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Authors: Emi TSAKALOU and George VLAHOS

Agricultural University of Athens

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ABBREVIATIONS

ACFA	*"Advisory Committee on Fisheries and Aquaculture"*	
ANKA	*"Αναπτυξιακή Καρδίτσας"*	Karditsa Development Agency
ATE	*"Αγροτική Τράπεζα της Ελλάδος"*	Agricultural Bank of Greece
ATQ	*"Autonomous Tariff Quotas"*	
BMSY	*"Biomass at Maximum Sustainable Yield"*	
CAP	*"Common Agricultural Policy"*	
CP	*"Critical Points"*	
CCP	*"Critical Control Point"*	
CETA	*"Canada Comprehensive Economic and Trade Agreement*	
CFCA	*"Community Fisheries Control Agency"*	
CFP	*"Common Fisheries Policy"*	
CMO	*"Common Market Organization"*	
EC	*"European Commission"*	
EEC	*"European Economic Community"*	
EFF	*"European Fisheries Fund"*	
ELGA	*"Οργανισμός Ελληνικών Γεωργικών Ασφαλίσεων"*	Greek Agricultural Insurance Organization
ELOGAK	*"Ελληνικός Οργανισμός Γάλακτος και Κρέατος"*	Greek Orginisation of Milk and Meat
ELSTAT	*"Ελληνική Στατιστική Αρχή»*	Hellenic Statistical Authority
EFET	*"Ενιαίος Φορέας Ελέγχου Τροφίμων"*	Hellenic Food Authority
EMFF	*"European Maritime and Fisheries Fund"*	
EPA	*"Economic Partnership Agreement"*	
EU	*"European Union"*	
FADN	*"Farm Accountancy Data Network"*	
FAO	*"Food and Agriculture Organisation of the United Nations"*	
FRI	*"Fisheries Research Institute"*	
GDP	*"Gross Domestic Product"*	
GMO	*"Genetically Modified Organism"*	
GVA	*"Gross Value Added"*	
HACCP	*"Hazard Analysis and Critical Control Points"*	
HCMR	*"Hellenic Centre for Marine Research"*	
HCR	*"Harvest Control Rules"*	
HNV	*"High Nature Value areas"*	
IMP	*"Integrated Maritime Policy"*	
KENAKAP	*"Αναπτυξιακή Τρικάλων"*	Trikala Development Agency

LFA	*"Less Favoured Areas"*	
MINAGRIC	*"Υπουργείο Αγροτικής Ανάπτυξης και Τροφίμων»*	Ministry of Rural Development and Food
MS	*"Member State"*	
MSC	*"Marine Stewardship Council"*	
MSY	*"Maximum sustainable yield"*	
NGO	*"Non-Governemental Organisation"*	
NUTS	*"Nomenclature of Territorial Units for Statistics"*	
OP	*"Operational Programme"*	
OSPA	*"Ολοκληρωμένο Σύστημα Παρακολούθησης και Καταγραφής Αλιευτικών Δραστηριοτήτων"*	Integrated system monitoring and recording of fishing activities
PASEGES	*"Πανελλήνια Συνομοσπονδία Γεωργικών Συνεταιριστικών Οργανώσεων"*	Pan-Hellenic Confederation of Agricultural Cooperative Associations
PDO	*"Protected Designation of Origin"*	
PENA	*"Πανελλήνια Ένωση Νέων Αγροτών"*	Pan-Hellenic Union of Young Farmers
PGI	*"Protected Geographical Indication"*	
PO	*"Producer Organisation"*	
PSEA	*"Πολιτική Σχεδίαση Έκτακτου Ανάγκης"*	Division of Policy Planning of Emergency
PSI	*"Private Sector Involvement"*	
RAC	*"Regional Advisory Council"*	
RDP	*"Rural Development Programme"*	
SAC	*"Special Areas of Conservation"*	
SADC	*"Southern African Development Community"*	
SBTKE	*"Σύνδεσμος Βιομηχανιών Θεσσαλίας & Κεντρικής Ελλάδος"*	Industries Association of Thessaly and Central Greece
SEK	*"Σύνδεσμος Ελληνικής Κτηνοτροφίας"*	Greek Livestock Organisation
SME	*"Small Medium Enterprize"*	
SPA	*"Special Protection Areas"*	
TAC	*"Total Allowable Catch*	
TE	*"Technical Efficiency"*	
UAA	*"Utilized Agricultural Area"*	
UHT	*"Ultra High Temprature"*	
VAT	*"Value Added Tax"*	

WTO	*"World Trade Organisation"*
WWF	*"Worldwide Fund"*

Executive Summary

Introduction

This report is one result of the Horizon2020 research project SUFISA, supported under grant agreement number 635577. The purpose for this report is to examine the market conditions, institutional arrangements and the relevant policy requirements that affect sustainability of fisheries in North Aegean Sea as well as small and medium sized milk producers and feta cheese makers in Thessaly as part of the Sufisa (Sustainable Finance for Sustainable Agriculture and Fisheries) project.

Data collection methods

The analysis focused as far as the first case study is concerned mainly on purse seine and small scale fishers operating in Kavala and its neighboring ports. Whereas for the dairy case study the analysis focused on livestock farmers producing sheep milk for the production of Feta PDO cheese in Thessaly. In the first stage a media analysis was conducted which examined national, regional and specialised media. The main aim has been to identify the key elements discussed in the media in relation to the sustainability, mainly economic/financial, of primary producers (farmers and fishermen) in Greece. Along with media analysis, a desk based analysis of policy and market conditions was conducted supplemented with expert interviews. Governmental, farmers' organisations, academic and NGO publications as well as policy and government documents from 2006 to 2016, have been scrutinised.

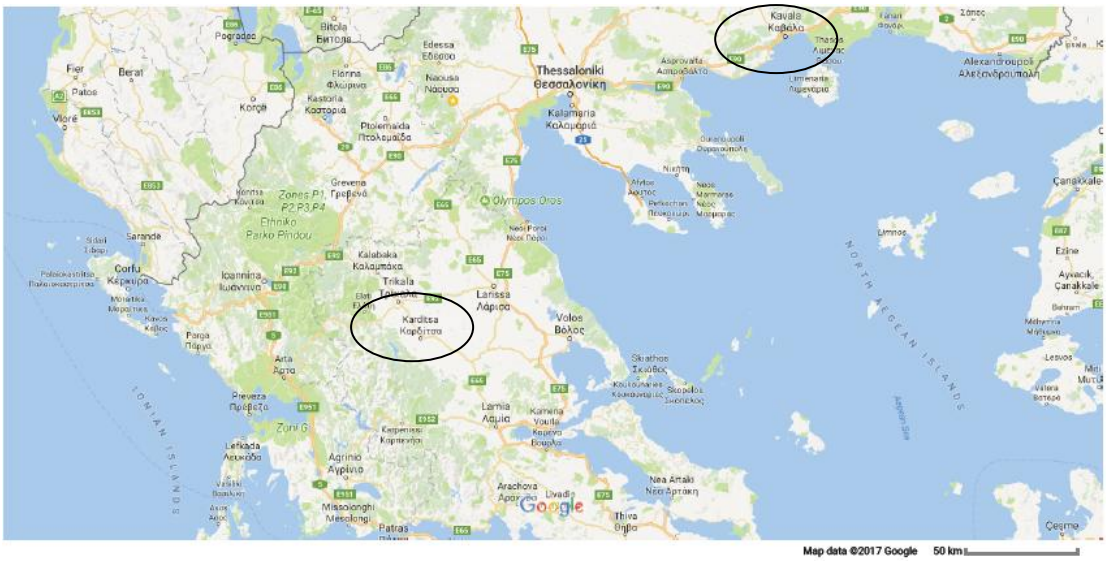
During the second stage of the research, focus groups, workshops and additional interviews have been conducted. In the case of fisheries two focus groups were held with fishers, one with purse seine fishers in Kavala port and one with coastal fishers in the neighbouring port of Nea Iraklitsa. Additional interviews with coastal fishers in Keramoti, another neighbouring port were taken as an alternative to the focus group in order to capture their views. Thos focus groups and interviews were followed by a workshop, held in Kavala, where various marine experts as well as stakeholders participated.

In the case of dairy there two focus groups were held in Karditsa, with sheep milk producers. The second consisted of young livestock farmers on their second year of participation in the aid to young farmers' scheme of the Greek Rural Development Programme (RDP). These participants, at the time of focus group, were attending, the training course for young farmers, as a compulsory prerequisite in order to receive the young farmers' aid under the RDP. An additional focus group, held in Trikala (a neighbouring city) followed with cheese makers producing feta PDO cheese, complemented with additional interviews with local stakeholders. The process concluded with a workshop comprised of local, regional and national key stakeholders.

For the purpose of the producer survey the research questionnaire was addressed to sheep and goat farmers operating in the Regional Unit of Karditsa. For the purpose of the survey 152 interviews were conducted with producers, between December 2017 and March 2018. The majority of the producers interviewed stem from the office clientele from 71 different villages, in order to obtain geographical

representativeness. From the original sample 4 producers were eventually excluded because they didn't meet the criteria set by the survey for various reasons, as for example the last finance year they didn't manage to sell their produce.

Map 1. Case studies areas



Case study A: Small pelagic fish in Northern Greece

General conditions for fisheries in Greece

Greece is the second European country and the first EU country in terms of the extension of its coastline. The Greek fishing fleet is characterized by a large number of fishing vessels (15 385 vessels in 31.12.2015) with low gross tonnage and engine power (72,105.76 GT, and 434,475.13 KW), targeting at coastal fishing stocks along the extended coastline of the mainland as well as of the numerous Greek islands (Annual Fleet Report, 2015).

There are certain features of the Greek fisheries sector that differentiate it from those of other countries, even in the Mediterranean. The main distinguishing characteristic is that the largest part of fishing fleet (95.19%) consists of vessels fishing with polyvalent passive gear in the coastal zone and the fishery is multispecies. Of the vessels, only to 1.59% (245 vessels) carry the purse seine gear targeting pelagic species, mainly anchovies and sardines, while 1.68% (258 vessels) carry bottom trawl doors (trawlers) targeting demersal species, mainly gray mullet, red mullet, hake and crustaceans. Thus the extended coastline of the country (13,676 km) is exploited. (http://world.bymap.org/Coastlines.html)

Policy and regulatory conditions

There are no limitations enforced on the volume that can be landed per day or year, like quotas. The limits of the activity are therefore defined by the environmental conditions, fishing effort and the situation in the market. Permanent limitation of fishing effort is pursued through permanent

withdrawal of vessels (more than 5000 vessels were destroyed). A vast modernization effort for the fishing fleet through EUs' structural policy took place during the last two decades within the framework of the previous programming periods. Structural policy has managed to modernize the majority of fishing vessels and in some cases even to regenerate them. Also, thanks to the same policy it has been possible to preserve a large part of the traditional shipbuilding, which otherwise would have perished.

Management of fisheries resources in the Mediterranean and in Greece is based mainly on technical measures (e.g. setting a minimum net mesh opening, fishing ban in specific areas or periods, minimum legal commercial size of fish). According to the Greek legislation, purse seiners are allowed to fish between 1st of March until 15th of December each year and bottom trawlers between 1st of October until 31st of May in order to limit the fishing effort for stocks in danger. In practice though, no national legal instrument can ban them from fishing all year round in international waters. Covering the distance to reach international waters does not present an insurmountable obstacle (Tsikliras A., 2016).

There is an absence of a single legally binding management framework in the international Mediterranean waters. This lack permits free access to fishery resources, in a status that is "open to all". On the other hand, there is complex as well as conflicting legislation of fishing tourism.

Purse seiners, although they are significant fuel consumers, they seem to employ one of the most energy efficient fishing methods. On the other side, we encounter the small scale coastal fleet, which is characterized by old, small sized vessels, with poorly maintained engines. These characteristics lead not only to low catches but also catches attained at a very high energy cost (Damalas, D, 2015).

Markets and marketing

Currently there is a Worldwide Fund for Nature (WWF) Fisheries Improvement Project for purse seiners in Kavala in development. It was initiated by WWF Greece in 2013 in collaboration with a retailer chain and a fisheries company, with the support of the local Fisheries research institute. The main objective of the global Fisheries Improvement Projects is to assist fleets in improving their sustainability and create networks with retailers and consumers interested in sustainable production. In general such projects should attempt that the fleets involved reach the level of certification according to the principles of MSC (Marine Stewardship Council) and receive certification. (http://www.wwf.gr/en/sustainable-economy/fisheries).

Structural conditions

Although the contribution of fisheries to the national economy of the country is considered to be relatively low (<3.1% of GDP), the sea fishing sector employs people with permanent employment relationship, without seasonal staff. Nevertheless, in 2012 the rate of employment in the fishing sector fell by 9.9% compared to 2010.

Young people are reluctant to get involved with fisheries, mainly because of the difficulties and the harshness of the conditions. It is noted that the difficult working conditions on board (mainly in the small-scale coastal fishing), the limited capacity of the vessels and the increase in fuel prices, coupled

with the financial crisis, has led to a decrease in the employment. At the same time undeclared work of immigrants has increased. Eventually the ones that remain in the profession seem to be older persons without any relevant training but their experience. Old age and inadequate education of the fishermen are leading to an inability to adapt to the new concepts or activities in fisheries, inhibiting thus modern management of fisheries resources and any increase in productivity.

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Environmental conditions

Overfished stocks in the Greek seas exceed 65% and the ones characterized as fully exploited 32% summing up to over 95% of all stocks. Overfishing of small pelagic species such as sardines and anchovies reaches 71%.

Besides overfishing, there is also is a considerable lack of basic infrastructure e.g. fishing ports, fishing shelters, road infrastructure. In addition to that, there is an extensive coast line developed at a low intensity level. While due to their closeness to urban settlements, coastal ecosystems are more susceptible to human activities than other marine habitats.

In the Northern part of the Aegean one can find some of the most biodiverse marine zones in the Mediterranean basin. Fishing in areas with either marine seagrass meadows or calcareous red algae reefs is causing destruction of habitats of particular importance for the productivity of the seas. For Posidonia meadows (*Posidonia oceanica*) which suffer from destructive fishing practices, it may take more than 100 years to recover.

Insights from the focus groups and participatory workshop

Institutional framework- policy adaptation

Policy design and formulation

Fisheries policy in Greece, according to experts participating in the workshop, consists of a broader legislative framework including the CFP, the Mediterranean Regulation (1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea) and National legislation. Moreover, as a starting point they consider the National law before the implementation of the CFP. The Mediterranean Regulation, which provides the general guidelines for the Mediterranean Sea and in case there is a conflict between the Mediterranean Regulation and the National law, the strictest one is implemented.

Workshop experts expressed doubts that the legislative framework has been always the product of scientific evidence. In addition to that, there is a need for participatory procedures in the design of specific management plans and policy making at the different levels.

The management plan for purse seines considered the entire stock of Mediterranean anchovies as one entity, calling for uniform management rules and practices. Workshop participants argued for more flexible measures to allow space for temporal and spatial adaptations to local circumstances. According to purse seine fishermen, the design of CFP was based on (and targeted to) the fisheries in the Northern countries of Europe.

The fisheries councils and regional fisheries councils, although established under this framework, have never been activated in order to determine the fishing rules.

Regulatory framework

- *Landing obligations*

Greece has 3 more years to gradually introduce landing obligations. Workshop experts believe that purse seines' fisheries are not going to experience pressures or serious difficulties since it is considered to be a 'clean' fishing tool. They target very specific species such as anchovies and sardines; hence there are very low discards.

None of inshore fishers interviewed or participants in the 2nd focus group consider this issue of major importance, although, in principle, this measure should be of their concern. This is attributed by the workshop experts to the fact that most of inshore fisheries do not register their catches since they sell directly, without passing through the official fish market i.e. the fish auction house.

- *Spatial restrictions*

According to the Mediterranean Regulation (1697/2006), it is prohibited to use purse seines within 300 meters of the coast or at a shorter distance from the coast, where the isobath of 50 meters is met before the 300 meters. According to purse seine fishers it is not easy to fish further than 100 meters from the coast in the Aegean islands, due to the strong winds blowing in the Aegean Sea. Additionally they stated that even with a wind rated only 3 in the Beaufort scale (a gentle breeze of 12-19 km/h) it is impossible for them to operate. For inshore fisheries, there aren't any effective spatial restrictions, which is an issue of complain for purse seine fishers.

- *Seasonal-temporal arrangements*

It is forbidden for purse seines with night license to fish during a 2 ½ months period, extending from the 15th of December up to the end of February as well as to fish two nights before and two nights after full moon. Although these management plans for purse seines favor the sardine stock, since it coincides with its breeding season, it is in fact it is useless for the anchovy. Anchovy reproduces during the summer when purse seines are legally allowed to fish anchovy even bearing with eggs. On the other hand coastal fisheries do not face any such restrictions.

None of the seasonal temporal arrangements holds in the international waters which in the case of the Aegean are limited to 6 miles from the coast. Hence, resorting to fishing in international waters emerged as a way for purse seines boats to work on the days prohibited by the national law. There was an informal arrangement not to fish 2 days before and 2 days after full moon, respected by everyone. After its formalization as a state law, purse seines started fishing in the international

waters on no-fishing days. The current situation in the North-northeastern Aegean Sea has been described by the focus group members as a "de facto" co-exploitation mainly with the Turkish fleet.

- *Recreational fishing*

Recreational fishing is highly regulated (specific fishing gear, limited quantities and only for personal use) but inefficiently controlled. Thus inshore fishers in Greece perceive recreational fishers as competitors.

Incentive based policy measures

In the 1980s and '90s more than half of the vessels of the Kavala fleet were modernized or improved (better and/or bigger vessels, gear etc.). Many fishers with large inshore vessels targeting sardines had the opportunity, through the incentives provided by a national investment law (1982) to built new and larger purse seine vessels.

In the recent programming periods, modernisation investments seem to collide against the CFP objective to stabilize or reduce fishing efforts. For instance, the horsepower of the new engine could exceed neither the registered horsepower of the engine to be replaced nor the upper limits set. Fishers argue that they cannot use the financial support of the CFP. Instead they repair the existing engines in order not to lose from the existing horsepower.

The horsepower available however is not accurately registered with the immediate consequence to deprive fishers of the possibility to take advantage of a lower tax incentive since they can buy transit fuel for their vessels according to the registered engine power. A CFP measure for the permanent cessation of fishing activities failed to achieve its objectives, since most of the vessels that entered the scheme were inshore fisheries and not trawlers or purse seines. According to the stakeholders the decision to dismantle a bigger vessel was not easy to make especially since the money offered was not enough.

Environmental issues

Overfishing – rational exploitation of fish stocks

Workshop participants estimate that most of the fish stocks are overexploited. On the other hand, purse seine fishers claim that there is no issue of overfishing in anchovies and sardines since they are abundant in the area. Inshore fishers are deeply concerned with the low availability of fish, attributed to the abundance of dolphins and illegal fishing by recreational fishers and purse seines and trawlers.

Control mechanisms

Understaffing of the multiple controlling authorities is considered to be main reason for the insufficient controls carried out at the sea and at the fish auction. Workshop participants consider that although inspections cannot be considered as enough, those performed, mainly target purse seines and trawlers and not inshore fisheries. Participants in the workshop mentioned that many fish

channeled through the fish auction are undersized or products of illegal fishing since controls are not regular as they ought to be.

Data collection

A very important tool, especially for the evaluation of the condition of the fish stocks, is the national Fisheries Data Collection Programme. This is a multi – annual programme for the collection of primary biological, technical, environmental and socio-economic data. Although this programme should operate continuously; this is not done in practice, as stated, because it is not funded by the Greek state. Since the beginning of the programme in 2002 there were important time lapses and delays in the implementation. According to the workshop experts the fragmented implementation of the programme creates serious problems to scientists involved in the estimation of fish stocks.

Even if the program was operating uninterruptedly, it would be very difficult to have a clear idea on the actual state of the fish stock, because the information obtained is not adequate. Only trawlers and purse seines are registering their catches through the system (OSPA), while there is no information for inshore and recreational fisheries.

Market conditions

The supply chain

Fish are mainly sold in the internal market according to the stakeholders the quantities not sufficient to be worth exporting. However, exported quantities increase in the period that the Turkish fleet stops fishing; fish imported to Greece from Turkey are not subject to custom duties while those exported to Turkey are.

Expensive fish have a more stable price for the last ten years while the trend now for the price is to drop. Sales in the fish auction dropped since the consumption of fresh fish has dropped. This decline is attributed by purse seine fishers to the economic crisis. Best prices come from retail sales, followed by wholesalers. Lower price is offered when sardines and anchovies are destined to be frozen and the lowest price is offered by processing units.

Most of the processing units operating in the area, which used to receive large volumes of the production, have shut down or relocate to areas with lower labor cost while those few who remained in the area are very selective to the small quantities they now buying.

Inshore fishers sell most of their fish locally. Each fisher either has a clientele of restaurants and fish shops or individual customers buying directly from the vessel. Individual sales are the most preferred way, since they set the price, which is much higher than the merchant will give. Furthermore they are not obliged to issue invoices for individual sales hence they are not taxed for these. In case the catch is bigger they sell to wholesalers or to the fish auction.

The fish auction

Purse seines and trawlers are obliged to deliver their catch in fish markets where a daily auction takes place. There are 25 fish dealers operating in Kavalas' fish market and each fisher has an informal, typically oral, agreement with a dealer. The dealer usually acts as an intermediary between the fisher and the buyer. The auction is a transaction between the dealer and the buyer.

Fishers are price takers, they have no control on the price the fish is sold and payments are done at the end of the month for all the quantities sold. All costs (e.g. the cost of the ice and of the plastic fish containers, fish auction fees etc.) besides the rent and the personnel costs, are borne by fishers. A current alarmingly frequent arrangement is that fishers are paid after the dealer gets paid by the final buyer.

Coastal fishers consider that for the lack of advance payments, is due to the large amounts of imported fish. According to them most of the fish sold in the auction – up to 90%, besides sardines and anchovy- is imported. Although inshore fisheries are also obliged to deliver their fish to the fish market, it is considered as a last resort solution in cases where they consider their catch is too big to get absorbed through the local market.

Horizontal co-ordination

There is a widespread impression that cooperation among fishers is very difficult due to mutual distrust. Even "small" inshore fishers cannot find common ground. Their 'diametrically opposed views' are attributed to the differences in the gear they use.

Workshop participants claimed that a price drop due to excessive supply, two years ago, alarmed fishers. Thus 18 purse seines from Kavala (the whole purse seine fleet) agreed informally to perform a single landing per day of operation. With this arrangement, purse seine fishers hope to keep prices higher and steadier since the fish delivered in the auction now is about 1/3 of the quantity that it was 2 years ago and quantities exported have decreased. This arrangement is followed by all purse seines based on Kavala area, encountered many reactions since in the area are activated much more vessels which come to fish from other areas of Greece.

Access to finance

Most of the businesses are family owned and run where the family, already in the business, provides the necessary means to the younger members of the family to start their own fishing business. All purse seine vessels are under co-ownership whether that is family or not.

- *Informal access*

The common practice for fishers, especially for purse seines and trawlers, is to finance their business through their cooperation with the dealer. The dealers occasionally fulfill also the role of the money lenders through informal agreements with fishers. This has been a common transaction arrangement between fishers and dealers. However currently, its frequency has been reduced, due to shortages of liquidity on the dealers' side attributed to the ongoing crisis.

For much higher investments, such as for the construction of a new vessel, the capital required is pursued through a bank loan. But in case where the fisher and the family do not have the requisite quarantines to attain the loan from the bank, collaborations are sought. This is an old practice, in which the fisher is contributing in knowledge and experience and the other party in money. Capital providers are often related to fisheries e.g. technician or fishing equipment dealer.

- *Formal access*

For investments supported by EU or national funds, co-funding of the project is considered by inshore fishers as very difficult to cope with. Resorting to banks for the capital needed for co-funding faces a major obstacle: the inability to support a demand for loan with adequate guaranties, which is mainly the case for inshore fishers with vessels less than to 12 meters long.

Inshore fishers, were not obliged, up to the recent past, to issue invoices during their transactions, were taxed based on the vessels Gross Tonnage (GT) where each GT unit represents an income of 3,000 €. More than 40% of inshore vessels of the area have less than 1 GT, while the average size of the area's inshore vessels is 2.3 GTs'. Since most of the fish caught are sold locally without the obligation to issue any kind of receipt or invoice, the taxed business income that of the registered GTs. Presumably, not enough to support a demand for an investment loan.

Proposals drawn by focus groups and the participatory workshop

Some of the key issues participants of the focus groups and workshop consider that would help ensure the future viability of the fishing sector include:

- Complete readjustment / review of the legislation, in accordance to scientific advice.
- Flexible management rules according to the needs of each fishing area.
- Improvement of control mechanisms for more frequent and efficient controls inside and outside the fish market.
- Fishers' education in sustainable fishing practices – rational management of the fish stock.
- Purse seine fleet certification project with dual purpose: improvement of fishing practices and improving fishermen's income.
- Engagement of fishermen in the decision making process.
- Collaboration between producers.

Case Study B: Feta cheese production in Thessaly

Case study introduction and context

Dairy production in Greece

The most characteristic feature of the structure of the rural economy in Greece is the unequal relationship between animal and crop production. The value of animal production in the total value

of agricultural production varies between 26% in 2000 and 30% in 2007 (the year with the lowest total value of the agricultural production in the period 2000-2012) while this relationship between animal and crop production in EU is about 45%. Milk production is almost 41% of the total value of livestock production while sheep and goat meat represents the 25% of the total livestock value (Speed, 2015).

Another characteristic feature of Greece compared to other EU countries is the predominance of small ruminants (sheep and goat) in livestock breeding and the deficit of dairy cow products, therefore sheep and goat milk production take up to 60% of the total milk production and the rest 40% is cow milk.

Although at European level, sheep and goat farming is a minor agricultural activity (3.6% of the total value of livestock production) that nonetheless takes up an important part of the agricultural land in certain countries in EU, Greece has the biggest goat herd population, but with a gradual switch from goats to sheep (AND International, 2011).

Greece has a long history of pastoral farming of sheep and goats while extensive farming is the most common form of traditional farming, with the livestock often herded in mixed flocks for cheese production (up to 30% of the milk used for the production of Feta) and has contributed significantly to the current traditional landscape and the biodiversity of rural areas. This system covers much of the main land and is especially significant for nature conservation of mountainous areas.

Sheep and goat sector has vital role for the stability of rural population by providing income for thousands of farmers. In 2010 extensive livestock was practiced in 2,465,161 ha which accounted to 47.6% of the total UAA of the country, while in the EU-25 is 28.9% (Speed 2015). Nevertheless, the sector is facing a significant decline in production and a reduction in the number of the holdings, as well as a total failure to attract young sheep and goat farmers (Hadjigeorgiou, 2014).

Sheep in Greece are kept mainly for milk production, and in contrast with the cow's milk, the majority (70%) is transformed into quality cheese products (Gousios et al, 2014) and secondarily into yogurts and other milk-based products. Nearly 80% of sheep and goat milk derives from small and family farms with an average herd size less than 100 animals, which are highly dependent on family labour, with almost 115,000 families engaged in farming and over 300,000 people working part or full time in the primary dairy sector (Parpouna et al, 2015).

Dairy processors are scattered all over the country and are operating mainly regionally while they vary greatly in size. The secondary dairy sector, i.e. milk processing, involves 53 big dairy companies processing >5000 tons of milk per year and 671 SMEs or family dairy units processing <5000 tons of milk per year (Parpouna, 2015) They process all types of milk produced in Greece, namely 602,519 tons of cow milk, 547,815,383 of sheep milk, 129,566,015 tons of goat milk in 2015 (ELOGAK, 2016) while the highest volume is directed in the production of drinking milk, yogurt and cheese. There are 3-4 firms which operate at national and even at international level, while the on-farm production of sheep and goat cheeses and other milk-based products is estimated to reach the 1/5 of total

production. These units operate at a limited scale covering mainly the needs of the local markets (Hadjigeorgiou, 2014).

In accordance with the national and European legislation applied, Feta is a Protected Destination of Origin (PDO) since 2002 and as that is produced with traditional techniques in Greece, in the defined geographical area consisted by the continental parts of the administrative regions of Attica, Central Greece, Western Greece, Peloponnese, Thessaly, Epirus, Western Macedonia, Central Macedonia, Easter Macedonia and Thrace and from the regional unit of Lesbos from sheep milk or in a mixture with 30% of goat milk from the same area. Milk is derived from sheep and goats adapted to the area of the production of Feta, whose diet is based on the flora of the local pastures.

The Thessaly region (NUTS 2), is located in the centre-east of mainland Greece, has an area of 14,037 km2 (50% of which is plains) which is equal to the 10.6% of the total area of Greece and Larissa is its administrative center. The UAA in Thessaly is 861,000 ha, or 15% of the national UAA. The 50% of the area, devoted to pasture (mainly rough grazing) are located mainly in the mountainous and semi-mountainous areas, with the plains being mainly devoted to intensive crop production (Gousios et al, 2014). The primary sector of Thessaly contributed with 14.22% to the country's primary production in 2009. On the other hand, the contribution of the primary sector in the total production of the region has fallen from 15.7% in 2000 to 8.75% in 2009 (SBTKE, 2013).

Policy and regulatory conditions

Various policies seem to have a significant influence in the dairy sector. The main of course is the Common Agricultural Policy and its integral part the Rural Development policy. In the second place one could state environmental policy measures.

It is important to mention the vast the vast inequality between the subsidies directed towards the livestock sector (of which sheep and goats constitute a very important segment) in comparison with the ones of the plant production through the first pillar of the CAP since the accession of Greece in the EU (EEC in 1981) up to the more recent CAP reform. It is indicative that, in 2003, when the single farm payment scheme was initiated, pastures although comprising 57% of the UAA, were receiving only a mere 4% of the subsidies through the milk and sheep and goats meat Common Market Organisations,

An attempt to lessen this disparate imbalance was made, when the adoption of the regional model became obligatory. The distribution of funds is a more balanced in the current situation, although the differences are vast and evident, since a hectare of pasture receives half the support of a hectare of arable land. The main problems seemed to be that an more equitable distribution of subsidies could result to a drastic shift of resources from crop, especially intensive crop producing farms, to livestock farms and consequently from areas and regions highly depending on crop production to areas and regions where livestock production systems are prevailing.

The main issue during the design of the single farm payment in Greece especially when livestock is concerned is that of the eligibility of pastures. The issue was crucial for sheep and goat farms and mainly in the mountainous and semi mountainous areas. A first concern had to do with pasture ownership, tenure and management patterns, existing in Greece. A large part, almost half, of the over 5 million hectares of pastures are public, belonging either to the state or to local authorities.

A fear expressed, was that when obtaining grazing land is going to become a prerequisite in order to get the support, clientelistic criteria are going to prevail at the local level. Secondly, was the fear expressed that, bearing in mind the lack of a cadastre or another legally binding system of land use registration, the, ever conflictual in Greece, issue of land use is going to arise again. A third problem that arose later; during the setting of the detailed eligibility criteria was that of the wooded pastures (EFNCP, 2014).

There are three features of the RDP that could be thought as affecting the sheep and goats sector in Greece. The first is compensatory allowances to farmers in Less Favoured Areas, since most of farms (80%) and the sheep and goats (85% of the total number of animals) are in mountainous and semi mountainous areas (MINAGRIC, 2015). In that sense, sheep and goat farms seemed to have benefited by this pillar 2 measure.

The second has been the focusing of RDP investment support measures to livestock farms especially the promotion of special investment plans for small and very small livestock farms mainly for the provision of infrastructure such as milking machines and milk conservation equipment, establishing a fast track procedure for applying and funding of such projects. However, the level of acceptance by livestock farmers of this, specifically designed, has not been encouraging (MINAGRIC, 2015).

The third part of the second pillar support measures that could be of interest for sheep and goat farmers, apart from organic livestock production, could be the agrienvironmental scheme for the extensification of livestock farming launched within the Measure 214 framework of the 2007-2013 RD programming period. The scheme had two options. The first has been to expand the grazing area by renting more land in continental Greece and the second to lower the grazing load by reducing flock sizes in islands where pastures are scarce. Participation in this scheme has not been wide and in the case of the case study area there was no such scheme implemented, because of a prerequisite for a pasture management plan which was not fulfilled.

Organic livestock farming in Greece was significantly delayed, almost a decade later by other European countries, since for several years the national legislation for organic livestock farming hasn't been enacted until 2002. The increase in the number of animals under organic farming is significant since the number of animals have multiplied since the implementation of the program in 2002. During the period 2002 – 2006, the number of sheep under organic farming increased by 260%, corresponding to the 2.9% of the total sheep population in Greece and the 9% of the organically bred sheep in EU (Tzouramani et al, 2008) This is mainly due to the favorable conditions that already existed in the Greek livestock production, such as small size, extensive and family based holdings that formed the basis of organic farming (Miliadou et al, 2010).

Greece has a comparative advantage compared to other countries with regard to livestock farming, due to favourable soil and climate conditions and the implementation of extensive farming, which can easily be converted to organic. But, the conversion from conventional to organic of small ruminant production although it appears to be less complex in management than in other animals, farmers seems to face certain difficulties over this process (Nardone et al, 2004). According to the study by Tzouramani et al. in 2011, Greek animal farmers are facing insufficient technical support concerning organic methods, the feed management, the disease control, breeding strategies, the poorly organised markets, the limited number of certified slaughterhouses, the low educational level of farmer and the scarcity of skilled personnel, the small size of farms, as well as the scarcity of extension services and scientific activities. But as many studies indicate, the major problem is that the price for organic products is very small, and in many cases farmers shell their organically produced milk and meat as conventional, without getting any premium at all (Tzouramani et al, 2011).

Markets and marketing

Dairy products (as a whole) are a staple food for Greek consumers since they are consumed on a daily basis and presenting a high demand and relatively low elasticity regarding the selling price and the disposable income. However, in recent years, consumers' choices are significantly influenced by the price of the various brand products available in the market. In addition, a key feature of cheeses demand is that the consumers' choices are based mainly on the type, category or geographical area of origin of cheese and less on a specific company brand, but nevertheless, the demand for dairy products is affected by the availability of competing and substitute products that are offered at a lower price (ICAP, 2014).

An important trend in the food market is the growing penetration of private label products, which is expected to grow further in the near future. The main attraction of private label products is the price, which is lower than of the brand-name products. This change of consumer's behavior is mostly attributed to their reduced purchasing power due to the economic crisis (Parpouna, 2015). The share of the total expenditure for dairy products and cheese in the food expenditure has remained almost stable between 2008 and 2014, ranging from 17% to 18%, fact that is justified by the important position of dairy products and cheeses in the Greeks' dietary habits (Parpouna, 2015).

The size and the degree of organization of the industry determine the distribution of their products. The big production and importing companies distribute its dairy products mainly through its own distribution network and partly through dealers and wholesalers. Their own network usually covers the all country, while local representatives-distributors serve some areas that are geographically remote from their distribution centers and warehouses (ICAP, 2014).

The smaller companies cooperate with dealer networks, intermediaries and wholesalers, while several of them sell their products directly to their stores or the local market.

More specifically dairy products are available through:

- Small Selling Points channel: it concerns, small outlets (kiosks, convenience stores, dairies, bakeries, gas stations etc.) which elicit significant proportion of total sales of dairy, as they cover the "spontaneous" consumer desire for dairy products. Indeed, certain categories of products (such as chocolate milk) handled mainly through this channel.
- FOOD channel: this channel includes super - markets (S/M). Over the last two decades, there has been impressive growth in S/M chains, both in terms of geographical expansion of the branch network, as well as of broadening the range of products and services available.
- Professional: this channel includes the foodservice premises (restaurants, hotels, bakeries) and catering units. The volume of sales of dairy products marketed through this channel is not easy to determine, since the quantities marketed are not systematically counted.

According to the ICAP sectoral study on dairy production in 2013, most of the dairy products that channeled through the super markets and other retail shops such as kiosks, bakeries, convenience stores etc. was the 80-85%, while the through restaurants, fast foods', catering companies etc. was channeled the 15-20% of the dairy products in 2013.

The main raw material of dairy industries is milk, which is supplied by farms, since most of them do not have vertically integrated production. The big industries usually conclude trade agreements with many producers while, under these agreements there are providing for the control and the quality assurance of the milk, as well as for the transportation. In addition, in order to cover their needs in milk big dairy industries are importing milk from other EU countries. Producers' negotiating power over the price of milk is marginal, due to the fragmentation of production in a large number of small dairy farms and the absence of an integrated and solid organisation of the livestock sector.

On the other side of the chain, the size of the client in conjunction with the volume of the orders for dairy products is an important determinant of their bargaining power. Therefore, supermarkets have a considerable negotiating power as buyers, the largest of which supply the products directly from the dairy industries. The 'power' of supermarkets stems from the high volume of quantities they supply as well as by their ability to contribute to the recognisability of the product. Furthermore, their negotiating power strengthens even more if they sell private label products. Smaller points of sales do not have considerable negotiating power because they are handling small orders. Finally, buyers from the HO.RE.CA. Sector (Hotel - Restaurant - Cafe) have, in general, much smaller negotiating power.

Despite the importance of agriculture for the Greek economy, the primary sector faces decreased competitiveness, intense structural problems and very low income sustainability. All these issues have been intensified by the economic crisis.

The absolute cost of inputs purchase in Greece is extremely higher than our competitors in terms of similar Mediterranean products as well as compared with countries engaged to typical north-European agriculture. Moreover, the diesel consumption is higher in Greek agriculture due to the fragmentation of the land, the landscape and the irrigation which is often carried out with diesel

engines. The same applies with almost all the basic animal feedingstuffs used in free or stabled livestock breeding, the capital costs (capital and interest) and the rental costs of machinery which are presenting a highly upward trend (Speed, 2015). The need to survive in a difficult economic and market environment pushes farmers to follow different management practices which include cost reduction methods such as reduction of expensive feed and the use feed from other countries as well as optimum management practices of the herd. (Karelakis et al, 2014). But on the other hand, the SWOT analysis conducted for Rural Development Programme state in a more pessimistic manner that "*the high production cost of in Greek agriculture and livestock breeding weakens any comparative advantage and competitiveness and combined with the full decoupling, have made the decision not to crop the land quite attractive. At the same time it weakens the farmers' incomes and discourages the new entrants to farming. Finally, the high cost is marginalizing a large part of agricultural holdings which before the recession could function, although less competitive, hoping to improve their competitiveness" (*Speed, 2015).

Insights from the focus groups and participatory workshop

Two focus groups with livestock farmers were held in the end of January of 2017, in order to get an insight from the perspective of sheep livestock farmers into the key issues of the sector. An additional focus group was held with cheese makers in order to gain a better understanding of the sector and the relationship among them. All of the focus groups and the workshop were organized and carried out in Karditsa, with the participation of sheep farmers from Karditsa and the villages surrounding Karditsa. The purpose of the workshop was to validate the information gathered from the three focus groups and to get a better insight on the conditions and the decision making process of the producers'.

The production process

Genetic improvement and the role of animal breed in Feta PDO

The debate on the issue of which breeds should be used for the production of Feta PDO is an ongoing one, albeit been considered a sensitive issue due to the long dispute on the designation of feta as a PDO. On one hand, workshop experts and cheese makers from the 3rd focus group argued that only Greek animal breeds can guarantee that the PDO designation will not be challenged. On the other hand livestock farmers, participants in the focus groups and the workshop, argued that is not the origin of the animal that matters but the traditional way of farming.

Livestock producers argue that it is rather difficult to find Greek sheep breeds like Chios or Karagouniko with high milk yields. Thus, most of them prefer highly productive breeds like Lacaune from France or Assaf from Spain. Many livestock producers mistakenly consider the mere introduction of foreign breeds as genetical improvement, expecting to see significant increase in the milk yields without further ado.

Improvement of livestock facilities and infrastructure

An issue considered important for the overall sustainability of the livestock sector, by the stakeholders of the workshop, is the need for improvement of infrastructure, equipment as well as the facilities. Most of the infrastructure and equipment available to sheep farming holdings are not maintained and extremely outdated. Less than 200, out of the approximately 2,500 sheep farms (8%) in the area have milking units for their ewes.

Farmers observe that the currently prevailing trend seems to be extensive farming (grassfed, pastoral systems). Hence, they argue, investments in intensification of their holding are not the appropriate strategy. Due to the dysfunctional credit market, farmers will not be able to take advantage of the possibilities offered by the new RDP, through mainly the investment aid.

Animal feed

The issue of animal feed has two aspects: the first is the effort to achieve a balanced animal diet and the second is the need to control production costs. Experts strongly argue that in the case of sheep farmers, there is a vast margin for improvement in the economic performance and, thus, viability of the holdings through cost reduction. Most sheep farmers do not provide a balanced diet to their animals, which according to experts, is in fact the main reason for their high production cost and low productivity.

Producers in the focus groups, being fully aware that animal feed is a cost factor of major importance, shifted their cost cutting strategies towards buying cheaper fodder. Farmers have an erroneous way of accounting for or are often unaware of their own actual production costs.

Price formation – price levels

Although the price of milk in Thessaly is one of the highest in Greece, almost all stakeholders in the focus groups shared the view that it is not satisfactory. They also agreed that in spite of low milk supply, price levels have been the lowest of the last few years and shared the fear that the trend of decreasing prices will continue.

Fat content, the milk quality indicator determinant of the price at the farm gate is perceived as another tool used by cheese makers to control the price. Responsibility for lower prices is also attributed to uncontrolled sheep milk imports.

The value chain

The role of milk imports and fraud controls

There is a general consensus on the view that there is uncontrolled milk adulteration with imported milk in Feta production. This practice is incompatible with EU PDO regulations and the relevant national specifications for Feta cheese. Apart from that, it leads to consumers' fraud and market distortion, particularly, in price formation. The problem is rooted in the deficient control system, while fines are not high enough to prevent repetition.

Institutional arrangements between sheep farmers and cheese makers

The prevailing form is the individual transaction with a single dairy whereas only a small percentage of farmers sell their milk through the co-operative. Small family dairies establish more personal relationships with their collaborating farms. The agreements are mainly of an informal nature, resulting often in poor terms of collaboration regarding the price set for the milk.

All small farmers make verbal agreements, while some big farms may pursue a formal agreement. Co-operative and large dairy industries' prices to farmers are somewhat higher; however, they are paying a single flat price to all farmers, regardless of specific product characteristics. Farmers cooperating with large dairies, do not receive the same personal relationship they have with the small dairies and the advantages stemming from this close relationship i.e. positive price differentiation according to milk quality, technical and financial assistance and advice

Uncertain export potential

The price of feta cheese in the international market is lower than that of the Greek market. Workshop stakeholders attribute the low level of export prices to big dairies and their policy to compete on the basis of low price instead of high quality. Small dairies cannot supply international markets with the sufficient quantities they require. The only path for small dairies to overcome this obstacle is to collaborate with other small dairies.

Horizontal co-ordination

The role of the livestock farmers' co-operative

A new specialized co-operative of livestock farmers has been created defying the generalized reluctance to co-operate. Among its aims are the marketing of milk in order to achieve better terms and conditions in the market e.g. higher and stable prices, improved frequency and reliability of payments etc. as well as the joint supply of animal feed in order to reduce the purchase cost for its members.

A single price for milk is offered to all its members regardless of the quantity or the quality delivered (i.e. fat content). The lack of advance payments is counterbalanced by other services provided, such as the credit offered, used by farmers for the purchase of animal feed and paid back by withholding installments from the payments for the milk delivered, which plays exactly the same role, that of advance payment.

Obstacles and strategies towards collective action

It seems that the need and the benefits derived from the existence of a collective organisation are unanimously acknowledged. Nevertheless, when it comes to their daily practice most of the farmers, seem to be have individualistic behavior acting competitively against each other.

An obstacle often encountered is the - sometimes difficult to overcome - personal relationships and family ties, established with cheese makers. This inhibits farmers from making the step toward collective actions. Another important element is the mistrust towards cooperatives in general, due to the long history of mismanagement and ineffectiveness which appears an obstacle difficult to overcome. On the other side, young people seem to be more prepared and willing to be actively

involved in a collective process but, still, it requires an effort by experts to motivate and get them engaged in the long run.

Awareness, training, advice and technical support

Training provided to farmers has never been substantial and sufficient. Advice of the private input provider or veterinarian who sells the vaccines and antibiotics is the only technical assistance provided to livestock farmers. Young farmers and/or new entrants are, in general, better educated but not trained in production issues. These people are seeking technical assistance to upgrade product quality.

Although the role of Universities, research institutions and experts is considered to be important, it was stated by workshop stakeholders that personalised technical assistance is more appropriate for livestock farmers.

