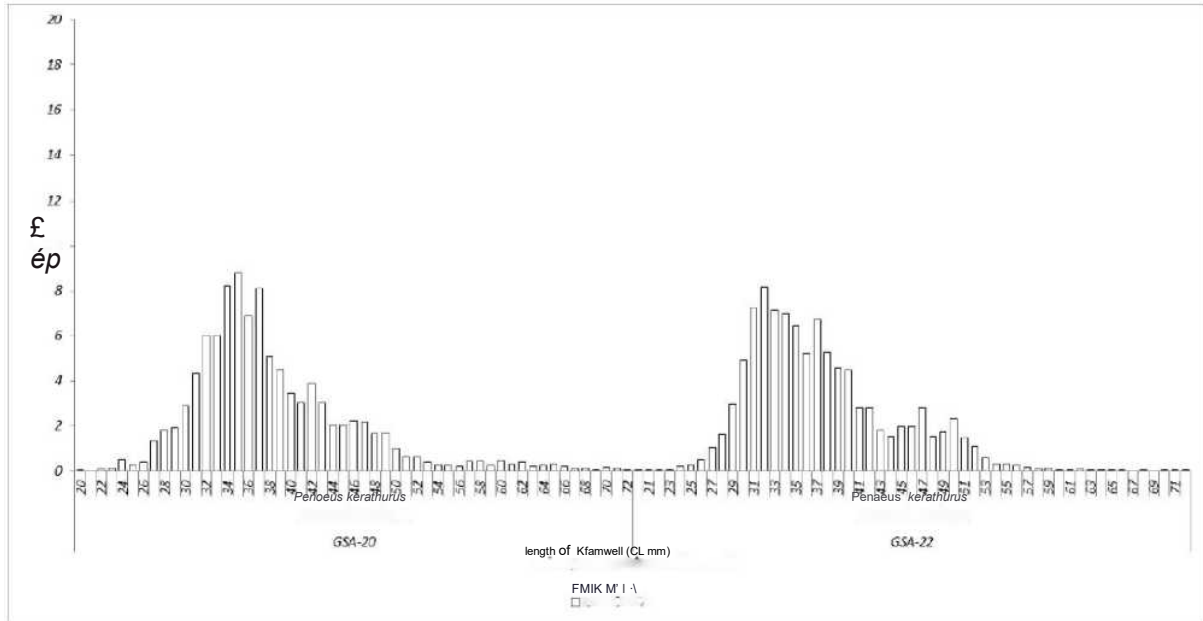
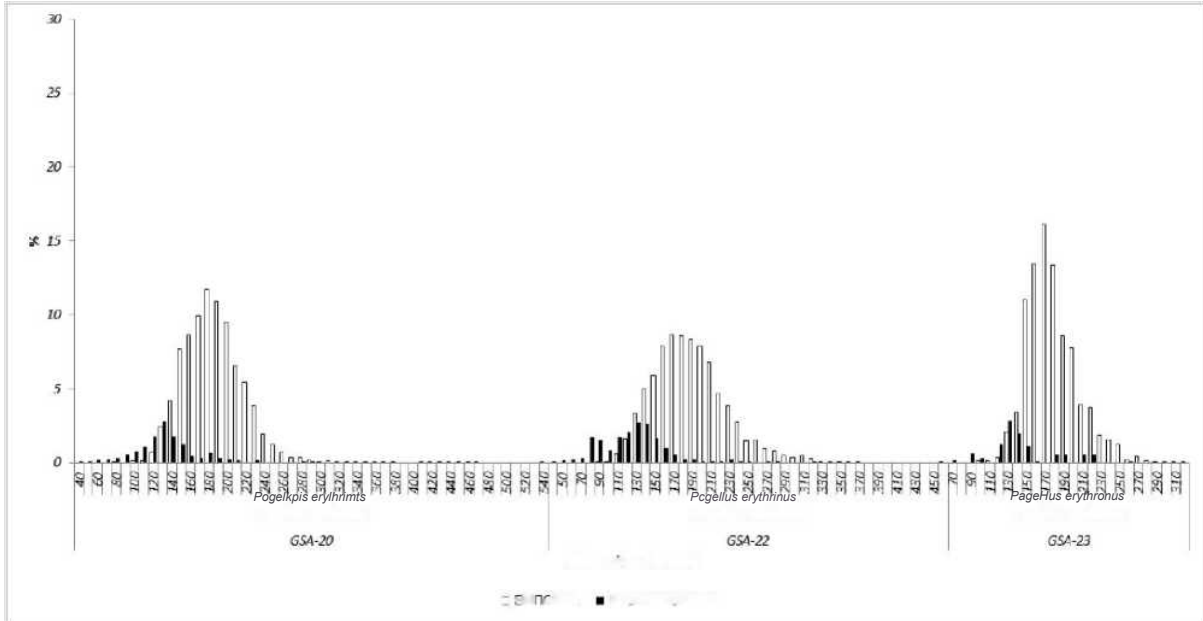