Future prospects - Viability of sheep farming

Farmers on the focus groups expressed their despair and the feeling that the sector is in the end-of-life-stage, abandoned by the state. Contrary to this, experts in the workshop argued for a more optimistic view. According to them, a sheep farming enterprise can be profitable, but it can require up to 5 years of investments in order to reach the point of yielding profit.

Results of producer survey

The research questionnaire was addressed to sheep and goat farmers operating in the Regional Unit of Karditsa. For the purpose of the survey 152 interviews were conducted between December 2017 and March 2018. From the original sample 4 producers were eventually excluded because they didn't meet the criteria set by the survey for various reasons, as for example the last finance year they didn't manage to sell their produce

Farm and farmer characteristics

The vast majority of the producers who took part in this survey (87.2%) were men and only 19 out of 148 (12.8%) were women while more than half of the respondents, specifically 80 respondents, which represent 54.1% of the total sample, are under 40 years old, whereas 46 (31.1%) fell in the 41 to 50 years old category. Regarding the education level of the participants, 81 are lower secondary education graduates, 61 are graduates of primary education, 6 have a higher secondary degree, while 16 stated that have an agricultural degree.

There is a significant difference between the smallest and the largest holdings in the survey sample, which range from 40 sheep to 480 animals. The majority of producers (75%) have up to 230 animals. Significant differences we can also observe between the smaller and the larger area that the holding owns or rents, with the smaller holding to declare an area of 2.36 ha while the biggest holding declare areas that reaches the 43.78 ha while the average total area was at 16.35 ha. The average total production was at 31,790.54 liters per year.

Sales channels

Only 27 producers (18.2%) stated that are currently members of a cooperative while 5 out of those sold their production individually. None of surveyed producers are members of PO or a farmers' union/association. The most important service that the cooperative provides to the producers is that it constitutes the exclusive buyer of its member's milk production. The majority of the producers (121) which is the 81.8% of producers surveyed, stated that they sell their milk directly to the feta cheese manufactures (113 producers) or a wholesaler (8 producers). All producers interviewed sold their production through a single channel regardless if that is performed individually or collectively.

Characteristics of sale agreements

The agreement with the cooperative is mainly a legal contract or oral agreement before or during the production phase, which can be legally enforced with an annual duration while it requires exclusivity. Other services provided by the cooperative are collection, storage, transport and handling, as stated by the majority of its members in this survey. Additional services the cooperative is providing to its members are stated to be technology and/or machinery while many producers stated that there is an automatic extension mechanism in the agreement. The average price received by the cooperative is 0.95€/l.

The sales agreement which occur directly between the producer and the individual business typically has also an annual duration with the exception of 21 producers (17.1%) that the agreement has duration more than 5 years and of 6 producers with duration between 1 and 2 years. Again, as with the cooperative, the services producers get are mainly collection, storage, transportation and handling, while 30.1% of those producers receive special assets such as technology and/or machinery and 21.1% receive price premiums for delivering higher quality products.

Most of the producers that sell their milk to the cooperative and most of the producers that sell individually (108 answers, 87.8%) state that they get paid on a regular basis (e.g. monthly). Regarding on how satisfied they are with their sale agreements, producers that sold their production to the cooperative tend to be more satisfied with this sale agreement than those who sold their production to an individual business or a wholesaler. More specifically, of the 25 producers who sold to the cooperative, 11 (44%) declared to be somewhat satisfied by this agreement. On the other hand, the responses of those producers who sold to individual businesses are more evenly distributed between completely unsatisfied and completely satisfied. In other words, although the responses 'somewhat satisfied' and 'neither unsatisfied nor satisfied' received the highest number of preference (34 producers, 27.6% each response), next response was the 'completely satisfied' with 21 preferences and the response 'somewhat unsatisfied' with 20 preferences.

Sustainability

This section of the questionnaire asks farmers to express an evaluation about the sustainability of the sales agreement. Farmers participating in the survey, by a large majority, don't feel that the sale agreement has any impact on the environmental aspects of sustainability. More specifically, most farmers strongly disagree that the sale agreement has any impact in biodiversity maintenance by 53.7% (66 answers out of 148), while only 6 farmers strongly agree with that statement. Similarly,

40.7% of the participants strongly disagree with the notion that this sale agreement supports animal welfare, maintain water quality (67.5%) or maintains soil organic matter (54.5%).

The same perception seems to exist about the impact of the sale agreement on the societal aspects of sustainability, regardless if that sale agreement is with a cooperative organization or not. Answers are different regarding the questions on the effect of the sale agreement in the economic sustainability. There are no negative answers from the producers selling in the cooperative in the question whether this sale agreement help them maintain profitability. The answers to this question are more evenly distributed in the case of producers selling to individual businesses. Although the majority of producers (42 answers) strongly agree and agree (31 answers) that this sale agreement helps them maintain profitability, there are producers that strongly disagree (5 answers), disagree (12 answers) and neutral (32 answers).

Strategies and drivers to farming

This section is about the wider strategies producers adopt in their farming activities. The factors that producers seem to be influenced more by are the changes of farming regulations and changes in CAP, fluctuation of input prices, the severe drops in market prices. Changes in consumer behavior, adverse climate conditions and access to credit and loans are seemed to be less important.

The majority of the producers participating in this survey (60.1%, 89 answers) stated that they plan to maintain the existing scale of operations, while 37.2% (55 answers) stated that they plan to expand the existing scale of operations and only 3 stated that they plan to downscale the existing scale of operations.

1 Introduction

The draft national report comprises of two parts. The first is a draft report on the media analysis while the second part reports on the results of a desk research and key persons interviews on the case studies selected be the Greek team.

In the first place, the purpose of the media analysis was to present the debates prevailing in the national media, and the different stands of stakeholders, politicians, collective organisations of the sector as well as of the media themselves vis a vis the issues deemed as important for the agricultural and fisheries sector. The scope of the analysis was delineated by the objectives of the SUFISA object: sustainability of primary producers in a context of multi-dimensional policy requirements, market imperfections and globalisation. The survey was conducted on general and specialised media in order to map the elements (problems, determinants, conditions, strategies, solutions, performances, etc.) relevant for the issues at stake.

Secondly, it is obvious that the inherent instability of the markets and continuous process of reforms that policies and regulations of the sector are undergoing, under the pressure of the ever-changing global conditions, creates uncertainties for all players in the agrifood sector. The degree of uncertainty is always greater for the weak links of the value chain i.e. farmers.

And this in turn cannot but strongly influence, their strategy, their decisions and the performance of the farms impact on the performance of farms.This is the main purpose of the desk research and the interviews conducted. To identify for each commodity or system, existing market imperfections, and the consequent adaptive strategies as well as the issues raised for policy makers, in a specific region or area.

2 Media Content Analysis

The media analysis examined national, regional, specialised media as well as governmental, farmers' organisations and NGOs' publications from 2006 to 2016. Main aim was to identify the key elements discussed in the media in relation to the sustainability, mainly economic and financial sustainability, of primary producers (farmers and fishermen) in Greece. Table 1 is presenting the total number of publication analysed on the basis of the type of sources analysed.

Table 1. Size of the sample for the Greek media analysis

Type of media source	Texts number
Specialised magazines / websites / blogs	80
General newspapers / magazines/ websites / blogs	56
Government, NGO, farmers' organisations	26
Scientific articles	18
Total	180

In the media analysis, references are indicated by an abbreviation of the media name and a number indicating the number of the publication by that specific media (e.g. EFSYN5). Table 2 shows the abbreviations for the media used for the media analysis.

Table 2. List of the sources for the media analysis

Source	Abbreviation	Sphere	Type of Media	Type of content
Efimerida ton Syntakton	EFSYN	General	Daily newspaper	Facts, Opinions
Eleftheros Typos	ELT	General	Daily newspaper	Facts, Opinions
Eleftherotypia	ELEP	General	Daily newspaper	Facts, Opinions
Ethnos	ETH	General	Daily newspaper	Facts, Opinions
Avgi	HA	General	Daily newspaper	Facts, Opinions
Eleftheria	ELE	General	Regional webpage	Press releases, Facts, Opinions
Dikaiologitika	DKL	General	Generalistic webpage	Facts, Opinions
Imerisia	HM	General	Financial newspaper	Facts, Opinions
Karditsalive	KAR	General	Regional webpage	Facts, Opinions
Kathimerini	KTH	General	Daily newspaper	Facts, Opinions
Lesvosnews	LN	General	Regional webpage	Press releases, Facts, Opinions
Larissanet	LNET	General	Regional webpage	Press releases, Facts, Opinions

Source	Abbreviation	Sphere	Type of Media	Type of content
Newsbeast	NB	General	Generalistic webpage	Facts, Opinions
Naftemporiki	NF	General	Financial newspaper	Facts, Opinions
Makedonia	NM	General	Regional webpage	Facts, Opinions
Oikotrives	OIK	General	left environmental magazine/portal	Facts, Opinions
Sinidisi	SIN	General	Regional webpage	Press releases, Facts, Opinions
To Vima	TB	General	Daily newspaper	Facts, Opinions
E-Thessalia	THE	General	Regional webpage	Press releases, Facts, Opinions
Ta Nea	TN	General	Daily newspaper	Facts, Opinions
Haniotika Nea	XN	General	Regional webpage	Press releases, Facts, Opinions
Agronews	AGRN	Farming	Agricultural webpage	Press releases, Facts, Opinions
Agrocapital	AGRC	Farming	Agricultural webpage	Press releases, Facts, Opinions
Agroekfrasi	AGRE	Farming	Agricultural webpage	Press releases, Facts, Opinions
Agro24	AGRO	Farming	Agricultural webpage	Press releases, Facts, Opinions
Agrotypos	AGRT	Farming	Agricultural magazine/webpage	Press releases, Facts, Opinions
Alieftika Nea	ALI	Fisheries	Fisheries magazine	Press releases, Opinions
Elliniki Georgia	ELG	Farming	Agricultural webpage	Press releases, Facts, Opinions
Paragogi	PAR	Farming	Agricultural webpage	Press releases, Facts, Opinions
Ypaithros	YPA	Farming	Agricultural magazine/webpage	Press releases, Facts, Opinions
Archipelago	ARX	Fisheries	Fisheries NGO	Press releases, Facts, Opinions
Eas Thesprotias	EASTH	Farming	Union of Cooperatives	Facts, Opinions
EPALTH	EPAL	Fisheries	Operational Programme Fisheries	Press releases, Facts
GEOTEE	GEO	Farming	Greek Geotechnical Chamber	Press releases, Opinions

Source	Abbreviation	Sphere	Type of Media	Type of content
MINAGRIC	MRDF	Farming	Ministry of Agricultural and Food webpage	Press releases, reports
Agrotiki Anaptixi	PAA	Farming	Operational Programme of Rural Development webpage	Press releases, reports
Neoi Agrotes	PENA	Farming	Union of Young Farmers	Press releases, Opinions
ΠΕΡΜΑ	PEP	Fisheries	Panhellenic Union of Middle Range Fisheries Ship Owners	Press releases, Opinions
PASEGES	PSG	Farming	Pan-Hellenic Confederation of Unions of Agricultural Co-operatives	Press releases, Opinions
Workers Control	WRC	General	Workers Control webpage	Press releases, Opinions
ΕΤΑΓΡΟ (ETAGRO)		Academic literature	GAAE - Greek Association of Agricultural Economists	Press releases, reports, academic literature
ΕΛΚΕΘΕ (ELKETHE)		Academic literature	HCMR- Hellenic Centre for Marine Research	Press releases, reports, academic literature
ΕΛΚΕΘΕ (ELKETHE) /ΙΘΑΒΙΠΕΥ		Academic literature	Institute of Marine Biological Resources and Inland Waters	Reports, Press releases, academic literature

2.1 Regulatory and policy conditions

Debates related with regulation and policy conditions influencing producers' decision making are mostly harvested from the policy sphere (government documents and cooperative publications) as well as from the specialised media, while there is much less coverage in the daily/general press. The Common Agricultural Policy (CAP) plays a central role in this discourse, followed by taxation to farmers. Other important issues covered, though to a lesser extent, are related with Agri-environmental Schemes, environmental regulations; – mostly on the topic of fishing quotas and pastures management.

There is an intense criticism that the Greek state has never exercised an agricultural policy based upon the country's needs and possibilities while it is common notion that "*the subsidies allotment is informally associated with clientelistic networks and is not motivated by development and modernization of production or environmental protection rules but exclusively as "easy" extra income*" (Kizos et al, 2016).

The complexity of bureaucracy and the mismanagement which often lead the country to pay heavy fines imposed by the EC (TB1), the delays in decision making by the authorities (NB1, TN1), the economic and petty political interests which influence decision makers (ELEP1, EFSYN2), the inefficient regulation in the market (PSG5, AGRE1) are among the conditions that are referred frequently to the entire spectrum of the sources analysed.

The most debated conditions influencing producers decision making, unavoidably, revolves around the CAP. For more than 25 years, since Greece entered the European Union in 1981, farmers' production decisions have been led by CAP's support and Rural Development policy funding opportunities. There is evidence for this high degree of dependence provided by all sources examined. The importance of CAP subsidies and the strong dependence of the Greek agriculture from them are also stressed by the fact- a fact that is also acknowledged in official documents- that they amount to the 22% of the value of the Greek agricultural production while the average in EU Mediterranean countries is 12% (AGRE4, PAA).

A criticism which relates with the above mentioned conditions, is related with the unequal distribution of the EU funds among the products produced, as some enjoyed excessive support, while nearly 50% of the agricultural produce received minimum or no support at all (TB7). Crop production is based on fruits, vegetables, cereals and olive oil production, while there is a significant shortfall in the production of animal feed and the survival of industrial plants despite the full or partial decoupling of cotton and tobacco (PAA). This preferential regime of EU is accused to be one of the reasons that the Greek agriculture has lost its competitiveness (Papageorgiou A., Petropoulos P., 2014).

A counterargument which comes mainly from the general media affiliated to the political right, is that through CAP funds the specialization of agricultural products has increased, market shares have been improved, trade terms have remained in satisfactory levels and the farm income have remained at acceptable levels (TB7).

Another condition related to the CAP concerns the historical model and as mentioned in an internal document of the Ministry of Agriculture and Food for the upcoming CAP Reform, '*The historical model has generated doubts and distortions, since it retraces to reference periods that now have lost their importance while at the same time causes great administrative burden'* (MRDF1). This issue is of critical importance for the young farmers since they depend on the national reserve of rights, a disincentive for their entrance in the sector (GEO2).

In the media scrutinised, there was not much coverage of the Rural Development schemes. The majority of the articles dealing with rural development, both in general media as well as the specialised press were mere reproductions of press releases issued by the Ministry of Agriculture and Food. The most frequent references in the media are related to the high number of farms that are unable to implement their approved investment projects due to lack of access to bank loans and the investment stagnation of the RDP. In an article is mentioned that a few months before the previous period 2007-2013 had expired the absorbance of funds for improvement plans was at 70% and for manufacturing was at 30% (SIN1). In order to address these issues the recommendation from the Ministry of Agriculture and Food for the new programming period was that the emphasis should be

given to investment projects with mid-high budgets, while there should be distinct investment categories of smaller budget projects, which aim to improve climate and environmental performance of farms, regardless of the economic size of the holdings (MRDF2).

A particular mention should be given to the Leader initiative that is being implemented since the first programming period (1989-1993). Through the 43 local action groups to rural regions throughout Greece, the Leader project has reinforced the local entrepreneurship, infrastructure for the development of rural tourism was created as well as the first cores of development for the utilization of local potential (MRDF2). But as indicated in the specialised press, just 6 Local Action Groups from the total of 43, account for the 30% of the absorption of Leader funds, while a criticism stated was that many of those Local Action Groups used most of the money for their operation instead of promoting them into investments (AGRN34).

Another key factor that significantly influences farmers' strategies, including their decision to continue or not with the agricultural profession, or to abandon or restrict their agricultural activities is their taxation. Farmers' taxation is a much debated issue, especially recently, with the latest reform of the fiscal system which directly affects farmers and fishermen. The debate revolves around the VAT increase from 13% to 23%, the abolishment of fuel tax refund, the real estate property tax for the agricultural land, the obligation for advance payment of taxes as well as the increase of contribution for social security (AGRN2, AGRC1, XN1). These measures, according to all sources dealing with the issue, seem to lead to a further loss of the competitiveness of the Greek agriculture, livestock and fisheries (GEO1), while abandoning the activity qualifies as a strategy in the majority of the publications mainly from specialised media (AGRE2, AGRE6, YPA4, YPA5).

Issues of employment in the agricultural sector are also very much discussed in the media, general and specialised. Agriculture in Greece is widely accused for the undeclared work force employed. The majority of that workforce is usually immigrants without work permits. In many rural areas in Greece most of the workers available for farmers are immigrants without legal papers. The existing legal framework requires of the employer who illegally employs third-country nationals to pay for their work equal pay to the one provided under the law. Additionally, the employer has the obligation to pay social security contributions and taxes which are related to this employment. But in practice, even though the fine for employing undeclared workforce is extremely high (up to 10,500 € for each worker while the fine for employing immigrants without legal papers is up to 5,000 €) farmers cannot insure immigrants, precisely because they are staying illegally in the country, which means that they do not have a social security number, a tax ID or a valid passport. Consequently, '*farmers are 'forced' to pay foreign workers 'black money' (which cannot be checked if it is equal to the lawful)'* (ETH3). Farmers' organisations and specialised media are raising this issue, pointing out the need for adjustments in the labour and immigration laws (AGRN22, AGRN28).

Based on what was forced until now, the granting of entry visas for seasonal labourers with the process of invitation of third country nationals, as it is stated by the media, it does not address the problem, since the implementation of the legal framework does not apply to those who are illegally in the country. In 2015 a new law came into force in which there are given six months' of residence permit to revocable seasonal farm workers as well as 11 months residence permit to fishermen.

According to the specialised press, "*the decision, gives a limited number of licenses, which do not correspond to the actual needs of the work in the fields, but at least it was a start*" (AGRO2).

As reported to the press, the government is trying to fill the law gap which currently exists for foreigners land workers with a law provision. According to the explanatory memorandum, "*establishment of a procedure whereby, in the case that the maximum numbers of revocable farm workers are not reached, and the farmer is invoking an objective impossibility for the employment of land workers with valid* contracts*, he will be entitled to request from the Decentralized Administration (ie. Regional Administration), the approval for the employment of illegally staying third country nationals as an exception*" (ETH3).

On the other hand, non specialised press mainly focuses on specific cases of extreme exploitation of immigrant workers, such as the incidents in Southern Greece and the strawberry plantations or the fish workers from Egypt in Northern Greece (EFSYN8, ELEP2).

The dairy sector got a lot of media attention in the last couple of years due to regulatory changes concerning the complete liberation of fresh milks' shelf life duration, the possibility to use condensed milk in yoghurt production as well as the Economic Partnership Agreement (EPA) between the European Union and the Southern African Development Community (SADC) EPA Group for the protection of Greek PDO products. Media addressed all these issues in a common manner supporting that these reforms work directly against domestic production and the government failed to support Greek producers against their global competitors (GEO3, AGRN35).

In the first case, the government attempted to change the legal provision for shelf life duration of fresh cow's milk from 7 days to 11 days, only a few months after the cancelation of milk quotas in EU and the subsequent liberation of milk production in the EU countries. This could create a very difficult environment for the local dairy sector. The argument was that the country will be flooded by cheap milk from northern Europe and the competitive environment coupled with price pressure will force dairy farmers to abandon their profession. Cattle's farming in Greece is in decline over the last years, with the production being at about 600,000 tonnes while the quota for Greece was at 750,000 tonnes and the domestic consumption needs for dairy products are at 1,350,000 tonnes (AGRC1, AGRN10).

The second issue also raised great public attention, where in the new National Code for Food and Beverages no longer contains the obligation to use fresh milk in the production of yoghurt. Greek yoghurt, although not a PDO product, has managed to establish a brand name in the international and European market. Actors of the sector express the fear in the media that the new law opens the way to the quality degradation of the product with the possibility to use cheap imported powder milk (PSG3, GEO1).

The last issue concerns Feta cheese, a PDO product, which was subject to fierce, often unfair, competition from white "Feta type" cheeses from Northwestern MS, nowadays by non EU countries. As reported in the media the treaty between EU and 15 African countries for the economic and trade partnership didn't protect Feta as a PDO product and these African countries will continue to produce and sell to EU countries their similar products under the name Feta Style or Feta Like. Media

were very critical to the government for signing the treaty and treated the issue as an attack to the Feta PDO. The press release for the issue by the Greek Geotechnical Commercial summarizes the related articles in the notion that "*the loss of protection of Feta as a PDO product is a huge blow for the Greek livestock, since it paves the way for losing the Greek character of a product that is a "trademark" for the country and one of the best ambassadors of quality and recognition of Greek products abroad*" (GEO3).

The final registration of the Feta PDO by Greece in 2005 has contributed not just to the significant growth in the production of Feta but also in the production of sheep's milk. The number of large herds increased due to the growing demand for sheep's milk by dairies following the registration of Feta PDO by the EU. But a major problem farmers are facing is the pasture demarcation for eligibility. Another complicating factor in resolving the issue of eligible forage land for extensive livestock farming (sheep and goat) is the exploitation of eligible forage area from the stabled (intensive) farming. In order to subsidize the intensive livestock deprives eligible areas from extensive farming (OIK1). There are also common references in the specialised media about livestock farmers that were not eligible for EU subsidies since there was not eligible forage for them to declare (AGRE4) or the forage area that was given to them was not same that traditionally graze their animals but sometimes even in another regional unit (AGRE2).

Regarding fishing, the policy that influences most the fishermen is the EU's Common Fisheries Policy. One of the main goals of the Common Fisheries Policy was the limitation of fishing effort. This policy was implemented mainly through the measure of permanent withdrawal of vessels. Regarding the reduction of the formal fishing fleet capacity and the absorption of EU funds, this measure is considered to have achieved its goals in Greece, where in the last twenty years more than 5000 vessels were destroyed. The criticism raised against this policy in the media is that this policy was not designed to preserve the shipbuilding wealth, thus the money for vessel demolition was 55 times more than those for their preservation (ELEP4).

On the other hand, the structural policy of fishing fleet that was followed in the last twenty years and more, has managed to modernize the majority of fishing vessels and sometimes even to regenerate them (ELEP4).

The management of fisheries resources in the Mediterranean and in Greece is based mainly on technical measures (e.g. setting a minimum net mesh opening, fishing ban in specific areas or periods, minimum legal commercial size of fish). These measures most of the times are not based on scientific evidence and are static in time i.e. they don't change annually, with the only exceptions of tuna and swordfish. These technical measures are most of the times conflicting and ineffective (Stergiou K., Kallaniotis A., 2013). For example in a scientific study presented in an article, although all legal technical measures were followed (legal fishing gear, in permitted areas and time) the size of the caught fish was still under the length of first maturity (Stergiou K., Kallaniotis A., 2013).

Another example of an ineffective measure, is fishing prohibition in certain periods for the renewal of certain fish populations. According the Greek legislation, purse seiners are allowed to fish between 1st of March until 15th of December each year and bottom trawlers between 1st of October until 31st of May in order to limit the fishing effort for stocks in danger. In practice though, no national legal

instrument can ban them from fishing all year round in international waters. Covering the distance to reach international waters does not present an insurmountable obstacle (Tsikliras A., 2016).

Another condition the Greek fishermen have to deal with is the absence of a single legally binding management framework in the international Mediterranean waters. This lack permits free access to fishery resources, in a status that is "open to all". Hence, these unregulated waters, can be exploited not only by Mediterranean countries, but by other countries with big fishing interests, such as Japan and South Korea (ELEP3).

Another regulatory condition that fishermen had to deal with involves the complex as well as conflicting legislation of fishing tourism. In a press conference in 2014 for the new Common Fisheries Policy, even the EU fisheries commissioner admitted that there is a difficulty in the communication for the issue between the ministry of Rural Development and Food and the ministry of Commercial Shipping in order to simplify the legislation (AGRN11). Expressing their view, the fishermen argued that "*if the ministries want to significantly contribute in the support of tourist and fishing sectors they should consider the use of new technologies so as to simplify recreational fishermen licensing, aiming to facilitating, but also to the sustainability of professional fishermen and not to create "fast track" procedures for marine tourism from vessels belonging to the cartel of 'vertical' tourism*" (AGRN11).

2.2 Factors conditions

In this category the main issues dealt by the media are related to overall production cost and more specifically the cost of land (for purchase and rent), the labour cost, the cost of inputs as energy, the cost for agrochemicals and, not least, for animal feed.

The most debated issue concerning land in all media categories is the small size of the owned cultivated land per holding and the high degree of its fragmentation. It is estimated that, in these terms, the average size of the Greek agricultural holdings is 4.8 ha, while 50% of them has less than 2 ha. Even in Thessaly where there is a considerable concentration of large agricultural holdings the average size of the cultivated land of a holding is 6.8 ha, while the average size in EU is 14.2 ha (ELE4). Besides that, farmers have to deal with the fragmentation of their holdings, with an average of 5 to 6 parcels per holding. These characteristics of the agriculture sector are primarily accused for the lack of the ability of the farms to achieve economies of scale both in cultivation practices and in investments (PAA, TB5), and combined with the country's mountainous landscape increases excessively production costs ultimately leading to low productivity and competitiveness. On the other hand, there is an issue, raised mostly by scientists and agricultural cooperatives, of the loss of agricultural land threatened with abandonment (GEO2).

The issue of labour is discussed primarily in the context of unemployment due to economic crisis. Since the beginning of the economic crisis Greece in Greece, situated in late 2008, the unemployment had reached its peak with 27% of the economic active population in 2014 (24.4% in February 2016). The same percentage was over 50% for the younger population. The primary sector, however, demonstrates an upward trend in employment rates in 2009 and is stable in 2012-2013, compared to the great and continuous negative trend of the other economic sectors and the overall economy. According to the data by the Labour Force Survey during the years 2008-2013 of the crisis

12,000 jobs in the primary sector in rural areas were lost, while, in the same time period, 4,200 new jobs in the primary sector from urban areas were created. This means that 1 in 2 new entrants in agriculture have their origins in the urban centers (cities with more than 10,000 inhabitants). As expressed in a scientific survey, "*agriculture and the rural areas have been transformed into a shelter but also a 'greenhouse' for ideas and initiatives for a part of the rural population as well as a part of the urban population that is led there by choice or need. It is now well known that some urban households believe that their only way out from the unemployment and desperation labyrinth they experience, is the path that leads to agriculture and rural areas" (*Kasimis C. and Zografakis S., 2016).

General and specialised media are devoting sufficient room with interviews and presentations of several individual cases of successful and innovative settlements in agriculture by people originated from urban centers. But the objection to that as eloquently expressed is that "*The media bombing us with the few successful cases of urban return in agriculture and the countryside. But they are consciously silent about the considerably more failed attempts. People invested their life savings in agriculture and failed miserably, losing money and courage. They were confronted with the lack of agricultural policy and resources for agriculture and they failed*" (AGRN18).

Nevertheless, although the share of the primary sector in the overall employment is high, over 10% in 2013, only 11.8% of the employees in the agricultural sector use 100% of their time in agriculture. A 20.4% of employees use 50-100% and more than $^{2}/_{3}$ of the persons employed in agriculture are occupying less than 50% of its working time in farming. In other words, only 32.2% of those employed in agriculture can fit in the category of "farmer with farming as their main occupation" (PSG8). On the other hand, other reports indicate that the high unemployment in other sectors of the economy raises prohibitive obstacles to the exit from agriculture and sustains, thus, the main stress factor on agricultural income, which is the mismatch between the economically active population and its contribution to GDP (HA3).

Meanwhile, scientific studies have also focused their interest on the crucial role of migrants in the revitalization of rural areas, since they are directly involved in agricultural production and with low cost for the farms, enabling the modernization of the large farms and the survival of the small, which would otherwise be abandoned and disappear (KTH2).

As for the employment in fisheries, although the contribution of fisheries to the national economy of the country is considered to be relatively low (<3.1% of GDP), the sea fishing sector employs people with permanent employment relationship, without seasonal staff. In 2012 the rate of employment in the fishing sector fell by 9.9% compared with 2010 (EPAL).

The third factor in this category which determines producers' decision making is production cost. The status of the Greek agriculture regarding the production cost is very unfavorable. It is reported that the extremely high level of production cost weakens any comparative advantage and competitiveness and, in conjunction with the tax law reform, the decision of not farming becomes more attractive to farmers (AGRN2, AGRN7). The alarming effect of increased production cost on the farmers' income is becoming obvious by the fact that while the average output of all agricultural holdings increased by 4% in the period 2010 – 2012, the intermediate consumption increased by 14%. Consequently the net added value decreased almost by 13%.

The cost of inputs like animal feed and fertilizer is a major issue of concern for the specialised press and cooperative organizations. Animal feed is stated to occupy up to 70% of the farms' operational cost, with the purchase costs to have increased over 50% in the last few years (PAR4). Some of the results of this increased cost, as often mentioned in the media, are less use of purchased animal feed, qualitative changes of feed rations towards the diminishing of utilization of expensive ingredients and dietary supplements (Karelakis et al, 2014). This, in turn, leads to poor diet for the animals (AGRN9) and the consequent impact on the productivity of the herd. Another key factor which influences decisively the decisions of producers is the cost level for energy whether it is expressed as diesel fuel for agricultural machinery or electricity for irrigation pumps for crops and greenhouses.

Regarding fisheries, the main production cost is for energy. Fishing is an energy intensive activity and has often been considered one of the less efficient food production activities compared to agriculture, cattle farming and aquaculture (Tyedmers, 2004). According to Damalas, 2015, purse seiners, although they are some of the larger fuel consumers, they seem to employ one of the most energy efficient fishing methods. On the other side, we encounter the small scale coastal fleet, which is characterized by old, small sized vessels, with poorly maintained engines. These characteristics lead not only to low catches but also catches attained at a very high energy cost (Damalas, D, 2015).

2.3 Demand conditions

In this category of conditions the debate conducted in the media focuses mainly on the interrelated issues of farm gate price levels, market concentration and the distribution of added value along the value chain and food demand patterns. In this category of conditions there are also references in the media on the issue of farmers' ability to access the market.

There are numerous references especially in the specialised press on the issue of the low level of prices that the producers are paid. These low prices, depending on the product, are attributed by the media to various causes such as the lack of liquidity faced by the farmers due to economic crisis, the market concentration as well as pressures producers receive from the global agrofood markets.

During the years of the economic crisis, the references in the media, mainly of the specialised press, regarding farmers selling their produce at lower prices than expected or even lower than their production cost are more often (ELE3, AGRN29), due to the lack of liquidity of the farmers (ELE3, TB5, AGRE6, PSG8). The lack of liquidity of farmers (which is analysed in the conditions relating with finance and risk management) is used by buyers to lower the prices offered to producers.

Specifically for the dairy sector, the price of milk, though stagnant for years, despite the increase of VAT and prices of animal feed, is considered relatively satisfactory by sheep and goat farmers, compared to cow's milk prices and the price of lamb meat. Although Feta is considered to be the "strong asset" of livestock production due to the increased demand for exports, the price of Feta exported isn't high, nor the price of milk received by the farmers destined to the production of this PDO product, is proportionate (AGRN37). As far as the cows' milk sector is concerned, press reports make references that eight months after the lengthening of milks' shelf life duration the

consequences included a decline in producer prices, increased imports of milk and new "padlocks" units within the industry which didn't favor either producers or consumers (PAR2).

Another issue of importance in this category of conditions, is the series of obstacles encountered by the producers' in their strive to access markets. There are many references in the media on this issue, however, as the main reason on why this is happening; it seems that the one prevailing is that products do not meet either specific market requirements or the needs / desires of consumers (ELE4). Most of the times, the problem seems not to be the quality of the products, but rather the fail to fulfill aesthetic criteria: i.e. the shape, the size or the colour of the product. If the apples are not red enough, the potatoes are too large and the oranges with "spots" on their skin there are discarded by the market (e.g. supermarkets) and vast amounts end up at waste damps (HA1).

In addition to that, there are frequent references in the media for and individual producers' inability to access the market, especially when trying to trade with local products. In these cases, the only way to sell their products is through local markets or through direct sales to consumers in street markets. Most of the times, individual attempts to promote their products in large companies fail, since those big retailers require signing contracts for large amounts of products (ELE5).

At the same time, even in the cases where they gain market access, the price they receive is not satisfactory, and as PASEGES states "*Producers in our country complain because market cannot absorb their products, whose production costs are higher than the retail price of imported ones. Therefore are forced to sell at prices below cost, with negative effects on their income*" (PSG8). However, the Young Farmers Association (PENA) has a different view on this issue stating that: "*the focus of attention on 'production cost' is often misleading and leaves untouched the real creators of the problems which are mainly the intermediaries… with (the payoff with) the 'delivery' and not with the sale of a product, while it should be in the increase of the farmers participation in post harvest activities (marketing) and in the important (or most important) contribution of farming to the provision of free public goods to human beings"* (PENA).

Concerning the food market concentration, this is also an issue that is often debated in the media when it comes to agricultural products. It is generally recognized that there is an increased monopolistic power in the Greek food industry and a high concentration of the retail market. As the market concentration gets stronger it contributes to a wider gap between the producer and the consumer price. The strong bargaining power of those few retailers depresses the prices received by producers while at the same time consumer prices have remained unchanged. This asymmetric price transmission has become more obvious since the beginning of the crisis in 2009, when thousands of businesses have closed down, leading, thus, to higher negotiating power for the remaining few. This coincided with the paradox that while incomes have been reduced over 40%, consumer prices have remained practically the same since the beginning of the crisis. A consequence of this is the reduction of social welfare against extreme links of the chain, as producers and consumers are unable to influence the gap (MRDF1).

Moreover, as it is mentioned in a Ministry of Rural Development and Food survey, the interconnections between the agricultural production and food processing are weak since 60% of the gross value of the production is processed. A characteristic example presented is again that of olive

oil since Greece is the third largest producer in the world and exports 60% of its production bulk, and the lost added value amounts to approximately 35% of the products' value. In addition to that, the distribution of added value along the agri-food chain is that for every euro 1 product value of primary production, the processing sector adds value to the product of euro 0.4 when other countries this amount run up to euro 1.5 which makes the value added of agricultural products to be less of that of the main competitors (PAA). In addition to that the degree of processing and packaging as an added value of the food industry to the agricultural production of the country is very low, i.e. 40% compared with the 70% of the average EU (AGRE4).

As a young farmer expresses it "*In 1960 an agricultural product on the shelf (consumer price), inputs was cost 10% of the consumer price, the farmer was getting 60% and post harvest operations absorbed 30%. In 2010 the same agricultural product on the shelf, inputs cost 20%, the farmer received only 10% and post harvest activities (packaging, transport, refrigerators, trading, wholesale, retail, etc.) absorbed 70%*" (PENA1). A further point to that, comes from the dairy sector, as it is reported, that from 1litre of cows' milk that is sold by the producer at approximately 45 cents, reaches the consumer at 1.5 Euros, thus processing costs, packaging and distribution are considered to absorb the rest (ELG3).

A strategy often favoured by the media is the vertical integration by the producers, as very clearly put in the title of an article in a specialised press: '*Vertical integration is the answer to the products' distribution costs' in order for "the producer to raise a surplus from the "intermediate" links in the chain is to participate in it" (*AGRN26).

The issue of farmers' inability to assert a strong role in the supply chain to market their products, as well as to receive a larger piece of the added value is considered by all media scrutinised that it could be resolved through strong cooperatives and producer groups and by building contractual relations with the processing, distribution networks and export agencies (AGRE4). In order to solve the serious problem of disposal of the agricultural products from small farms, the promotion of the horizontal and vertical cooperation among supply chain actors for the establishment and the development of short supply chains and local markets is proposed (NF1).

An academic study about the 'Direct Distribution of agricultural products to consumers' in Northern Greece came to the conclusion that in practice the system of direct marketing of agricultural products contributes substantially to the welfare of producers and consumers. The producers sell their products at higher prices than those the intermediaries buy, thus achieving higher income, and more importantly are paid concurrently with the sale. Thus, producers can directly meet the subsistence needs of their families. Another conclusion of that study is that producers actually sell larger quantities, because the demand is higher since consumers buy products in lower prices than they do in conventional markets thus buying more products with the same money (Kamenidis et al., 2016).

Consumer price has an effective weight on domestic consumption, especially after the increase of VAT to 23% (and nowadays to 24%) which leads consumers to cheaper solutions, even with lower nutritional value e.g. frozen instead of fresh or cheaper imported similar products. The same behaviour that consumers have is reported for standardised and packaged organic products, and for

products sold in bulk, that are available in lower prices, a trend which is particularly strong in the olive oil sector (NF2).

There seem to be opportunities too, as pointed out in the media, for the Greek agricultural sector, from the international trend for Mediterranean Diet. The Greek agriculture produces 2.6% of the total value of the EU-27 agricultural production, with a comparative advantage in the market in the "Mediterranean Diet" products (PAA). The main products of the "Mediterranean Diet" are cereals, fruits and vegetables, olive oil and wine and less dairy products and meat. Besides these products, Greece also produces other products on which there is a virtual monopoly, such as masticha and crocus. An opinion that is often expressed through the media is that the country's position in the production of 'Mediterranean Diet' products such as olives, olive oil and Feta can be further exploited, by utilizing this global trend (ELG7) and the market share increased. As it is mentioned the demand for these products is growing and if the economic crisis wouldn't have occurred it would have been even more intense (TB1). All these products are also associated with food processing (processing, packaging and juicing) and the added value can be increased even more.

Furthermore, these new food trends emerging at global and European level, are potentially favouring a Mediterranean agricultural production model of flexible small size structures that are based on quality rather than quantity (AGRN1). In addition to that, many articles are pointing out that now is the time for the shift to quality organic farming since the international demand for these products is unfulfilled (TB7), providing also a way to "disengage" from the declining domestic demand (NF2).

2.4 Finance and risk management conditions

In the media examined there are not significant references to the financial conditions farmers are facing and to the risk management tools available to them. On the contrary, there are extensive references in all examined media to the liquidity deficiency producers are facing. However, the risks faced by the producers usually appear in media agenda when a natural disaster occurs.

The main insurance tool for agricultural holdings is ELGA, the Greek Agricultural Insurance Organization, which was established in 1988 and its main aim is the insurance of the agricultural production and the assets of the agricultural holdings. Since 2002, it was assigned to the area of responsibility of the Division of Policy Planning of Emergency (PSEA) of the Ministry of Agriculture, concerning the monitoring of damages caused by natural disasters, unfavorable weather conditions, fires and other emergency incidents in production (cultivations, herd) and the assets of the holding (plants, animals, fixed, land). The insurance of the production is mandatory and the insurance premiums are paid as a deduction from the singe payment. If a natural disaster occurs producers are entitled to compensation.

A different and yet a very serious risk for the producers arises from the lack of liquidity that dominates the market due to the economic crisis. Combined with the seasonal distance between input and output payments, producers are facing insolvency. As reported in a number of publications, almost all input companies, have revised their credit policy and, while producers have to pay cash for their input purchase, they get paid with credit which may be paid in more than one year. In this time interval their need for loan becomes more urgent.

Twenty years ago, the financier of agricultural holdings, almost exclusively, was the Agricultural Bank of Greece (ATE). ATE was established in 1929 as an independent, public benefit, banking organization within states' efforts to control the banking sector and stabilize the national currency from the of the 1st World War monetary disturbances. Its main purpose was to provide agricultural credit in all its forms, to strengthen cooperative organizations and to improve the terms of conducting of all types of agricultural transactions in Greece. Alongside, it was the main partner of the state in the execution of agricultural policy for the development of the national production. In 1999 ATE converted from credit institution into Limited Company and became a multipurpose bank. The voluntary participation in the deletion of the public debt at 53.5% (PSI) had catalytic effect to its own capital and to its capital adequacy. In the proceedings aimed at the restructuring of the Greek banking system and the strengthening of the financial stability, Piraeus Bank absorbed the healthy part of the Agricultural Bank in 2012.

In the period 2009 – 2014, due to the crisis, the funding to the agricultural sector decreased by 61.1% reflecting the shortage of liquidity and borrowing from banks, the absence of trust by the farmers who prefer to abstain until the return of positive expectations as well as the absence of a public financial organization for the agricultural sector after ATE's divestment. This lack of liquidity and the subsequent financial suffocation producers are suffering is noted in many of the sources examined both in general and in specialised media. As they mention, these economic conditions have created major impasses to farms which are forced to reduce or even to discontinue their production activity, if they are not already facing bankruptcy.

The need for a new public finance institution is stated by cooperative organizations such as the Greek Livestock Organisation (SEK) who propose the creation of a new, special purpose public bank, financing farmers with loans of low interest whereas according to the National Association of Young Farmers (PENA) "*agricultural society needs a different financial tool for social economy, or even a market- society partnership*".

This financial downturn has also had an impact on the implementation of the Rural Development Program 2007-2013 of which many investment projects were not completed due to inability to access bank loans whereas investors have been impossible to dispose the own capital required for the completion of the investment. For the required funding for the investment, a farmer has the obligation to obtain the necessary loan from Piraeus Bank, the successor of Agricultural Bank, with an interest rate of 8%.

In the resent years there was a vast coverage by both general and specialised media of specific cases of known large national or international agri-food corporations for conducting contracts with banks for contract agriculture. The leader in this domain is Piraeus Bank, with the majority of contracts with farmers and corporations, but only in the last few years; other commercial banks have also entered this field, promoting agricultural contracts. As several sources mentioned it seems that already a significant rate of over 13% of Greek farmers has adopted contract farming and a rate of 24% of farmers is interested in conducting some form of contract in the future.

2.5 Socio-institutional conditions

In this category of conditions several factors were extracted from media analysis. Most references are dealing with administration efficiency, an issue which we have dealt with, mainly in regulatory and policy conditions. Another factor with many references in the sources examined is cooperation and finally is the interrelated issues of criminality and control on frauds.

Most of the sources examined, consider cooperation as the solution of many of the producers' problems but at the same time cooperatives are considered to be the source of many of the producer's problems.

The enactment of the first law for cooperatives in 1915 marked the beginning of the cooperative movement. In the following years 2.500 primary agricultural cooperatives were created, the main efforts of most being focused in securing credit for farmers in order to address the serious problem of usurers. In 1935 PASEGES was founded (the National Confederation of Agricultural Cooperatives) which is the leading ideological and coordinating body of Agricultural Cooperative Organizations in the country, that supports and promotes their activities and represents them at an international, European and national level.

Ever since the beginning, the adventures of agricultural cooperatives reflect the historical turmoil, political interferences, inadequate legal frameworks and the lack of cohesion and commitment from their members.

However, although the number of primary cooperatives ranged from 5,000 to 7,000 and the number of farmers participating ranged from 500,000 to 750,000 members, due to the lack of social capital of trust between farmers it is estimated that less than 10% of products and supplies are handled collectively by cooperatives and producer groups while the average in Eurozone countries is over 60% (AGRE4). As it is stated in a PASEGES's political document for the reconstruction of agricultural cooperatives *"Although cooperatives legal framework enables the creation of a collective body - the cooperative - by members for their own convenience, the use of this body in practice in Greece, is not distinguished by doing the obvious. Cooperatives in our country are used by their members at will. Members are allowed free to use or not cooperatives' services. This looks like a businessman who opened a shop but he is not shopping from his shop" (PSG8).*

In an official document it is stated that until now there are producer organizations only in four fields: fruit and vegetables, vine and wine products, olive oil and table olives, as well as milk and milk products. In these four sectors, there is also a significant low degree of organization of the producers. The number of producers participating in cooperatives is extremely low as well as the land with which those producers are participating to their cooperation (PAA).

Since the beginning of cooperatives, especially the large ones remained largely under state control, captive of political patronage relations, which have prevented the development of an autonomous cooperative movement (WRC1). And as an old cooperative unionist expressed in a newspaper interview *"The individualism has destroyed us. But this was created by criminal policies of previous governments who now are hidden, tore the autonomy of the cooperative movement, politicized it,*

manipulated it by the known farmers' paternalists, who acted for their own benefit and against the interests of farmers" (EFSYN4).

In 2011 there was another reform in the legal framework for agricultural cooperatives which was accompanied by the creation of the Agricultural Cooperatives Registry where cooperatives and unions had to submit financial data in order to determine their viability. Today there are about 6,370 cooperatives recorded of which only 1,042 operate and the rest 5,400 are in fact non-existent 'seal-cooperations' that have stopped their operation long ago. As it is reported, from those 1,040 cooperatives, only 15 to 20 can exhibit healthy financial data while the rest are either indebted or decreasing their commercial activity. The reason for the debt was mismanagement or because some cooperatives exhibited intervening role to support producers without commercial criteria (i.e. by buying products in prices higher than market price).

The large number of cooperatives is also associated with the incomparably smaller turnover of those cooperatives; with the average turnover per cooperative in Greece is 68 times lower than the average in EU-11 (PSG8).

In the beginning of 2016 a new legal framework came into force for cooperatives which, as stated by the Ministry of Agriculture and Food "*paves the way for the big cleanup, trying to eliminate all the elements that have contributed to the depreciation of the cooperative movement and to lay the foundations for their non-recurrence*" (ETH4). With this bill all cooperatives that exhibit losses which exceed 80% of their capital and lack a viability study by their creditor will be closed.

Other important issues in this category of conditions are the illegal practices and the controls in the market of agricultural products which is a very serious issue especially for products as Feta and fish. There are vast references in the media (general and specialised) about the illegal practice of importing products and the circulation in the market as Greek products. This is the case for milk, Feta and meat as well as fresh fish. What is often argued is that monitoring of the market by the authorities is inadequate and ineffective to protect local producers as well as consumers from unfair competition this practice bears.

Especially for Feta it is stated that most of the Feta imitations are distributed inside the country and not abroad where white cheese is sold as Feta. Especially in the summer time, in touristic areas the phenomenon of restaurants selling these products is on a rise, in quantities that reach 150,000 tons.

Regarding the fishing sector most of the references in the media are dealing with the issue of illegal fishing and more notably for fishing of undersize fish. There are many references in the media on the issue of undersize fish that are sold in restaurants or even outside the fish auction. Again, the administration efficiency is questioned with the issue of inadequate and inefficient controls of the market as well as of the fishing boats. As it is stated by an NGO, the fine for illegal catch is very small, representing only a small percentage of the profit of the illegal catch, while the point system provided is not activated with the result to operate as an incentive for illegal fishing.

2.6 Socio-demographic conditions

In the media analysis three are the main factors which arise regarding socio-demographic conditions: the aging of farmers, followed by the educational level of farmers and urbanization.

The ascertainment about the aging of farmers and of rural population runs through the whole range of sources examined both in general /specialised media as well as scientific articles and institutional reports (Kasimis C., Zografakis S., 2016, EFSYN7, KTI2, AGRN18, EPAL1). Specifically, the significant increase in the age of farmers, the average of which is older than 60 years old, although it is near to the European average (PAA), readily leads to the conclusion that there is a need for enrichment of the human resources (GEO2) in the agricultural sector. At the same time, in the general press it is mentioned that young people are reluctant to engage in agriculture or fisheries due to the difficulties of rural life and, also the state does not provide enough incentives for their entrance in the sector (ELEP2, EFSYN7, MRDF1).

On the other hand, the entry of immigrants in rural areas, contributed to the maintenance of the rural community (KTH2), temporarily ensuring cheap labour, and helped in the aversion the crisis for a short period of time (Kasimis Ch., Zografakis S., 2016), but at the same time it facilitated the departure of farmers from heavy and unhealthy activities and their engagement in other sectors (KTH2).

A very important factor in this category which often appears even in the general media is farmers' education level. Farmers' educational level is considered to be very low and for that the responsibility lies in both the state and the producers themselves (ELEP1, PAA). In combination with the above mentioned factor of farmers' aging and the lack of flexibility that it engenders (ELG2), it inevitably results to low penetration of new technologies and innovations in rural areas (PENA1, EPAL1). This is also the case for livestock farming, where the media often observe that the lack of training and know how, results in the farmer not enjoying the economic benefits from farm operation (HM1, AGRN10).

The third factor relating with socio-demographic conditions that emerges from the media analysis, especially from the general media, is that of the rural depopulation and the subsequent urbanization of the rural population (EFSYN5, EFSYN6). Right after the WW2 a civil war afflicted the country and one of the consequences was the beginning of the abandonment of rural areas through immigration and urbanization. The degree of urbanization in Greece is remarkable with 50% of the population inhabiting in Athens and its surrounding areas.

Even in institutional documents it is observed that the rural areas do not provide the necessary guarantees for the remaining of the population in the rural areas (PAA). Intense interest is also presented by the specialised press for the departure from rural areas of skilled rural workforce (AGRN18). On the contrary to that, there is a discussion in the last few years on the trend of young people from urban centers to return to agriculture and the beginning of agricultural activities as a way out from the increasing unemployment and the absence of career options in the urban centers due to crisis (PAA, Kasimis Ch. and Zografakis S., 2016).

Furthermore, scientific data show that half of the newcomers in agriculture originate from large urban centers and especially from Athens (PAA1). Scientific evidence shows that the average age of new entrants to agriculture is more than 40 years old (Kasimis Ch., Zografakis S., 2016), while despite the many references in the general media for all the successful efforts in returning in agriculture, in the specialised press is also noted that there are many more cases of failed bourgeois attempts from urban people which began their operation in rural areas without the necessary knowledge and funding provision in projects of high risk (AGRN8, AGRN18, AGRN24).

As far as it concerns the fishing sector, similar socio-demographic conditions prevail as in the agricultural sector. There are references in the media that most of the employees in trawlers are foreign fishermen, since it is difficult for young Greek to get employment in professional fishing, which is a difficult job, with long periods of absence from their residence (ELEP2). In addition, in the survey of the current situation of the fishing sector by the Ministry of Agriculture and Food under the business plan for fisheries for the programming period 2014-2020, it is noted that the difficult working conditions on board (mainly in the small-scale coastal fishing), the limited capacity of the vessels and the increase in fuel prices, coupled with the financial crisis, has led to a decrease in the employment, and an increase of the undeclared work (employment of fishermen mainly immigrants) eventually remaining in the profession the older persons without the relevant training. In fact, that old age and the inadequate education of the fishermen is leading to a weakness to adapt the new concepts or activities in fisheries, not facilitating the modern management of fisheries resources and the development of productivity (EPAL1).

2.7 Technological conditions

In this conditions' category there are two issues which are often discussed in the media examined: the lack of farmers' education and the lack of basic infrastructures.

Since the late 1950s the education of farmers was taken over by the Ministry of Agriculture where a systematic effort for the professional training of the farmers through the establishment and operation of 70 Centres of Agricultural Training in each region across the country. Currently, 6 technical - professional schools and 26 training centres operate throughout Greece. There is also a compulsory education course only for Young Farmers beneficiaries through 150 hours of seminars which they have to follow as a contractual obligation to obtain the subsidy.

The lack of adequate farmers' education and training on new technologies and innovation is evident in all sources tested, even in non-specialised press. As the representative of Panhellenic Union of Young Farmers' characteristically points out "*farmers are lacking agricultural research and agricultural extention services, they are lacking professional training (which is almost nonexistent)*" (PENA1). Even in governmental reports it is recognized that, apart from the problem of available resources for the promotion of Innovation and Technology Research, there is an observed absence of interconnection between the needs of the sector with the generated from Research Institutes research output (PAA).

A significant problem also lies in the severe shortage in basic infrastructures, such as irrigation water supply (PAA, AGRN30) and road infrastructure for the transport of products. The technological lag occurs to the fleet of agricultural tractors where the 55.9% are aged between 26-40 years (NB1).

The low degree of processing, packaging and exporting is reflected by the low share (5%) of PDO and PGI products which are exported to the European market and is ranking in the 5th position by concentrating the 8.4% of total EU branded products (TB3). A typical example, which the media always refers to when reporting about low competitiveness of Greece's products, is the one of olive oil bottling. Most of the country's olive oil production, up to 48.26%, is exported bulk in Italy where it is bottled and resold, part of which to be imported back in Greece (YPA6, EFSYN5).

The sheep and goat breeding has changed much over the past two decades with the introduction of foreign breeds, particularly of sheep, increasing the productivity of the livestock, mainly due to genetic improvements and better nutrition, but their performance still lags far behind of those countries which are considered to be advanced in animal husbandry (AGRN10). Generally the extensive form of production is characterized by simple or even poor accommodations, most of them even lacking the permits to the livestock facilities, as well as the electronic system for the recording of the units (AGRN8).

On the other hand, general and specialised press are dedicating space to the illustration of innovations such as fresh milk automatic vending machines, with direct sale from the producer to the consumer (PAR3) or vertically integrated production units for milk and yogurt (EFSYN1, ETH1).

As far as the fishing sector is concerned it seems that structural policy, having being followed the last twenty years for the fishing fleet, has managed to modernize the majority of fishing vessels and in some cases even to regenerate them. Also, it was able to preserve a large part of the traditional shipbuilding, which otherwise would have perished (ELEP4). By contrast to that, deficiencies are observed in basic infrastructure such as fishing ports, fishing shelters, road infrastructure etc. (EPAL).

2.8 Ecological conditions

The ecological conditions related to the agricultural sector are mainly issues of concern of the scientific literature and institutional reports. Sporadic reports in the general and specialised media due to incidents of natural disasters, like floods or summer fires, are attributed to climate change.

Greece is characterized by a rich biodiversity with 27.3% of the states' surface being covered by the Natura 2000 network. In 2011 Greece classified 241 sites as SACs (special Areas of Conservation) and 202 as SPAs (Special Protection Areas). To date 28 Management Agencies have been established under whose jurisdiction fall 55 SPAs and 55 SACs. Of those 28 areas, 16 are under a statutory protection regime, while the remaining 12 areas are in the process. Finally, only two Management Agencies have approved Management Plans whereas the percentage of SACs without management plans is 98% and 99% the SPAs, respectively.

Biodiversity maintenance is inextricably linked to agricultural activity. Agricultural land often supports wildlife by providing food, nesting sites or even hunting areas. Also, a large number of animal and plant species are directly dependent for their survival on the continuation of traditional

forms of agriculture and livestock breading. Especially orchards, pastures and mixed agricultural systems sustain a large number of flora and fauna which are considered to be agricultural high ecological value systems.

Agriculture of low intensity is a feature of High Nature Value areas (HNVs) and it favors biodiversity. The majority of these rural areas in Greece is concentrated in hilly, mountainous and island regions and is characterized by small plots of land, terraces and extended pastures. These elements combined with agricultural practices such as crop rotation and fallow, mixed livestock farms, particularly in mountainous and island regions, help create a mosaic of great diversity of landscapes, which are habitats for a large number of species of wild fauna living, feed and reproduce around the crops. The LFA cultivated agricultural land amounted to 73.3% of the total UAA. LFA rural areas, as well as many important agricultural landscapes, face visible threats such as abandonment and intensification.

Moreover, in the period 1987-2007, the country lost more than 6 million ha of natural areas against a corresponding increase of agricultural or other, mainly urban, uses. The land cover which received the biggest pressure is characterized as low vegetation and has decreased by 12% of its original size while 8% of the land that was covered with shrublands has changed the land cover in twenty years. At the same time, rural areas of High Nature Value likewise many important agricultural landscapes are facing visible threats such as abandonment and intensification (PAA).

Another ecological condition of concern is the status of surface and ground waters. Agriculture consumes over 86% of the water while the 40% of irrigated land is irrigated by surface irrigation, the 50% is irrigated with artificial rain systems and only the 10% is applying drip irrigation systems (AGRE4). The pressure exerted by the irrigation systems threatens 14% of the wetlands while over-pumping threatens 15% of wetlands. Meanwhile, 42% of the wetlands sustain non point pollution from agricultural activities, whereas 20% is threatened by the installation or the expansion of farms. At the national level, a decrease of nitrate concentration is recorded by 43.2% in the surface waters and by 37.1% in the groundwaters in the period 2007-2010 compared to the period 2000-2006 (PAA).

Relative to water management and the impacts to the environment is the issue of Acheloos river diversion. It is a highly contested subject which reaches the media for at least 20 years. The discussion for the diversion started in 1980's and the main scopes of this multi – expediency project was the production of hydropower energy alongside the transportation of Acheloos waters from Pindos mountain in West Greece (which is much favored in rainfalls and water reserves) to the Thessaly plains to the East Greece, water supply for urban areas as well as irrigation for the Thessaly plains. The opposed sides reached the media was Thessaly farmers in one side and scientists and environmentalist on the other. Finally, as stated to the media by the minister of Environment and Energy "*The diversion is wrong in every aspect, environmental and economic. Also it has been repeatedly annulled by the Council of State. Yet, it was the cause that no significant water project has been done in Thessaly in the recent years, such as dams, land reclamation, or the Karla water utilization projects. The abandonment of this pharaonic project of diversion will be the last chapter of an irrational affair, which lasted more than 20 years and cost almost 600 million Euros*".

The greenhouse gases in the period 1990-2012 decreased by about 19.17%. The decrease is owing to the reduction of N_2O emission from the soil, due to the limitation of the use of synthetic nitrogen fertilizers (PAA). Nonetheless, changes in the climate conditions intensify crops' plant protection problems, which are forcing producers to apply excessive spray controls even in seasons close to harvest, which eventually has an impact on consumer safety (ELG8).

In addition, new diseases or re-emergence of old ones such as smallpox outbreaks (AGRN10) or the outbreak of bluetongue which has reduced livestock by 2 m. sheep and goats (AGRE3) as well as the reappearance of rabies with an incident with a fox (ELE1). Alongside, farmers have to deal with new enemies of the crops which often leads' them to restructure their cultivation plans (AGRN27).

There is much attention given by the media to the ecological conditions of the sea. There are numerous references regarding overfishing and its impact in the sea environment. Greece has an extensive coast line, more than 18,000km, which makes it the largest in Europe. Due to the low development of the coastal zone in Greece (in comparison to the Western Europe) and the fact that it constitutes a wide area for species settlement makes the coastal zone ecosystems of the Greek seas and the Southeast Mediterranean one of the most biodiverse marine zones in the Mediterranean basin.

As reported by Archipelago (an NGO that is activated in the Greek seas) due to the closeness of the coastal ecosystems to the cities and villages there are more susceptible to human activities than other marine habitats. The main threats for these coastal ecosystems are the large scale fishing, eutrophication and pollution mainly from fish farm operations, toxic chemicals, invasive species and the climate change.

The pressure that coastal fishing puts on fish stocks is an issue which is often found in the media, general and specialised, while it is a real issue of concern for scientists, NGO and cooperatives that operate in this sector. In the Greek seas the overfished stocks exceed 65% and the fully exploited 32%, in other words over 96% of all stocks (ALI1, NB2). Overfishing of pelagic species such as sardines and anchovies reaches 71% (ARX4), while according to the reports, the grouper, the bogue, the sheepshead, and the red mullet are also some species which are recorded to have significant reduction both because of overfishing, and because of the interdependence of species in the marine food chain (ARX1, ARX4).

Another impact to the marine ecosystem derives from rawling as well as by anchoring, mainly of recreational boats but also by small scale fishing vessels. Fishing in areas with marine seagrass meadows and in areas with calcareous red algae reefs, are causing destruction in habitats of particular importance for the productivity of the seas. Posidonia meadows which may accept such destruction, it will take more than 100 years to recover (ARX3).

Another condition influencing the fishing sector is related to climate change. As scientific evidence indicates, the climate change is already evident in Greek waters. There are clear indications of warming since the early 1990s, which is gradually strengthened, with record-breaking hot summers being of increasing occurrence while the trend of precipitation in Greece is negative both on an annual and a seasonal basis. Climate variability also directly affects fish recruitment, a key process for

fisheries. Changes in marine currents, derived from atmospheric climate variability, may modify transport and survival of young fish, as well as the distribution and abundance of phytoplankton and zooplankton. If climate change decreases primary and secondary production, the food supply for fish larvae may be limited, constraining fish recruitment and thus fish population sizes. Changes in seawater temperature and salinity may also impact the physiology and the distribution ranges of fish migration routes, due to changes in prey abundance and distribution. These changes will affect the status of the Greek fisheries. In more detail, concerning fish, these changes will appear first in the North Aegean, which contains large populations of species such as sardine and anchovy (HRMC6).

3 Greek Case Study A: Fishing of two small pelagic species in Northern Greece.

3.1 Case study introduction and context

3.1.1 Fishing in Greece

Greece is the second European country and the first EU country in terms of the extension of its coastline. The Greek fishing fleet is characterized by a large number of fishing vessels (15,385 vessels in 31.12.2015) with low gross tonnage and engine power (72,105.76 GT, and 434,475.13 KW), targeting at coastal fishing stocks along the extended coastline of the mainland as well as of the numerous Greek islands (Annual Fleet Report, 2015).

There are certain features of the Greek fisheries sector that differentiate it from those of other countries, even in the Mediterranean. The main distinguishing characteristic is that the largest part of fishing fleet (95.19%) consists of vessels fishing with polyvalent passive gear in the coastal zone and the fishery is multispecies. Of the vessels, only to 1.59% (245 vessels) carry the purse seine gear targeting pelagic species, mainly anchovies and sardines, while 1,68% (258 vessels) carry bottom trawl doors (trawlers) targeting demersal species, mainly gray mullet, red mullet, hake and crustaceans. Thus the extended coastline of the country (13,676 km) is exploited. (http://world.bymap.org/Coastlines.html)

3.1.1.1 Description of the Greek fishing fleet

According to the data from the National Fisheries Registry, the Greek fishing fleet included on December of 2015, 15,385 active fishing vessels with gross tonnage of 72,105.76 GT and total engine power of 434,475.13 KW. The Greek fishing fleet operates, almost in its entirety, in the Mediterranean Sea and is classified into three major categories, depending on the fishing gear used:

A. Vessels with static gear: They are coastal fishing vessels which operate all year round in the coastal mainland coastline of the country and the island zone, using a variety of gear, depending on the season and the target species.

Depending on the overall length there are divided into:

- Small vessels, which include 14,308 coastal fishing vessels with overall length of less than 12 meters and gross tonnage of 28,122.02 GT and total engine power of 267,270.03 KW.
- Vessels with length greater than 12 meters, which included 337 inshore fishing vessels with gross tonnage of 5.959.46 GT and total engine power of 30,742.80 KW.

B. Vessels with towed gear: Boats with tool bottom trawling nets (trawlers), which are active in the Greek and international waters of the Aegean, Ionian and Cretan Sea and in third country waters, under bilateral fishing agreements between EU and third countries as well as private partnership agreements.

C. Vessels with purse seines: Vessels with Purse seines fishing gear, operating in the Greek and international waters of the Aegean and Ionian seas, targeting at different pelagic species.

The overall number of jobs offered by the sector was 27,558, in 15,021 firms (Liontakis et al, 2014). The fleet decreased between 2008 and 2012 by 9%. This decreased was attributed by Liontakis et al (2014) to the implementation of the fisheries policy to reduce the number of vessels and the fleet capacity.

However, in order to be able to better analyse data concerning the type of enterprise across a temporal scale, the team resorted to the available statistical time series of the Greek Statistical surveys that include vessels with motors accounting for more than 8 HP. If one examines vessels over that size the number in 2014 was a reduced 5,783 vessels, with a combined gross tonnage of 27,975 GT and a total engine power of 496,557 HP. These enterprises offer employment to 10,804 people.

3.1.1.2 Fishing effort trends

Analysing further the data concerning the fishing effort i.e. number of vessels, tonnage and power of the fishing fleet with engines of over 20 HP one cannot but notice the steadily negative trend on all accounts.

Table 3. Number of motor propelled fishing vessels by type of fisheries and fishing gear

Year Fisheries & Fishing Gear	2004	2009	2014	Change
Overseas fishery / Trawlers	22	8	5	-77%
Open sea fishery / Trawlers	345	312	282	-18%
Open sea fishery / Purse seiners	331	270	253	-24%
Inshore fishery / Seiners	368	394	226	-39%
Inshore fishery / Other fishing gears	5,779	5,190	5,017	-13%
Total	**6,845**	**6,174**	**5,783**	**-16%**

Source: Greek Statistics Authority (elaboration by the authors)

In all types of gear and fisheries there has been a decrease in the number of vessels. This however has been more pronounced in the cases of overseas fisheries and inshore seiners (Table 3). However, there is a particularity in this general trend, since inshore seiner vessels have been increased during the first 5 years of the period examined.

A proportional reduction in the power of the motors used has been observed, although in the case of inshore seiners one can note that the horsepower of vessels increased during the 2004-2009 period (Table4). Furthermore one can observe an increase of the average power per vessel in almost all cases (Table 4a).

Table 4. Horsepower of motor propelled fishing vessels by type of fisheries and fishing gear

Year Fisheries & Fishing Gear	2004	2009	2014	change
Overseas fishery / Trawlers	14,603	6,071	4,176	-71%

Open sea fishery / Trawlers	135,062	123,949	111,319	-18%
Open sea fishery / Purse seiners	76,612	68,902	64,798	-15%
Inshore fishery / Seiners	32,620	36,444	19,876	-39%
Inshore fishery / Other fishing gears	351,087	312,567	296,388	-16%
Total	**609,984**	**547,933**	**496,557**	**-19%**

Source: Greek Statistics Authority (elaboration by the authors)

Table 4a. Average horsepower of fishing vessels by type of fisheries and fishing gear

Year / Fisheries & Fishing Gear	2004	2009	2014
Overseas fishery / Trawlers	663.8	758.9	835.2
Open sea fishery / Trawlers	391.5	397.3	394.7
Open sea fishery / Purse seiners	231.5	255.2	256.1
Inshore fishery / Seiners	88.6	92.5	87.9
Inshore fishery / Other fishing gears	60.8	60.2	59.1

Source: Greek Statistics Authority (elaboration by the authors)

The same proportionality of reduction can be observed when the tonnage is examined (Table 5)

Table 5. Tonnage of motor propelled fishing vessels by type of fisheries and fishing gear

Year / Fisheries & Fishing Gear	2004	2009	2014	Change
Overseas fishery / Trawlers	3,304	1,379	846	-74%
Open sea fishery / Trawlers	21,909	19,524	16,800	-23%
Open sea fishery / Purse seiners	12,840	11,045	10,329	-20%
Total	**38,053**	**31,948**	**27,975**	**-26%**

Source: Greek Statistics Authority (elaboration by the authors)

3.1.1.3 Economic trends

Looking at the data for the period 2004-2014 one can see that employment presented a negative trend to be reduced which resulted to an overall reduction of employment of about ¼ of the 2004 figures (Table 6).

Table 6. Average annual employment by type of fisheries and fishing gear

	Employees			
Year Fisheries & Fishing Gear	**2004**	**2009**	**2014**	**Change**
Overseas fishery / Trawlers	211	127	82	-61%
Open sea fishery / Trawlers	1,258	1,136	938	-25%
Open sea fishery / Purse seiners	1,660	1,419	1,396	-16%
Inshore fishery / Seiners	992	862	275	-72%
Inshore fishery / Other fishing gears	9,974	8,676	8,113	-19%
Total	**14,095**	**12,220**	**10,804**	**-23%**

Source: Greek Statistics Authority (elaboration by the authors)

Two have been the categories that most have suffered a severe reverse in terms of employment, that of the trawlers overseas and the inshore seiners. The explanation for the latter has to be drawn from the fact that a specific EU policy was implemented.

However inshore fisheries seem to maintain their proportional importance as job provider (more than ¾ of the total employment) although significantly reduced in absolute terms.

Table 7. Average annual quantity of catch by type of fishing gear and fisheries

Year Fisheries & Fishing Gear	2004	2009	2014	Change
	Tonnes			
Overseas fishery / Trawlers	3,202.20	1,772.40	729.4	-77%
Open sea fishery / Trawlers	23,937.40	21,968.40	15,512.9	-35%
Open sea fishery / Purse seiners	27,089.90	21,491.80	22,357.6	-17%
Inshore fishery / Seiners	7,994.90	6,340.30	683.5	-91%
Inshore fishery / Other fishing gears	28,910.40	30,248.50	21,035.2	-27%
Total	**91,134.80**	**81,821.40**	**60,318.6**	**-34%**

Source: Greek Statistics Authority (elaboration by the authors)

The important reduction of fishing effort is apparent, if one examines the data concerning annual catch in Table 7. The policy for the reduction of fishing effort seems to be successful as a whole, but far more in the case of inshore fishing enterprises using seiners, the catch in 2014 was less than one tenth of the 2004. Although it accounted less than 10% of the catch in 2004, it contributed to the reduction by an impressive ¼ of the total reduction in annual catch quantities.

Finally, in terms of value of the catch, the reduction of 21% the decade 2004-2014 (Table 8) should be mainly attributed to a large extent to the reduction of fishing effort, mainly in the case of inshore seiners.

Table 8. Average annual value of catch by type of fishing gear and fisheries

Year / Fisheries & Fishing Gear	2004	2009	2014	Change
	,000 euro			
Overseas fishery / Trawlers	12,500.00	6,292.90	2,729.7	-78%
Open sea fishery / Trawlers	85,739.10	86,589.80	62,630.9	-27%
Open sea fishery / Purse seiners	52,677.20	45,091.50	51,469.5	-2%
Inshore fishery / Seiners	18,114.80	16,643.20	2,389.3	-87%
Inshore fishery / Other fishing gears	122,882.60	137,984.70	110,589.1	-10%
Total	**291,913.70**	**292,602.10**	**229,808.5**	**-21%**

Source: Greek Statistics Authority (elaboration by the authors)

Having said that it is useful to note two particularities in those, in general homogeneous, trends as first is the case of open sea fisheries, where the catch of vessels using purse seiners increased from 2009 to 2014 while for the inshore fishery vessels with other fishing gears the catch increased from 2004 -2009.

Finally, focusing on the two specific small pelagic species we are interested i.e. anchovy (*Engraulis encrasicolus*) and sardine or pilchard *(Sardina pilchardus)* by looking at Table 9, one can observe that their share in the continuously amount of catches is increasing , from 30% in 2004 to 37% in 2014.

Table 9. Quantity of catch by species under examination, category of fishery and type of fishing gear

Year		Total National Catch	Open sea fishery		Inshore fishery	
			Trawlers	**Purse seiners**	**Seiners**	**Other**
2004	**Total**	**87,931**	**23,912**	**27,093**	**8,003**	**28,923**
	Total Fish	75,674	17,438	26,951	7,601	23,685
	Anchovy	13,404	288	10,251	1,277	1,588
	Sardines	9,217	515	6,547	1,243	912
2009	**Total**	80,048	21,953	21,507	6,343	30,245
	Total Fish	69,387	15,710	21,442	6,081	26,153
	Anchovy	14,539	747	9,797	888	3,106
	Sardines	10,072	501	5,925	1,558	2,088

2014	**Total**	**59,590**	**15,508**	**22,372**	**683**	**21,026**
	Total Fish	*50,343*	*11,099*	*21,887*	*576*	*16,782*
	Anchovy	9,847	470	9,032	15	331
	Sardines	8,405	1,089	6,908	45	364

Source: Greek Statistics Authority (elaboration by the authors)

This can be attributed to the smaller rate of decline of catches for the specific species especially for the first five year period when there was an increase in catches, mainly due to inshore vessels using other fishing gear. It seems that there was a further shift of open sea fishers with purse seiners (as well as trawlers) towards these two species, especially sardines, during the period 2009-2014, resulting to open sea fishery accounting for 95 to 97% of the total catches.

3.1.1.4 Concluding comments on fishing productivity

As a general comment regarding the situation of fisheries in Greece one can say that inshore seiners seem to be the most affected by the Common Fisheries Policy measures aiming at the reduction of the fishing effort.

The above mentioned reduction of fishing effort lead to a disproportionate reduction of the production/value and labour.

The two species focused by the present study, anchovy and sardine, account for more than 1/3 of the total catches, a large share of the catches (almost the totality) is attributed to open sea fisheries.

3.1.2 An introduction to Northern Greece fisheries

Breaking down the data on average annual catches to fishing areas (Table 10) one can observe that although the overall catches present a declining trend as mentioned previously this trend is not observed in all fishing areas. In three fishing areas, namely the gulfs of South and North Evia and Lamia, the islands of Lesvos, Chios, Samos and Ikaria as well as Dodekanissos, a considerable increase in catches has been observed leading them to increase their share in catches from 6% to 21%.

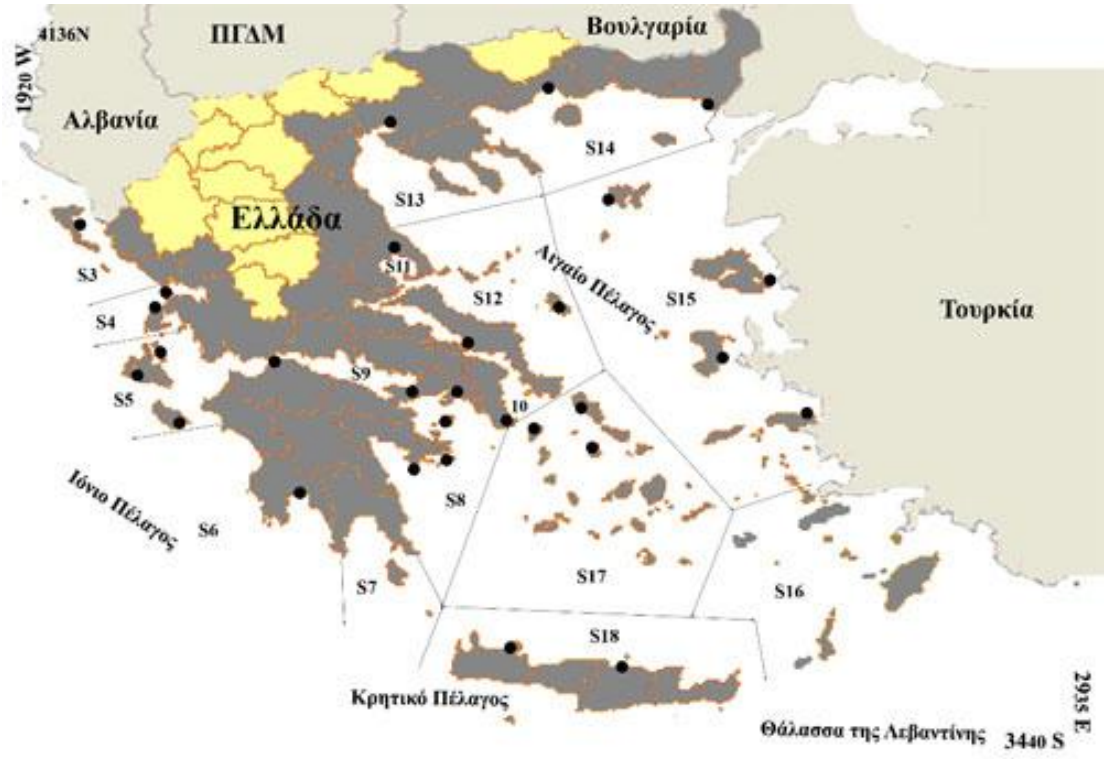
Table 10. Quantity of catch by fishing area

Fishing area	Quantity of catch			
	Tonnes			
	2004	**2009**	**2014**	**Change**
Atlantic ocean	3,203	1,773	729	-77%
Coasts of Epirus and Corfu island (S3)	1,149	932	884	-23%
Amvrakikos gulf and coasts of Lefkada island (S4)	1,980	1,863	455	-77%
Coasts of Kefalonia, Zakynthos and gulf of Patras (S5)	6,557	5,637	4,073	-38%
Gulf of Kyparissia and gulf of Messinia (S6)	705	189	254	-64%
Gulf of Lakonia (S7)	168	379	413	146%

Gulf of Argolida and Saronikos gulf (S8)	7,149	6,236	5,023	-30%
Gulf of Korinthia (S9)	1,347	697	806	-40%
Gulf of S. and N. Evia and gulf of Lamia (S10)	3,243	7,735	6,227	92%
Pagassitikos gulf (S11)	990	1.260	316	-68%
Eastern coasts of Evia and Sporades islands (S12)	2,840	4,930	669	-76%
Thermaikos gulf and gulf of Chalkidiki (S13)	26,647	20,240	11,213	-58%
Strymonikos gulf and gulf of Kavala, coasts of Thassos and sea of Thrace (S14)	23,244	16,491	18,631	-20%
Islands of Lesvos, Chios, Samos and Ikaria (S15)	1,325	3,980	3,361	154%
Dodekanissos islands (S16)	784	1,357	3,080	293%
Cyclades islands (S17)	6,637	6,146	2,364	-64%
Crete island (S18)	2,656	1,976	1,822	-31%
Total	**91,134**	**81,821**	**60,319**	**-34%**

Source: Greek Statistics Authority (elaboration by the authors)

In the two fishing areas examined in the current case study i.e. (S13) Thermaikos gulf and gulf of Chalkidiki and (S14) Strymonikos gulf and gulf of Kavala, coasts of Thassos and sea of Thraki, the overall picture is that of a declining catch quantities although in the case of the latter, this trend seemed to be partially reversed since there was an increase of catches during the second five years period examined.



Map 2. Map of the Greek fishing areas (Source: Alieftika Nea, 2014)

A study by Liontakis et al. (2014), detected that the small scale vessels operating in the region of East Macedonia and Thrace (Strymonikos gulf and gulf of Kavala, coasts of Thassos and sea of Thraki) score lower in Technical Efficiency (TE) than the vessels operating in others regions as for example vessels operating in the Cyclades Islands and Crete. The authors attribute these regional differences in the TE scores of small scale fishery to differences in the composition of the catch and or the various levels of competition faced when large scale vessels are operation on the same fishing areas and/or the same markets. Sandy bottoms are common in the region of East Macedonia and Thrace while fishing areas in the Cyclades Islands and Crete are characterized by rocky bottoms. The competition of large scale vessels in the Cyclades Islands and Crete seem to be lower due to their limited numbers.

Finally on can conclude that although there is a decrease of the overall catches in the two areas of the Northern Aegean we are dealing with, Thermaikos gulf and gulf of Chalkidiki, Strymonikos gulf and gulf of Kavala, coasts of Thassos and sea of Thraki, they account for ½ of the total catches.

3.2 Policy and regulatory conditions

3.2.1 Common Fisheries Policy

According to the Commission statement the "*CFP aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. Its goal is to foster a dynamic fishing industry and ensure a fair standard of living for fishing communities*".

One can distinguish four elements in the CFP: Conservation, structural, market and external policy measures.

- Conservation measures deal with direct exploitation of Community fish resources. Its main objective is to conserve and manage living marine aquatic resources while providing for the sustainability of their exploitation;
- Structural policy measures focus on expansion of aquaculture, marketing, processing, and vessel building and decommissioning towards the modernisation of the sector, bearing in mind the overall objective of a balance between fishing capacity and existing stocks;
- Market stabilisation, providing for regular supply of fish products at reasonable prices for consumers and safeguarding reasonable incomes for workers in the sector are the main features of the market policy element of the CFP and finally
- The external policy is regulating activities of vessels on the high seas or in waters of third countries as well as issues of the international trade in fish products.

3.2.1.1 A brief account of the past

Fish stocks have a high, though limited, reproductive capacity. In cases of uncontrolled fishing resulting to excessive pressure, stocks collapse and/or fishing becomes economically unviable. Hence, it is in fishermen's interest in the first place, to have a fisheries management system in place. Stock reproduction not only is a biodiversity goal but ensures a long-term yield which in turn lay the foundations for a profitable industry.

The Common Fisheries Policy of the European Union has a history of about 40 years. But the 2002 reform introduced a novel approach that of the "*progressive implementation of an ecosystem-based approach, to the extent permitted by scientific knowledge*".

The multi-annual management plans introduced were aiming at: (a) reducing fishing pressure to levels permitting sustainability, by influencing unsustainable activities, (b) achieving 'favourable conservation status' of non-commercial species and habitats; as well as promote fishing methods with reduced impacts on habitats by e.g. reducing discards, incidental by catch; and (c) developing an specific Action Plans on discards, together with proposals to protect sharks, cetaceans and sea birds.

Within this framework, institutional changes and the introduction or redefinition of notions were deemed necessary such as:

According to the World summit on Sustainable development "*To achieve sustainable fisheries, the following actions are required at all levels: Maintain or restore stocks to levels that can produce the maximum sustainable yield (MSY) with the aim of achieving these goals for depleted stocks on an urgent basis and where possible not later than 2015*." (Lutchman I., 2009).

The precautionary approach was introduced as far as the Harvest Control Rules (HCRs) were concerned. In that sense a broadening of the HCRs (consequently the MSY) following the example "*of the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR's) decision rules which first safeguard the stock and recruitment to the stock (Rule 1) and second, aim to safeguard the ecosystem to support natural predators and the general balance of the ecosystem (Rule 2). Rule 3*

then directs decision-makers to determine the level of catch that balances the safeguarding of stocks and recruitment with the safeguarding of ecosystems which support natural predators." (Lutchman I., 2009).

The same principle (the precautionary) was also imposed in the case of setting Total Allowable Catch (TAC), aiming at stocks at or above clear, target reference points (e.g. MSY or BMSY) determined by biological and/or ecosystemic parameters, e.g. in case of redaction of a recovery plan any target set for preservation should exceed depletion rates.

The same principle (the precautionary) was also imposed in the case of setting Total Allowable Catch (TAC), aiming at stocks at or above clear, target reference points (e.g. MSY or B_{MSY}) determined by biological and/or ecosystemic parameters.

In order to be able to overcome the difficulties arising in the course of policy implementation institutional arrangements in order to ensure a coordinated approach to control and inspection. These could be classified in two levels, the first one being the design. At that level the main elements have been a reform of the legal framework towards increased effectiveness, targeting and programming of enforcement, the extension of the mandate of the Community Fisheries Control Agency (CFCA). At the enforcement level harmonised inspection and standardised control procedures as well as sanctioning. Finally, the Commission was given the competence to impose sanctions starting from financial and reaching the closure of fisheries, deduction of quotas from Member States as well as the rectification of catches figures (Luchtman et al. 2009).

Another new important element has been the introduction and establishment of Regional Advisory Councils under the CFP[1]. The intention of the Council, adopting this decision, has been to encourage participation in the design and implementation of CFP. Hence, RACs participants could communicate their suggestions to both the Commission and the national authorities of the area covered by each RAC. The sea areas covered are delineated based on biological criteria and must involve at least two Member states. When there are issues involving more than one RAC, a co-ordination procedure is provided and the adoption of joint recommendations should be pursued.

The RACS established cover

- the Baltic Sea;
- the Mediterranean Sea;
- the North Sea;
- north-western waters;
- south-western waters;
- pelagic stocks and
- the high seas/long distance fleet.

[1] Council decision 2004/585/EC

These councils consist of representatives of the fisheries sector (fishermen, producer organisations, processors, traders and other market organisations, and women's groups) as well as other groups having a stake and/or affected by the Policy (e.g. environmental organisations and groups, aquaculture producers, consumers and representatives of recreational or sport fishing). The members are proposed by stakeholders and selected by the MS and once established they form the General Assembly of the RAC. Expert scientists are invited while active observers include the Commission, national and regional administrations, a representative of the Advisory Committee on Fisheries and Aquaculture (ACFA). Finally, the RAC can also invite stakeholders from third countries. Consensus building and transparency are the functioning principles of the RACs which are eligible for support to cover operational costs.

According to Lutchman et al (2009), the established RACs were encountered by a series of challenges mainly emanating from their internal governance arrangements. These included the achievement of a balanced membership, the inclusiveness of the established procedures especially as far as the minority members participation and expression was concerned, consensus building in issues like Total Allowed Catches (TACs) and quotas, especially when dominant partners and short term interests have been determining the outcome, resulting to environmental NGOs either refusing to endorse the outcome or altogether withdraw from the process.

The same authors, albeit identifying external pressures to RACs like the increasing workload emerging from the Commission, impeding the building of a bottom up strategy through discussions on strategically important issues, refer to positive outcomes from the function of RACs. Among these the most notable have been the strive for consensus and the respect of minority views, the commitment to transparency, the useful but not determinant participation of scientists, better access to and understanding of EU level policy making processes. Finally, the active inclusion of RACS in the governance structure of CFP has been, per se, a very positive outcome.

3.2.1.2 The currently implemented Common Fisheries Policy

Environmental policy in the EU, apart from the legislation that covers, among others, certain marine ecosystems like the Birds and Habitats Directives, has been enriched with new specific legislative initiatives like the Marine Strategy Framework Directive (or Marine Directive), which aims to create a framework for the sustainable use of our marine waters.

These environmental measures include in different degrees biodiversity conservation obligations for MS, regions as well as companies and individuals. Fisheries is one of the fields where certain rules apply especially when the seas are concerned. The fishery sector and related policy measures, are included in the exclusive competences of the European Union, hence the CFP, any fisheries-related environmental protection measures lie within the EU competencies.

The current CFP has continued the reforms in its rules and management structure, with further steps towards regionalisation and more extensive stakeholder consultations, frequent recourse to multi-annual plans which often combine different management tools and closer collaboration with experts for scientific advice and data based decision making.

In that sense, the Common Fisheries Policy, through the process of regionalization, gives member states the chance to play an active role in designing fisheries conservation measures. Affected countries through the RACs, submit joint recommendations in order to better design measures aiming at the environmental objectives set. These recommendations can partially or wholly gain the Commission's endorsement and be invested the form of a legally binding document.

On the other hand existing fisheries management measures have been strengthened and new introduced. Management measures take the form of input control, output control, or a combination of both. Input controls include: *rules on access* to waters, fishing effort controls– limitations in vessel usage and fishing capacity and, as well as technical measures – regulating gear usage and spatial and temporal fishing arrangements. Output controls mainly consist of applying total allowable catches or quotas, limiting the amount of fish from a particular fishery. Adopting a precautionary approach the CFP, although the impact of fishing on fragile marine ecosystems is not fully understood, recognises the impact of human activity on all components of the ecosystem.

3.2.1.3 Fisheries management and marine conservation

- *Access to waters*

Fishing vessels registered in the EU fishing fleet register should have, as a general rule, equal access to all the EU waters and marine resources covered by the CFP. A formal procedure of obtaining a fishing license should suffice for authorizing access to any fishery. However, two temporary (expiring in 2022) exceptions to this rule have been established. The first is that in the waters up to 12 nautical miles from the coasts of the EU countries restrictions apply in order to give preferential access to vessels that traditionally fish in those waters from the adjacent ports. Thus MS have the right to limit access rights: to vessels from adjacent ports that traditionally fish in the specific areas or to vessels identified under neighborhood relations or related to fisheries as listed in annex I of the CFP.

The second temporary restriction applies to the waters up to 100 nautical miles from the coasts of Europe's outermost regions. There, access can be restricted to vessels registered in the ports of these territories and to vessels that traditionally fish in those waters.

- *Fishing effort*

Apart from the generally applied system of Total Allowable Catches (TACs), specific fishing effort restrictions have been considered necessary. These include limitations to the fleet capacity as well as the time that can be spent at sea by that fleet. The legal framework used in order to introduce such restrictions varies, e.g. such restrictions apply under multiannual plans for the management of a specific stock or group of stocks or more generally area-based. Effort restrictions have been particularly in focus in the case of Management plans in the Mediterranean.

3.2.1.4 Technical measures

Technical measures include a quite broad set of rules for all European sea basins. They, however, differ substantially from one basin to another, taking account the local and regional environmental and socioeconomic conditions.

Minimum landing sizes and minimum conservation sizes, specifications for design and use of gears, minimum mesh sizes for nets, requirement of selective gears to reduce unwanted catches, closed areas and seasons, limitations on by-catches (catches of unwanted or non-target species) are some of the measures aiming at minimizing the impact to marine ecosystems.

- *Ecosystem Approach to Fisheries Management*

For the current CFP programming period the overall objective set is to ensure high long-term fishing yields for all stocks by 2015 and, where this would not be possible, at the latest by 2020. An important tool in order to achieve this objective is the gradual introduction of a landing obligation. The main aim of this tool is to avoid unwanted catches and wasteful practices or reduce them to the minimum or avoid them altogether, though. (http://ec.europa.eu/fisheries/cfp/index_en.htm)

The new CFP intends to avoid altogether or at least reduce significantly the wasteful practice of discarding i.e. returning unwanted catches, either dead or alive, to the sea either because they are not of a marketable size, because of existing catch composition rules or just because the fisherman has no quota. The tool to achieve this is the landing obligation. Under the landing obligation all catches have to be kept on board, landed and counted against existing quotas while small fish cannot be marketed for human consumption purposes.

This obligation apart from encouraging more selectivity in fishing, at the same time, provides for reliable fish stock indicators. In order to facilitate fishermen's adaption to the new rules, a gradual introduction of the landing obligation is scheduled, between 2015 and 2019 for all commercial fisheries (species under TACs or under minimum sizes) in European waters.