figure A.2. Length of the configuration of the agricultural sector (*Penaeus kerathurus*) geographical sub-area/or. Overall length (TL, mm)

11 — M — SUBJECT MATTER  
PIKA

Figure A.2.0.25 The composition of the sea bream (*Pagellus erythromm*) av geographical wall/or.



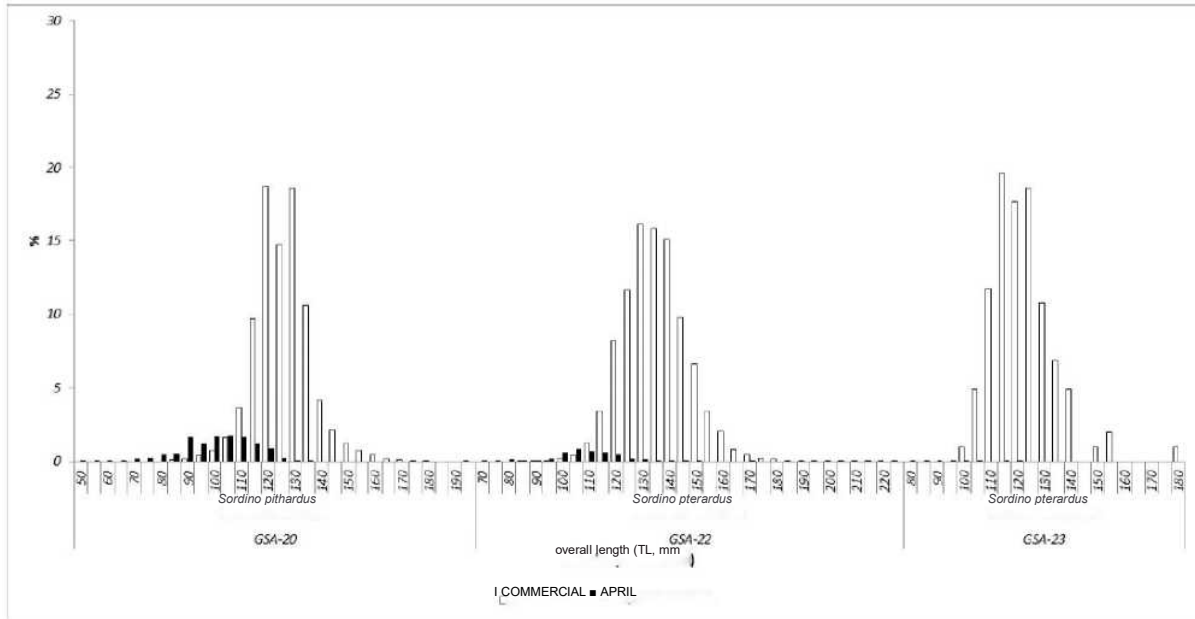
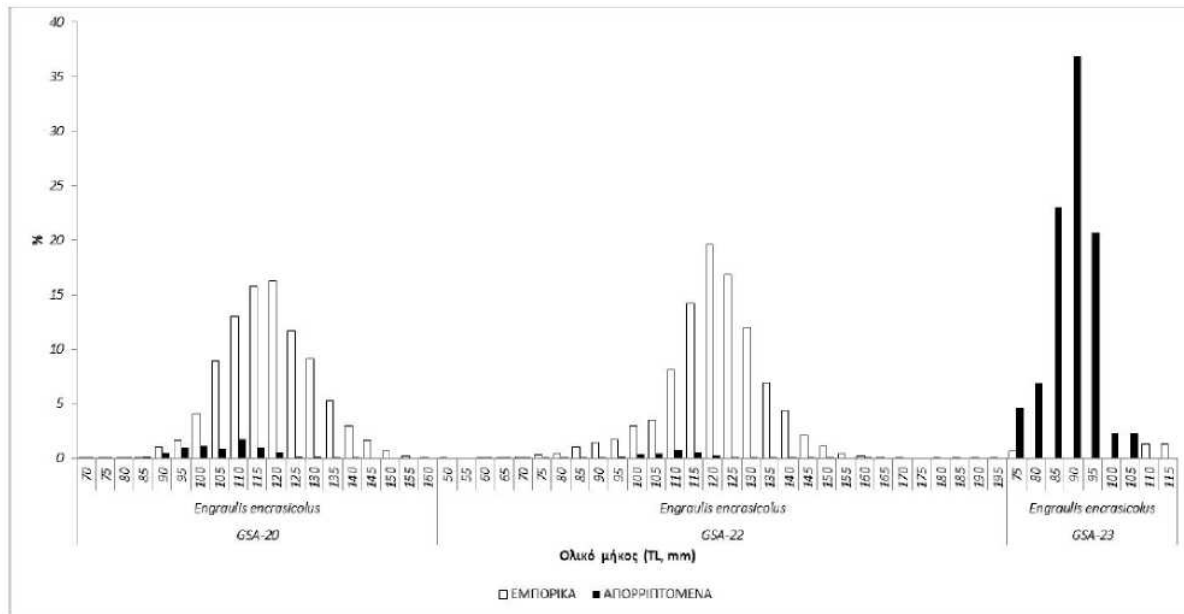
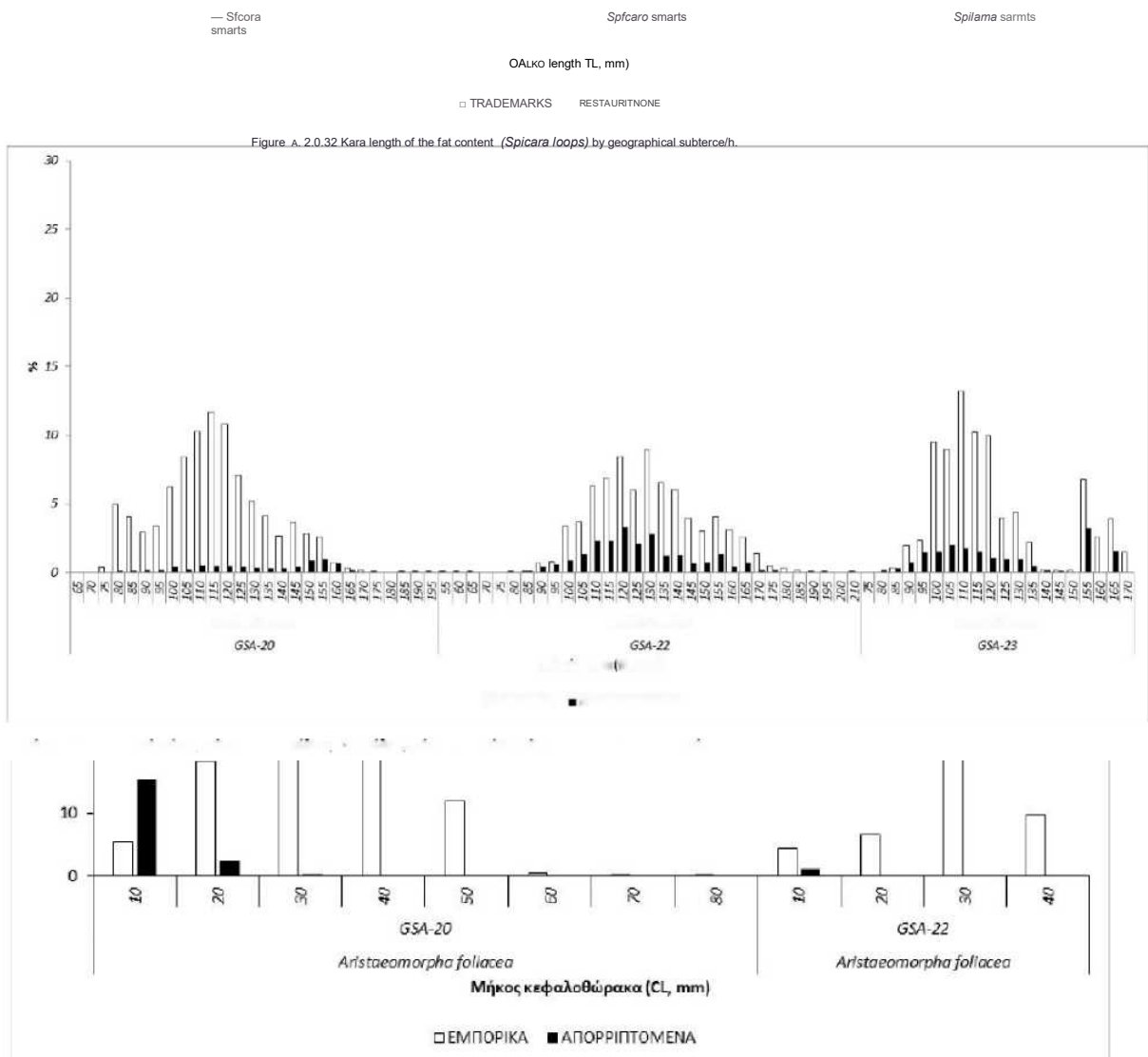