The specificities of the implementation of the landing obligation will differ according to the conditions existing in each fishery. The specifications consist of the list of species covered, provisions on catch documentation, minimum conservation reference sizes, and exemptions concerning for example fish that may survive after returning them to the sea or a specific *de minimis* discard allowance under certain conditions. When a multiannual plan is in operation, all relevant specific details are to be included there. In case of absence of such operational multiannual plans, specific discard plans should be prepared. In the cases where fishing quotas are in place, a certain degree of flexibility is thought of as a means to facilitate compliance with the landing obligation. By the year 2019 all fishermen, even the ones fishing in non EU waters, should land all the fish they catch. It is a gradually enforced obligation starting from the 1 of January of 2015. It started with the pelagic and industrial fisheries, and in the Baltic the salmon fisheries and fisheries for cod fall for which specific discard plans have already been issued. For all other areas and species undersized fish, dish not covered by quota or not abiding to catch composition and by-catch rules should still be returned to the sea (http://ec.europa.eu/fisheries/cfp/index_en.htm).

This obligation affects also Mediterranean fisheries, when catches are subject to minimum size rules. For that purpose the minimum landing sizes are converted to minimum conservation reference sizes, but they will remain largely the same, if there is no different provision established in the approved regional discard plans. Catches of under sized fish i.e. fish below the minimum conservation reference size as in the fisheries under the landing obligation, must be landed. This fish, once landed,

has to be treated in a way that permits a clear distinction with fish destined to direct human consumption. It can, however, be sold, as a general rule, but not for direct human consumption.

In any case, catches of prohibited species must be returned to the sea. There are also exemptions which also include the Mediterranean fisheries. Any exemptions, however, to these rules are based either on the *de minimis* principle or on high survivability (which should be defined in the relevant discard plan) or predator damaged and/or suspected of being contaminated by diseases. All those quantities although not under the landing obligation, must be documented in the vessel's logbook. Other exceptions hold for international or third countries waters when another, either international or national, legal framework is in force.

The control and traceability system adopted calls for the registration of all catches above 50 kg in the log-book and the landing declaration, broken down by species. They should also be registered in all documents as the transshipment declaration, the transport and take-over documents and the sales note, with specific information on fish under minimum conservation reference sizes when appropriate. The regulation dictate that even when the discards are allowed under exemptions (e.g. de minimis), they must be registered in the log-book.

Implementation of the landing obligation renders the ban of high – grading as futile. High grading has been a common practice in fisheries where quotas or catch composition rules existed, since fishermen preferred to fulfill their allowance for catching certain species by high grade, hence more expensive, fish and discarded the second grade. It is obvious that in fisheries where the landing obligations have not been enforced, a high grading ban is still applying, albeit, with the same exemptions conceded for the landing obligation.

In the same spirit, although increased fisheries productivity is an important goal, limits on the total amount of catches apply, in order to ensure that the reproductive capacity of fish populations is not adversely influenced. CFP for the period up to 2020, aims towards catch limits that guarantee the long term sustainability of fish stocks.

- *The EU system for fisheries controls – Relations with third parties*

In order to facilitate control procedures and traceability systems, when catches have to do with sensitive species or they account for large-volume landings, CFP rules set limitation to the number of ports where operators can land their catches. MS as well as third countries have identified certain ports and designated them for the landings of sensitive species and large volumes. The list of designated ports as well as the volume thresholds varies according to the fishery.

On the other hand, EU constitutes a major fishing power, the largest single market for fisheries products in the world and a globally net importer, hence an international player. The EU establishes autonomous tariff quotas (ATQs) for certain fish and fish products for a triennial period. An ATQ allows for certain product to be imported into the EU, at a defined quantity, enjoying a preferential reduced tariff rate – typically, 0%, 4% or 6%. On the other hand, more 25% of the fish caught by the European fishing fleet are taken outside EU waters. Furthermore, around 8 % of EU catches for the period 2004-06 were made under fishing agreements with third countries, while another $^{1}/_{5}$ is taken

on the high seas, in regions, mainly, where regional fisheries management organisations are established.

3.2.1.5 European Maritime and Fisheries Fund

The EMFF is the fund for the EU's maritime and fisheries policies for 2014-2020. It is the successor of the European fisheries fund (EFF) that operated in the period 2007-2013. The scope of the fund is to:

1. help fishermen in the transition to sustainable fishing
2. support coastal communities in diversifying their economies
3. finance projects that create new jobs and improve quality of life along European coasts
4. make it easier for applicants to access financing.

The EU Regulation 508/2014 of the European Parliament and the European Council on the European Maritime and Fisheries Fund defines financial measures of the Union for the implementation of:

a) the Common Fisheries Policy (CFP)
b) relevant measures relating to the Law of the Sea
c) the sustainable development of fishing and aquaculture areas and inland fisheries
d) the Integrated Maritime Policy (IMP).

The Fund is used to co-finance projects, along with national funding, while each country is allocated a share of the total Fund budget, based on the size of its fishing industry. Each country then draws up an operational programme, defining how it intends to spend the money. The EMFF has a budget of 5.8 billion Euros for 2014-2020. (http://ec.europa.eu/fisheries/cfp/emff_en)

3.2.1.6 Greece's Operational Programme

In October 2015 the European Commission has adopted the Greek Fisheries Operational Programme (OP) which covers the six "Union Priorities" defined in the EMFF. The almost 523.4 million Euros available for the period 2014-2020 include more than 388 million Euros of EU funds which represents 6.76 % of the total EMFF amount.

The main focus of the Greek OP is on the following priorities:

1. Promoting environmentally sustainable, resource efficient, innovative, competitive and knowledge based fisheries: 186.2 million Euros
2. Promoting environmentally sustainable, resource efficient, innovative, competitive and knowledge based aquaculture: 89.8 million Euros
3. Fostering the implementation of the Common Fisheries Policy: 92.1 million Euros
4. Increasing employment and territorial cohesion: 54.1 million Euros
5. Fostering marketing and processing: 78.3 million Euros
6. Implementing the Integrated Maritime Policy: 5.9 million Euros
7. Technical assistance: 17 million Euros.

The General Directorate for Sustainable Fisheries of the Greek Ministry of Agriculture and Food is responsible for the scientific assessment of fish stocks of the main commercial species. Its tasks include the data collection and the economic analysis of the sector. For this purpose, is assisted by two national research institutes, the Fisheries Research Institute (FRI) and the Hellenic Centre for Marine Research (HCMR), which bear the responsibility of implementing the national framework program for data collection and the collection of the relevant data. For fisheries control duties, the General Sustainable Fisheries is assisted by the competent services of the Greek Coast Guard.

- *Results of the previous programming period*

The OP covered the whole territory of Greece (the regions of Sterea Ellada and South Aegean were non-convergence regions while the rest of the country was a convergence region). EFF funds allocated to Greece for the period 2007-2013 amounted to 207.8 million Euros, of which, 76.8 million for the 11 convergence regions and 31 million for the two non-convergence regions, which represented the 4.83% of the total EFF allocation for the Union. By the end of 2014, 96.82% of the original EFF total amount had been committed and 63.72 % was certified (Com, 2015).

Overall, by the end of 2014 there were integrated into the program 1597 acts with public expenditure of 253 million Euros, which corresponds to the 92.3% of the public cost of the program. At the same time, from these acts 1255 were completed, while payments to beneficiaries amounted to 154.1 million Euros (56.22% of the public expenditure of the program).

Below, a summary of the applied Measures of the 2007-2013 operational programme is presented.

Priority Axis 1

In priority axis 1 were allocated the 36.5% of the total funding while the absorption rate of EFF contribution was at 91.56% at the end of 2014.

The measure 1.1 "Permanent cessation of fishing activities" refers to the permanent cessation of fishing activities or the dissolution of professional fishing vessels, or by changing their use (flying the flag of Member State and registered in the Community) for non-fishing activities or by changing their use in order to create artificial reefs. The permanent cessation of fishing activities took the form of national decommissioning schemes, with goal of the dissolution of 1700 fishing vessels by the end of the programming period. By the end of 2014 988 fishing vessels were dissolute, which led to a decrease of the fishing capacity of the Greek fleet by 8,873 GT and 48,933 KW. The measure 1.3 "Investments on fishing vessels and selectivity of fishing gear" includes actions aimed at safety on board, in working conditions, in improving the health and the quality of catches, in energy efficiency and the selectivity of fishing gear provided that it will not increase the ability of vessels to catch fish. By the end of 2014 there were completed 209 acts from 1800 that was the goal of the original plan and 300 new investment proposals were received in order to evaluate integrate and complete by the end of 2015.

Regarding the measures 1.2 (temporary cessation of fishing activities), 1.4 (small scale coastal fishing) and 1.5 (socio-economic compensation for fleet management) with a Ministerial Decision amended

the allocation of the public expenditure of the axles at measure level by zeroing the expenditure on them.

Priority Axis 2

In priority axis 2 were allocated the 23.9% of the total funding while the absorption rate of EFF contribution was at 73 % at the end of 2014.

The measure 2.1 "Aquaculture" includes actions for productive investments in aquaculture, the support for environmental measures and measures for public and animal health. The goal was that 210 businesses would undertake actions for the establishment, expansion or the modernization of their business and the total production would increase by 11,500 tonnes. It was also expected to contribute in the creation of 496 new permanent jobs. By the end of 2014 there were completed 15 investments for the 79 approved acts while 32 new plans were submitted to be evaluated in 2015.

The measure 2.2 was aiming at "development of inland fishing" to ensure the economic, social and environmental viability of these sensitive areas. Regarding the 1st action: “inland fishing vessels” for the modernisation of fishing vessels the potential beneficiaries presented very small interest with only 3 vessels to finally enter the scheme. Another 2 investments were taken under Action 2 'investments in plant construction of inland fishing" and Action 3 "investments for the extension, equipment and modernization of inland fishing facilities".

The measure 2.3 "Processing and Marketing" includes actions to improve the business position of the productive processing plants as well as of the marketing facilities. By the end of 2014 were completed the 8 from the 40 approved acts; while 29 more investment plans would be evaluated and approved in 2015.

Priority Axis 3

In priority axis 3 were allocated the 18.6% of the total funding while the absorption rate of EFF contribution was at 56 % at the end of 2014.

Under the measure 3.3 "Fishing ports, landing sites and shelters" there were included interventions to improve infrastructure in fishing ports, shelters and landing sites, have been approved 31 acts, of which 12 have been completed.

Under the measure 3.4 "Development of new markets and promotional campaigns" aiming at increasing the quality and the value of the products and the expansion of their market share 2 proposals were submitted and approved.

Under the measure 3.5 'Pilot projects', aiming at acquisition and dissemination of new technical expertise in the field of fisheries and aquaculture were approved 13 proposals from Universities and research institutes and 5 proposals from private businesses.

Priority Axis 4

Priority Axis 4 "Sustainable Development of Fisheries Areas", implemented through Measure 4.1 "Development of fisheries areas". For the implementation of the measure 11 Local Programs

"sustainable development of fishing areas' were approved to be implemented by the Local Action Groups. In priority axis 4 were allocated the 17% of the total funding while the absorption rate of EFF contribution was at 26 % at the end of 2014.

Priority axis 5

Priority Axis 5 "Technical Assistance" is intended to facilitate the implementation of the operational program with the best possible preparation of the measures and actions, the direct information of all stakeholders, beneficiaries and the public, through the implementation of communication and publicity actions, as well as the support of the functioning of the executive bodies of the OP 2007-2013. In priority axis 5 were allocated the 2.6% of the total funding while the absorption rate of EFF contribution was at 87.5 % at the end of 2014.

3.3 Market conditions – economic performance

3.3.1 Common Market organisation

The Common Organisation of the Markets (CMO) is the set of regulations and measures established in order to manage the market in fishery and aquaculture products. The CMO for fisheries and aquaculture holds producers as responsible for the sustainability of the natural resources they exploit, ensure fair rules for all products regardless of their origin and equip them with instruments that facilitate better marketing of their produce. On the other hand, through the CMO provisions consumers are better informed on the products sold on the EU market.

Five are the main areas covered by the scheme:

i. Producer organisations and other professional organisations are empowered and constitute key players in the sector also by extending their rule to non-members.
ii. Common marketing standards laying down uniform characteristics for fishery products sold in the EU, whatever their origin. They increase transparency as well as reinforcing the efforts towards long term sustainability.
iii. Rules on the consumer information regulating information provision in order to allow consumers and customers in general to make informed purchasing choices.
iv. The CMO must abide to EU competition rules. Any exceptions have to found on better functioning of the CFP and the achievement of EU objectives.
v. In order to contribute to market transparency and efficiency, a European Market Observatory for Fishery and Aquaculture Products has been established by the EC.

3.3.2 Economic sustainability of Greek fisheries

Scientific literature on economic performance of Greek fisheries is not that rich. However a fairly recent publication by Liontakis et al (2014) provided a lot of useful insights as well as a thorough review of previous existing work. Thus according to the authors, input oriented technical and scale efficiency are particularly interesting parameters to examine in the case of the Greek small-scale fleet. This is due to the fact that the existing EU policy scheme concerning fisheries management is mainly based on effort control measures, including limited entry plans (licensing), open and closed

areas and seasons, as well as minimum length of species harvested and mesh size of nets (Fousekis and Klonaris, 2003).

There are no limitations enforced on the volume that can be landed per day or year, like quotas. The limits at the activity are therefore represented by the environmental conditions, fishing effort and the situation in the market. The latter, oddly enough, doesn't seem to represent a constraint, since a constant imbalance between domestic demand for fresh fish and the corresponding supply is observed, resulting to price levels higher than the ones observed in other MS. Generalising this, the authors consider that Greek small – scale fisheries face this imbalance at a permanent bases, having its roots in cultural and socio economic factors which create high demand for seafood products, driving prices at constantly high levels, irrespective of the landing volume or the season.

Their study results suggest that small vessels, less than 6 meters length, using polyvalent fishing gear, are more technically efficient mainly due to their high level of flexibility. In the sense, that they can easily adjust their cost determinants according to the spatial or temporal differentiations of harvesting rates. This can be done by using alternative fishing gear or moving to a different fishing areas and species or simply by decreasing the level of the activity and ceasing operation on the days that the prospects are not good. Similar conclusions have been drawn by other authors like Fousekis and Klonaris (2003), working on Greek trammel netters. They also point out that a large crew size may reduce the operational flexibility of the skipper.

The limited volume of landings, a marketing strategy that focuses on direct sales, without the intervention of any intermediaries, on the first place shortens the supply chains, hens vertical leakages of added value but also encourages fishermen to rely on higher quality in order to build trust with buyers.

3.3.2.1 Processing

According to the 2013 report of the Fisheries Research Institute (Analysis of parameters concerning the fisheries sector) there were 2,184 full time jobs equivalent out of which significant part was female labour in the fish processing industry. These include 81 self-employed.

As one can see in Table 11, over 45,000 tonnes of fish was not directed towards the fresh market in 2011. The larger proportion (approximately 80%) of this was sold as frozen and the rest was processed otherwise (smoked and/or salted).

Table 11. Final produce sales per branch (2011)

Branch	*Quantity (t)*	*%*	*Value (euro)*	*%*
Frozen	36,116	78.6	209,340,704	78.0
Processed	9,364	20.5	57,022,446	21.3
Dehulling of Mussels	460	0.9	1,977,376	0.7
Total	**45,940**	**100.0**	**268,340,526**	**100.0**

Source: Fisheries Research Institute, 2013

An almost equally large proportion (77%) of the processed fisheries production was destined to the internal market while only about 20% found an outlet to other EU countries and a very small proportion to third countries (Table 12).

Table12. Sales per branch and destination (euro) (2011)

Branch	*Greece*		*EU*		*Third countries*	
Frozen	161,565,629	(77.1%)	44,564,231	(21.3%)	3,371,642	(1.6%)
Processed	44,333,875	(77.6%)	10,952,061	(19.2%)	1,729,968	(3.0%)
Dehulling of Mussels	1,977,376	(100.0%)	0	-	0	-

Source: Fisheries Research Institute, 2013

As far as the two specific species of interest in our case study i.e. Anchovy and sardine, according to the same study, the former in 2011 accounted for 6.12% of the total processed quantity (a reduction of 11.36 % to 2007) and 3% of the value, being the second fish in terms of importance. Sardine in 2011 was the 4th fish with 3.37% of the total processed quantity and 1.4% of value. It is worth noting that freezing is not important in either species as a processing method.

The data on processed fisheries products present a rather distorted picture due to the vast increase of the quantities of aquaculture sea bass processed.

3.3.3 Sustainable seafood and certification

Currently there is a Worldwide Fund for Nature (WWF) Fisheries Improvement Project for purse seiners in Kavala in development. It was initiated by WWF Greece in 2013 in collaboration with a retailer chain and a fisheries company, with the support of the local Fisheries research institute. The main objective of the global Fisheries Improvement Projects is to assist fleets in improving their sustainability and create networks with retailers and consumers interested in sustainable production. In general such projects should attempt that the fleets involved reach the level of certification according to the principles of MSC (Marine Stewardship Council) and receive certification. (http://www.wwf.gr/en/sustainable-economy/fisheries).

The Marine Stewardship Council (independent since 1999) was established in 1997 by a food processing company and WWF. Although, the MSC certification system is using environmental criteria limited to the fishing stage, its scope is broader than the species targeted since it also

encompasses the impacts of by-catch as well as the general marine ecosystem health. Finally, the MSC label encompasses transparent procedures for third-party certification, accreditation of certification organsiations and stakeholder involvement. In 2016 there were 238 certified fleets all over the world (but none in the Mediterranean).

This is the first such program in Greece and in the Mediterranean that aims at achieving sustainability for the purse seiners of Kavala targeting at sardine and anchovy.

3.3.4 Community supported fishing programmes

During 2016 Greenpeace Greece launched a Community Supported Fishing project, called “Ena kouti thalassa”, (A box of sea). This pilot direct marketing project that lasted for three months, called for consumers to support low intensity inshore fishermen. The format of the project was that interested consumers could get in contact with fishermen selected by the organization based on social and environmental criteria e.g. the low intensity of their fishing practices and the size and location of their activity. Consumers could either support the project or even receive a 2 kg box of fresh fish at their door coming from inshore vessels based at Lesvos and Leros (both islands at the eastern part of the Aegean Sea, both receiving increased numbers of refugees).

3.4 Key issues identified in the literature, media and interviews

3.4.1 Conditions

3.4.1.1 Issues internal to the sea food sector

As far as the problems faced by firms operating within the sector, originating from internal factors, two have been mentioned. An important issue identified has been that of the difficulty of skilled/ expert personnel recruitment, due to seasonality of the operations and the harsh working conditions. That applies both for fishing and the sea food processing industry. The second has to do with considerable increases in production and functional costs mainly due to raises in the cost for energy and communications. The uneven fluctuations of fuel final prices are considered of particular importance, since they have been aggravated by energy tax increases, especially during the last years. These are especially important for the processing industry, since it results to a high increase of transportation costs.

One should stress that one of the problems reported is the pressure exerted to the fishing resources by excessive, illegal, unreported and unregulated fishing. They are reported to result to a critical reduction of certain species stock and the depletion of the common resource.

3.4.1.2 External issues

Concerning the external financial environment, the source of the problems seems to be the financial crisis. Thus a lack of cash liquidity is reported for almost the totality of the firms resulting to difficulties in paying for purchase of production inputs, primary produce as inputs as well as other liabilities. The difficulties in the provision of inputs from both national and foreign sources due to liquidity shortages are aggravated by the lack of credit. More specifically, and in reference to the

banking system, a very frequent phenomenon encountered by firms is banks' refusal for new loans, both short term and long term (investment). This reluctance for credit provision, affects also international trade of the sector, since banks refuse to issue letters of credit, which are indispensable for these purposes.

Furthermore, two issues that have to do with consumption patterns seem to have played an important role for the seafood industry. The first is that differences in regional consumption patterns have been observed resulting to differences in regional demand, but more important seems to be the fact that there is a considerable reduction in the consumption of fresh and processed seafood, hence of the relevant demand in the internal market, due to a sharp decrease of available household income, this in turn being the result of the financial crisis and the austerity measures.

3.4.1.3 Processing industry specific issues

There is a series of issues reported concerning the production process within the sea food processing industry. These had to do with the increase of in primary input cost and at the same time the decline of the quality of the inputs available to purchase. On the other hand, concerning the distribution of their produce one of the main problems reported was the increased delays and difficulties in payments by clients as well as the increase of doubtful liabilities, due to the lack of liquidity and reluctance of the banking institutions to provide credit. It is obvious that the capital controls imposed in the summer of 2015, did very little to improve the situation. Furthermore the structure of the market, high degree of power imbalance within the value chain, seems to create constantly frictions. An issue, which seems to be of particular importance for small processing businesses is that of market access and hence increased difficulties in distribution. Staying within in the distribution and value chain issues, it seems that an increased level of competition within the fish processing industry, results to a lesser profit margins for firms operating in this market. One should add to this the increased price competition by imported smoked and conserved products that could aggravate the situation. Finally, concerning consumption, it seems that changes in consumption patterns, either due to health claims or income level fluctuation, influence demand for processed products e.g. salted and cured fish.

3.4.1.4 Institutional issues

In addition to these issues raised above, an unfavourable institutional environment including social security, tax services, the Ministry of Rural Development and Food (the competent authority for fisheries) as well as the banking institutions has been reported as an important problem. An example, given has been the increased bureaucratic burden in order to get the necessary permits before being able to even start an investment.

3.4.2 Strategies

A series of proposals have been reported concerning some of the issues raised before.

3.4.2.1 Financial

As far as the *financial problems* caused by the shortage of cash liquidity and, at the same time, the reluctance of the banking system to provide credit badly needed by the firms, in order to fulfill their

obligations and access export markets the first proposal has been to exert pressure to banks in order to withdraw their general refusal to provide credit with a more flexible policy depending on a assessment of the competency and solvency of individual applicant firms. In the same line, that of having a system discriminating between applicants based on their fundamentals and prospects, in order to facilitate negotiations and achieve better terms for credit, convert short term loans to long term ones. This shall also allow firms both to pay their providers but also speed up payments to firms by their clients.

3.4.2.2 Management improvement strategies

The first type of suggestions have to do with the increase of the investment by shareholders and the re investment of profits in the business. The second type has to do with the qualitative characteristics of the investments suggested. In fact, the overall spirit of the proposals was that a new business "culture" should be created in the specific sector aiming at innovation, creativity and a shift to extrovert strategies. This could take the form of commissioning studies for new markets, promotion of novel products including the promotion of origin as a quality element. Within the production process, the suggestions include the implementation of novel technologies in order to reduce turn over time as well as costs and on the other hand improve competitiveness by extending shelf life etc. The abandonment of obsolete production lines and the introduction and promotion of improved novel products is another element of such a strategy. Finally, the other need that was reported as crucial is that of improving in human resources, through both hiring skilled labour and by investment on in service training.

3.4.2.3 Co-operation

The third set of proposals regarding strategies that could be adopted by the firms of the fisheries sector had to do with collaborative solutions in order to increase their resilience against the pressures described above. These included mainly co-operation among businesses both horizontal for input purchase and vertical for promotion and marketing. There are even suggestions arguing for horizontal mergers in order to be able to perform adequately in the fiercely competitive international market, since economies of scale could be achieved in both input purchase as well as in functional costs. The creation of business clusters was suggested as far as the vertical co-operation is concerned. Apart from the gains in efficiency and competitiveness, collaborative solutions are considered as empowering the sector stakeholders in order to claim national and EU support and assistance.

3.4.2.4 Institutional

Finally, the suggestions included public support from national and/or EU funds in the form of subventions and/or subsidized credit. However, the need that was stressed concerning policy measures was that in order to achieve long term sustainability of the fisheries sector, these measures should focus on competitive enterprises. Another element that was thought as important was that this financial, mainly, support should be accompanied with both institutional changes which could decrease the administrative burden and with tax relief measures.

3.4.3 SWOT analysis

Strengths	**Weaknesses**
• Long tradition of fisheries • Highly appraised quality of Greek seafood in the internal market • High price levels	• Lack of skilled labour • Market structure unfavourable for fishermen. • High functional costs • Dire financing • Seasonality, dependence on weather conditions • Competition by IUU fishing (illegal, unreported and unregulated)
Opportunities	**Threats**
• Global trend for healthy diet • Synergies with tourism • Policy shifts on marine environment conservation	• Severe reductions of household incomes • Fierce international competition • Aquaculture

3.5 Insights from the focus groups and participatory workshop

This part of the reports deals with the findings of the two focus groups and one participatory workshop that were conducted as part of task 2.3, which complements and builds on the findings of task 2.2.

Two focus groups with fishers were held in the beginning of March of 2017 in order to get an insight from the perspective of fishers into the key issues of the sector. The first focus group was carried out in March 2nd and lasted longer than 2 hours. In order to organize the meeting, contacts were made with one purse seine fisher who undertook the responsibility to notify the rest of the purse seine fishers to participate. Eventually, 4 purse seine fishers participated and the meeting took place in the city of Kavala. All fishers are operating in the area of Kavala, while one of them in the recent years has transferred his business and family to Kavala from an Aegean Island.

The second focus group which was held in the next day, 6 coastal fishers participated and the discussion lasted also more than 2 hours. The arrangements for the meeting were made by the staff of Fisheries Research Institute of Kavala and it was held in the port of Nea Iraklitsa coastal village, where all participants keep their vessels. All participants were male while their ages were between 27 - 70 years and their vessels length varied between 4.20 – 9.00 meters.

In both focus groups the guidelines document provided by the WP2 leader document were followed. The topics discussed were based on the findings of the previous stages of the research, as formulated, by the research team, in a potential topics list.

All focus group participants were asked for and provided with their permission to digitally record the discussions.

Although the initial plan was for the workshop to be conducted in May, it was, eventually, decided to postpone it. The reason was that the SUFISA ream was offered the opportunity to participate as observer in the regular meeting of the Kavala Joint Committee for Small Pelagic fish. This Joint committee and the meetings constitute part of Marine Stewardship Council (MSC) certification process for the purse seine fleet of Kavala (see 3.3.3). In this particular workshop, the participants comprised of WWF Greece, a retailer chain, a fisheries dealer, the local Fisheries research institute, and also stakeholders representing the Directorate-General for Fisheries, the Coast Guard, the Hellenic Center for Marine Research, the Management Authority for the Fisheries Operational Program, the Department of Fisheries of Kavala (part of the regional administration), the local fish auction house and fish merchants in the region. The role of the Committee is thought as of paramount importance for the participation of those involved in the management and improvement of the sustainability of the fleet.

The SUFISA participatory workshop was, thus, conducted on June the 12th , 2017 in Kavala, with the purpose to validate the information gathered from the two focus groups and to get a better insight on the conditions and the decision making process of fishers. The participants of the workshop consisted people representing: the Department of Fisheries of Kavala (part of the regional administration), the Banking Sector, an environmental NGO, the Hellenic Center for Marine Research, the (research) Institute of Agricultural Economics and Sociology and the Fish auction house. Additionally, a purse seine fisher turned up later in the workshop. Representatives of the Fisheries Research Institute, the Directorate-General for Fisheries, Management Authority for the Fisheries Operational Program as well fish merchants in the region although invited, did not attend the meeting.

The workshop was divided in two stages:

- In the first stage, there was a presentation by a member of the research team about the conditions and strategies of the fishers based on the information obtained from the two focus groups. The findings presented, distinguished between conditions for and strategies of purse seine fishers on the one hand and coastal fishers on the other. Participants were asked to validate, add or simply comment on those conditions and strategies presented to them by the team.
- Participants were shown a figure that depicts institutional arrangements formulating the horizontal cooperation and vertical coordination among the various links in the value chain. They were then asked to indicate what should be done in the sector in order to become more sustainable. Their suggestions should be written on stickers and these stickers should

be placed, on the point of the figure where they thought it was more appropriate. Their suggestions were grouped by the facilitator and the promoters of the different proposals were asked to explain their choice and validate the grouping.

The workshop lasted almost 3 hours and their permission was asked to digitally record the conversation.

3.5.1 Institutional framework – policy adaptation

3.5.1.1 Policy design and formulation

One of the main issues that emerged from the discussions with stakeholders in the focus groups and the workshop was that of decision making processes when the various policy measures implemented locally are concerned. Focus groups participants insisted on the prevalence of the EU Common Fisheries Policy (CFP), as the main policy driver. According to purse seine fishermen, the design of this important policy was based on (and targeted to) the fisheries in the Northern countries of Europe. According to the same stakeholders, the particularities of the Mediterranean Sea have never been even taken into consideration in policy making. The stakeholders of the 1st focus group strongly argued that it is not rational to apply the same rules on the large and extended fishing areas of the Atlantic or the Baltic Sea and the very limited fishing areas of the Aegean Sea.

Experts participating in the workshop, however, broaden the perspective in terms of examining fisheries policy in Greece. They argue that it consists of a broader legislative framework including the CFP, the Mediterranean Regulation (1967/2006 of 21 December 2006 concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea) and National legislation. Moreover, according to the same experts, as a starting point they consider the National law before the implementation of the CFP. In order to corroborate their argument, they mentioned the Mediterranean Regulation, which provides the general guidelines for the Mediterranean Sea. There it is stated that if there is a conflict between the Mediterranean Regulation and the National law, the strictest one is implemented. More than that, they insisted on the need for modifications of the national legislation and consequently interventions on CFP in order to fit better to the Greek fisheries.

Experts participating in the workshop corroborated the views expressed by focus groups participants, that fisheries policy making process largely ignore that situation in the Mediterranean by stressing the fact that aspects of the fisheries policy applied in Greece, such as the obligation for operating in certain distance from the shore, may create confusion to fishers. They also stood very critical to the notion that there has been no attempt for an adaptation of the Common Fisheries Policy to the specific circumstances of the eastern Mediterranean (see 3.5.1.2).

On the other hand, the environmental NGO representative in the workshop raised also concerns on the national/regional decision making process. The way specific national or regional rules are decided, resulted to inflexible measures. An example provided during the workshop, was the issue that the management plan for purse seines considered the entire stock of Mediterranean anchovies

as one entity, calling for uniform management rules and practices. On the contrary, some of the participants considered that more flexible measures should be proposed allowing some room for local temporal and spatial adaptations, according to the specificities and needs of each area. According to the same participants, this idea of flexibility and adaptability is something not taken under consideration so far. As an expert in marine biology expressed it:

> "*As biologists we can evaluate - and that's where our work ends - the base, the fish. When genetics tell me that all the anchovy of the Aegean is the same stock, I'm bound, as a biologist, to see it as one stock. If I take off my biologist hat and put on that of the ichthyologist –fisheries manager, then I can see the variations on the same stock at different locations. Because that affects the way it is fished. For example, the way they fish in Kavala is different from the way they fish in Thessaloniki. It is the composition of the catch, there are environmental factors; there are many things*." (Marine expert, workshop)

At this point of discussion there was another issue raised in the workshop. Experts expressed their doubts that legislative framework has been always the product of scientific evidence. They claim that lobbying by individuals or by interest groups plays an important, if not decisive, role in policy making. Workshop experts however insisted that it is essential for the legitimacy and ultimate success of the legislation to be the result of scientific evidence.

Another relevant issue raised during the workshop, was the need for participatory procedures in the design of specific management plans and policy making at the different levels. According to workshop stakeholders, this lack of consultation breaches the existing institutional framework which foresees active participation of various stakeholders related to fisheries at various levels. The fisheries councils and regional fisheries councils, although established under this framework, have never been activated in order to determine the fishing rules.

Last but not least in the general debate on policy making, an important point raised in the workshop. It was suggested and argued that there have always been a set of informal rules, useful for the co-ordination of actions among the different actors in the area. The formalization of these rules, in the form of adoption by the existing administrative structure and their consequent standardization resulted to a rather poor performance in terms of compliance by fishers and its effects were on the opposite direction than the one sought by policy makers and the authorities.

3.5.1.2 Regulatory framework

- *Landing obligations*

Under the landing obligation all catches have to be kept on board, landed and counted against existing quotas while small fish cannot be marketed for human consumption purposes (See 3.2.1.4). Greece has 3 more years to gradually introduce the landing obligations. Workshop experts believe that purse seines' fisheries are not going to experience pressures or serious difficulties since it is considered to be a 'clean' fishing tool. They target very specific species such as anchovies and sardines; hence there are very low discards. Stakeholders from the 1st focus group consider that in

each catch, non commercial fish account for less than 1% of the total catch, much less than the limit of 5% mentioned in the CFP.

For inshore fisheries, on the other hand, landing obligations will gradually start being enforced for specific species and for specific tools. The usual practice for inshore fishers is to return back by-catches in the sea. They estimate that the quantity is insignificant. None of inshore fishers interviewed or participants in the 2nd focus group consider this issue of major importance, although, in principle, this measure should be of their concern. This is attributed by the workshop experts to the fact that most of inshore fisheries do not register their catches since they sell directly, without passing through the official fish market i.e. the fish auction house.

- *Spatial restrictions*

According to the Mediterranean Regulation (1697/2006), it is prohibited to use purse seines within 300 meters of the coast or at a shorter distance from the coast, where the isobath of 50 meters is met before the 300 meters. For inshore fisheries, there aren't any prohibitions regarding depth or the distance from the shore. These restrictions are one example of prohibition under the Mediterranean EU regulation that is stricter than the national one. The latter, dated in 1953, imposed an obligation to fish in areas beyond 100 meters from the coast and depths greater 30 meters isobaths. Fishers argue that the currently existing, stricter prohibition may apply to other European Mediterranean countries with much deeper waters but certainly not in the Aegean Sea where fishing fields are quite limited.

According to a stakeholder from the 1st focus group who originates from an Aegean island, it was because of this particular tightening of the prohibition that he had to move from his island to Kavala. He insisted that it is not easy for a purse seine to fish further than 100 meters from the coast in the islands, due to the strong winds blowing in the Aegean Sea. This argument was further supported by the other purse seine fishers, who stated that even with a wind rated only 3 in the Beaufort scale (a gentle breeze of 12-19 km/h) it is impossible for them to operate.

Additionally, the Mediterranean Regulation prohibits the purse seines to be used in depths less than 70% of their overall drop. As a participant in the 1st focus group mentioned:

> "*Some years ago, they issued an inapplicable law that the net should be 70% of the drop of the purse seine that you use. This is not possible in Greece, where I have a very small field. From here [Kavala} to Thasos the field changes 10 times.*" (Fisher, 1st focus group)

While another participant added:

> "I*n order to work according to the law which says 70% of the depth of the sea, I have to build a vessel of 30 meters and put on it 4 different nets, to be legitimate every time. I have a vessel of 20 meters and can fit only one net*." (Fisher, 1st focus group)

Their overall argument was that purse seine in fact does not harm or does a minimal harm to the seabed since it is not crawling the bottom of the sea.

- *Seasonal –temporal arrangements*

A third set of rules concerning fishing is that of temporal and seasonal arrangements. Since 1993 there is national legislation imposing seasonal restrictions to vessels with licenses to use purse seines aiming at the protection of fish stocks. More specifically, it is forbidden for purse seines with night license to fish during a 2 ½ months period, extending from the 15th of December up to the end of February. In addition to that, there is another time restriction for night purse seines: they are not allowed to fish two nights before and two nights after full moon. A critical point raised in the workshop, concerning temporal fishing arrangements and rules imposed, is that although these management plans for purse seines favor the sardine stock, since it coincides with its breeding season, is, in fact useless for the anchovy. Anchovy reproduces during the summer when purse seines are legally allowed to fish anchovy even bearing with eggs. Again, in this case, coastal fisheries do not face any such restrictions.

But the most important criticism has been that this restriction does not apply to international waters, rendering the whole exercise as rather futile. As a workshop expert argued, prohibitions should have been stricter and during the fish breeding season nobody should be allowed to fish either in national or international waters. After all, the fish they catch during these seasons, have reached a smaller than the permitted size anyway. All workshop participants expressed their concerns for this contradictory approach and its serious implications for the fish stocks. This discussion raised another issue, that of international waters.

- *Recreational fishing*

If Turkish counterparts constitute a competing force, purse seine fishers are facing, inshore fishing in Greece faces another, internal, competitor. That is another category of fishers supposedly amateurs, classified as recreational. This category of fisheries also used to be regulated in Greece mainly because, in almost all cases, recreational fishers were also selling their catch. Until 2 years before amateur/recreational fishers were obliged to have a personal license to fish as well as a separate license for their fishing boat. Furthermore, they were restrictions imposed on gear types, specifications and even maximum daily allowed catches. However, according to local officials, two years ago port authorities, the competent administrative department, ceased granting licenses for recreational fishing. As a result, since then, recreational fishing is deregulated hence anyone can fish, rendering impossible any estimation of the number of fishers, days of operation or any information on vessels any more. Thus the fishing effort, an indicator that was proven to be very efficient for fish stock management has been impossible to be estimated.

Inshore fishers participating on the 2nd focus group, consider recreational fishers as competitors. They argue that they fish at the same sites and they are after the same species. Inshore fishers claim that in order to play on a level field, no professional gear, such as nets and long-lines, should be allowed to be used for recreational fishing. They mentioned, as an indicative example that although there is a specific legal provision for recreational fishers to use 150 hooks in a long line, they are using 1000 or more hooks. More over they are allowed to sell their catch without any control. The

complaints of inshore fishers expressed in the respective focus group, were corroborated in the workshop:

> "*Regarding uncontrolled recreational fishing,… yes, it exists and even more so as the years pass and we move deeper into [economic] crisis. The sea is freely accessible; everyone can fish for themselves and sell, 100% illegally, to others. Nevertheless, recreational fishing has a limited but quit clear legislative framework where you can fish with specific gear, specific quantities and only (100%) for personal use*." (Marine expert, workshop)

They conclude thus, that since inshore fishers sell their fish to the local market and not through the fish market (as they are obliged to do) they consider recreational fishing as an unfair competition. And as another workshop participant added:

> "*Recreational fishers have better gear and they can even fish dentex (*Dentex dentex*) and other high quality and expensive fish much easier than professionals"* (Regional fisheries office representative, workshop)

- *The issue of international waters*

The issue of international waters is a particularity of fisheries which in the case of the Aegean and the purse seines' vessels is becoming more complicated because there is a long standing disagreement between the two countries surrounding the Archipelago of the Aegean i.e. Turkey and Greece. In the case of Northern Greece, fishing in international waters emerged as a way for purse seines boats to work on the days prohibited by the national law.

According to stakeholders there have been informal arrangements respected by everyone, long before the EU imposed and national legislative initiatives. The example of the informal rule of no fishing 2 days before and 2 days after the full moon is quite indicative in that sense. This informal rule was respected by fishers in the area, since it was imposed by necessity: fishing like that when there is light is not efficient. But after its establishment as a state law, there was an unexpected outcome. All purse seines started fishing in the international waters on no-fishing days. As a workshop participant stated:

> "*The national law states that 2 days before and 2 days after the full moon, the purse seines are not allowed to fish. This was an unwritten law among them, and it was willingly applied by all, and no one violated it. Once the state law was passed, for the 2 days before and the 2 days after, they asked to go to the international waters where it is not applicable. That is, an unwritten law that everyone applied, as soon as it became a law of the state, they violated it and they did whatever they wished*" (Regional fisheries office representative, workshop)

Currently and for the last 5 years, purse seines in Kavala are requesting permissions by the regional authorities to fish in the international waters, right after the regional authorities of the nearby

regional unit of Evros, permitted the Alexandroupoli fleet of purse seines to fish in international waters.

The issue of international waters has become more complicated since Greece has not adopted the Exclusive Economic Zone and the territorial waters are limited to 6 miles, due to neighboring Turkey. Turkey hasn't signed the International Convention on the Law of the Sea (UNCLOS) which gives the right to signing members to expand their territorial sea to 12 miles[2]. It has also been stated that any Greek attempt for an expansion of the territorial waters to 12 miles, was going to be considered, literally, as a "casus belli". The whole, rather complicated, situation was also mentioned as a inhibiting factor by stakeholders in the workshop. They consider that the possibility to impose fishing restrictions beyond the 6 miles limit, lies rather within the competencies of the Ministry of Foreign Affairs as a matter of bilateral relationships between Greece and Turkey.

Fishers from the 1st focus group consider that the permission to fish in the international waters was given to them for political reasons that are in order not to allow the Turkish fishing fleet to exploit the Aegean Sea alone. They argue that purse seine boat owners, besides fishing, they also provide services to the Greek Coast Guard, covering for its lack of adequate means to guard the sea during the night.

In order to make things even more complex, the unregulated overexploitation of the Black Sea fish stocks caused a total collapse of the stocks. Consequently, the main bulk of the Turkish fishing fleet, previously active in the Black Sea, moved and started operating in the Aegean. Hence, the exclusivity Greek fishing boats have been enjoying all those years before was vanished. The number and the size of the boats operating in the area has changed, hence the existing balance has been seriously disturbed, since a powerful competitor appeared.

The current situation in the North-northeastern Aegean Sea has been described by the focus group members as a "de facto" co-exploitation mainly with the Turkish fleet. During, the 1st focus group it was stated that in the East Aegean Sea they are fishing together with 30 to 35 Turkish ships of 40 to 60 meters long, much bigger than theirs. At the same time, the Turkish fleet does not face any restrictions of the type they (the Greeks) have to face.

The situation was described in a somewhat different way by the workshop stakeholders. They corroborated the fact that Turkish ships are bigger and better equipped, hence they can fish larger quantities. That has the consequence to make Greek fishers feel disadvantaged for their smaller boats. Nevertheless, workshop experts insist that the Turkish fleet does follow rules albeit they are different than those of the EU and Greece. They mentioned, as indicative examples, the different size of the net's eye imposed or that they also face seasonal operating restrictions in order to protect the fishing stock during the breeding period, only they are different. Moreover, according to workshop

[2] 168 states have ratified the UN convention and 86 (including Greece) have also signed the consequent 1995 Agreement for the implementation of the provisions of the Convention of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks.

participants, the fact that the Turkish fleet stops earlier, i.e. in April, could be considered, from a biological point of view, as more beneficial for the reproduction of the fish stock.

3.5.1.3 Incentive based policy measures

Stakeholders participating in the focus groups, raised complains for the lack of subsidies available for the sector. This was strongly refuted by workshop experts. It was highlighted that, on the contrary, the local fisheries sector has greatly benefited from numerous subsidies offered combining national and European funding. As a workshop expert stressed, in the 1980s and '90s more than half of the vessels of the Kavala fleet were modernized or improved (better and/or bigger vessels, gear etc.). It is indicative that during that period many fishers with large inshore vessels targeting sardines, had the opportunity, through the incentives provided by a national investment law (1982) to built new and larger purse seine vessels.

Workshop stakeholders suggest that fishers lack interest to use the specific subsidies made available to them. Their reluctance to seize the opportunity is not attributed to inertia or lack of information on the availability of subsidies. They also argue that the investments fishers are willing to perform instead, in order to modernize their vessels, collide against certain existing legal limitations. According to workshop experts this is the main obstacle, especially for the subsidy offered for engine replacement. More specifically, in the case of inshore vessels the upper limit for the engine is 15 Hp, for purse seines it is 300 Hp while for trawlers it raises to 500 Hp. If the owner of a vessel was to replace the engine through this subsidy, the horsepower of the new engine could exceed neither the horsepower of the engine to be replaced nor the upper limits set.

Fishers in the focus groups argued that they can make no use of this particular subsidy since the size, in terms of horsepower, of the engine, they are allowed to buy, is much smaller than their actual needs. As a purse seine fisher in the 1st focus group said:

> "In order to *be entitled to the subsidy for engine replacement [the law] says to put 20% less horsepower. What we are saying is to put bigger [engines], to be on the safe side. To be able to come back ashore, in the case of a storm; to be able to work better; to be able to go to the port faster.*" (Fisher, 1st focus group)

According to the workshop experts, though, the real problem lies on the fact that most of the engines registered (fulfilling another legal obligation) in the Common Fleet Registry (CFR) do not correspond to actual engine sizes. CFR, the European Unions' registry of the fishing fleet, contains all the data concerning the characteristics and the activities of fishing vessels, classified by type of fishing gear. The competent authority for the registration is the local port authority. The stakeholders in the 2nd focus group stated that most inshore vessels have bigger engines than those registered in the CFR. As an inshore fisher said during the 2nd focus group:

> "*They said that in a vessel of 9 meters, you will put an engine of 15 Hp. But with only 15 Hp you will definitely drawn. We said we can't do that, we want an engine of 100 Hp, to be able to go to work. And they did a trick that we will declare 15 Hp but…, for example my engine*

> *says that in 950 rpm gives 15 Hp. I have to work at 950 rpm, although my engine is 130 Hp*." (Fisher, 2nd focus group)

Additionally, inshore fishers from the 2nd focus group argued that everybody involved in the process is very well aware of the manipulation of the law. As the same fisher quoted:

> "*They know it. The [selling] company gives you a paper which says that at 900 rpm it gives 15 horses (Hp). Then the port authority, the controller, puts a stamp that indeed it is so, and leaves for work. But the horsepower of the engine is 100*" (Fisher, 2nd focus group)

On the contrary nowadays, as a workshop expert stated, this practice no longer exists since now responsible authorities have the means to find out by themselves the actual characteristics of the new engine. As local representative in the workshop stated:

> "*We find the brochures, we enter the internet and we see the type of the engine and it is not true that I reduce the engine speed and have less efficiency, but we also want a certificate from the company that produces the engine*." (Regional fisheries office representative, workshop)

This issue creates multiple problems to fishers since they cannot replace their outdated engine with a new one by using the financial support of the program. So they repair their old engines in order not to lose from the existing horsepower.

In addition to that, the other related issue fishers face, is the impossibility to take full advantage of the provision of the law to use transit fuels in their vessels since they can buy transit fuel only for the registered engine power.

The same inconsistency between stated and existing engine potential also creates problems to the fishing authorities and the institutes responsible for the data collection and estimation of the fleet capacity, fishing efforts etc.

However, according to inshore fishers, the main issue for them is the need to contribute to the investment with their own funds. Fishers on the 2nd focus group argued, that there is no fisher able to sustain such an investment with own contribution, especially now that they are deep in the economic crisis.

3.5.1.4 Short deadlines

Another issue raised by fishers in the 1st focus group is that most of the times deadlines for a program is to close to the announcement of the programme; thus it does not provide them enough time to raise the capital required for the investment. As a stakeholder in the 1st focus group exposed his experience:

> "*Programs usually come out late and are announced late. When a program comes out, to subsidize a new net that costs 60 and 80 thousand Euros and you have to make the order today and within one month the deadline is over, I cannot raise 60 thousand Euros in a month*

to get him paid, to get nets. I have made 3 times a grant application and I have not gotten anything" (Fisher, 1st focus group)

The statement of the regional fisheries office representative is indicative of the situation that although the Operational Programme for Greece for Fisheries should have started since 2014, yet still hasn't started and raised the concern was raised that it will start again when the programme expires.

3.5.1.5 Permanent cessation of fishing activities

Permanent cessation of fishing activities is a measure to reduce the fishing effort. According to workshop experts, the programme was not successful in the area and it didn't reach the desirable results, since most of the vessels that entered the scheme were inshore fisheries and not trawlers or purse seines. As the representative of the local fisheries office pointed in the workshop, it requires 50 inshore vessels to reach the fishing effort of a trawler.

It was mentioned in the workshop that most of the vessels withdrawn were of aged inshore fishermen which most of the times did not fish anymore. On the contrary, it was stated in the workshop, that the decision to dismantle a bigger vessel was not easy to make especially since the money offered was not enough. The representative of the local fisheries office quoted to the workshop:

"*The big ones are not so easy to scrap. They may have applied for the [subsidy] but on the eve of their approval they would say 'I will keep it'. They considered that the money they were getting to scrap their vessel was not enough. It was not of their interest and even though they did the application, when the time came they said "you give just 200,000€? Only my license costs half a million …*" (Regional fisheries office representative, workshop)

3.5.2 Environmental issues

3.5.2.1 Overfishing- rational exploitation of fish stocks

While workshop participants estimate that most of the fish stocks are overexploited, purse seine fishers participating in the 1st focus group, from their part, claimed that there is no issue of overfishing in anchovies and sardines. They insisted that these fish are abundant in the area and they wanted they could catch twice as much fish.

Nevertheless, workshop experts argue that even if purse seines may not have an issue regarding the quantity of fish stocks at this point but indirectly, they have issue since it is changing the composition of the stock. As an expert clarified in the workshop:

"*There are of three types of overfishing. There is quantity over-fishing; there is size over-fishing and over-fishing of the reproductive potential. We are talking about three different things. If I get 2 tons and its 15 centimetres [long] and [then] I get 2 tons and its 12 centimetres, it's a different thing.*" (Marine expert, workshop)

Participants in the workshop claimed that purse seine fishers presented no interest to the fact that the fish they were fishing were undersized and only when the price reached a threshold they stopped excessive fishing.

However, inshore fishers do not share the view of the purse seines fishers and they are deeply concerned with the low availability of fish. They argue that until 2012 they had no problem with the fish availability but ever since the reduction of the fish stocks have become their most urgent issue. The explanation they provided in the focus group for the scarcity of certain fish, such as sand seabreams, gray mullets and steenbrasses is due to the abundance of dolphins and due to illegal fishing by recreational fishers and purse seines and trawlers.

On the other hand, some workshop participants were reluctant to point the finger to a particular fishing category but rather support the opinion that each fishing category has a share of responsibility for the reduction in the fish stocks. As an expert pointed out in the workshop:

> "*On environmental issues, on stocks reduction, I do not know what you were told, [inshore fishers] those who always accuse, are the trawlers. Obviously, everyone in the sea has its own share of responsibility. And surely the bottom trawler is an active gear. However, there are stocks that are exploited by the inshore fishers, which no one else exploits.*" (Marine expert, workshop)

Other experts though in the workshop, have completely opposite views as to who is responsible for the overfishing clearly indicating inshore fishers along with recreational fishers as responsible for the scarcity of even disappearance of these particular stocks. An example indicative of the situation was provided in the workshop by a local participant:

> "*In the southern region of Thassos, where there were seaweeds, now is full of sea urchins from overfishing. All the fish that eat the sea urchins are gone, the seaweeds are gone, and the fishes left are with small teeth that do not eat the sea urchins. We do not have the quality fish, the big fish you had to fish in a special way*." (Regional fisheries office representative, workshop)

3.5.2.2 Control mechanisms

There was a broad agreement among workshop stakeholders that control mechanisms are at least inadequate. Responsible for this task are the Directorate of Fisheries Control of the Hellenic Coast Guard as well as the Fisheries Department of the Directorate of Agricultural Economy and Veterinary of the respectively Regional Unit. Understaffing or responsible authorities is considered to be main reason for the insufficient controls carried out at the sea and at the fish auction. At this point the Fisheries Department of the Directorate of Agricultural Economy and Veterinary of Kavalas' Regional Unit is staffed with only one person in charge with all bureaucratic burden and controls.

In the focus group held with inshore fishers, they made some quite serious accusation for illegal practices applied by purse seines and trawlers as well as recreational fishers in the absence of the

port authorities. As they report, port authorities patrol in the sea once in a month while larger vessels through cell phone communication have the ability to sail in the open sea and avoid penalties for their illegal practices.

Inshore fishers in the focus group claimed that while purse seines in each catch up to 5% they are allowed to have other fish, some of the purse seines are not fishing sardines and anchovies at all but instead they are after fish mainly caught by inshore fishers. Inshore fishers claim that those purse seines usual practice is to leave the lamps open to appear that they are fishing while they turn off the radar and fish other fish elsewhere. Another illegal practice by purse seines revealed in the focus group of inshore fishers is of the use the purse seine gear as a trawler to catch sea beams and other groundfish as a 2nd focus group fisher quoted:

> "*They make a net of 80 meters high in 12 meters of water [depth], so it becomes a towed gear where the fish they give birth to. While it is allowed the nets to be the 70% of the height in relation to the [depth of the] water they fish in 10 meters water with 100 meters net height. They are not allowed, but...*" (Fisher, 2nd focus group)

On the other hand, workshop participants consider that although inspections cannot be considered as enough, those performed, mainly target purse seines and trawlers and not inshore fisheries. An explanation given in the workshop is the fact that most of the checks are carried out by the authorities in the fish auction premises whereas inshore fisheries main marketable fish are tuna and swordfish requiring special license due to quota.

Participants in the workshop mentioned that many fish channeled through the fish auction are undersized or products of illegal fishing since controls are not regular as they ought to be. As inshore fishers argued in the 2nd focus group, fish auction didn't start without the presence of port authority but that is not the case anymore. Nevertheless, workshop experts stipulate for more and better controls which is a requisite in order to reduce illegal practices by all fishers.

3.5.2.3 The issue with dolphins

A serious issue raised by all fishers in the focus groups is related to the abundance of dolphins in the area. All inshore fishers interviewed refer to dolphins as a top priority issue which they don't know how to deal with it and requires immediate solution. As an inshore fisher stated in the 2nd focus group:

> "*In our region, from Strymonas [river] to the other river we have 6,000 dolphins – statistics of the [Marine] Research Institute. We love them but they also need to eat. There is no way to put nets in the sea, from 10 vessels the 9 will come back with the nets cut.[…]You throw them into the sea new, and after a week, the most, there are scraps, just the ropes*" (Fisher, 2nd focus group)

As they reported to the focus group, the cost is very high for them to bear and since dolphins are species under protection, they believe they ought to be compensated for the destruction of their gear.

3.5.2.4 Ecological consequences from illegal practices

An issue emerged in the focus group with the inshore fishers concerns a practice of purse seines perform while fishing. The usual fishing practice of purse seines have a small boat and the fisher was leaving in the sea a series of 4 or 5 robots with lamps to attract the fish, each one attached to an anchor. When fishing was over they would pulling up the anchors after turning of the lamps. Instead of this practice now they attach a rope with a cement tile to the robot with the lamp instead of an anchor and when fishing is over they cut off the rope underneath the robot and leave it with the cement tile in the sea.

According to the inshore fishers, each time a purse seine finish fishing leaves behind these ropes in the sea while this is happening every day from up to 50 purse seines operating in the area creating obstacles to inshore fisheries to use their gear, since this rope made out from nylon has the ability to stand upright. On the other hand, purse seines fishers participated in the first focus group admitted that this practice is a minor illegality by their side without though giving particular importance to the environmental aspect of this practice.

On the contrary, as a marine expert in the workshop pointed out:

> "*This is an ecological disaster. It is not minor [illegality], what they do is a criminal offense. What they do, so they do not have to pick up anchors, tie in a stone a nylon rope, cut it, leave the rope with the stone in the water, take the robot and leave. There are areas, I do not know about here, but I have seen it in the Evan [Golf]. In the Evian, in a single scientific fishing catch, with a trawl, we took out 120 kilos of this kind of ropes*." (Marine expert, workshop)

Furthermore, as another workshop expert argued that ecological degradation of the sea also arises from the amount of cement tiles which linger on the bottom of the sea. These tiles are cheap so they leave them in the sea.

3.5.2.5 Data Collection

A very important tool, especially for the evaluation of the condition of the fish stocks, is the national Fisheries Data Collection Programme. This is a multi – annual programme for the collection of primary biological, technical, environmental and socio-economic data. Although this programme should operate continuously; this is not done in practice, as stated, because it is not funded by the Greek state. Since the beginning of the programme in 2002 there were important time lapses and delays in the implementation. According to the workshop experts the fragmented implementation of the programme creates serious problems to scientists involved in the estimation of fish stocks.

However, other experts in the workshop argued that even if the program was operating uninterruptedly, it would be very difficult for scientists to have a clear image of what is the actual fish stock since the information obtained is not even 50% of the information needed since only trawlers and purse seines are registering their catches through the system (OSPA), they argue, while there is no information for inshore and recreational fisheries. In fact, inshore vessels under 10 meters have the obligation, to deliver monthly information about their catch to the regional fisheries office, but workshop experts raised doubts for the accuracy of the information delivered.

Regarding inshore fisheries, workshop stakeholders pointed out that while taking under consideration that it consists over 95% of the Greek fleet, the missing information is of great importance, and it is an issue which needs to be solved. According to workshop stakeholders the main issue lies on the fact that most of the production of inshore vessels is traded locally and not through the fish auction. On the top of that, there is no information at all about recreational fishing, especially since port authorities stopped issuing fishing licenses to recreational fishers. As a workshop participant pointed out:

> "*All these catches that does not pass through the fish auctions, for us the biologists and the managers who do the monitoring models etc, is a deficit, it is a very important information deficit, because there are respectable, not to say significant catches.*" (Marine expert, workshop)

3.5.3 Market conditions

3.5.3.1 The supply chain

As reported in the focus group with purse seine fishers, expensive fish have a more stable price for the last ten years while the trend now for the price is to drop. Mainly these fish are intended to meet the needs of the internal market; the quantities are not sufficient to be exported.

Regarding sardines and anchovies stakeholders in the 1st focus group consider demand has been declined. One explanation provided in the focus group is that although consumers in Greece may prefer them, consumption has been reduced due to economic crisis. Another explanation provided is that most of the processing units operating in the area, which used to receive large volumes of the production, have shut down or relocate to areas with lower labor cost while those few who remained in the area are very selective to the small quantities they now buying.

Nevertheless, sales to processing units are the least preferred by purse seines since they offer the lower prices. According to purse seine fishers best prices come from retail sales, followed by wholesales. The third lower price is offered when sardines and anchovies are indented to be frozen and the lowest price is offered by processing units.

As purse seine fishers stated, due to the informal agreement between them for one catch a day the quantities exported have been decreased. It was also stated in the focus group that exported quantities increase in the period that the Turkish fleet stops fishing; during that two month period

Turkey is supplied fish from Kavala fish auction. An issue raised by purse seine participants concerns the fish trade with Turkey. They claim that fish imported to Greece from Turkey are not subject to custom duties while those exported to Turkey are.

On the other hand, inshore fishers sell most of their fish locally. Each fisher has a clientele of restaurants and fish shops where they deliver their catch beyond individual customers who buy directly from the vessel. In case the catch is bigger they sell to wholesalers or to the fish auction. As they argue, individual sales are the most preferred way, since they set the price, which is much higher than the merchant will give. As a fisher in the 2nd focus group stated:

> "*The dealer will pay 1/3 of what he sells, if he pays 5€ will sell those for 15€. He will include VAT, operational costs. If [the fish] are better and give you 15€ he will sell them 25. If he pay for them 20- 22€ will sell them 30€.*" (Fisher, 2nd focus group)

Besides the higher prices, inshore fishers are not obliged in issuing invoices for individual sales hence they are not taxed for this part of their income.

3.5.3.2 Fish auction

Purse seines and trawlers are obligated to deliver their catch in the fish market where the auction takes place and the dealer act as an intermediary between the fisher and the buyer since the sale is between the final buyer and the dealer. At this point there are approximately 25 fish selling offices working in the fish market and each fisher has an informal, typically oral, agreement with an office operating in the fish market.

The procedure in the auction includes the fisher leaving the fish caught to the dealer and the dealer is tries to sell them to the one offering him the best price for the fish. The fisher has no control on the price the fish is sold. The fisher is paid depending on the agreement with the dealer, mainly at the end of the month for all the sales being done, without the ability to trace the exact price of the fish being sold. The fisher is not obligated to be present during the auction. As stakeholders of the 1st focus group mentioned, in case a fisher wants to know the price of fish is sold, he can stay in the auction and hear the price or if he knows who is the final buyer he can ask him for the price he bought the fish from the dealer.

The fisher is price taker; what finally the fisher receives is depending on the auction dealer. And all the costs besides the rental cost of the office in the market and the salaries of the offices' employs, is delivered to the fisher e.g. the cost of the ice and of the plastic fish containers, fish auction fees etc..

The arrangement between the fisher and the dealer is based mainly on the price of fish the fisher is finally gets and on the personal relationships among them. Typically, fishers for the 1st focus group consider these agreements long and steady. But as a workshop stakeholder quoted:

> "*Who is working more to get better prices? If the fisher is disappointed by the dealer he can make new arrangement with another dealer. […]. Because they find out that the other dealer*

is giving better price to these 5 fishers, but the price is not the same for all. Maybe I have a deal with a [fisher] to give him more and another deal with the other to give him something less." (Regional fisheries office representative, workshop)

On many occasions the dealer fulfils the role of a money lender. This is basically an informal agreement between the two parties. This was always the typical way of transaction between fishers and dealers and nowadays it has been reduced, as has been stated by fishers in the focus groups, only due to the crisis and the subsequent shortage of liquidity on the dealers' side. As has been stated by the purse seines fishers in the focus group, even the dealers now are paid with credit from the final buyer so the fishers are paid after the dealer gets paid by the final buyer.

However, as stressed by other stakeholders in the workshop, these arrangements have many disadvantages for the fishers. Fish quality can be used by the auction dealer as a way to artificially decrease the price paid to a fisher or, as it was mentioned in the workshop by an expert, as an example of cases where the auction dealer has an arrangement with a processing industry, to deliver all the catch with a much lower price.

On the other hand, coastal fishers from the 2nd focus group offered another explanation for the lack of advance payments, which is due to the large amounts of imported fish. According to them most of the fish sold in the auction – up to 90%, besides sardines and anchovy- is imported.

Although inshore fisheries are also obligated to deliver their fish to the fish market, it is considered by all workshop experts as a last resort solution in cases where they consider their catch is too big to get absorbed through the local market.

Another issue raised in the 1st focus group by all fishers and confirmed in the workshop is the presence in the area of vessels fishing, mainly in the summer. In the workshop it was stated by the fish auction representative that those vessels are obligated to deliver their catches through the auction since the fish in the area, thus they are cooperating with auction dealers for this period. Another disadvantage of the activation of all those vessels in the area is the long wait in order all those vessels to land the dock of the fish auction. As it was mentioned in the workshop, a solution to this situation is to land to another certified port in the area, though these stocks are not registered by the fish auction.

3.5.3.3 Horizontal co- ordination

- *Competition among fishers*

Fishery is by nature a competitive business and the explanation given by the fishermen who participated in the focus group meetings is that competition exists because essentially they are hunters and not producers. They directly admit that they don't want other fishers to know where they fish, what they fish and what money they get for that fish. This is the main explanation given by fishers for the difficulty of cooperation among them.

Another explanation provided by a workshop expert for the lack of cooperation among fishers, is the differentiation among them according the gear they use. This is the case mainly between inshore fishers where the variety of gears they use is very large. Workshop experts as well as inshore fishers participating in the 2nd focus group consider that there is no common ground among them in order to pursue collectively common interests since they have 'diametrically opposed views'.

However, as mentioned by inshore fishers in the 2nd focus group, efforts have been made in the past in this direction but as they argue individualism prevailed.

> "*I had suggested - when projects were available - to make a cooperative, to gather all the fish and to make our own producers fish market and sell the fish. But, "the hares cannot become a flock', to have 1-2 employees, to sell our fish and we will also advertise ourselves as coastal fishermen that fish is ours, local.*" (Fisher, 2nd focus group)

According to a participant in the workshop this behavior stems from the nature of their profession where the basic motto in the sea is 'every man for himself'. However, other workshop participants argue that the reality they experience on a daily basis by working with them in the fish auction is an indifference to others which leads him to the conclusion that is very difficult for fishermen to operate under a framework of regulations.

The situation is not much different for purse seines fishers. As they argued in the focus group in theory cooperation is very good but in practice there are many obstacles and in order to overcome those it is necessary the assistance of the state. Again, like inshore fishermen they bring the argument that it is a competitive profession with many and different interest among them.

- *The role of the fishers' unions*

In the discussions with inshore fishers in the focus group, fishers constantly expressed the view that they are helpless and defenseless since the state has dismissed their federations and confederation of costal fisheries. In reality, as workshop experts argued, now their interests are represented through the Union of coastal fisheries clubs although they raise doubts whether inshore fishers actually use it. These doubts seem to be confirmed from the statement of an inshore fisher in the 2nd focus group:

> "*We made a club and they put me as president and we got in trouble, [in order to] to have a representative in the union and vote for them. They have us as instruments to use; they remember us whenever they need us.*" (Fisher, 2nd focus group)

On the other hand, as workshop participants argued, the union of purse seiners and trawlers is a very active union promoting their interests though the informal dispute between them is intense. A workshop stakeholder stated that purse seines explored the possibility to create an independent union which finally this possibility did not succeed.

- *Informal agreements between purse seines*

Since last year the 18 purse seines from Kavala have an informal agreement between them to perform a single landing per day of operation. According to the participants of the 1st focus group, the main reason for that action is that due to the crisis, sales in the fish auction dropped. They argue that consumption of fresh fish has dropped, even of small fishes like anchovy and sardines which typically are considered to be cheap fish.

Another reason they reported for the reduced sales is that most of the processing units operated in the area have been closed or moved to another area where the labor cost is lower. Furthermore as 1st focus group fishermen claim, these units now are very selective to what they buy and in smaller quantities.

But the workshop participants address the issue differently. They claim that two years ago it was the excessive abundance of fish in the fish auction which caused the price drop and eventually alarmed fishers. The price drop was so outstanding that fish cost less than the box containing them. As a fisher in the 1st focus group shared his experience:

> "*Only the box has 1€, with 8kg of fish within [it cost] 2€ -3€. Where to sell? You will not throw them away. For example, with 2000 boxes with fish, we loaded the trucks and when he was leaving he told me 3€ for each box and I had to pay for the truck, for the driver, for the ice*" (Fisher, 1st focus group)

Now with this arrangement, as purse seine fisher stressed at the focus group they hope to keep prices higher and steadier since the fish delivered in the auction now is about 1/3 of the quantity that it was 2 years ago.

> "*The one landing we did for a year period, worked well for the production, because we are interested in having fish tomorrow. Prices vary depending on the day and the demand. But mostly there are still fish; we do not catch them all.*" (Fisher, 1st focus group)

However, although this arrangement is followed by all purse seines based on Kavala area, encountered many reactions since in the area are activated much more vessels which come to fish from other areas of Greece. As a workshop expert quoted:

> "*If another [fisher] comes from another region and is fishing here, he will not stop at one [landing] because he has the crew inside, he has many things. He came from the other side of Greece here and he throws [the nets] he is fishing, he is selling. Throwing, fishing and selling. That's why he came for."* (Regional fisheries office representative, workshop)

Nevertheless, purse seine participant in the workshop expressed the view that the highest rate of those vessels coming from other areas to fish in Kavala area comply with this arrangement.

Within the same framework is the other arrangement between the 18 Kavala's purse seines regarding fishing on Saturdays. Along with the decision for one landing per day they also decided not

to fish at all at Saturdays. At the time of the focus group took place they were reconsidering this decision due to the fact that many of vessels active in the area originating from other areas didn't follow that rule. Fish auction is operating every day and as they stated, Sunday is the day that the Kavala's fish auction is supplying Athens's fish auction with fish and vessels from other areas took advantage of the opportunity to supply Kavala fish auction when the local vessels didn't work. As fishers said in the focus group they were examining the possibility to fish 4 of the local purse seines in rotation or through lottery in order to supply the market.

3.5.4 Access to finance

According to workshop experts in the area most of the businesses are family owned and run where the family, already in the business, provides the necessary means to the younger members of the family to start their own fishing business. But there are cases where this opportunity of family support is not available and alternative recourses are being sought. As a purse seine fisher mentioned in the 1st focus group that all purse seine vessels are under co-ownership whether that is family or not.

3.5.4.1 Informal access

The common practice for fishers, especially for purse seines and trawlers, is to finance their business is usually through their cooperation with the dealer but in case where the investment is much higher, such as for the construction of a new vessel the amount required for the investment is pursued through a bank loan. According to workshop experts in many cases like this, the fisher does not have the requisite quarantines to attain the loan from the bank. In these cases collaborations are sought with people who consider the investment profitable. Experts mention that this is an old practice this type of cooperation in which the fisher is providing his knowledge as captain of the vessel and the other persons, one or two, are providing the necessary amount of money.

Typically, as workshop stakeholders argued, these investors originate from the wider circle of friends and acquaintances and usually are relevant to the fishing business such as machine technician or fishing equipment dealer. In the workshop cases were also mentioned were the investor is not from the sector, such as doctors, lawyers, bankers which consider a purse seine or a trawler a good investment.

3.5.4.2 Formal access

As already mentioned the most prevailing way of obtaining liquidity is through the auctions' dealer. From the fishers point of view this is a much preferred way to get access to liquidity with many advantages. As a fisher expressed it in the workshop:

> "*With one word, you have the money. Bank wants papers wants this and that. And afterwards, if you have problem to give back the money, you can talk to him, you can tell him, not this month, the next, no papers, no nothing. Bank has a procedure*." (Purse Seine fisher, workshop)

But in most of the cases were the producer reaches out to the bank for a demand for a loan, as was stated by the bank representative in the workshop, the general rule is that producers are lacking of business logic. He expressed the opinion that the bank is now expecting from the producers to act as any other businessmen and to be able to document how the repayment will be done, in what time range, under which term etc. From the banks' point of view, it is not enough anymore for the producer just to appear to the banks' department.

This also applies for investments through subsidies. Banks consider as their obligation to request producers to contribute with their own funds in the subsidized project. Fishermen, however, consider this obligation as very difficult to cope with. As mentioned by the bank representative in the workshop, is typical of producers from all the spectrum of the primary sector and it is the main obstacle banks are facing for financing the sector.

But the most serious issue faced by producers when dealing with banks is their inability to support a demand for loan with adequate guaranties, which is mainly the case for inshore fishers up to 12 meters, as a workshop expert stressed. The bank representative in the workshop quoted:

> "*In their attempt to avoid increased taxation, they essentially undermine their right to seek bank financing. When a producer comes [to the bank], from any sector of the agricultural sector and presents you a clearing fee of 2-3,000€,…, which means, you undermine your own effort and possibly the right you would have to claim a form of financing, such as a project management or a project finance or working capital when he brings you a clearing that is so* low, he actually tells you not to evaluate the proposal". (Bank representative, workshop)

As it was stated by the local administration representative in the workshop the low clearing apply mainly in the case of inshore fisheries than of purse seines or trawlers. While purse seines and trawlers are obligated to issue invoice for all the catch they deliver to the auction, inshore fishers are taxed based on the vessels GT's where each GT represents income of 3,000€. More than 40% of inshore vessels of the area have less than 1 GT, while the average of the inshore vessels in the area is 2.3 GTs' (Fishing Fleet Register Database, 2016). Taking under consideration the fact that most of their caught fish are sold locally without the obligation to issue any kind of receipt or invoice the taxed business income is almost only that of the registered GTs. Since the request to the bank is for the business financing, expects the repayment to derive by the business income and not the overall family income of the fisher.

3.5.5 Proposals drawn by focus groups and the participatory workshop

Some of the key issues participants of the focus groups and workshop consider that would help ensure the future viability of the fishing sector include:

- Complete readjustment / review of the legislation, in accordance to scientific advice.
- Flexible management rules according to the needs of each fishing area.
- Improvement of control mechanisms for more frequent and efficient controls inside and outside the fish market.

- Fishers' education in sustainable fishing practices – rational management of the fish stock.
- Purse seine fleet certification project with dual purpose: improvement of fishing practices and improving fishermen's income.
- Engagement of fishermen in the decision making process.
- Collaboration between producers.

4 Greek Case Study B: Small and medium-sized milk producers and Feta cheese makers in Thessaly, Central Greece

4.1 Case study introduction and context

4.1.1 Dairy production in Greece

The most characteristic feature of the structure of the rural economy in Greece is the unequal relationship between animal and crop production. The value of animal production in the total value of agricultural production varies between 26% in 2000 and 30% in 2007 (the year with the lowest total value of the agricultural production in the period 2000-2012) while this relationship between animal and crop production in EU is about 45% (Speed, 2015). Livestock production mainly concerns milk production which is almost the 41% of the total value of livestock production and the sheep and goat meat which represents the 25% of the total livestock value (Speed, 2015).

Another characteristic feature of Greece compared to other EU countries is the predominance of small ruminants (sheep and goat) in livestock breeding and the deficit of dairy cow products, therefore sheep and goat milk production take up to 60% of the total milk production and the rest 40% is cow milk. According to the Livestock Research results from the Hellenic Statistical Authority (ELSTAT) for the year 2015, there was a reduction of the holdings with cattle by 7.2% compared with 2014. In particular, the estimate of the number of holdings was 16,812 in 2014 and 15,609 in 2015. Along with that, cow's milk deliveries fell far short of national quotas (Figure 1) despite the strong technical modernization of livestock farms and dairies (Gousios et al, 2014). Specifically, during the year 2010-2011 milk deliveries fell short by 173,091 tonnes than the national quota while in 2011-2012 by 203,787 tonnes and in 2012-2013 by 230,913 tonnes (ICAP, 2014).

Main feature of the dairy cows sector is the rapid increase of the size of the holdings and the corresponding reduction of the number of producers with the cow breeders going down from 12,400 in 2000 to 3,680 in 2013 (Parpouna et al, 2015). Modern businesses of cattle farming for milk production are concentrated mainly in Macedonia, Thrace and Thessaly, while the rest of the cattle units are located in Epirus, in Central Greece, in Peloponnese and in the islands (Speed, 2014).

Greece is highly deficient in products based on cow's milk with only 608,002 tons in 2015 (ELOGAK, 2015), while the domestic needs are reaching 1.3 million tons for drinking milk as well as dairy products, mainly yogurt. Despite the EU limitations under the quotas regime in cow milk production, Greece had never exceeded its own quotas (Figure 1). In a study of the Pan-Hellenic Confederation of Unions of Agricultural Co-operatives (PASEGES) for the shelf-efficiency of Greece in agricultural –food products in 2012, estimated that the self-efficiency in cow's milk was only 58.8% while in cow's meat is just 28.70%. The lack of self-sufficiency in meat and milk production is intertwined with the lack of self-sufficiency and the costs of animal feed as well as the overall policy for animal production (Speed, 2015).

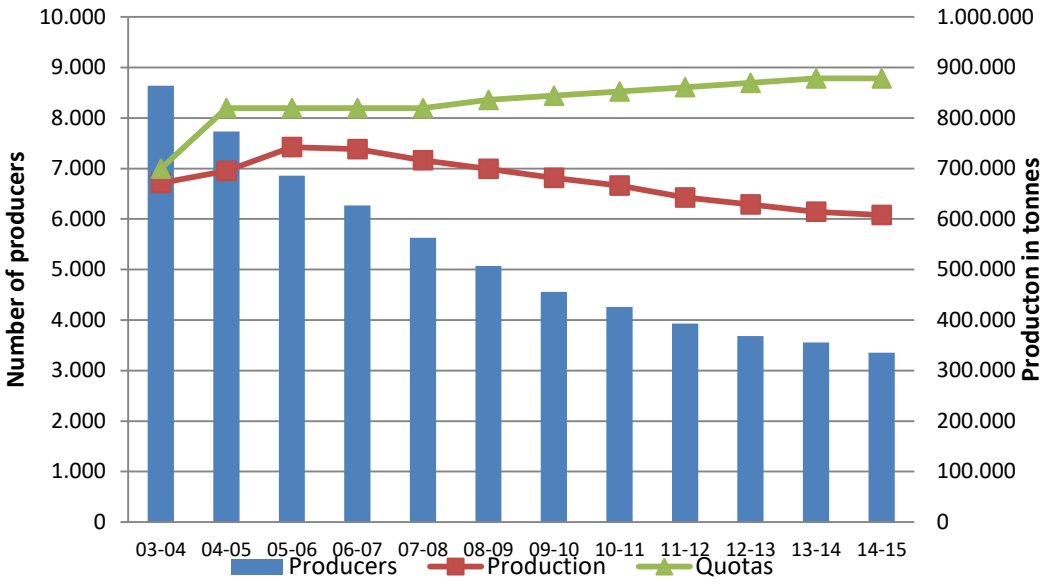


Figure 1. Evolution of the number of the producers, the production of cow's milk and the quotas between 2003 - 2015

Source: *Greek Milk and Meat Organization (ELOGAK), 2015* (elaboration by the authors)

Domestic production of cow milk is predominantly led to fresh drinking milk while part of the production is used for the manufacture of yogurt by large and small dairies and farms. Large dairies use mostly concentrated milk or imported powdered milk for the manufacture of their products while large part of the UHT milk consumed (which has increased at the expense of fresh pasteurized milk) is also imported (Gousios et al, 2014).

At a European level, sheep and goat farming is a minor agricultural activity (3.6% of the total value of livestock production) that nonetheless takes up an important part of the agricultural land in certain countries in EU. Greece has the biggest goat herd population, but with a gradual switch from goats to sheep (AND International, 2011). Greece has a long history of pastoral farming of sheep and goats while extensive farming is the most common form of traditional farming, with the livestock often herded in mixed flocks for cheese production (up to 30% of the milk used for the production of Feta) and has contributed significantly to the current traditional landscape and the biodiversity of rural areas. This system covers much of the main land and is especially significant for nature conservation of mountainous areas.

In 2010 extensive livestock was practiced in 2,465,161 ha which accounted to 47.6% of the total UAA of the country, while in the EU-25 is 28.9% (Speed 2015). Sheep and goat sector has vital role for the stability of rural population by providing income for thousands of farmers. Nevertheless, the sector is

facing a significant decline in production and a reduction in the number of the holdings, as well as a total failure to attract young sheep and goat farmers (Hadjigeorgiou, 2014).

At the accession of Greece to the E.U., in 1981, there were 8,316,000 sheep and 4,623,000 goats, which were farmed in 217,810 and 323,630 farms respectively. In the following thirty years the sector changed considerably since milking sheep population increased slightly (about 10%), but the respective goats decreased (about 17%) (Hadjigeorgiou, 2014). At the same time sheep and goat farms were reduced by 59% for sheep and 73% for goats, due to an intense evolution towards specialization and reorganization of the sector (Hadjigeorgiou, 2011). The decrease in the number of the farms came along with a respective increase to the average number of sheep and goats per farm, but this trend in not uniform on all the regions (Hadjigeorgiou, 2014). According to the livestock research results of the Hellenic Statistical Authority (ELSTAT) for the year 2015, there was an increase of the holdings with sheep by 2.6% compared with 2014. In particular, the estimate of the number of holdings was 86,491 in 2014 and 88,761 in 2015. On the other hand, there was a reduction of the holdings with goat by 1.2% compared with 2014 with 68.766 holdings in 2015.

According to data published by ELOGAK, the Greek Orginasation for Milk and Meat, in 2015 410,004 producers of sheep milk delivered 539,641 tons and 14,973 producers of goat milk delivered 127,903 tons of goat milk while the respective numbers for 2002 are 35,309 producers of sheep milk delivered 352,173 tons and 16,695 producers of goat milk which delivered 161,340 tons (Figure 2).

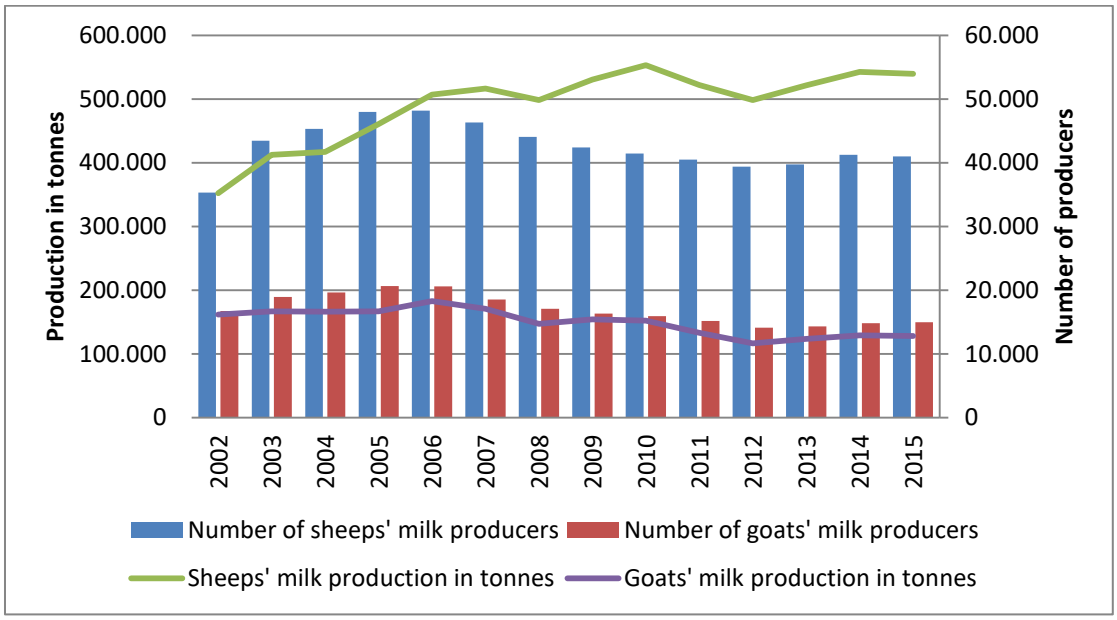


Figure 2. Evolution of the number of the producers and the sheep and goat milk production between 2002 - 2015

Source: *Greek Milk and Meat Organization (ELOGAK), 2015* (elaboration by the authors)

The sheep and goat sector in Greece presents two specificities on the European level. First of all sheep and goats are dairy animals, while milk contributes up to 62 % and 55 % towards the total value of the sheep and goat production respectively. Secondly, as already is mentioned, the national

production of cow milk is lower (40 %) than the small ruminants milk (60 %). Sheep in Greece are kept mainly for milk production, and in contrast with the cow's milk, the majority (70%) is transformed into quality cheese products (Gousios et al 2014) and secondarily into yogurts and other milk-based products. Nearly 80% of sheep and goat milk derives from small and family farms with an average herd size less than 100 animals, which are highly dependent on family labour, with almost 115,000 families engaged in farming and over 300,000 people working part- or full time in the primary dairy sector (Parpouna et al, 2015).

Dairy processors are scattered all over the country and are operating mainly regionally while they vary greatly in size. The secondary dairy sector, i.e. milk processing, involves 53 big dairy companies processing >5,000 tons of milk per year and 671 SMEs or family dairy units processing <5,000 tons of milk per year (Parpouna, 2015) They process all types of milk produced in Greece, namely 602,519 tons of cow milk, 547,815,383 of sheep milk, 129,566,015 tons of goat milk in 2015 (ELOGAK, 2016) while the highest volume is directed in the production of drinking milk, yogurt and cheese. There are 3-4 firms which operate at national and even at international level, while the on-farm production of sheep and goat cheeses and other milk-based products is estimated to reach the 1/5 of total production. These units operate at a limited scale covering mainly the needs of the local markets (Hadjigeorgiou, 2014).

Small-size dairies trade their products directly, mainly to the local and secondarily to the regional market through retailers, super-markets and catering companies e.g. hotels, taverns, restaurants and pastry shops or collaborate with networks of representatives, intermediaries and wholesalers. Interestingly, trading via own contacts and loyal customers brings higher profits than trade at national level through networks of wholesalers and large retail chains. Some companies have even their own retail shops (Goussios et al. 2014). The territorially orientated marketing allows small companies to take advantage of their PDO and traditional products and their high quality and to endure competition from larger companies that can take advantage from economies of scale.

The dairy sector provides work to a total of 11,802 employees and makes 17.3% in production value of the food sector as a whole, which in turn makes in value almost 1% of the Greek economy (GDP) from a total of 3.3% of the whole rural sector's participation to the GDP (Parpouna et al, 2015). The main aim of the dairy sector is the production of high quality products (PDO, PGI, organic etc). The problem with the sheep/goat milk is its seasonality of production which limits and determines the cheese making plants operation. However, the last few years more and more intensive sheep farms change the reproduction cycle of their animals in order to have milk all year round, getting higher milk prices, too (Zervas et al, 2015). Greece has twenty one different PDO cheeses, which is the highest number of PDO cheeses in the EU, whereby only 3 are made of cow's milk.

Regarding import and export trade of dairy products, total imports (in quantity) increased between 2008 and 2010 but afterwards decreased till 2013, with cheese ranking by far first. At the same time, exports (in quantity) fluctuated between 2008 and 2013, with cheese and yogurt to be the top selling products, presenting an upward trend (Parpouna et al, 2015). Regarding export, including Feta and "Greek" yoghurt (drained cow's milk yoghurt), large industrial groups such as FAGE, VIVARTIA and OLYMPOS (Thessaly) market their products through importers and distributors of Greek food

products abroad. Small and medium-sized dairies are mobilising to find opportunities abroad based on their relations and family networks (international food fairs, knowledge networks, the Greek Diaspora communities, etc.) failing the consortium to promote specialty products with a designation of origin (regional or national) (Gousios et al, 2014).

As far as it concerns yoghurt, it occupies a more and more important place in the Greek dairy chain while it ranks first in the dairy sector exports. Indeed, during the last decade, large dairies managed to triple their export of yoghurt on the European and the U.S. dairy markets (Gousios et al, 2014) since in 2013 exports reached 34,320 tons from 23,468 tons in 2010. This particular year, exports reached a top and won 73.5% of the total dairy exports share (Parpouna et al, 2015).

4.1.2 Feta production in Greece

The main product of the Greek dairy production is cheese which is produced almost exclusively from sheep and goat milk. Traditionally Greece is producing a range of cheeses; 70 registered, of which 21 are certified PDO cheeses. Greece has adopted the Geographical Indication products (Protected Designation of Origin - PDO and Protected Geographical Indication - PGI) as part of the development policy of the countryside and has registered about 145 PDO and PGI products including wines. It is estimated that the quality products constitute about 10% of the total value of agricultural production in Greece. Dairy products possess just under 70% of the production value of quality products (PDO and PGI) (MINAGRIC, 2015)

In accordance with the national and European legislation applied, Feta is a Protected Destination of Origin (PDO) since 2002. In 1988 specific standards for the production of Feta were included in the national Code for Food and Beverages and registered as a PDO in the national level in 1994 and in 1996 in EU level under the regulation 1107/96. On the appeal from other Member States, Feta was deleted from the EU registry of PDO-PGI in 1999 and after years of research on the way and the location of its production the European Court ruled in 2005 in favor of certification of the designation of Greek origin. Dairy industries producing Feta type cheeses of other Member States had a transitional period up until 2007 to completely eliminate the word “Feta” from their labeling.

Feta as a Protected Destination of Origin product, is the cheese that is produced with traditional techniques in Greece, in the defined geographical area consisted by the continental parts of the administrative regions of Attica, Central Greece, Western Greece, Peloponnese, Thessaly, Epirus, Western Macedonia, Central Macedonia, Easter Macedonia and Thrace and from the regional unit of Lesbos from sheep milk or in a mixture with 30% of goat milk from the same area. Milk is derived from sheep and goats adapted to the area of the production of Feta, whose diet is based on the flora of the local pastures. There are totally 242 processing units licensed to produce, pack and standardize PDO Feta cheese, located as shown in Figure 3. Moreover, there 12 enterprises licensed only to pack, standardize and trade and 41 enterprises licensed only to trade Feta cheese (Agrocert, 2016). In Figure 3 is presented the spatial distribution of the processing units which are licensed to produce, pack and standardize PDO Feta cheese.