Figure A.2.0.12 Length composition of *Sardina pilchardus* to be located/or.



Εικόνα Α.2.α.4 Κατά μήκος σύνθεση του είδους Γαύρος (*Engraulis encrasicolus*) ανά γεωγραφική υποπεριοχή.



Εικόνα Α.2.α.2 Κατά μήκος σύνθεση του δείγματος του είδους Γαρίδα κόκκινη (*Aristaeomorpha foliacea*) ανά γεωγραφική υποπεριοχή.





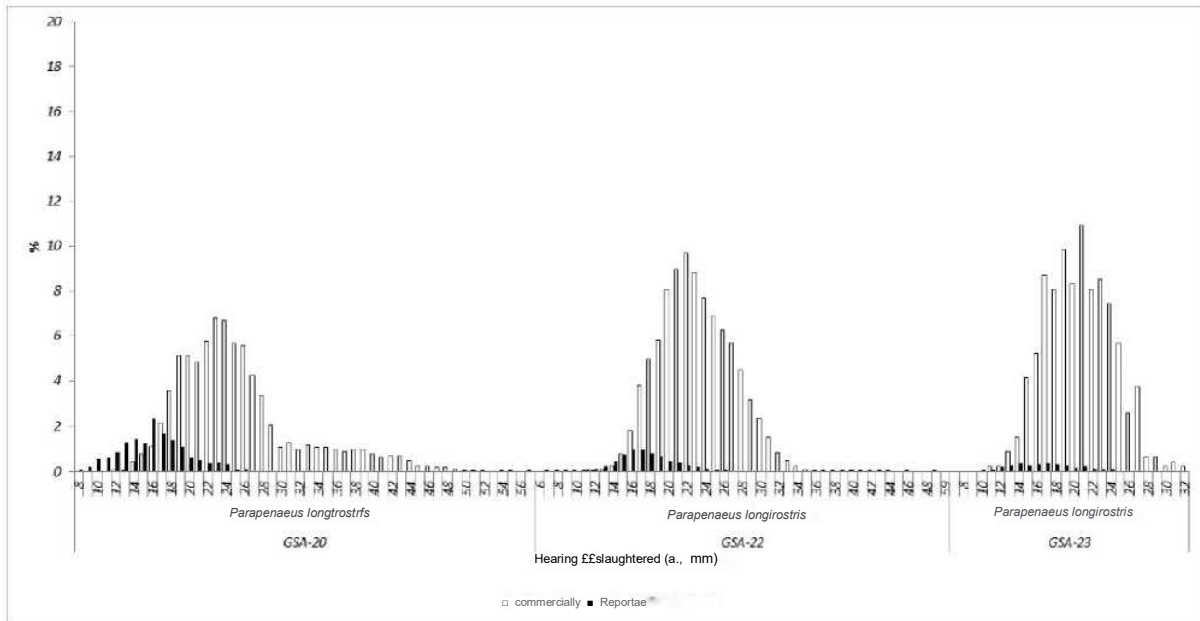
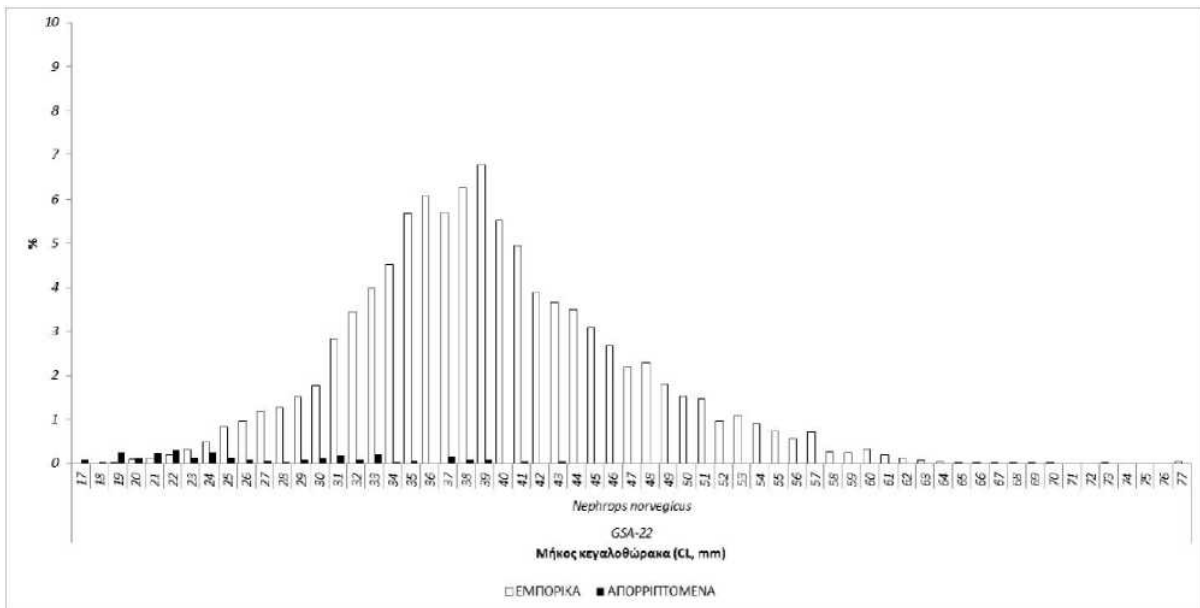


Figure A.2.10 Delays in length (*Parapenaeus longirostris*) to geographical address/h



Εικόνα Α.2.α.9 Κατά μήκος σύνθεση του είδους Καραβίδα (*Nephrops norvegicus*) στο Αιγαίο (GSA 22).