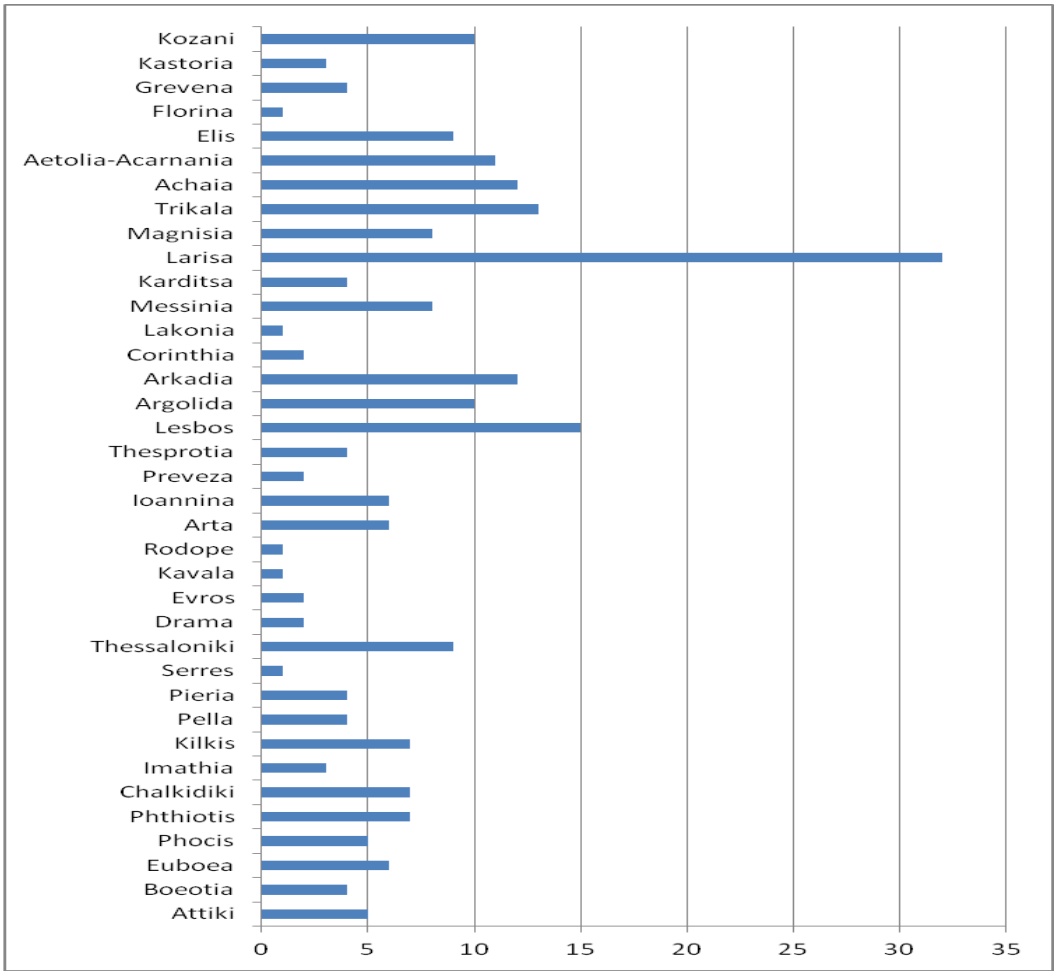


Figure 3. Geographical distribution in regional units of processing units licensed to produce, pack and standardize PDO Feta

Source: www.agrocert.gr

4.1.3 An introduction to Thessaly

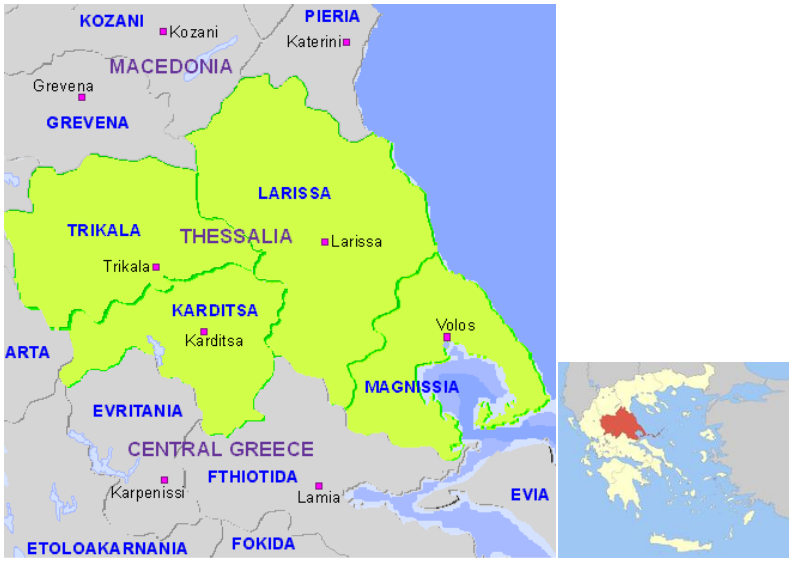
The Thessaly region (NUTS 2), is located in the centre-east of mainland Greece, has an area of 14,037 km^2 (50% of which is plains) which is equal to the 10.6% of the total area of Greece and Larissa is its administrative center. The population of the region according to the last census in 2011 is 730,730 people, which corresponds to the 6.7% of the total population.

The predominant activity is the tertiary sector with a gradually expanding contribution from 67% in 2005 to 73.35% in 2012. The secondary sector, which is based in manufacturing, is following with a downward trend from its peak in 2006. It appears that the secondary sector took long to be affected by the economic crisis but its impacts that recorded from 2010 are strong (Kaparesearch, 2015). The construction industry is sharply shrinking in 2012 compared with 2008, the last year with the highest economic activity with 71% decline. The primary sector is in a progressive decline in 2012 by 27.5%

compared with 2005, the year with the highest contribution in the regional GVA (Kaparesearch, 2015).

In a study, conducted by the Industries Association of Thessaly and Central Greece (SBTKE), for the regional development of Thessaly is argued that the index of local specialization of Thessaly's economy is highly depended by the primary sector, relatively high by the secondary and little by the tertiary sector. The study is concluding that if primary sector continues to be attached to its current quality and productive characteristics, the regional economy will continue to have the current limited capabilities thus the development of the other two sectors in a vertical integration to the primary is a critical option for the productive and economic perspective of Thessaly (SBTKE, 2013).

The UAA in Thessaly is 861,000 ha, or 15% of the national UAA. The 50% of the area, devoted to pasture (mainly rough grazing) are located mainly in the mountainous and semi-mountainous areas, with the plains being mainly devoted to intensive crop production (Gousios et al, 2014). The primary sector of Thessaly contributed with 14.22% to the country's primary production in 2009. On the other hand, the contribution of the primary sector in the total production of the region has fallen from 15.7% in 2000 to 8.75% in 2009 (SBTKE, 2013).



Map 3. Map of the case study area

Source: http://www.in2greece.com/english/opinions/library/2009_04_01_archive.html, http://www.holiday.gr/gr/place4.php?place_id=24

Total farms are 76,503 (crops and livestock), against 803,000 in Greece (9.5% of farms in the country) (Gousios et al, 2014). Thessaly is the first region in the production of cotton with 37% of the national production, as well as in the production of almonds (8,390 t), lentils (1,027 t.), sesame, soya beans and other industrial plants. Thessaly is also the second producer of wheat (239,000 t), apples (62,000 t.) etc (SBTKE, 2013).

Thessaly represents 14% of employment in farms in Greece and 13% of employment in dairy processing, while it contributes only 7% of national employment in the food industry (Gousios et al, 2014).

In Greece, due to the particular geomorphology (lowland, hilly, mountainous) there are many agricultural systems in each region. In Thessaly, there are large percentage of arable land with cereals and cotton but limited areas of olive groves and orchards. There is a large number of intensive dairy farms, extensive cattle farms for meat and extensive -semi-intensive sheep and goats farms, but a few pig and insignificant poultry farms. However in the area are encountered several major HNV areas of high biodiversity. Also in the region is still retained the practice of moving cattle herds and sheep and goats depending on the season (extensive farming) (RDP Program, 2015).

In Thessaly (79 processing units, 60.7% of which have a capacity less than 1,000 tons/year) the majority of sheep milk is produced and the biggest quantities of sheep milk nationwide are being processed. Particularly, Larisa is ranking 1st in incoming sheep milk and also 2nd in goat milk and 2nd in cow milk. Thessaly is actually the administrative region with the biggest production of cheeses and has one of the biggest cheese making units nationwide, namely Tyras AE. According to data from ELOGAK (2013), it accounts for the 34.5% of the national production of PDO Feta cheese, with use of 85% of sheep and goat's milk local production. Especially in Thessaly, Feta accounts for the 95% of the production of all PDO cheeses (Parpouna et al, 2015).

4.2 Policy and regulatory conditions

Various policies seem to have a significant influence in the dairy sector. The main of course is the Common Agricultural Policy and its integral part the Rural Development policy. In the second place one could state environmental policy measures. Food safety and quality policy issues are dealt with in the present report in the section referring to the market conditions (4.3).

4.2.1 Common Agricultural Policy

4.2.1.1 CAP (First Pillar)

The first observation that could be made concerning the first pillar of the CAP can be that since the accession of Greece in the EU (EEC in 1981) up to the more recent CAP reform, is the vast inequality between the subsidies directed towards the livestock sector (of which sheep and goats constitute a very important segment) in comparison with the ones of the plant production. It is indicative that, in 2003, when the single farm payment scheme was initiated, pastures although comprising 57% of the UAA, were receiving only a mere 4% of the subsidies through the milk and sheep and goats meat Common Market Organisations, while other CMOs benefited considerable more. E.g. Cotton producers although they were 9% of the beneficiaries covering 4.2% of the total UAA have been receiving 25% of the first pillar payments or tobacco producers with 0.6 % of the UAA benefited 18% of the total subsidies through CMOs. However, one should note that in the case of sheep and goat farms a specific payment for them operation in Less Favoured Areas, rendered them in a better than their counterparts in the plains (SAC, 1999).

An attempt to lessen this disparate imbalance was made in Greece, when the adoption of the regional model became obligatory[3]. The distribution of funds is a more balanced in the current situation, although the differences are vast and evident, since a hectare of pasture receives half the support of a hectare of arable land. The main problems seemed to be that an more equitable distribution of subsidies could result to a drastic shift of resources from crop, especially intensive crop producing farms, to livestock farms and consequently from areas and regions highly depending on crop production to areas and regions where livestock production systems are prevailing. Under that light, the demarcation of regions, for the purpose of calculation of regional per ha amount of aid, obtained more significance. In the relevant discussion the stance of the Agricultural co-operatives Union that finally prevailed has been that of maintaining existing balances among regions and crops/sectors. The outcome was that there are three regions demarcated for the purpose of the single farm payments. Arable land, permanent crops and pastures with the latter receiving less per hectare payments than the other two.

However, the main issue raised during the design of the single farm payment in Greece especially when livestock is concerned is that of the eligibility of pastures. The issue was crucial for sheep and goat farms wide spread and mainly in the mountainous and semi mountainous areas. A first concern had to do with pasture ownership, tenure and management patterns, existing in Greece. A large part, almost half, of the over 5 million hectares of pastures are public, belonging either to the state or to local authorities. However, even the ones owned by the state are managed by local authorities. A fear expressed, was that when obtaining grazing land is going to become a prerequisite in order to get the support, clientelistic criteria are going to prevail at the local level. Secondly, was the fear expressed that, bearing in mind the lack of a cadastre or another legally binding system of land use registration, the, ever conflictual in Greece, issue of land use is going to arise again. A third problem that arose later; during the setting of the detailed eligibility criteria was that of the wooded pastures (EFNCP, 2014).

4.2.1.2 Rural Development Policy

There are three features of the RDP that could be thought as affecting the sheep and goats sector in Greece. The first is compensatory allowances to farmers in Less Favoured Areas, since most of farms (80%) and the sheep and goats (85% of the total number of animals) are in mountainous and semi mountainous areas (MINAGRIC, 2015). In that sense, sheep and goat farms seemed to have benefited by this pillar 2 measure.

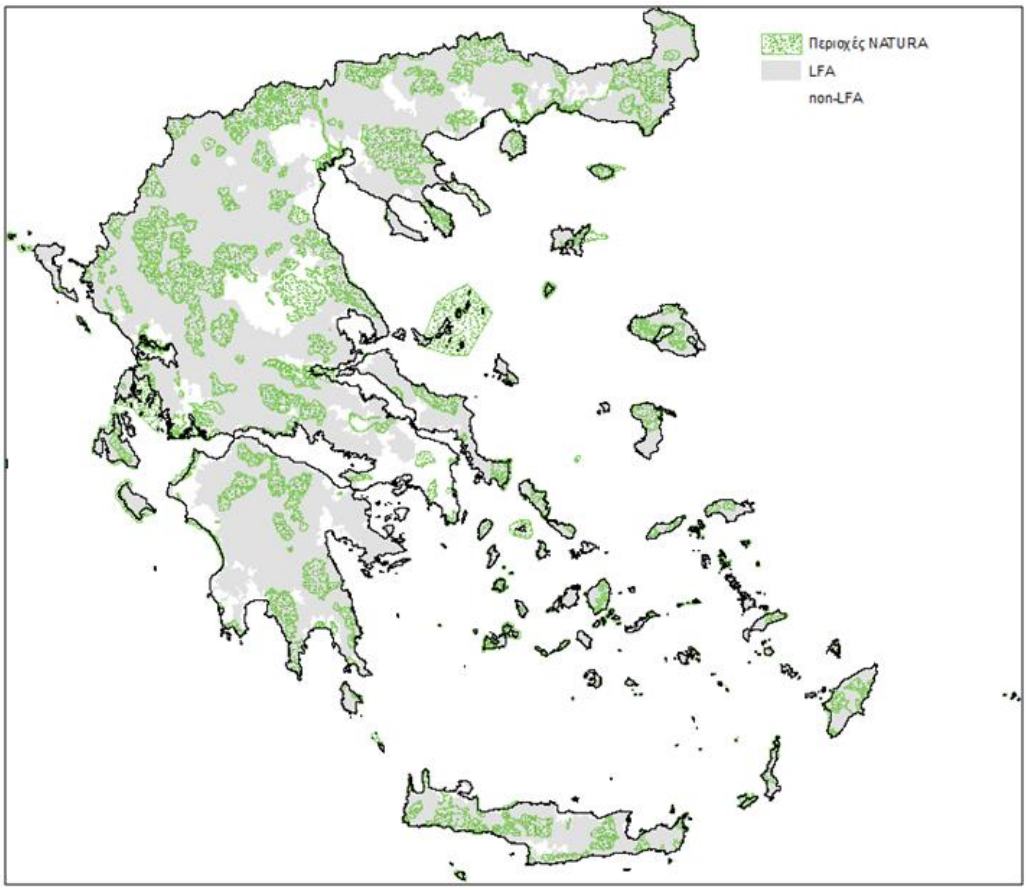
The second has been the focusing of RDP investment support measures to livestock farms especially the promotion of special investment plans for small and very small livestock farms mainly for the provision of infrastructure such as milking machines and milk conservation equipment, establishing a fast track procedure for applying and funding of such projects. However, the level of acceptance by livestock farmers of this, specifically designed, has not been encouraging (MINAGRIC, 2015)

[3] It is worth noting that when there was a choice between the regional and the historical model, the decision of the Greek authorities was in favour of the latter, albeit the imbalance between the subsidies received by animal husbandry and plant production was more than evident.

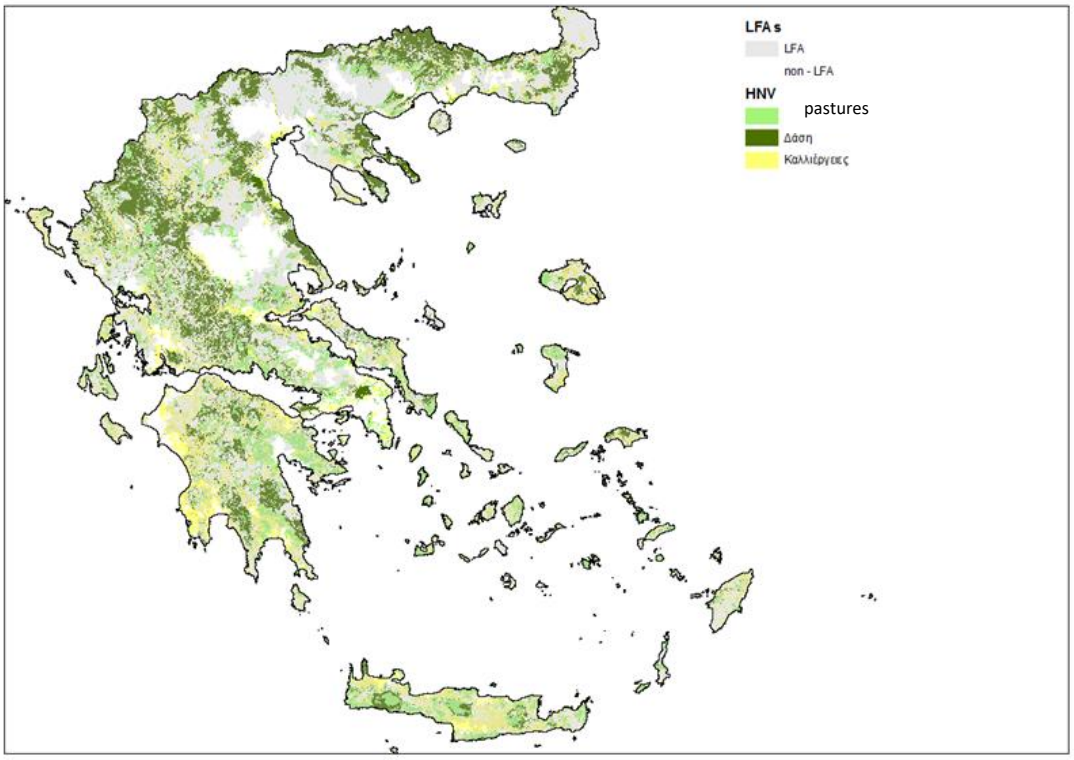
The third part of the second pillar support measures that could be of interest for sheep and goat farmers, apart from organic livestock production referred to in section 4.2.3., could be the agrienvironmental scheme for the extensification of livestock farming launched within the Measure 214 framework of the 2007-2013 RD programming period. The scheme had two options. The first has been to expand the grazing area by renting more land in continental Greece and the second to lower the grazing load by reducing flock sizes in islands where pastures are scarce. Participation in this scheme has not been wide and in the case of the case study area there was no such scheme implemented, because of a prerequisite for a pasture management plan which was not fulfilled.

4.2.2 Environmental policy

A large part of the protected areas under the Natura network are used for grazing and that of course results to the fact that biodiversity conservation measures of the EU environmental policy have a considerable impact on pastures and hence on livestock farmers, especially sheep and goats' farms who depend almost entirely on free grazing. It is indicative that 18.9% of the NATURA 2000 area are used for extensive grazing systems (Map 3).

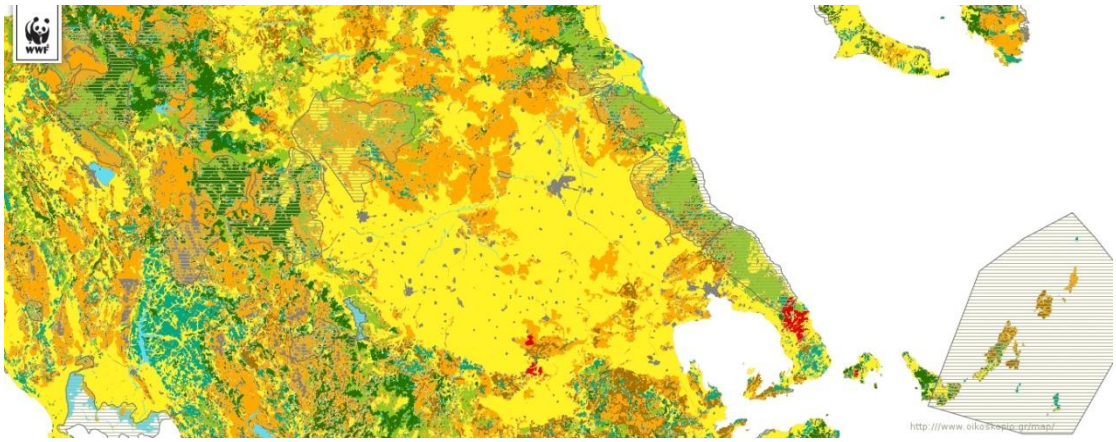


Map 4. Natura 2000 areas in LFAs



Map 5. High Nature Pastures in LFAs

Furthermore, extensive livestock systems covered 246,516 ha (47.6% of the UAA) see also Map 4.



Map 6. Map of the protected areas of the case study area

Source: WWF, Oikoskopio (http://www.oikoskopio.gr/map/)

Finally, a significant part of the area (the one shaded in map 5) is lying within the Natura 2000 network.

4.2.3 Environmental management

4.2.3.1 Organic livestock farming

Environmental management is also expressed through organic farming. The first legislation developed for organic farming in EU was the Regulation 2092/1991 for organic plant production although organic farming exists for more than 80 years. The main objectives of this regulation are the protection of the environment through organic management practices, and the protection of consumer health through the production of organic products. Legislation for organic livestock production was issued after long delay, with the Council Regulation (EC) 1804/1999 for organic animal production which is essentially a supplement for livestock products from Regulation 2092/91 for organic plant production. The main objectives are the establishment of environmentally friendly production, to sustain animals in good health, to realize high animal welfare standards, and to yield products of high quality. Organic livestock is directly linked to organic farming since animal nutritional needs, besides grazing, are covered through organic feed.

Organic livestock farming in Greece was significantly delayed, almost a decade later by other European countries, since for several years the national legislation for organic livestock farming hasn't been enacted until 2002. The increase in the number of animals under organic farming (Table 13) is significant since the number of animals have multiplied since the implementation of the program in 2002. During the period 2002 – 2006, the number of sheep under organic farming increased by 260%, corresponding to the 2.9% of the total sheep population in Greece and the 9% of the organically bred sheep in EU (Tzouramani et al, 2008) This is mainly due to the favorable conditions that already existed in the Greek livestock production, such as small size, extensive and family based holdings that formed the basis of organic farming (Miliadou et al, 2010).

Table 13. Organic livestock aggregated data (2008-2015)

Animal Type	2008	2009	2010	2011	2012	2013	2014	2015
Bovine	20,254	28,618	23,109	22.959	66,846	71,034	70,346	68,454
Sheep	316,243	357,499	288,923	251.768	593,609	610,489	604,364	609,617
Goat	296,243	309,060	226,556	180.039	349,789	356,002	353,964	344,479
Pigs	60,918	54,631	42,991	28.665	6,292	4,797	4,664	4,203
Poultry	239,452	266,182	368,689	330.209	n.a.	n.a.	203,154	279,915
Beehive	110,203	14,302	13,695	14.865	n.a.	n.a.	n.a.	n.a.
n.a.*: Not Available*								

Source: Ministry of Agriculture and Food (elaboration by the authors)

Greece has a comparative advantage compared to other countries with regard to livestock farming, due to favourable soil and climate conditions and the implementation of extensive farming, which can easily be converted to organic. But, the conversion from conventional to organic of small ruminant production although it appears to be less complex in management than in other animals, farmers seems to face certain difficulties over this process (Nardone et al, 2004). According to the

study by Tzouramani et al. in 2011, Greek animal farmers are facing insufficient technical support concerning organic methods, the feed management, the disease control, breeding strategies, the poorly organised markets, the limited number of certified slaughterhouses, the low educational level of farmer and the scarcity of skilled personnel, the small size of farms, as well as the scarcity of extension services and scientific activities. But as many studies indicate, the major problem is that the price for organic products is very small, and in many cases farmers shell their organically produced milk and meat as conventional, without getting any premium at all (Tzouramani et al, 2011). According to this study, the expected net return of organic farming is 15.56% higher than it is for conventional farming. This is mainly due to subsidies, in the absence of which the activity is not economically viable and not the price of organic products (Tzouramani et al, 2008). Organic livestock farming seems to be a promising solution, mainly for the mountainous and semi-mountainous areas in which pastureland are abundant and intensive livestock farming are rarer. A well established market and an organic price premium of 20% for organic milk and meat may improve the economic results of organic livestock farming, making it a viable way out for sheep and goat farmers even without subsidies.

According to the data of Ministry of Agriculture and Food there were 46 businesses registered in the area of manufacturing organic cheese and other dairy products in 2006. The number of organic manufacturing businesses presented an upward trend until 2009, the year with the maximum number of 106 businesses. Afterwards, the sector followed a downward trend with a minimum number of 47 organic dairy manufacturers registered in 2013. In practice this means that the sector is clearly affected by the recession and the declining consumer incomes that have reduced their spending on organic products (MINAGRIC, 2015).

4.3 Market conditions of dairy producers

4.3.1 The dairy chain in Greece

4.3.1.1 Trade analysis of dairy and cheese products

- *Imports evolution*

Total imports of dairy products showed an upward trend in 2008-2010. After a temporal decline in 2011-2012, a slight increase by 1.6% was observed in 2013 (Table 14). The value of imports amounted 357.8 million euro in 2013, compared to 329.6 million euro in 2012 (8.5% increase). In regard with the countries the products were imported from, Germany had a share of 47.8% of the total imported quantities, followed by the Netherlands (12.3%) and Hungary (9.1%) (ICAP, 2014).

Table 14. Imports of dairy products by category, in tonnes (2008-2013)

Product category	2008	2009	2010	2011	2012	2013
Total milk	260,638	263,902	331,290	301,829	238,674	239,242
Sour milk (UHT)	15,417	28,099	31,241	37,898	26,707	26,713
Total yogurt	13,411	14,565	14,996	14,674	15,425	16,262
Other fresh milk products	6,545	7,116	4,992	2,759	1,998	1,610
Whey and other products	8,463	7,952	6,742	6,547	6,499	9,125
Total butter	10,280	10,429	9,628	11,086	8,919	10,088
Total imports	**314,755**	**332,063**	**398,890**	**374,793**	**298,222**	**303,130**

Source: ICAP, 2014

The imports of cheese products were presenting an upward trend in the previous years until they reached their maximum value in 2009. It is worth mentioning, that in 2002 cheese imports amounted 70.2 thousand tonnes and in 2009 were amounted 125 thousand tonnes, a cumulative increase of 78% (Figure 4, Table 15) (ICAP, 2013). However, after 2009 imports declined by 4% in 2010/11 and by 3.4% in 2011/12 reaching eventually 110 tonnes in 2012.

Table 15. Imports of cheese products by category, in tonnes (2006 - 2012)

Category	2006	2007	2008	2009	2010	2011	2012
Semi - hard cheese	45,267	66,487	59,069	65,228	62,846	61,924	53,914
Hard Cheese	24,237	28,394	30,356	31,428	29,096	27,630	35,972
Soft Cheese	17,501	13,185	13,650	14,138	14,455	14,844	11,883
Other	9,806	10,179	9,419	14,221	12,268	9,486	8,273
Total Imports	**96,811**	**118,245**	**112,494**	**125,015**	**118,665**	**113,884**	**110,042**

Source ICAP, 2013 (elaboration by the authors)

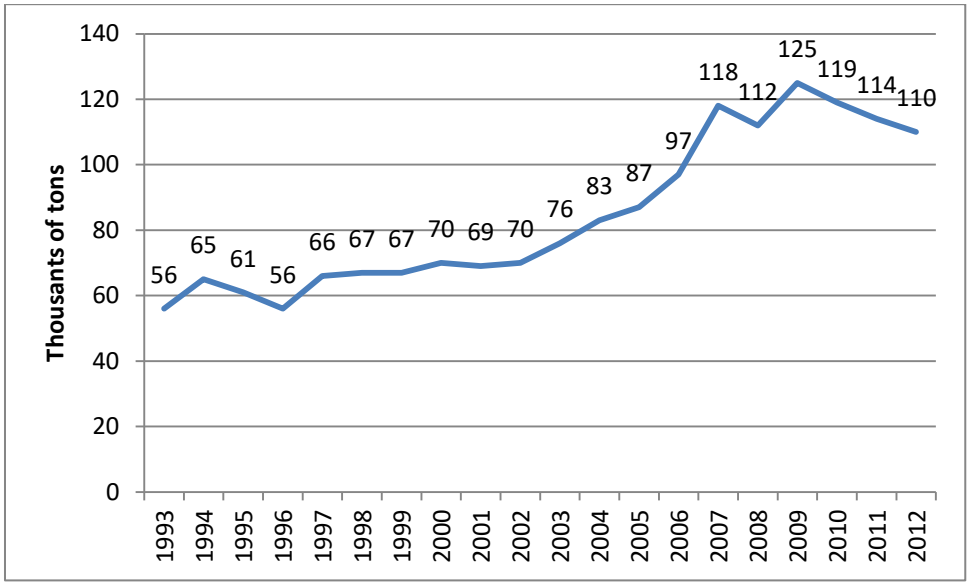


Figure 4. Evolution of the imports of cheese products (in quantities, 1993 -2012)

Source: ICAP, 2013 (elaboration by the authors)

The value of total imports reached 406.5 million euro in 2011 and 391.4 million euro in 2012, reduced by 3.7%. In terms of cheese type, the biggest volume of imports regards "semi-hard cheeses" followed by "hard cheeses" and "soft cheeses". Regarding the countries the cheeses were imported from, Germany covered 32.9% and the Netherlands 30.1% of imports (ICAP, 2013).

- *Exports evolution*

In the period 2008-2012 the exports of dairy products showed variable trends. In 2013 the exported quantities were up to 46,672 tonnes, increased by 21.4% compared to 2012 (Table 16). At the same time, the value of exports amounted to 103.4 million euro versus 79.1 million euro in 2012, a rise of 30.6% (ICAP, 2014).

Table 16. Exports of dairy products by category, in tonnes (2008 – 2013)

Product category	2008	2009	2010	2011	2012	2013
Total quantity of milk	2,602	3,144	3,110	2,924	2,660	2,954
Sour milk (UHT)	262	1.238	524	241	462	815
Total quantity of yogurt	23,468	22,015	23,087	24,924	27,849	34,320
Other fresh milk products	404	990	2.925	797	893	678
Whey and other products	5,060	13,565	11,822	10,095	6,474	7,579
Butter	270	59	156	127	101	326
Total exports	**32,066**	**41,011**	**41,624**	**39,108**	**38,439**	**46,672**

Source: ICAP, 2014

Greek dairy products were exported mainly to, the United Kingdom which absorbed the 18.3% of the exports, followed by Italy (17.7%), Bulgaria (11.6%) and Cyprus (8.2%) (ICAP, 2014). The main product exported is yogurt, which received 73.5% share of the total export volume in 2013.

Exports of cheese products have diachronic rise in the recent years (Figure 5). Specifically, in 2012 the total exported quantities amounted to 50.7 thousand tonnes presenting an annual increase of 3.5%. The value of exports amounted to 274 million euro in 2012, versus 237.5 million euro in 2011 (up 15.4%). Main destination is Germany, which received 32% of the total Greek cheese exports in 2012 followed by the United Kingdom, Cyprus and Italy with respective rates of 12.2%, 11.3% and 9.2%. The value of exports amounted 237.5 million euro in 2011 and 274 million euro in 2012, an increase of 15.4%. As regard as the countries the cheeses were exported to, Germany absorbed 32% of the exports, followed by the United Kingdom (12.2%), Cyprus (11.3%) and Italy (9.2%) (ICAP, 2013).

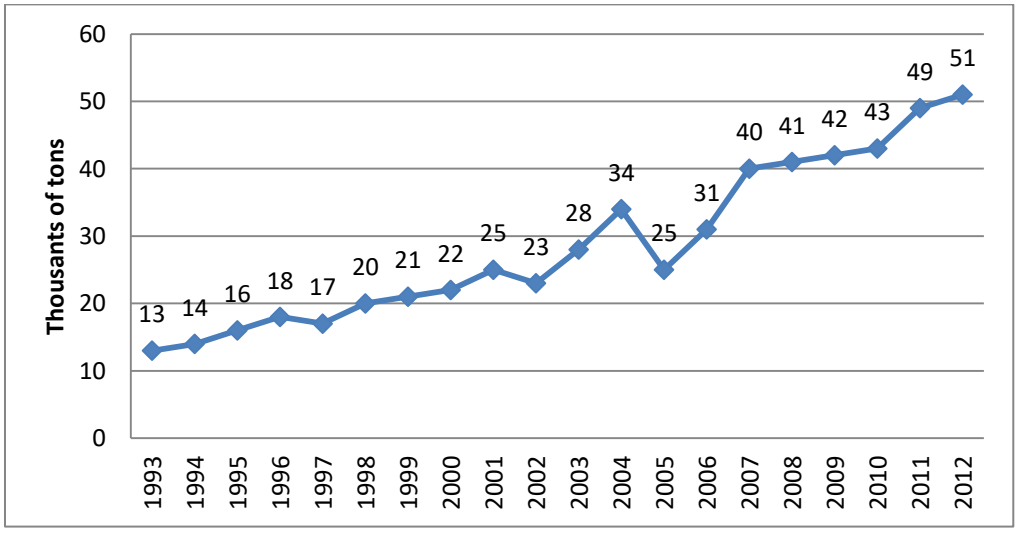


Figure 5. Evolution of exports of cheese products (in quantities, 1993-2012)

Source: ICAP, 2013 (elaboration by the authors)

The largest share of exports held by the category "Feta and Telemes", covering 68.5% of total cheese exports in 2012 (Table 17). The second largest category in exports is “hard and semi-hard cheeses”. This category includes Graviera, Kefalograviera, Kefalotiri and Pecorino type of cheeses. Exports of these products accounted for 16.4% of the total cheese exported quantities in 2012. “Fresh whey cheeses”, which mainly, include Anthotyro and Myzithra and “other fresh cheeses”, mainly Manouri, accounted for only 1.7% of the total exports in 2012.

Table 17. Exports of cheeses by category, in tonnes (2008 – 2012)

Year	2008	2009	2010	2011	2012
Feta and Telemes	28,773	29,469	32,963	34,029	34,766
Hard and semi-hard cheeses	9,158	8,810	7,614	11,473	8,339
Whey fresh cheeses and other fresh cheeses	521	556	698	675	869
Other cheeses	2,908	2,819	1,972	2,848	6,785
Total exports	**41,360**	**41,654**	**43,247**	**49,025**	**50,759**

Source: ICAP, 2013

- *Competitiveness of dairy and cheese products*

Although in the recent years exports have significantly increased, in no way does this mean that the dairy sector has become competitive, since the different categories composing the sector, display significant differences between them in relation to the degree of competitiveness. As it is presented in Table 18, besides yogurt which receives positive values, all the other products are receiving negative values, since imports, diachronically, are exceeding exports (ICAP, 2014).

Table 18. The competitiveness of dairy products based on Balassa index[4] (2007-2013)

Product groups	2007	2008	2009	2010	2011	2012	2013
Milk	-0,96	-0,96	-0,95	-0,95	-0,95	-0,95	-0,95
Sour milk (UHT)	-0,92	-0,97	-0,96	-0,96	-0,98	-0,96	-0,92
Yogurt	0,54	0,43	0,32	0,45	0,46	0,54	0,61
Other fresh milk products	-0,59	-0,87	-0,67	-0,55	-0,26	-0,23	-0,24
Whey and other products	-0,62	-0,77	-0,51	-0,45	-0,39	-0,38	-0,27
Butter	-0,99	-0,95	-0,99	-0,97	-0,98	-0,97	-0,94
Total	**-0,66**	**-0,71**	**-0,7**	**-0,68**	**-0,68**	**-0,61**	**-0,55**

Source: ICAP, 2014

[4] Balassa index is expressed by the formula: [(X-M) / (X + M)], where X = Value of exports and M = Value of imports. The extreme values are +1 for the most competitive product and -1 for the not competitive at all products.

The same applies for the competitiveness of the Greek cheese products, which is diachronically negative (Table 19); however there is a clear improvement in its competiveness (ICAP, 2013).

Table 19. Evolution of the competitiveness of cheese products based on Balassa index

Year	Value of Exports	Value of Imports	Trade Balance	Balassa Index
2006	146,919,455	323,261,401	-176,341,946	-0,38
2007	172,660,900	369,213,165	-196,552,265	-0,36
2008	198,329,058	406,394,633	-208,065,575	-0,34
2009	204,377,658	360,677,629	-156,299,971	-0,28
2010	219,626,377	388,462,513	-168,836,136	-0,28
2011	237,519,755	406,579,377	-169,059,622	-0,26
2012	273,997,023	391,457,339	-117,460,316	-0,18

Source: ICAP, 2013

4.3.1.2 The demand for dairy products and cheese

Dairy products (as a whole) are a staple food for Greek consumers since they are consumed on a daily basis and presenting a high demand and relatively low elasticity regarding the selling price and the disposable income. However, in recent years, consumers' choices are significantly influenced by the price of the various brand products available in the market. In addition, a key feature of cheeses demand is that the consumers' choices are based mainly on the type, category or geographical area of origin of cheese and less on a specific company brand, but nevertheless, the demand for dairy products is affected by the availability of competing and substitute products that are offered at a lower price (ICAP, 2014).

An important trend in the food market is the growing penetration of private label products, which is expected to grow further in the near future. The main attraction of private label products is the price, which is lower than of the brand-name products. This change of consumer's behavior is mostly attributed to their reduced purchasing power due to the economic crisis (Parpouna, 2015).

The consumer price index, which is presented in Table 20, increased in almost all categories of products during 2010-2014. Feta and yogurt recorded the biggest rise in 2014 compared to 2013, namely 2.2% and 2.1%, respectively. Other factors influence consumers behavior toward these products regards specific features of these products, such as taste, quality, duration of use, nutritional value, package etc. and sometimes even the ease of access to the point of sale (ICAP, 2014).

Table 20. Consumer price index for cheese and dairy products (2006 - 2016)

	2006	2008	2010	2012	2013	2014	2015	2016 (Jan- Sept)
Feta	90.91	97.91	101.78	104.19	106.03	108.37	99.75	97.94
Hard Cheese	88,6	101,76	101,22	106.04	106.65	108.86		
Pasturised Fress Milk	101.3	109.24	98.15	108	108.52	110.27	101.48	99.72
Chocolate Milk	89.73	99.29	99.83	104.91	106.21	107.98	103.26	100.85
Preserved Milk	89.05	100	100.8	101.91	99.22	101.28	99.29	95.69
Yogourt	94.39	100.87	96.48	100.83	102.57	103.90	104.34	103.08
Other Dairy	93.9	99.3	97.62	98.07	96.64	95.30	101.99	102.73
Milk Butter	75.52	98.64	100.83	107.18	105.51	106.18	105.52	104.06
Food and non-alcoholic beverages	90.21	98.13	100.06	104.73	104.74	131.06	104.83	104.78

Source: Greek Statistics Authority (elaboration by the authors)

Due to the economic crisis, the total household expenditure, on a monthly basis, declined from 2008 to 2014, more than 30% (Table 21). However, this significant drop is not observed in food expenditure and total expenditure for dairy products and cheese had a decrease of only 13%. It is worth mentioning that the share of the total expenditure for dairy products and cheese in the food expenditure has remained almost stable between 2008 and 2014, ranging from 17% to 18%, fact that is justified by the important position of dairy products and cheeses in the Greeks' dietary habits (Parpouna, 2015). On the other hand, the domestic consumption of cheese in the same period has dropped from 3.6 kg in 2009 to 3 kg in 2014.

Table 21. Average monthly households' total expenditure (in euro), expenditure for food, dairy products and cheeses and % share of dairy products and cheeses in food expenditure (2008-2014)

Year	Total expenditure	Food expenditure	% share of food expenditure in total expenditure	Total expenditure for dairy products and cheeses	% share of dairy products and cheeses in food expenditure
2008	2,117.67	326.71	15.43	59.36	18.17
2009	2,065.11	335.38	16.24	59.15	17.64
2010	1,956.42	330.81	16.91	56.88	17.19
2011	1,824.02	334.51	18.34	58.16	17.39
2012	1,637.10	311.60	19.03	55.52	17.82
2013	1,509.39	290.96	19.28	52.45	18.03
2014	1,460.52	283.90	19.44	51.23	18.04

Source: (ELSTAT: Family Planning, 2008-2014)

The highest average monthly expenditure on dairy products mainly concerns the expenses made for pasteurised milk (13.78 €), followed by expenses for yogurt (7,45 €) which is relatively high compared with other dairy products. Between 2008 and 2014, the amount of money spent by households for cheese has reduced, reaching in 2014 its lowest level (24,27 € per month) (Table 22).

Table 22. Average monthly households' expenditure (in Euro) for cheeses and dairy products, by category (2008-2014)

Year	Cheeses expenditure	Soft cheeses	Hard cheeses	Low-fat cheeses	Dairy products expenditure	Pasteurised milk	Yogurt
2008	28.38	16.1	11.45	0.82	30.98	15.43	7.56
2009	28.92	16.34	11.64	0.93	30.23	14.49	7.9
2010	28.56	15.75	11.83	0.99	28.32	13.31	7.72
2011	29.38	16.4	11.96	1.02	28.78	13.94	7.76
2012	27.74	15.69	11.28	0.77	27.78	14.3	7.22
2013	25.92	14.57	10.53	0.83	26.53	13.63	7.08
2014	24.27	13.77	9.57	0.93	26.96	13.78	7.45

Source: (ELSTAT: Family Planning, 2008-2014)

The major part of the total consumption of cheese is covered diachronically by the Greek cheeses. Their share in the overall market presented a slight increase in the recent years (at 67.5% in 2012), but remains below the 2000-2005 levels (ranging between 71% and 75%) (ICAP, 2013). The

consumption of imported cheese also presented an upward trend until 2009. Their participation in total consumption ranged between 32-34% in the recent years.

The category 'Feta Telemes and soft cheeses' is ranging first, with the largest share both in the consumption of Greek cheeses, as well as the total cheese consumption. Specifically in 2012 amounted for the 46.8% of total domestic cheese consumption and the 69.3% among the Greek cheeses. The category of semi-hard and hard cheese (from sheep and goat or cow's milk) is the second category of Greek cheese products with the highest consumption. In particular, this type of cheeses gained a share of 14.1% of the total cheese consumption in 2012 (ICAP,2013).

According of estimates of ICAP for cheese products packed products in 2012 were covering the 13% of the total consumption of cheese products. Nevertheless, with regard to cheese consumption only through super markets and other retail points, the rate of packed cheese reaches the 23% for 2012. According to estimates by the stakeholders, the market of packed cheese in 2012 declined by 8% (by volume) compared to 2011 (ICAP, 2013).

The growth of packed cheese based to a considerable extent to the significant advantages they present compared to the products sold bulk and is related to issues such as practicality, safety, time saving etc. However, considering the fact that the packed cheese is sold at a higher price compared to the bulk, the limitation of the consumers' disposable income due to the prolonged economic recession led to the reduction of the consumption of packed cheese in 2012 (ICAP, 2013).

4.3.1.3 Distribution Channels of Dairy and Cheese Products

The size and the degree of organization of the industry determine the distribution of their products. The big production and importing companies distribute its dairy products mainly through its own distribution network and partly through dealers and wholesalers. Their own network usually covers the all country, while local representatives-distributors serve some areas that are geographically remote from their distribution centers and warehouses (ICAP, 2014).

The smaller companies cooperate with dealer networks, intermediaries and wholesalers, while several of them sell their products directly to their stores or the local market.

More specifically dairy products are available through:

- Small Selling Points channel: it concerns, small outlets (kiosks, convenience stores, dairies, bakeries, gas stations etc.) which elicit significant proportion of total sales of dairy, as they cover the "spontaneous" consumer desire for dairy products. Indeed, certain categories of products (such as chocolate milk) handled mainly through this channel.
- FOOD channel: this channel includes super - markets (S/M). Over the last two decades, there has been impressive growth in S/M chains, both in terms of geographical expansion of the branch network, as well as of broadening the range of products and services available.
- Professional: this channel includes the foodservice premises (restaurants, hotels, bakeries) and catering units. The volume of sales of dairy products marketed through this channel is not easy to determine, since the quantities marketed are not systematically counted.

According to the ICAP sectoral study on dairy production in 2013, most of the dairy products that channeled through the super markets and other retail shops such as kiosks, bakeries, convenience stores etc. was the 80-85%, while the through restaurants, fast foods', catering companies etc. was channeled the 15-20% of the dairy products in 2013.

The situation seems to be a little different regarding cheese absorption by the market since through the super markets and other retail shops was channeled the 55-58% of cheese products in 2012 and the rest 42-45% was channeled through restaurants, fast foods', hotels and catering companies (ICAP, 2013). According to this study, the share of retail stores is expected to widen further, at the expense of the other channels as the current economic environment is turning an increasing number of consumers to reduce consumption outside the house.

Regarding the distribution of cheese products from the companies of the sector (production and import), it is estimated that about 45% is distributed directly from the industry to the super markets and other retail points, while a share of 50% is distributed through wholesalers. Finally, a small part of cheese products are allocated directly to catering services, restaurants, hotels etc. since this channel is covered mainly by the wholesalers (ICAP, 2013).

4.3.2 Promotion of products

The competition that exists between production and importing companies of dairy products is driving primarily the large sized companies in the implementation of various ways to promote their products, both addressed to final consumers and to retailers. An important instrument used by the companies of the industry for the placement of their products in retail stores are various discounts (on volume or sales value) credits and extra benefits. The benefits to their major retailers (such as super markets) have increased significantly in the resent years, so as to ensure a better position for its products in the stores against its competitors. Credits and discounts provided vary according to the method of payment and the agreement signed between the two parties. The benefits to consumers concern either economic packages (larger amount of product to the same value) or discount in the price of the product (ICAP, 2013).

The large companies of the sector spend large amounts on advertising their products while they also engage in promotions such as discounts, offering of economic packaging (eg 2 + 1 gift etc.). By contrast, smaller companies of the sector aiming at local markets, particularly highlighting the "locality" of their products and of the raw material that they use.

An important trend in the food sector is the increasing penetration of private or own label. Generally, private label products have increased their sales over the last years and it is expected to present a further growth (ICAP, 2014). Their main advantage is considered to be their lower price against 'brand' products, which is an attractive attribute for the consumers, especially during the economic crisis. Most of these products are considered from the consumers, to be of quality without any disadvantages against the respective branded products. More specifically, for the dairy sector, the private label products are mainly yogurt and high pasturised milk, produced by domestic industries or there are imported on behalf of certain supermarkets and branded after the name of the supermarket. In the category of fresh pasturised milk the penetration of private label is not that easy

due to the specificity of the product (short expiring date) and the consumers' preference in branded products. In regard with cheese products, the resent years are available through large supermarkets, mainly white cheese, while it is estimated to have extorted 10% of the sales through the retail markets (ICAP, 2013).

4.3.3 Suppliers and buyers negotiating power

The main raw material of dairy industries is milk, which is supplied by farms, since most of them do not have vertically integrated production. The big industries usually conclude trade agreements with many producers while, under these agreements there are providing for the control and the quality assurance of the milk, as well as for the transportation. In addition, in order to cover their needs in milk big dairy industries are importing milk from other EU countries. Producers' negotiating power over the price of milk is marginal, due to the fragmentation of production in a large number of small dairy farms and the absence of an integrated and solid organisation of the livestock sector.

On the other side of the chain, the size of the client in conjunction with the volume of the orders for dairy products is an important determinant of their bargaining power. Therefore, supermarkets have a considerable negotiating power as buyers, the largest of which supply the products directly from the dairy industries. The 'power' of supermarkets stems from the high volume of quantities they supply as well as by their ability to contribute to the recognisability of the product. Furthermore, their negotiating power strengthens even more if they sell private label products. Smaller points of sales do not have considerable negotiating power because they are handling small orders. Finally, buyers from the HO.RE.CA. Sector (Hotel - Restaurant - Cafe) have, in general, much smaller negotiating power.

In general, the market of dairy and cheese products is a very competitive market, in which are operating few very large industries and a large number of small enterprises. Large industries, which are equipped with modern machinery equipment and are producing a variety of products, have the ability to respond faster in the new demands arise in the market. In the same time, some of those companies have developed extended distribution networks, covering the majority of Greek territory while they have the ability to provide considerable amounts for the advertisement and the promotion of their products, as well as for the research and development of new types of products packaging. In their effort for diversification and strengthening their market share, are making strategic moves such as enriching the variety of the products, quality improvements, packaging renewals etc.

From the other side, small enterprises, due to lack of capital are not able to undertake significant investments in order to upgrade and modernise their production establishments or to package their products. Furthermore, their distribution network is relatively narrow. However, they manage to extract, at least at local level, remarkable shares of market. The competition, is not limited between the sectors' actors, but extends to retail (supermarkets), which react mainly through private label products (ICAP, 2013).

4.3.4 Production and inputs costs of Greek dairy farmers

Despite the importance of agriculture for the Greek economy, the primary sector faces decreased competitiveness, intense structural problems and very low income sustainability. All these issues have been intensified by the economic crisis. According to the SWOT analysis for the mapping of the current condition of the agricultural sector within the Rural Development Programme 2014 – 2020, as main reasons are reported to be the massive food and agricultural products imports, the low productivity, the increased production cost and the low degree of farmers bargaining power in the input supply.

The cost for energy has been increased by 216% in the period 1995 - 2011, while in the period 2010 - 2013 the agricultural income presented downward trend by 10% also due to the increase of the taxes and the interest rates by 150% and 40% respectively. In other words, the recession has increased excessively the production costs due to the tax on fuel and other inputs in agriculture. Additionally it increased the cost of money in agriculture and in manufacturing and has made it difficult to trade due to lack of trust to business (Speed, 2015).

The absolute cost of inputs purchase in Greece is extremely higher than our competitors in terms of similar Mediterranean products (e.g. Spain, Italy had no data on this variable) but also compared with countries engaged to typical north-European agriculture (eg Germany, UK).For example, the cost of diesel due to the taxes is almost double that of in Spain and the United Kingdom (Figure 6). Moreover, the diesel consumption is higher in Greek agriculture due to the fragmentation of the land, the landscape and the irrigation which is often carried out with diesel engines. The same applies with almost all the basic animal feedingstuffs used in free or stabled livestock breeding (Speed, 2015). The same applies for the capital costs (capital and interest) and the rental costs of machinery which are presenting a highly upward trend (Speed, 2015).

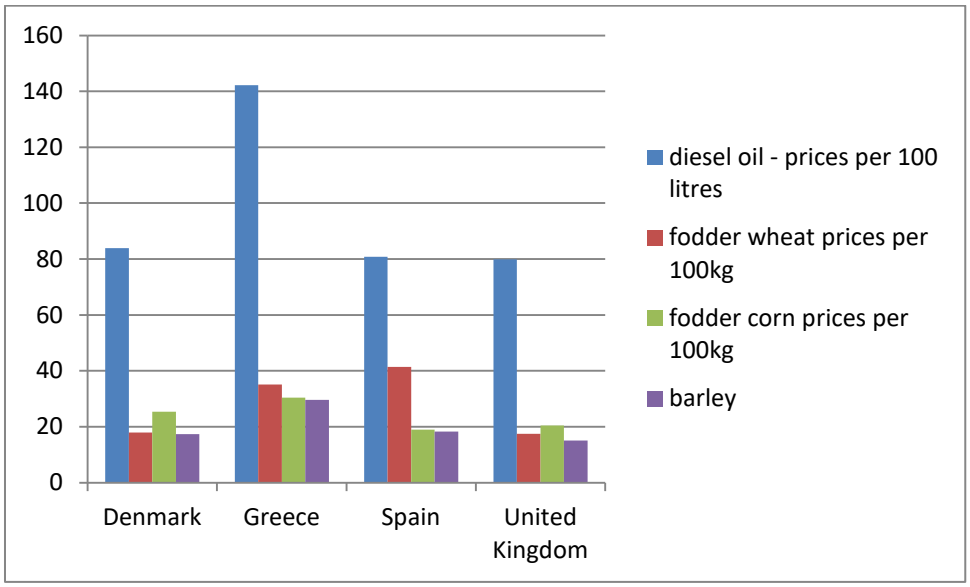


Figure 6. Cost in Euro of selected inputs in livestock farming – Energy and feedingstuffs in 2014

Source: Eurostat (variable: apri_ap_ina) (elaboration by the authors)

The same applies for almost all the common feedingstuff in extensive of stabled livestock farming. Alarming is also the course of input cost in time (Figure 7) since even the cheapest fertilizers is Greece are presenting an upward trend due to the increased oil and energy prices.

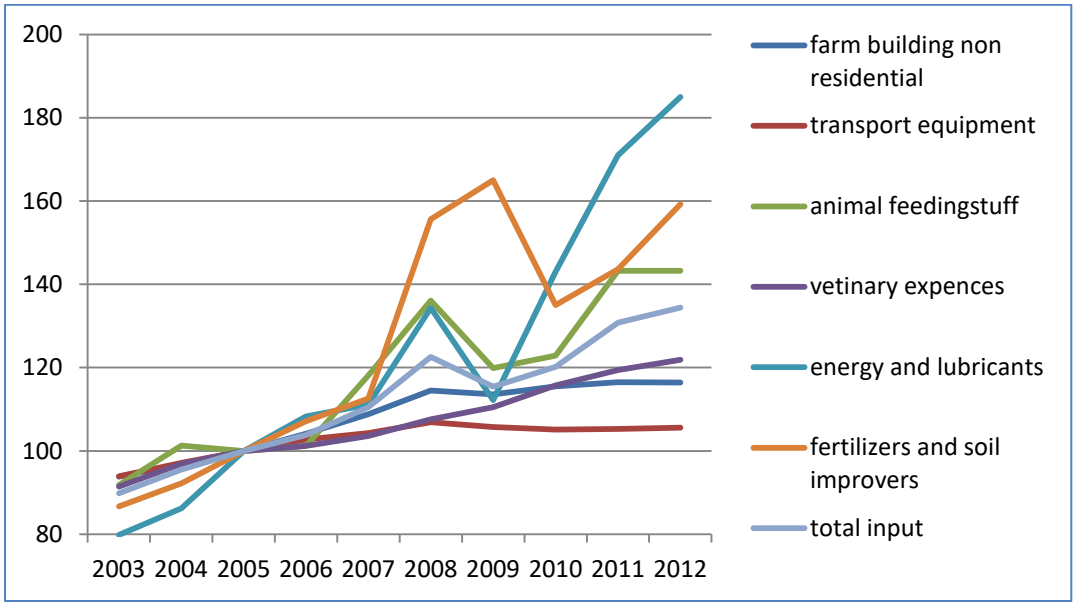


Figure 7. Evolution of price indices of the means of agricultural production, input (2003 -2012)

Source: data by Eurostat (variable: apri_pi05_ina). (Elaboration by the authors)

The need to survive in a difficult economic and market environment pushes farmers to follow different management practices which include cost reduction methods such as reduction of expensive feed and the use feed from other countries as well as optimum management practices of the herd. (Karelakis et al, 2014). But on the other hand, the SWOT analysis conducted for Rural Development Programme state in a more pessimistic manner that *"the high production cost of in Greek agriculture and livestock breeding weakens any comparative advantage and competitiveness and combined with the full decoupling, have made the decision not to crop the land quite attractive. At the same time it weakens the farmers' incomes and discourages the new entrants to farming. Finally, the high cost is marginalizing a large part of agricultural holdings which before the recession could function, although less competitive, hoping to improve their competitiveness" (*Speed, 2015).

4.3.5 Cheese categories and PDO PGI cheeses

The main categories of cheese according to the type of milk used for the manufacture are divided to cow, sheep, goat, buffalo etc. cheeses.

Depending on the moisture contained in the mass:

- Very hard cheeses (moisture content less than 32%)
- Hard cheese (moisture content between 32% - 38%)
- Semi-hard cheese (moisture content between 38% -46%)
- Soft cheese (moisture content between 46% - 58%)

- Fresh cheese (moisture content between 58% - 75%)

Depending on the fat content divided into:

- Low fat cheeses where the fat content in the dry substance is less than 25%
- Half-fat cheeses, when the content of fat in dry substance varies between 25% - 45%
- Fatty cheeses where the content of fat in dry substance exceeds 45%.

Depending on whether the curd sustained heat treatment during the preparation of the cheese, cheeses are distinguished between heated or not.

The European Union, having accepted the diversity of each Member State as regards the customs, traditions and diet has adopted the Council Regulation 2081/92 for the protection of the geographical indications (PGI) and the designations of origin (PDO) of the agricultural products and food, which was replaced by the Regulation 510/2006 and amended with the Regulation 417/2008.

The 21 Protected Designations of Origin (PDO) Greek cheeses have a number of common standards. There are prepared with traditional technology from milk which is derived from goats, sheep and/or cows which are reared in the defined geographical area, they have been fully adapted to the environment and their diet is based on the flora of the region. The preparation and the maturation of those cheeses incurred in facilities located within the defined geographical area. During the preparation is prohibited the condensation, the addition of powder or concentrated milk, casein salts, colorants, preservatives, and antibiotic substances.

The names of the products which have been accorded with protection, are subject to a control system that enshrineσ both the producers from imitation products as well as the consumers from misleading indications on food.

In the list below are displayed the Greek PDO cheeses along with their main characteristics, the area of their production and the current number of processing units licensed by ELOGAK.

- **Feta** is a soft white PDO cheese ripened in brine prepared from sheep milk or mixture of sheep with up to 30% goat milk. There are totally 240 processing units licensed to produce, pack and standardize PDO Feta cheese.
- **Kasseri** is a semi-hard yellowish PDO cheese from sheep milk or mixture of sheep with up to 20% goat milk. It is produced in the administrative regions of Western and Central Macedonia and in the regional units of Drama Kavala, Xanthi and Lesbos. There are totally 36 processing units licensed to produce, pack and standardize Kasseri.
- **Kefalograviera** is a hard white to yellowish PDO cheese made from sheep milk or mixture of sheep with up to 10% goat milk. It is produced in the administrative regions of West Macedonia and Epirus and in the regional units of Aetolia-Acarnania and Evrytania. There are totally 40 processing units licensed to produce, pack and standardize Kefalograviera.
- **Graviera Kritis** is a hard yellowish PDO cheese from sheep milk or mixture of sheep with up to 20% goat milk. It is produced in the administrative region of Crete. There are totally 30 processing units licensed to produce, pack and standardize this PDO cheese

- **Graviera Naxou** is a hard yellowish PDO cheese made from cow milk or mixture of cow with up to 20% sheep and goat milk. It is produced in the island of Naxos, regional unit of Cyclades. There are totally 3 processing units licensed to produce, pack and standardize this Graviera Naxou
- **Manouri** is a soft white PDO cheese made from the whey of either goat, sheep or mixture of goat with sheep milk with an addition of sheep or goat milk or their cream. It is produced in the administrative regions of Central Macedonia, Western Macedonia and Thessaly. There are totally 27 processing units licensed to produce, pack and standardize Manouri.
- **Kalathaki Limnou** is a soft white PDO cheese ripened in brine from sheep milk or mixture of sheep with up to 30% goat milk. It is produced in Limnos Island, regional unit of Cyclades. There are totally 3 processing units licensed to produce, pack and standardize Kalathaki Limnou.
- **Ladotyri Mytilinis** is a hard white to yellowish PDO cheese from sheep milk or mixture of sheep with up to 30% goat milk. It is produced in Lesbos Island, regional unit of Lesbos. There are totally 11 processing units licensed to produce, pack and standardize Ladotyri Mytilinis.
- **Katiki Domokou** is a soft white spreadable PDO cheese from goat or mixture of goat with sheep milk. It is produced in the plateau of Orthys, Domokos district in the Regional unit of Phtiotis. There are totally 2 processing units licensed to produce, pack and standardize Katiki Domokou.
- **Galotyri** is a soft white spreadable PDO cheese from goat, sheep or mixture of goat with sheep milk. It is produced in the administrative regions of Thessaly and Epirus. There are 7 processing units licensed to produce, pack and standardize Galotyri.
- **Sfela** is a semi-hard white to yellow PDO cheese ripened in brine from either goat, sheep or mixture of goat with sheep milk. It is produced in the regional units of Messinia and Lakonia, administrative region of Peloponnese. There are totally 5 processing units licensed to produce, pack and standardize Sfela in Messinia.
- **Xynomyzithra Kritis** is a soft white PDO cheese made from the whey of either goat or sheep or mixture of goat with sheep milk. It is produced in the administrative region of Crete. There are totally 6 processing units licensed to produce, pack and standardize this PDO cheese.
- **Batzos** is a semi-hard to hard, white to yellowish PDO cheese ripened in brine from goat, sheep or mixture of goat with sheep milk. It is produced in Western and Central Macedonia (regional units of Thessaloniki, Chalkidiki, Kilkis, Imathia, Pieria, Pella, Florina, Kozani, Kastoria, Grevena) and in Thessaly (regional units of Larisa, Trikala, Karditsa, Magnisia). There are 15 processing units in total licensed to produce, pack and standardize Batzos,
- **Formaella Arachovas Parnassou** is a semi-hard yellowish PDO cheese from either goat or sheep or mixtures of goat with sheep milk. It is produced in Arachova Parnassou district, regional unit of Boeotia. There are totally 9 processing units licensed to produce, pack and standardize Formaella Arachovas Parnassou.
- **Pichtogalo Chanion** is a soft white to whitish spreadable PDO cheese from goat, sheep or mixture of goat with sheep milk. It is produced in the regional unit of Chania, administrative region of Crete. There is only 2 processing unit licensed to produce, pack and standardize Pichtogalo Chanion.
- **Anevato** is a soft white PDO cheese from goat, sheep or mixture of goat with sheep milk. It is produced in the regional unit of Grevena (Western Greece) and in Voio County of the regional

unit of Kozani (Western Greece). There are totally 4 processing units licensed to produce, pack and standardize Anevato.

- **Kopanisti** is a soft yellowish to grayish salty spreadable PDO cheese from either cow or sheep or goat milk or mixtures of them. It is produced in the regional unit of Cyclades. There are totally 4 processing units licensed to produce, pack and standardize Kopanisti.
- **San Michali** is a hard white to yellowish PDO cheese from cow milk. It is produced in the island of Syros, regional unit of Cyclades. There are totally 2 processing units licensed to produce, pack and standardize San Michali.
- **Graviera Agrafon** is a hard yellowish PDO cheese from sheep milk or mixture of sheep with up to 30% goat milk. It is produced in Agrafa district, regional unit of Karditsa. There is only one enterprise licensed to produce, pack and standardize Graviera Agrafon.
- **Xygalo Sitias** is a soft white spreadable PDO cheese from goat, sheep or mixture of goat with sheep milk. It is produced in the district of Sitia, regional unit of Lasithi. No enterprise produced Xygalo siteias in 2016, according to ELOGAK.
- **Metsovone** is a semi-hard to hard yellow to sepia smoked PDO cheese from cow milk or mixture of cow with up to 20% sheep and goat milk. It is produced in Metsovo County, regional unit of Ioannina. No enterprise produced Metsovone in 2016, according to ELOGAK.

4.3.6 Compulsory and voluntary Standards

According to Article 5 of Regulation (EC) No 852/2004 of the European Parliament and of the European Council on the food hygiene it is compulsory for food business operators to establish, implement and comply with a permanent procedure based on HACCP principles (Hazard Analysis Critical Control Points). For this reason, EFET (Hellenic Food Authority), which is the institution responsible for the inspection of food enterprises, has published a guide that covers all the legal requirements to be followed by a small dairy for the application of sanitary measures based on the principles of HACCP. The guide can be altered depending on the applied treatment methods, operational processes, the type of produced dairy products and adapt to the needs of each company (EFET, 2012).

The application of good hygiene practice rules is a requirement for the operation of the business before the implementation of the procedures based on HACCP principles, there are forming the foundation for the implementation of HACCP and finally there are incorporated in the food safety management system. In practice, good hygiene practice is the implementation of general hygiene requirements laid down by Regulation (EC) 852/2004. With these requirements complies the business operator to control the risks. The certification of the HACCP system is not a legislative requirement for business operator and the certification process is implemented on operator's decision, is that serves commercial purposes (EFET, 2012).

The HACCP plan is a brief but comprehensive mapping of specific sanitary measures applied by the operation for the production of safe products on the basis of HACCP principles and includes:

1. All the production stages of a product, from the receipt of raw materials up to the transportation from the facilities to the points of sale for the distribution to the final consumer.
2. The characterization of each production stage as a control point (CP), or as a critical control point (CCP), based on the risk analysis that has been done.
3. The critical limits for each critical control point, based in legislation or on bibliographical references.
4. The risk monitoring process and their preventive control measures.
5. The corrective actions at each stage of production in the event of a risk control failure.

In Figure 8 is presented a chart flow for the production of Feta under the principles of HACCP. This chart flow represents the production process of Feta where is recorded the sequence of all the steps should be applied for the production, from the receipt of raw materials to the preservation of the end product.

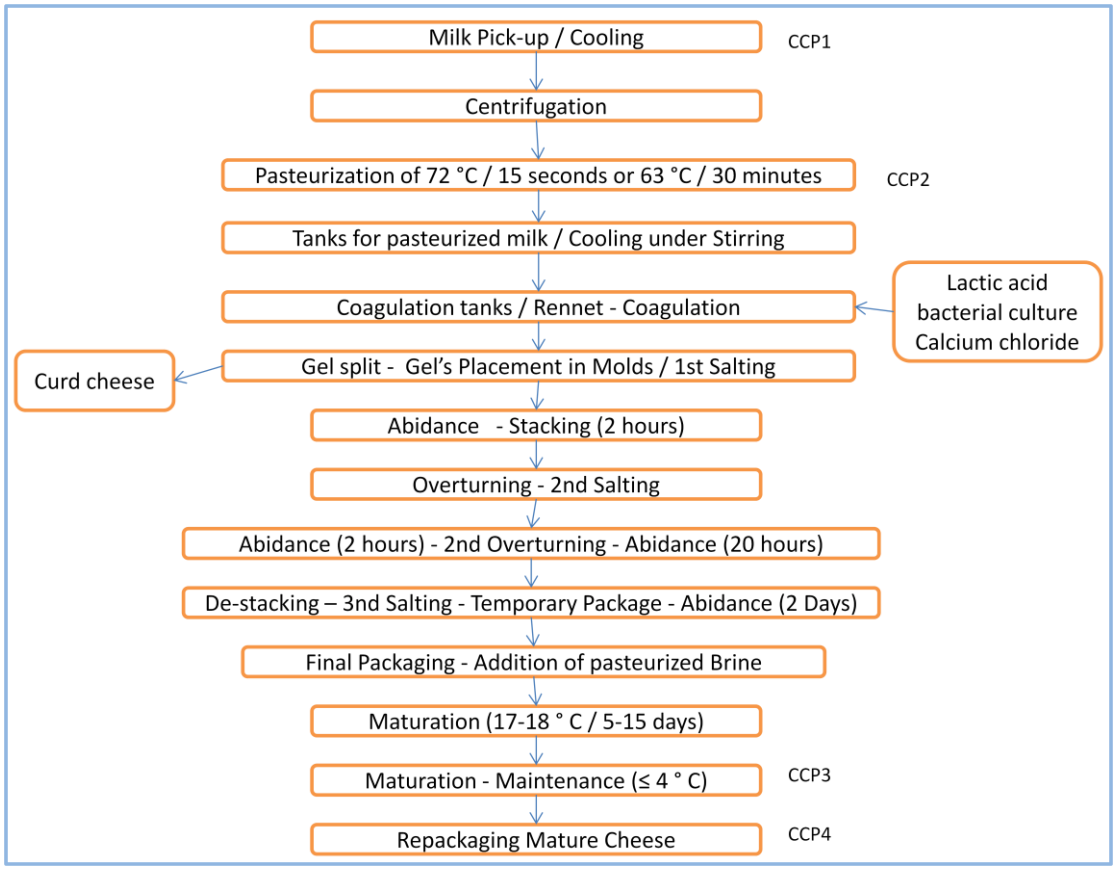


Figure 8. Feta Production Flow Chart

Source: EFET, 2012 (elaboration by the authors)

As already mentioned, certification is not obligatory by law, but in case the producer aims το export and depending on the exporting country and the requirements of the buyer can select from a range of standards available. Most common standards are presented in the list below:

- ISO 22000 - is the first International Standard that specifies the requirements for a food safety management system and may be applied to all types of organizations directly or indirectly involved within the food chain, from primary producers, crop producers and feed producers, to food manufacturers, wholesalers, retailers etc.
- IFS Food Standard - is applied for all the companies that manufacture, process and handle food, and especially to those companies that produce products for private labels. It is mostly required to enterprises aiming to German and French retailers.
- FSSC 22000 - is based on ISO 22000 and may be applied to the food chain organizations activated in food manufacturing.
- BRC - is a private standard for the food safety certification that was developed initially in 1998 by the British Retail Consortium and it applies to organizations activated in manufacturing or processing of food or of ingredients for use for food manufactured after the primary production.

4.4 Key issues identified in the literature, media and interviews

4.4.1 SWOT analysis

Strengths	**Weaknesses**
• Dairy farming is part of the county's identity • Good agro-ecological conditions (high quality grass/grazing) • Key dairy co-operatives and processors in close proximity • Quality and identity of the product • Relatively satisfactory prices with small fluctuation	• Relatively good milk price but does not match production cost • Very high input costs • Difficult farm succession & ageing farmers
Opportunities	**Threats**
• Attempts to establish new producer organisations (the creation of a cluster) • Futures markets for milk/dairy products • Global trend for Mediterranean Diet	• Increasing competition in order to access to export markets. • Pressures for lower prices could have adverse impacts on quality characteristics.

4.5 Insights from the focus groups and participatory workshop

4.5.1 Introduction

This part of the report deals with the findings of three focus groups (January 2017), and one participatory workshop (June 2017) that were conducted as part of task 2.3, which builds on and complements the findings of task 2.2.

Two focus groups with livestock farmers were held in the end of January of 2017, in order to get an insight from the perspective of sheep livestock farmers into the key issues of the sector. An additional focus group was held with cheese makers in order to gain a better understanding of the sector and the relationship among them. All of the focus groups and the workshop were organized and carried out in Karditsa, with the participation of sheep farmers from Karditsa and the villages surrounding Karditsa.

The first focus group was carried out on January 30, 2017, in the town of Karditsa; in order to facilitate the farmers it was conducted after working hours. Six sheep farmers participated in this focus group which lasted more than 2 hours. The participants all operate their units in the larger Karditsa area; their ages were between 40-65 years and the size of their herds range between 100-400 sheep. They were invited for participation in the focus group through the discussion groups for peer-to-peer learning that are already implemented in the framework of a PhD thesis by a collaborator of the AUA.

The second focus group was conducted on February 1st, 2017 also in the town of Karditsa, with the participation of 5 young farmers which were attending, at the time, the training for young farmers, which is a compulsory prerequisite in order to receive the young farmers' aid under the Rural Development programme (RDP). The meeting with the young farmers was arranged by their trainer and was conducted before the start of their training hours. Although the discussion lasted less than an hour, it proved to be sufficient to offer the time and the possibility to cover all the critical issues on their side. The participants, 2 women and 3 men, between 40-44 years old, were also from the villages surrounding Karditsa, managing herds between 100-150 sheep.

The 3rd focus group was conducted on March 31st, 2017, in the town of Kalambaka at the premises of the Trikala development agency, KENAKAP SA. KENAKAP also organized the meeting and made the necessary contacts with the local cheese makers in order to secure their participation in the focus group. 4 cheese makers participated, all men, aged between 40 and 65, all of which operate in the larger area of Trikala, with units of capacity between 300 – 1,000 tonnes of sheep milk per year, producing mainly Feta cheese; some also produce other products like yogurt and hard cheese. The focus group lasted approximately 2 hours.

In the first two focus groups the guidelines provided by the WP2 leader were followed. The topics that were discussed were based on the findings of the previous stages of the research that were formulated in a suggested topics list was elaborated. In the 3rd focus group the discussion was more formal and was therefore based on a presentation, highlighting the same discussion topics as the previous two focus groups.

All focus group participants were asked for and provided their permission to digitally record the discussions.

The participatory workshop was conducted on May 26, 2017 in Karditsa, at the premises of the local development agency, ANKA SA. The purpose of the workshop was to validate the information gathered from the three focus groups and to get a better insight on the conditions and the decision making process of the producers'. 17 experts participated in the workshop. Participants were all experts at local, regional or national level from various fields linked to livestock farming, such as professors, agricultural management experts, food safety officers and local representatives of the Ministry of Agriculture. Also, representatives from local cooperatives, individual sheep farmers and cheese makers participated.

The workshop was divided in three stages:

a. In the first stage, there was a presentation by a member of the research team about the conditions and strategies of the producers based on the information obtained from the three focus groups. The findings presented distinguished between conditions for and strategies of livestock farmers on the one hand and cheese makers on the other. Participants were asked to validate, add or simply comment on those conditions and strategies presented to them by the team.

b. In the next stage, participants were asked to offer their point of view on the most important challenges livestock farmers and cheese makers are facing. A separate list of issues/challenges was elaborated by the facilitator after consultation with the participants. After the final approval of both lists, they were written on two different flip charts and participants were asked to distribute 5 votes across all themes in the form of yellow stickers. The results of the voting were presented and the keenest supporters of the most voted issues were asked to comment on their decision.

c. In the third stage, participants were shown a figure that visualises the institutional arrangements that depict the horizontal cooperation and good coordination among the various links in the dairy value chain. They were then asked to indicate what should be done in the sector in order to become more sustainable. Their suggestions were written on stickers provided and placed by them on the point of the figure where they thought it was more appropriate. Their suggestions were grouped by the facilitator and the promoters of the different proposals were asked to validate the grouping.

The workshop lasted almost 3 hours and their permission was asked to digitally record the conversation.

4.5.2 The production process

According to the experts there are four elements to be considered in order to see how a livestock producer can reduce production costs. These are: the conditions of the facilities, the quality of genetic material management of human resources and, last but not least, animal feed.

4.5.2.1 Genetic improvement and the role of animal breed in Feta PDO

There is an open dispute on the issue of which breeds should be used for the production of Feta PDO, derived mainly from the wording of the legislative text which states:

> "*The milk must come from breeds of sheep and goats traditionally farmed and adapted to «ΦΕΤΑ» (FETA) production area and their nutrition should be based on the flora of that region*" (Article 2, FEK/1994, Volume 8)

This discussion stems from the varying interpretations of the legislation; First of all, experts in the workshop expressed their deep preoccupation that there is a great danger to have, in some point of time, a repetition of the whole dispute for the PDO designation for Feta. This fear cannot be considered as unfounded since the designation was contested by a number of parties and the favorable for Greece outcome of the procedure has been based on certain interpretations; however the margin was very thin. Moreover, Feta has been an issue in various negotiations concerning the trade relations of the EU with third parties (e.g. Trade agreement with S. Africa, CETA with Canada, etc). In that sense, stakeholders seem to have some good reasons to believe that Feta and its designation is a sensitive issue and should be treated accordingly, especially by the main beneficiaries.

On one hand, workshop experts and cheese makers from the 3rd focus group argued that only Greek animal breeds can guarantee that the PDO designation will not be challenged. On the other hand livestock farmers, participants in the focus groups and the workshop, argued that is not the origin of the animal that matters but the traditional way of farming.

It was argued in the workshop by the representative of the local department of rural economy and veterinary that is very difficult for livestock producers to find sheep of Greek breeds like Chios or Karagouniko with high milk yields and most of them end up in the purchase of certified foreign breeds like Lacaune from France or Assaf from Spain which are considered by some livestock farmers in the 1st focus group as more productive.

Several workshop stakeholders expressed the opinion that many livestock producers mistakenly consider as genetically improvement of their herd the introduction in it of foreign breeds, without scientific consultation, expecting to see significant increase in the milk yields. As a workshop stakeholder expressed it:

> "*The genetic improvement is completely random: by buying a Lacaune ram, they believe that the next year he will flood with milk. But is not like that. Sometimes he goes backwards, but if he had asked he wouldn't make that mistake*" (animal feeding expert, workshop)

4.5.2.2 Improvement of livestock facilities and infrastructure

An issue considered important for the overall sustainability of the livestock sector, by the stakeholders of the workshop, is the need for improvement of infrastructure, equipment as well as the facilities. There was an overall consensus, that most of the infrastructure and equipment available to sheep farming holdings, are both extremely outdated and in a very bad condition. It is indicative that according to local agricultural officials, less than 200, out of the approximately 2,500 sheep farms (8%) in the area have milking units for their ewes.

As the main reason for not investing in modernising their equipment and facilities, stakeholders mentioned lack of financial resources, aggravated by the economic crisis (see also 4.5.13.1.). Experts

in the workshop expressed fears that, due to the dysfunctional credit market, farmers will not be able to take advantage of the possibilities offered by the new RDP, through mainly the investment aid. On the other hand, farmers argued that the current trend seems to be extensive farming (grassfed, pastoral systems) hence they fail to see, at this point the need for investments in modernization/improvement or intensification of their holding.

4.5.2.3 Animal feed

The issue of animal feed has two aspects: the first is the effort to achieve a balanced animal diet and the second is the need to control production costs. The latter, in its broader sense, is an issue that sheep farmers are often preoccupied with; hence it frequently came up during the discussions in the focus groups and the workshop. Experts strongly argue that in the case of sheep farmers, there is a vast margin for improvement in the economic performance and, thus, viability of the holdings through cost reduction. In the workshop it was emphasized that the most efficient way to reduce cost is the development of a balanced diet for their animals which may simultaneously increase production volume and reduce production cost. In addition to that, experts stressed that most sheep farmers do not provide a balanced diet to their animals. This, according to the same experts, is in fact the main reason for their high production cost.

But the suggestion to improve the quality of the feeding stuff by producing their own fodder was dismissed through discussions with the stakeholders. First of all, the farmers strongly believe that it is much cheaper for them to buy fodder than to produce it, mostly by extensive sheep farmers who follow the traditional feeding regimes established by their ancestors.

This view was corroborated by local agricultural officials, stating that this year has been ideal for sheep farmers to purchase very cheap alfalfa of exceptional quality. This was attributed to the larger areas of organic alfalfa cultivated in the area; more than double compared to last year. Consequently, producers in the focus groups, being fully aware that animal feed is a cost factor of major importance, restricted their cost cutting strategies to buying cheaper fodder. This has been achieved either by buying in advance large quantities of certain fodder from the store or straight from the field or purchase them through the cooperative.

An additional difficulty in this process was reported: farmers have an erroneous way of accounting for or are often unaware of their own actual production costs.

It is obvious that the above mentioned issues are directly suggesting of the need for a focused advisory service, training activities and technical support towards specific issues.

4.5.3 Price formation – price levels

The main issue in all focus groups was the price of milk. Almost all stakeholders in the focus groups Farmers and Young Farmers shared the view that the price of milk is not satisfactory. They also agreed that it was the lowest of the last few years although, due to the weather conditions, the quantity of milk has been low too. They all expressed the fear that the trend of decreasing prices will continue.

A relevant outcome of the workshop has been that in the price formation process, the quantity of milk supply is the most important factor is. During the last few years, due to the conditions in the Feta cheese market, milk quality seems to gain importance as a pressing issue. The main pressure exerted in the Feta cheese market is increased competition from other regions within Greece as well as from other countries (see 4.5.3.). The milk quality indicator used in the transaction between farmers and cheese makers is fat content. Practically this means that the lower the fat content gets, the lower the price of milk sheep farmers enjoy.

At the same time, another outcome of the workshop was the relatively better situation in the region of Thessaly, concerning milk prices. It was, stressed that the price of milk in the region is one of the highest in Greece. This according to the participants could be attributed to the increased number of active dairies in the area and the competition among them for a limited quantity of milk.

4.5.4 The value chain

4.5.4.1 The role of milk imports and fraud controls

All participants from the all three focus groups and the workshop consent that there is uncontrolled milk adulteration with imported milk. That has as a consequence the misleading of consumers with claims that they are offered Feta cheese which is nevertheless made with imported sheep milk, something incompatible with EU PDO regulations and the relevant national specifications. This phenomenon, according to the stakeholders, play a very important distorting role in the market and, particularly, in price formation.

For Feta specifically, small dairies participating in the 3rd focus groups argue that it is not possible to keep the price of Feta cheese at such low levels without using imported sheep milk. The process, according to their perception, consists of using legally imported milk from within the EU (Sardinia (I), Spain, Bulgaria), bought at a significantly lower price - around 80 cents per kilo, when the average price in the area, according to focus groups participants is 99 cents per kilo. While for the making of Feta a PDO cheese, only milk originating from the designated area should be used. Farmers from the focus groups are also convinced that prices are kept low due to this process.

Another allegation made by the small family dairies participating in the 3rd focus group against large dairies consist in that it is not possible to maintain the milk balance i.e. the amount of cheese and other dairy products produced are disproportionate with the current local sheep milk production. However, livestock farmers claim that all dairies are involved in this fraud while small dairies insist that it is the larger dairy industries that have the means, the ability and the need to use imported milk in this manner. In any case, it is widely accepted by workshop participants, that the contribution of large dairies on the lowering of the price of Feta, which is the market outcome of such a fraud, i.e. is bigger. As a cheese maker stressed:

> *"A small dairy that produces 200 kilos of Feta cheese a day, for its own store, however much imported milk it might use won't destroy the market. The market is destroyed by the very large dairies, because they have the money. And importing the milk is not an easy thing to do, a small plant; a small business cannot do it"* (Cheese maker, workshop)

Fraud control, as the workshop has pointed out, is a very crucial factor in the battle to counter this phenomenon. Although fraud checks are regular in the dairy industry e.g. for the presence of cow milk in Feta cheese, all participants agreed that those checks cannot be effective for this particular fraud. Taking the case of legally imported milk, a fraud check is difficult to determine the final use of the milk. While for the illegally imported milk, they were references, even by local officials participating in the workshops, to farmers registering higher volumes of milk as delivered to the dairies, in order to rectify the dairy's milk balance for Feta cheese mentioned above. Moreover, complicated, uncertain and thus inadequate institutional arrangements concerning such controls result in a deficient control system, according to workshop experts. In addition to that, and even if the controls are effective and infringements are ascertained, as it was argued in the workshop, fines are not high enough to prevent repetition. As the cheese maker quoted in the workshop:

> "*Who can catch you? And if they catch you they will give you a fine, and if your profits are multiple, the logic says I will do it again. That is, if I have 1 million€ net profit and the fine is 100.000€ why not do it again?*" (Cheese maker, workshop)

4.5.4.2 Quality and safety controls, Quality of the product

There is confusion among farmers and cheese makers, especially when traditional small family owned and ran dairies are concerned, on what constitutes quality and the attributes are expected from a quality product. The misunderstanding stems from the consideration that anything produced using traditional techniques are 'by definition' quality products. On this specific issue, i.e. the characteristics of a quality product, an extensive and interesting debate has taken place in the workshop.

A main point of controversy between the small and the large dairies was where the emphasis is placed. Small dairies stress the importance of traditional techniques and organoleptic characteristics while large, industrial size dairies, place emphasis on food safety issues. The conclusion of the debate is that what we consider as quality product is not necessarily safe and what is safe is not always product of quality.

Regarding safety controls, livestock farmers are not obliged to perform any tests to the milk they produce. On the contrary, the dairy plant has the obligation to perform all required safety tests, including tests for brucella[5], aflatoxins[6], and antibiotics residues, upon receiving the milk from the producer. It is the dairy that is checked by the state authorities for the safety of the final product.

[5] *Brucella is a bacterial genus causing Brucellosis (Mediterranean fever, Malta fever, gastric remittent fever, and undulant fever), a zoonotic infection. Bacteria are transmitted from animals to humans by ingestion through infected food products, direct contact with an infected animal, or inhalation of aerosols. (http://emedicine.medscape.com/article/213430-overview)*

[6] *Aflatoxins are a family of toxins produced by certain fungi that are found on agricultural crops such as maize (corn), peanuts, cottonseed, and tree nuts. People can be exposed to aflatoxins by eating contaminated plant products (such as peanuts) or by consuming meat or dairy products from animals that ate contaminated feed. (https://www.cancer.gov/about-cancer/causes-prevention/risk/substances/aflatoxins)*

However, in practice, things seem to be different. During the workshop there was significant doubt expressed as to whether these checks are performed on a daily basis, even by the large industries.

Small dairies insist that their products, besides their higher quality, are as safe as those of large industries'. Nevertheless, farmers in the workshop suggested that the milk rejected by the large dairy plants as unsafe was accepted by small dairies, with no further ado. Furthermore, according to a workshop participant, only the large dairy industries request support from the competent regional authority, in order to check the milk delivered for the presence of aflatoxin. On the same issue, that of the presence of aflatoxin, during the 3rd focus group, small dairies raised the issue of the very high cost of tests, especially for aflatoxin. This costs which becomes extremely high, hence forbidding, in the cases of small loads of milk delivered by small sheep farms.

According to the dairies and most of the workshop participants, the problem stems from the quality of the animal feed. Consequently, serious concerns were expressed on the safety of animal feed used; raising thus the issue of the use of uncertified feedstaff. It seems that a common cost reduction practice among animal farmers is to use animal feed which comes from various uncontrolled sources e.g. straight from the field or own produced animal feed with unknown storage conditions. This problem is more serious with the small livestock farmers since the larger ones have the ability to purchase controlled animal feed by certified providers.

4.5.4.3 Institutional arrangements between sheep farmers and cheese makers

Members of the cooperative participating in the 1st focus group mentioned that the majority of farmers are selling their milk individually to the cheese makers, whereas only a small percentage of farmers sell their milk through the cooperative, as. Individually selling producers are selling their product directly to the dairy plants. The relationship between farmer and cheese maker is mostly based on exclusive cooperation on the farmer's side with a single dairy.

The size of the dairy plant is determinant for the specific nature of the relationship between the farmer and the dairy. Small family dairies establish more personal relationships with their collaborating farms. This relationship extends up to the building of financial trust which is exhibited mainly in the form of advance payments to the farmers. In those cases milk prices are negotiated directly and on an individual basis. The important parameters in such a price negotiation are quantity and quality characteristics of the milk.

However, this relationship with the small dairies can be constricting in terms of price formation. A cheese maker in the 3rd focus group stated that is not fair for farmers to receive the same price regardless if their milk is from the, highly productive, Assaf breed which is producing 4kg a day, or from the Karagouniko breed which is producing 400gr of high quality milk a day i.e. with a high fat content.

Furthermore, informality of agreements between farmers and the small dairies, which is the most common case, often results in poor terms of collaboration for the farmer, mainly, regarding the price set for the milk. Farmers in the 1st focus group mentioned cases of farmers who had received the advance payment without actually knowing the price of milk and when the payment time arrived the price was much lower than expected. As a farmer said:

> "*In a village he [the dairy owner] has the milk cooling tank where the village gathers the milk… 30 people. He gave everyone advance payments and nobody knew the price of the milk. Now he told them 93 [cents per kilo]. He tied them, they got the down payment, they all signed and they didn't know the price.*" (Farmer, 1st focus group)

The size of the farm also is an important factor affecting the type of the agreement reached. There was general consensus among farmers' focus groups and the workshop that all small farmers make verbal agreements, while some big farms may pursue a more formal agreement.

On the other hand, these very personal relationships between farmers and small dairies, keep farmers from seeking a more formal contract with the dairy. As formulated by a small family cheese maker:

> "*In small dairies, the farmers have a very personal contact, differing to their relation with other dairies, because we understand their problems; we help them a lot, financially, advances and more advances,[...], they show up in the dairy in every occasion, they will call any hour of the day to share their problems, they will not leave easily from us."* (Cheese maker, 3rd focus group)

On the other hand, big dairy industries' prices to farmers are somewhat higher; however, as pointed out in the 3rd focus group, large industries are paying a single flat price to all farmers, regardless of specific product characteristics. Furthermore, farmers do not receive the same personal relationship they have with the small dairies and the advantages stemming from this close relationship i.e. price differentiation according to milk quality, technical and financial assistance and advice.

4.5.4.4 Uncertain export potential

Participants in the 3rd focus group and workshop are supporting that the price of Feta cheese in the international market is lower than of the Greek market and they directly link this development with the economic conditions prevail in the country. As it was stated in the 3rd focus group by a cheese maker, who used to export large quantities of Feta cheese, the problem with the exports begun when the economic crisis affected the supermarkets in Greece. At this point most of Greek dairies turned to exports as to offset the lost internal market. According to the cheese maker this is the reason for the dramatic drop in the price of Feta in the international market. As he quoted in the 3rd focus group:

> "*10 years ago we only exported our products; to Sweden, France, Italy, Germany etc. There was no shop in Europe that did not have our products. When the crisis came to Greece, […], everybody [Greek dairies] started to export and the price reached the 4.50€ [per kilo]. Six years ago, exports stopped immediately. We had good prices until then; 5.30- 5.20€ [per kilo]. There was no Feta in the European market below 5€ [per kilo] and the transportation was theirs. […] We have reached the point that in Germany they are eating cheaper Feta than in Greece. What can we do now?"* (Cheese maker, 3rd focus group)

Workshop experts are pointing the finger to the big dairies which they consider to be responsible for the low prices in the international market. However, according to the cheese maker participated in

the workshop, another serious issue small dairies are facing in order to export their products, is not the price they sell but the quantities offered. As he stated in the workshop small dairies cannot supply international markets with the sufficient quantities they require and the only path for small dairies to overcome the obstacle of insufficient quantities is to create group with other small dairies.

In the workshop the question was raised whether now in European markets, in which Feta cheese is sold as private label with very low prices, if it is possible for a Feta cheese to extract the added value which they believe it deserves. Participants in the 3rd focus group do not feel optimistic since they consider foreign markets as lost cause.

> "*Abroad the game is lost because of this: they [big dairies] were leading [the market] with low prices and now we cannot turn the game, because we have taught them to sell cheaply, we cannot do something now to sell expensive.*" (Cheese maker, 3rd focus group)

4.5.4.5 A competitive environment

In the area under examination, Karditsa, there is a particularity concerning the spatial distribution of the dairy industry. Although livestock farms are located mainly within the area, most of the dairy workshops/industries, especially cheese dairies, are found in the neighboring area (30' minutes drive) of Trikala. In more detail, 7 dairies are active in the wider Karditsa area (3 of them exclusively producing yogurt) while 15 are based at Trikala, absorbing most of the milk production of the area. According to the cheese maker participating in the workshop, one can distinguish 3 different production and market strategies of dairies in the area.

- The first is the single-product strategy; in case of small dairies they produce just one product, bulk Feta in barrels or tin containers. They are selling their produce to few big retailers such as super markets, to their central warehouses at relatively lower prices. In case of large dairies they targeting mainly on private labels for super markets or large exporting companies.
- The second strategy consists of the production of larger variety of products such as cheese (Feta, kasseri) yogurt and xinogalo (sour milk). Small dairies following this strategy are using two market channels, delivering also to super markets as well as smaller markets and local shops. In the latter case, the dairy itself is responsible for the transportation and delivery of the product to the selling point. The multitude of different products causes a higher production cost while the larger and dispersed clientele results to increased marketing and transaction costs. However these characteristics, multiple marketing channels and diverse production outlets, are the ones that make the business more independent, stable and secure. Large dairies on this category are targeting beyond the national market the international market.
- Beside those there is also another marketing strategy followed by few, mainly small dairies which market their product directly through their own stores.

Although stakeholders from both dairy focus groups and the workshop believe that the market is very competitive between dairies in the area, a stakeholder in the workshop expressed a doubt, claiming that although it might seem like there is a competitive local market for milk, in fact it is not.

Since, four dairies amass 50% of the available milk in Thessaly and in reality they are dominating the market. Smaller dairies, in order to survive, need to find new strategies. One of the strategies mentioned in the workshop takes the form of a collective effort. Through Lactimed, an EU funded project, a cluster was created by 6 small family dairies and a number of sheep farmers, under the brand name "Terra Thessalia" aimed at promoting specific production methods having to do with the extensive use of pastures, the animal race bred and sourcing feeding stuff from nearby areas. Furthermore the cluster developed a series of product specifications concerning product safety and quality, expanding to the whole value chain. The main goal of the group is to enter new markets, using the brand name "Terra Thessalia "as a vehicle.

4.5.5 Horizontal co-ordination

4.5.5.1 The context

Livestock farmers' focus group participants consisted of both members and non members of the local livestock farmers' cooperative which led to a lively discussion on the issue of cooperative membership. The cooperative is active since 2012 and has around 250 members, which is a very low percentage of the active sheep farmers of the region.

In the village of Palama an existing group of around 25 sheep farmers, motivated by their participation in the Lactimed project, decided to transform their group into a formal co-operative in order to operate in a more coordinated manner. The process to establish a new co-operative appeared to be very difficult, as it was reported in the workshop by its representatives. According to the participants, it took the farmers over a year to formalize their loose organization as a local group into a cooperative. They consider the formalities and the whole process to be very heavy, in terms of bureaucracy and difficult because they claimed that they, the farmers, had to do everything by themselves without any aid and support by the state, albeit acknowledging the support provided by the University of Thessaly (responsible for Lactimed project).

4.5.5.2 The role of the livestock farmers' co-operative

As mentioned above, some of the focus groups participants are members of a livestock farmers' cooperative.

Among the aims and activities of the co-operative are the marketing of milk in order to achieve better terms and conditions in the market e.g. higher and stable prices, frequency and reliability of payments etc.) as well as the joint supply, through the co-operative, of animal feed in order to reduce the purchase cost for its members.

The co-operative is active in two subsectors, cow and sheep milk, therefore there are two separate producers' groups operating within the co-operative. Collection, quality control and delivery of the milk to the dairy is a responsibility of the cooperative. During the time of the research, the co-operative maintained collaboration with one large dairy plant and delivered sheep milk to the dairy throughout the year. Whereas if small and medium dairies were involved round the year delivery would not be possible since they stop their production during July and August. According to the

agreement between the co-operative and the dairy, a single price for milk is offered to all its members regardless of the quantity or the quality delivered (i.e. fat content).

Producers, members of the above mentioned co-operative, participating in the focus groups, expressed their wholehearted approval for the operation of the co-operative. They all stressed that they benefited in various ways from their involvement with the co-operative. While for non members, the major disadvantage of the cooperative is the lack of advance payments to farmers, as was revealed during the farmers' focus group discussions. However, farmers actively participating in the co-operative argued that the lack of advance payments is counterbalanced by other services provided, such as the credit offered, used by farmers for the purchase of animal feed and paid back by withholding installments from the payments for the milk delivered, which plays exactly the same role, that of advance payment.

Further arguments against participation in the cooperative have been easily contradicted. E.g. there was a statement that the co-op provides only roughage and not complete animal feed but according to co-op members they can charge the co-operative for feed purchased elsewhere. It seems hence that there are several misunderstandings concerning the functions of and the services provided by livestock farmers' co-operative that could be attributed to erroneous or lack of information.

An argument for the co-operative is that it maintains the prices received by animal farmers in the area stable at a relatively high level, functioning as a price setter. As a farmer stated during the first focus group:

> "*Everybody depends on the co-operative. If tomorrow the co-operative didn't exist, the price of milk would drop by at least 5 cents. [...] Because of the co-operative, everybody is paid 1€ [per kilo]. It is very easy for farmers to sign up for a membership [at the co-operative] so the dairies are afraid of losing them as providers; that is why they offer the same prices as the co-operative.*" (Sheep farmer, 1st focus group)

However, small dairies seem to be reluctant to collaborate with the co-operative alleging that it is not fair neither for them nor for famers to pay the same price to all milk delivered irrespective of its quality characteristics (i.e. fat content). Another objection raised against this co-operative from a participant of the dairies' focus group is that the co-operative is rather lenient on quality issues. The participant substantiated the allegation saying that every farmer he has rejected due to the low quality of the milk delivered, became member of the co-operative, finding thus an outlet for the low quality milk.

4.5.5.3 Obstacles and strategies towards collective action

It seems that the need and the benefits derived from the existence of a collective organisation are unanimously acknowledged. Nevertheless, when it comes to their daily practice most of the farmers, according to non farmer participants, seem to be have individualistic behavior acting competitively against each other. People involved in the process to facilitate collective action, shared the experience of the difficulties encountered when attempts were made to persuade sheep farmers to be actively engaged in coordinated activities. As a workshop participant put it:

> "*When in a conversation, they [farmers] always admit their inefficiencies and what they could do if they were acting collectively. But when the conversation is over and you talk to them individually, they will all tell you,' OK, but I will figure it out by myself. I deliver the milk myself and act a little competitive to the other sheep farmers'. Generally, in theory, it is nice to co-operate but in practice I don't see them to be firmly positive about it"* (Trikala Development Agency representative, workshop)

An obstacle often encountered is the - sometimes difficult to overcome - personal relationships and family ties, established with cheese makers. This inhibits farmers from making the step toward collective actions. As a farmer put it:

> "*I was with a cheese maker and we had a very good and long relationship. That was the reason that I initially did not join the co-operative. Nevertheless, I finally quit [on the cheese maker] with "cold heart'' but I didn't regret it.*"(Sheep farmer,1st focus group)

Another important element that emerged from the workshop discussions is that during the last decade, there has been a surge of young people, many of them holding university degrees, getting involved in the agrifood sector, partly due to the ongoing crisis. Those people seem to be more prepared and willing to be actively involved in a collective process but, still, it requires an effort by e experts to motivate and get them engaged in the long run.

The above mentioned widespread distrust vis a vis the agricultural co-operatives and in general any collective form of organization, has had serious consequences in the area. Although the livestock farmers' co-operative has gained the respect of farmers that are not members, there is still a pending issue there. It seems that a very important reason for not participating in the specific cooperative is the mistrust towards cooperatives in general, due to the long history of mismanagement and ineffectiveness which appears an obstacle difficult to overcome. As it was stated by a farmer in the focus groups:

> "*There is a bad reputation for cooperatives […] because whoever was on the Administration Board would buy fields, would buy a house or a BMW in the previews years*" (farmer, 1st focus group).

As another farmer stated, using harsher language, the issue against cooperatives, besides suspicion, is that those who had stolen all the previous years from the cooperatives they had also destroyed the cooperative ideal and now people are afraid to trust them again.

A possible strategy in order to overcome the above mentioned problems as well as the chronic distrust that has emerged during the workshop is specialization. According to the ones proposing it co-operatives, in general and the one discussed in particular, should be more focused on specific areas of operation i.e. be purpose oriented, for example support genetic improvement, co-ordinate animal feed distribution, etc.

Another need that became apparent during the workshop was the need to establish vertical collaboration schemes between farmers and dairies, which would go beyond the typical patron – client, buyer-seller relationship they have today. Both parts mutually admitted that they are more

interdependent than many realize. It was stated that in fact they should consider themselves part of the same sector.

Finally, a new measure in the current (2014-2020) Rural Development Program, was mentioned as relevant in the workshop. It is designed to be implemented with the purpose of funding synergistic schemes involving any of the interested parties of the value chain, i.e. farmers, processors like dairies, retailers (e.g. super markets), professionals, experts, Universities, etc. The scheme should be formed based on a project, preferably an innovative one, e.g. to develop a new product, to improve distribution. This is considered to be a new tool for farmers to apply improvements and innovations in their farms.

4.5.6 Awareness, training, advice and technical support

There is widespread agreement among stakeholders that the need for professional training of livestock farmers is of vital importance. Experts in the workshop expressed the opinion that farmers consider that they don't need training. In their view, this is mostly the case for the older generation of sheep farmers since the younger generation entered the sector has better general education.

Nevertheless, it is recognized that training provided was never substantial and sufficient. Moreover, as stated by the young livestock farmers participating in the 2nd focus group, the seminars which they are obligated to participate in order to fulfill the obligations of the program only started after two years from their entrance to the program. They feel that those lessons should have been provided to them before they started the occupation. Most of them feel that the lessons are a waste of their time, not because they don't need or don't want to know, but because they just don't have the time to spare anymore. As a young farmer put it:

> "*I have entered a program and it obligates me to attend some classes, this is why I am doing them. Not that I don't need them, I didn't know [these issues], but when you do this job there is no time [….]. I should be in the stable right now…*" (Young sheep farmer, 2nd focus group)

On the other hand, training offered so far through short courses and traditional type of teaching in a classroom is considered by stakeholders to be insufficient and more importantly inadequate for sheep farmers and should be offered in a different manner. Farmers have the best knowledge of the needs of their units; they need specific training at specific points in order to make the transition. It should be on the field or in the stable in order to have results for the unit.

Before that however, as characteristically a stakeholder in the workshop pointed out, farmers need to learn how to think as businessmen, they need to know exactly how much the product they produce costs them, if it is a profitable business or not. Indeed, sheep farmers participating in the focus groups expressed a genuine interest in knowing of what is the cost for their product, but as experts pointed out in the workshop, the farmers haven't realized that this is an issue that they need to be educated on.

The promising fact is that of the entrances in the sector of many young people, mainly the new generation of family farms taking over the family business; others are starting their own business due to the vast unemployment in the other sectors, many with higher education. These people are

seeking technical assistance because they want to upgrade their product and make it of better quality and they need the universities and the scientists by their side.

However, the local livestock cooperative offers to its member's technical advice when asked by their professional agronomist and veterinarian. On the contrary, what most sheep farmers are accustomed to use as technical assistance, in the lack of any alternative, is the advice of the merchant who sells the animal feed or the veterinarian who sells the vaccines and antibiotics for the animal with poor results and great economic cost for the producer.

In the last programming period of the Rural Development Program a project for advisory services was carried out but it failed to attract producers' interest. It was said that in the current Rural Development Program another project will be carried out in the form of technical assistance to the farmer by agronomists, veterinarians or agro-economists paid by the ministry of Agriculture directly to the advisor.

Another form of technical advice that can be offered to livestock farmers, provided by a workshop expert, is the way of a large dairy industry in another region. This particular industry, with the cooperation of the Department of Nutritional Physiology and Feeding of the Faculty of Animal Science and Aquaculture of the Agricultural University of Athens, provides to its collaborating livestock farmers technical assistance in the animal feed. According to the workshop expert, the project offers personalised technical assistance on balanced diet of the herd. While the dairy provides the animal feed to the producers withholds the amount from the milk payment. The expert argues that this system works for both parties since, he argues, livestock farmers are securing the market for their production while dealing with liquidity issues at the same time and the dairy can buy milk in lower prices. As he noted in the workshop:

> "*Of course, the dairy does it for marketing purposes: 'I give you technical assistance, don't grumble about the prices. I will help you become better'. The farmer does it, if he wants to, it is not obligatory. But it also solves this issue (of technical assistance), which is very important*". (Animal feed expert, workshop)

4.5.7 Future prospects - Viability of sheep farming

From the discussions with the farmers on the focus groups the feeling that was gained was that the sector is in the end-of-life-stage. Farmers often express despair; they feel helpless and not supported by the state. Furthermore they believe that under the circumstances it is not a viable enterprise let alone a profitable one. In support to their arguments the cheese maker participating in the workshop made the following comment:

> *"I have done a business plan,[…], if I can find funding, to have my own animals, with milk machines, using the subsidy by the state etc. [I have found that] it is completely unprofitable, […] when the producer has no profit, he will not try to do anything better, because it is a loss-making enterprise.*" (Cheese maker, workshop)

However, contrary to this, there is scientific evidence, as an expert pointed out in the workshop, that a sheep farming enterprise can be profitable, but it can require up to 5 years of investments in order

to reach the point of yielding profit. It was also mentioned that foreign investors often express interest in buying large sheep farms (500, 1000 sheep units) which have passed the maturity point and are considered promising as investments. They may yield a small share of the initial capital invested, but it is continuous and constant, and has great residual value.

5 Results of the producer survey

5.1 Introduction

This part of the report contains the producer survey results. The research questionnaire was addressed to sheep and goat farmers operating in the Regional Unit of Karditsa. For the purpose of the survey 152 interviews were conducted between December 2017 and March 2018. From the original sample 4 producers were eventually excluded because they didn't meet the criteria set by the survey for various reasons, as for example the last finance year they didn't manage to sell their produce.

The field research sought to identify further the key regulatory and market conditions that primary producers face in their everyday activity. The market and regulatory issues were identified in previous steps of the research (media analysis, desk research and stakeholders interviews).

The target group of the survey of the Greek case study was the sheep and goat livestock farmers operating in the area of Karditsa where the main product is milk for the production of Feta cheese in the various dairies operation in the wider area of Thessaly region. The holdings of those participating in this survey consist only of sheep, 5 holdings consist only of goats while there are other 6 holdings with mixed flock consisting of both sheep and goats. Besides that, only 8 producers stated that they produce organic sheep or goat milk.

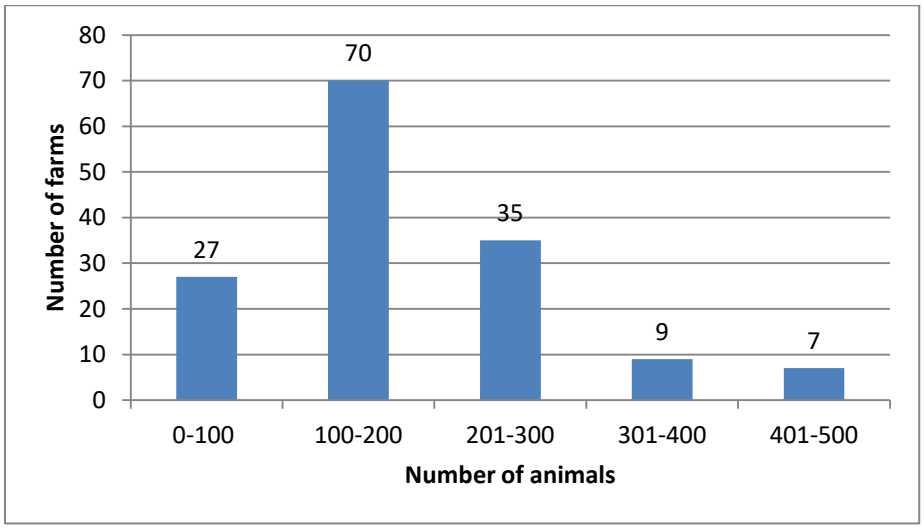


Figure 9. Number of farms per animal stock size

There is a significant difference between the smallest and the largest holdings in the survey sample, which range from 40 sheep to 480 animals. The majority of producers (65%) have up to 200 animals while the 75% has up to 230 animals (Figure 9). Significant differences we can also observe between the smaller and the larger area that the holding owns or rents, with the smaller holding to declare an area of 2.36 ha while the biggest holding declare areas that reaches the 43.78 ha (Figure 10).

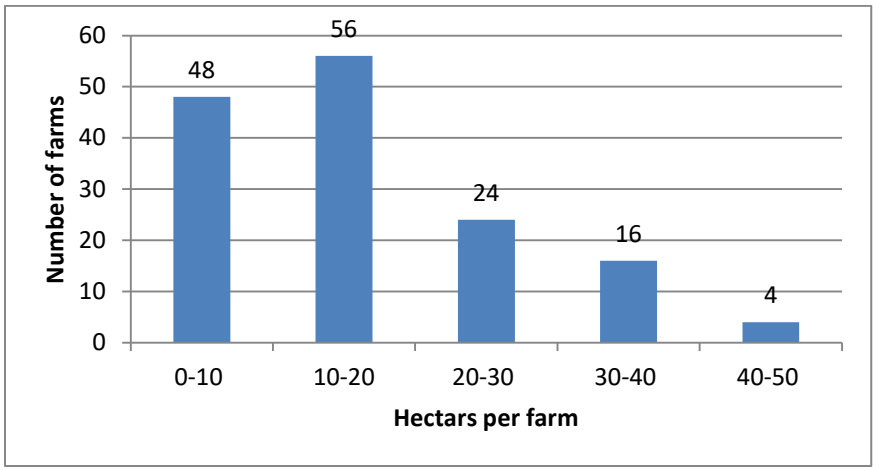


Figure 10. Number of farms by size categories

More than half of the respondents, specifically 80 respondents, which represent 54.1% of the total sample, are under 40 years old, whereas 46 (31.1%) fell in the 41 to 50 years old category. 21 participants are between 51 and 65 years old and only one participant is over 65. The vast majority of the responders are the owners of the farm while only one participant in this survey is just the manager of the farm business; meanwhile, 136 of the farms are privately owned, 11 are family farms and one is a private company.

The vast majority of the producers who took part in this survey (87.2%) were men and only 19 out of 148 (12.8%) were women. Regarding the education level of the participants, 81 are lower secondary education graduates, 61 are graduates of primary education, 6 have a higher secondary degree, while 16 stated that have an agricultural degree.

5.2 Sales channels

This part of the questionnaire explores the way each producer sells the entire production of milk in the last completed financial year, which in our case is the milk production period between September 2016 and June 2017.

The first question of this section concerns the total amount of the sheep and goat milk produced in the last productive year. One can observe a broad difference between the smallest and the largest quantity of milk produced, which ranges between 1,500 and 180,000 liters per year, with the average quantity at 31,790.54 liters and the median quantity of milk at 25,500 liters per year. The largest percentage of the producers (38.5%) produces less than 20,000 liters of milk per year. 52 producers (35.1% of the total sample) produced between 20,000 and 40,000 liters per year and 28 (18.9%)

produced between 61,000 and 80,000 liters per year. In other words, the majority of the producers (95.3%) produced up to 80,000 liters per year of milk and only 7 producers of the sample produced between 81,000 to 180,000 liters of milk in the previous productive year (Figure 11).

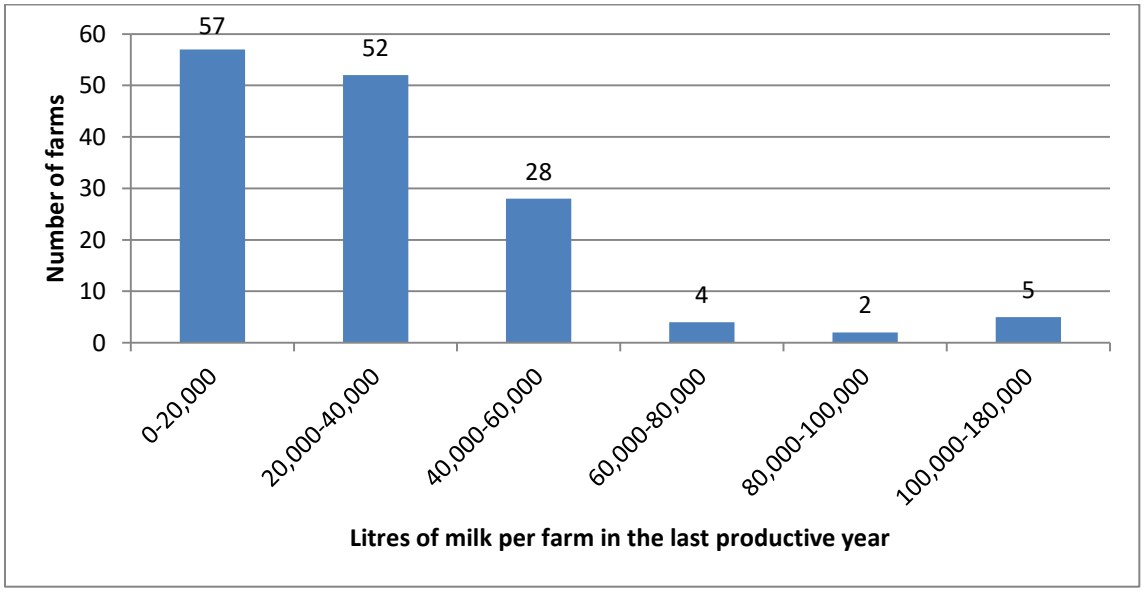


Figure 11. Number of farms per yield of milk in the last productive year

The next question of the questionnaire asks for the amount of production sold in the same period of time. 112 of 148 respondents in the survey, which correspond to 75.7% of the total, sold their whole production of milk. Within the rest of the producers who didn't sell their whole production, 19 producers sold 90% of their production, whereas for the rest of the producers (18), the quantities sold varied between 30%-97% of their total milk production. It should be noted that there is one sheep farmer that didn't sell any of his milk in the market, but instead he produced locally feta cheese.

Questions QB3 to QB16 distinguish between the sales carried out through collective organizations, such as cooperatives, producer organizations, unions etc and the sales which are carried out individually. Most of the farmers in the Greek case study participating in the survey sold their sheep milk production individually. More specifically, 123 producers, which represent 83.1% of the total, sold their production of milk individually. Looking deeper in individual sales, we can observe that the overwhelming majority of the small livestock farmers (113 out of 123) sold their milk production directly to the feta cheese manufacturers, 8 producers sold their production to a wholesaler and the remaining 2 producers sold their production to a retailer chain/supermarket.

Out of all the producers interviewed, only 25, which represent 16.9% of the whole sample, sold their production through collective organizations. It is important to note that each producer interviewed marketed the total amount of the production to be sold through a single channel regardless if that is performed individually or collectively.

From the producers interviewed for this survey for the Greek case study, only 27 stated that they are members of a cooperative, while the rest 121 producers, representing 81.8% of the total stated that they are not members of a collective organization. 5 out of 27 producers that stated to be cooperative members sold their production individually. On the other hand, it is interesting to mention that there were 3 producers that although stated that they were not members of the cooperative, still sold their milk production through the cooperative.

The remaining questions of this section investigate the role of the collective organizations. A collective organization can buy the production, act as an intermediary on behalf of producers or it can provide marketing services to the producers. It became obvious that collective sales channels other than the cooperatives do not exist for the Greek producers in the survey. The alternative sale channels for the Greek producers are individual sales.

Out of 25 producers who sold their milk production to the cooperative, 5 stated that the cooperative puts them in contact with the buyer and 16 that the cooperative negotiates the price with the buyer on their behalf.

5.3 Characteristics of sale agreements

In this section of the questionnaire the specific characteristics and attributes of the sale agreements are recorded. As 'sale agreement' we consider the set of conditions that characterize a commercial transaction which occur between producers and buyers. The buyer can be a collective organization or an individual business as already mentioned in the previous section. In the case of individual sales, the transaction's characteristics can be specified in a contract or in an informal agreement, but in the case of sales to collective organizations the transaction's characteristics can be part of the rules/conditions of being a member of the collective organization.

From the 25 participants in the Greek survey, where the cooperative is the buyer of their milk production, 16 stated that the agreement is a legal contract or oral agreement before or during the production phase, which can be legally enforced, whereas 7 participants stated that the agreement with the cooperative is an informal agreement; it is a written or an oral agreement before or during the production phase, which cannot be legally enforced. Only one producer stated that the sale agreement with the cooperative is a legal contract or an oral agreement at the time of sale, just prior to delivery, which can be legally enforced (Figure 12).

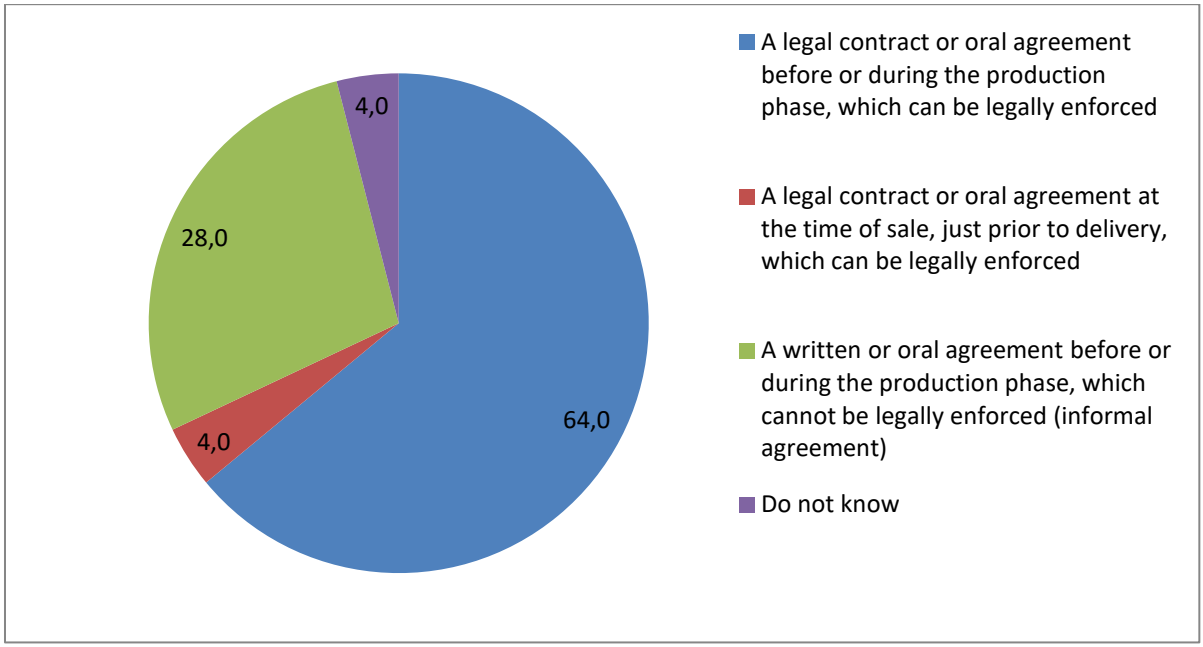


Figure 12. Types of contract with the Cooperatives

With regard to the duration of the agreement 16 respondents stated that the agreement with the cooperation lasts from 7 months to 1 year, 2 respondents stated that their agreement with the cooperative have longer duration and lasts up to 2 years, while 6 said that their agreement with the cooperative has an even longer duration of 2 years since it lasts up to 5 years.

23 out of 25 participants that sold their milk production to the cooperative stated that the cooperative requires exclusivity, while only two argued that there are penalties if they fail to deliver the agreed quantities. 3 argued that there are safeguards if the cooperative fails to fulfill the agreement, while other 4 argue that they get price premium from the cooperative if the quality of the delivered milk is higher.

All but one members of the cooperation responding to this survey - 27 out of 28 - and 24 out of 25 which sell their production to the cooperation argue that the cooperation is providing services like collection, storage, transport, handling etc., while 21 of them claim that the cooperative does not provide managerial support or technical assistance to them as well as credit assistance.

Most of the respondents (16 out of 25) argue that the collective organization in which they sell their production provide special assets, technology and /or machinery to them, while 12 out of 25 argue that there is an automatic extension mechanism in the agreement (Figure 13).

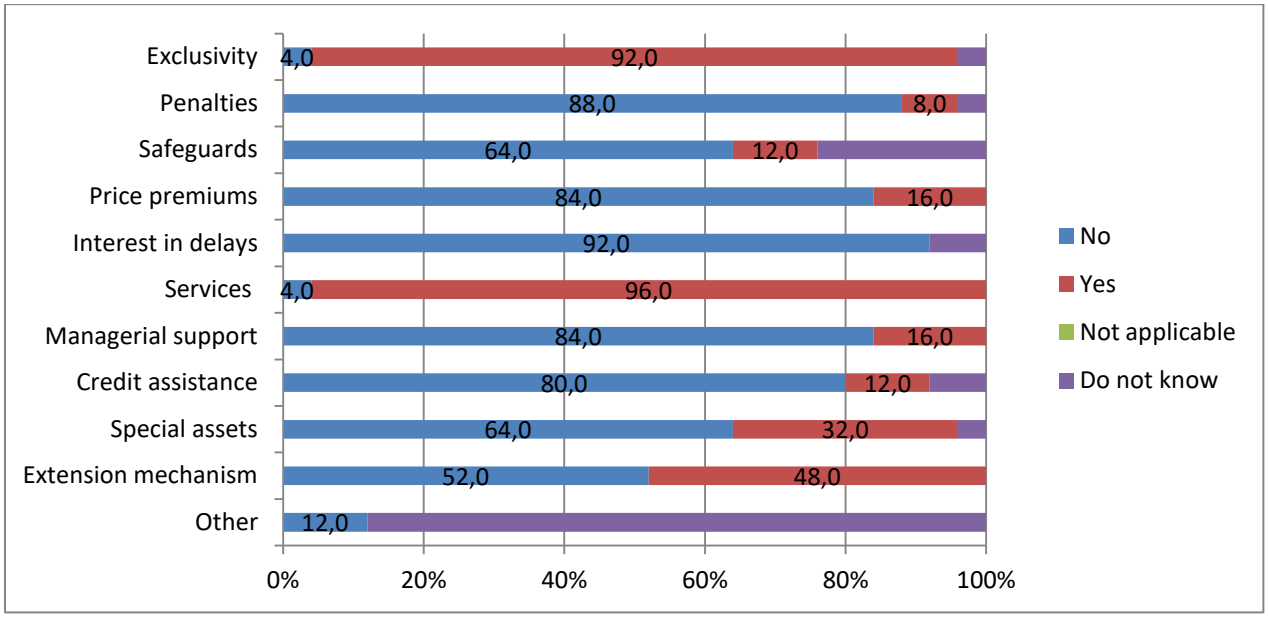


Figure 13. Characteristics of the sale agreement with the cooperative

From the producers surveyed, 123 confirmed that the buyer of their production was an individual business or a wholesaler. As far as the type of agreement is concerns most of the producers have an informal agreement with the dairy or the wholesaler. From those, 65 of the respondents said that they have a written or an oral agreement before or during the production face and 11 respondents said that they have a written or oral agreement at the time of the sale, which cannot be legally enforced. The rest 46 producers argue that the agreement is a legal contract or oral agreement before or during the production phase, which can be legally enforced. One producer stated that an intermediary is involved in the informal agreement (Figure 14).

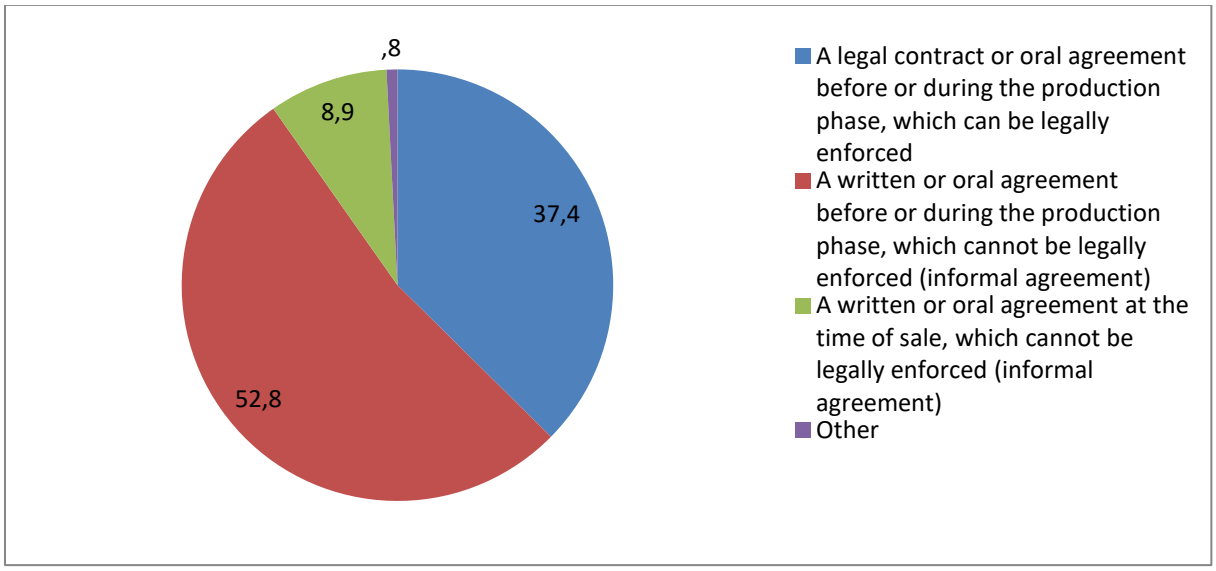


Figure 14. Type of contract with private businesses

For the majority of the respondents (90 answers out of 123) the agreement lasts between 7 months to 1 year while for 21 producers the agreement has duration more than 5 years and for 6 producers has duration between 1 and 2 years. As regards the question of whether the buyer requires exclusivity the answers are somehow divided, with 67 of the respondents to claim that their buyer does not require exclusivity and the 56 of the respondents to claim that they do.

Again, as in the case where the buyer was the cooperative, most of the respondents state that there are no penalties in case they fail to deliver the agreed quantities (111 answers) and no safeguards in case the buyer fails to fulfill the agreement (113 answers). Out of 123 producers, 26 (21.1%) reported that they receive price premiums for delivering higher quality products while only 3 producers stated that they receive interest in case of delayed payments from the buyer (Figure 15).

Most of the producers (93 producers, 75.6%) that sell their production to a dairy or a wholesaler receive services like collection, storage, transport, handling, etc, while 12 receive managerial support and 6 receive credit assistance. 37 producers (30.1%) declared that they receive special assets such as technology and/or machinery while 26 said that there is an extension mechanism in the agreement.

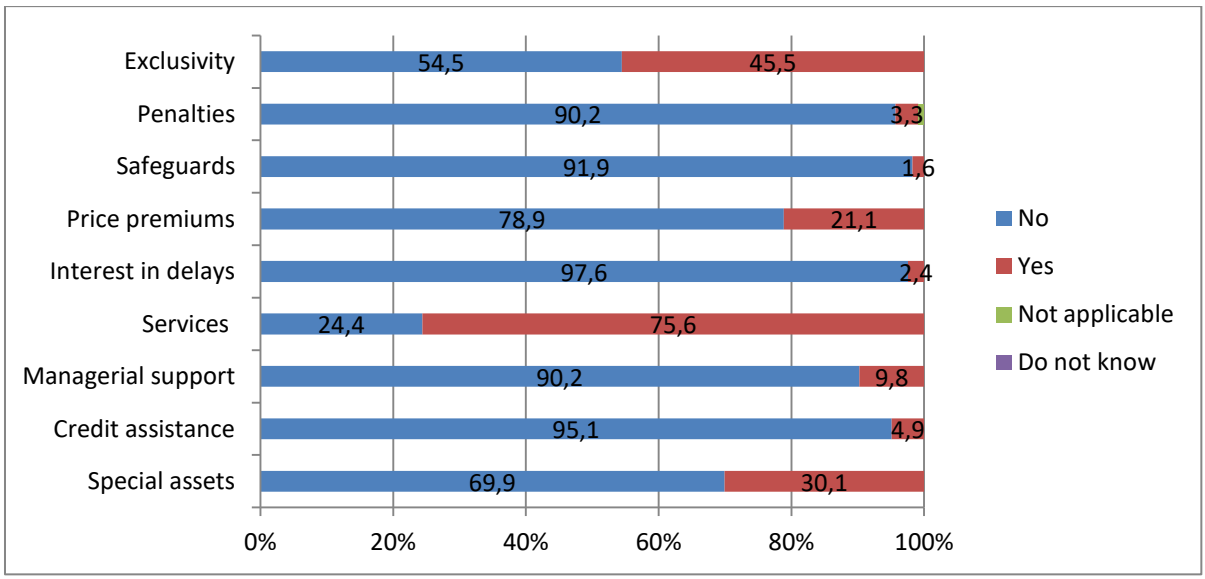


Figure 15. Characteristics of the sale agreement with private businesses

The average price received by producers for sheep milk by cooperative organizations as well as from individual businesses is at 0.95€ per liter. Those who sold their sheep milk to the cooperative do not exhibit large deviations from the average price; their prices range between 0.90€/l to 1.02€/l. Those participants who sold their milk as organic received from the cooperative 0.99€/l. On the other hand, those who sold their sheep milk individually to cheese manufacturers or to wholesalers had larger deviations from the average price; their price range was between 0.80€/l to 1.10€/l which was also the price received by those with organic production. The average price for goat milk is much lower

than that for sheep milk, with an average of 0.60€/l; for those selling organic goat milk the price reached 0.78€/l.

From the answers gathered in the survey about what they consider to be the production cost as percentage of the price received, the majority of the producers (up to 74.8% of total answers) consider that production cost can reach up to 70% of the price received.

Questions between QC.17 and QC.23 are exploring the extent to which the price of milk is determined by the agreement. From the answers collected, most of the producers (95 answers, 64.2%) consider the price fixed from the beginning of the agreement and it does not change. 13 producers (8.8%) said that the price varies based on delivered quantity, 29 producers (19.6%) said that it varies based on delivered quality, and 33 producers (22.3%) said that it is a variable price linked to the market price at the time of delivery.

All the producers that sell their milk to the cooperative and most of the producers that sell individually (108 answers, 87.8%) state that they get paid on a regular basis (e.g. monthly). Some respondents that sell their milk to individual businesses (13 answers) stated that they get paid entirely after the delivery of the product.

Only 4 of the cooperative members argue that they incur the cost of membership fee to the organization and 3 members consider that they incur the costs for collection, storage, transport etc. On the other hand, 11 producers that sell their milk to individual businesses consider that they incur the costs of collection, storage, transport, etc and just 2 producers that they incur cost of quality tests.

The following questions are exploring the possibility that the buyer (individual or collective organization) requires of the producer to comply with specific standards. 84 out of 148 producers (56.8%) say that the buyer requires to comply with quality standards such as nutritional content, chemical composition, etc., whereas 126 producers (85.1%) said that it is required to comply to food safety standards and 75 producers (50.7%) to animal welfare standards. 69 producers stated that they need to comply with Genetically Modified free standards and 18 with standards on natural resources and natural conservation.

Regarding the responses to the question on how satisfied they are with their sale agreements, producers that sold their production to the cooperative tend to be more satisfied with this sale agreement than those who sold their production to an individual business or a wholesaler. More specifically, of the 25 producers who sold to the cooperative, 11 (44%) declared to be somewhat satisfied by this agreement and 6 (24%) stated to be completely satisfied by this sale agreement. On the other hand, the responses of those producers who sold to individual businesses are more evenly distributed between completely unsatisfied and completely satisfied. In other words, although the responses ‘somewhat satisfied’ and ‘neither unsatisfied nor satisfied’ received the highest number of preference (34 producers, 27.6% each response), next response was the ‘completely satisfied’ with 21 preferences and the response ‘somewhat unsatisfied’ with 20 preferences (Figure 16).

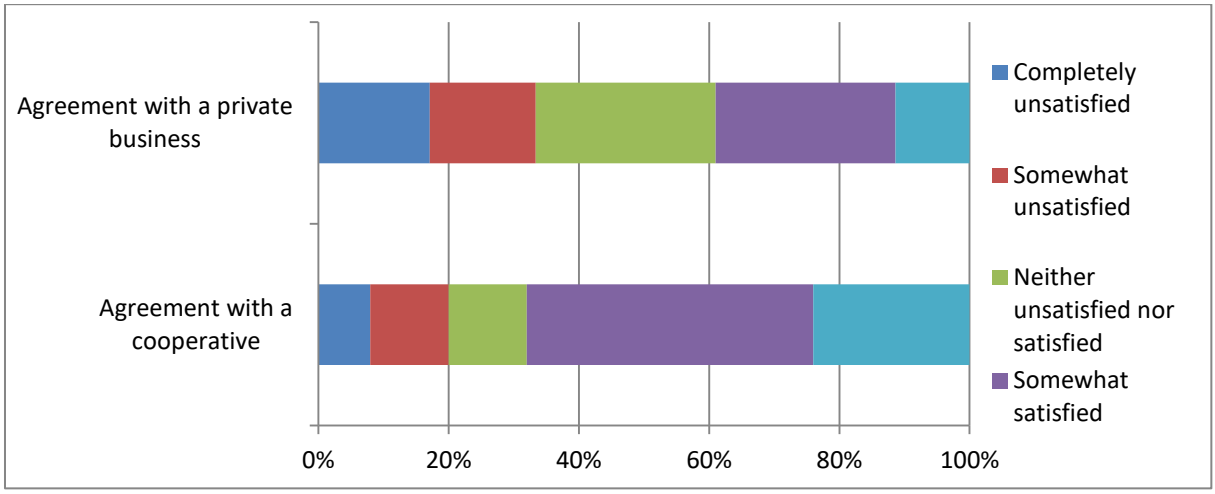


Figure 16. Satisfaction by the sale agreement

The last part of this section concerns questions regarding the satisfaction producers get with regard to the sale agreement. The majority of the producers with sale agreement with a cooperative strongly disagree by 44% (11 answers) that there are no alternative options to sell their products, by 76% (19 answers) that there are delays in payments; by 84% (21 answers) that the costs associated with this agreement are too high; by 68% (17 answers) that the production/quality standards required are too restrictive. On the contrary they strongly agree by 56% (14 answers) that the cooperative provides them with better prices and by 64% (16 answers) that the cooperative provide more stable prices than the alternative buyers (Figure 17).

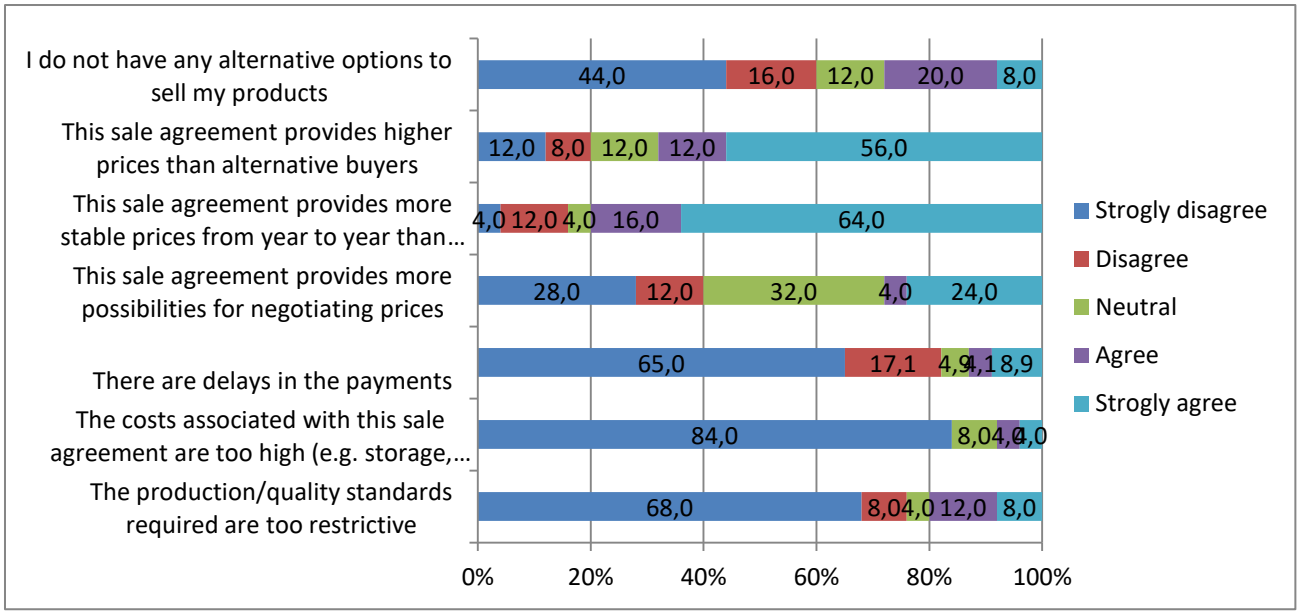


Figure 17. Producers' satisfaction with respect to the sale agreement from producers selling to cooperative

On the other hand, the answers of the producers with a sales agreement with an individual business or a wholesaler are more evenly distributed among strongly disagreement and strongly agreement answers to the statement of not having any alternative options to sell their products as well as to the statement that this sale agreement provides higher and more stable prices than the alternative buyers. Similarly, as the producers with a selling agreement with the cooperative, they strongly disagree by 65% (80 answers) that there are delays in payments; by 75.6% (93 answers) that the costs associated with this agreement are too high; by 85.4% (105 answers) that the production/quality standards required are too restrictive (Figure 18).

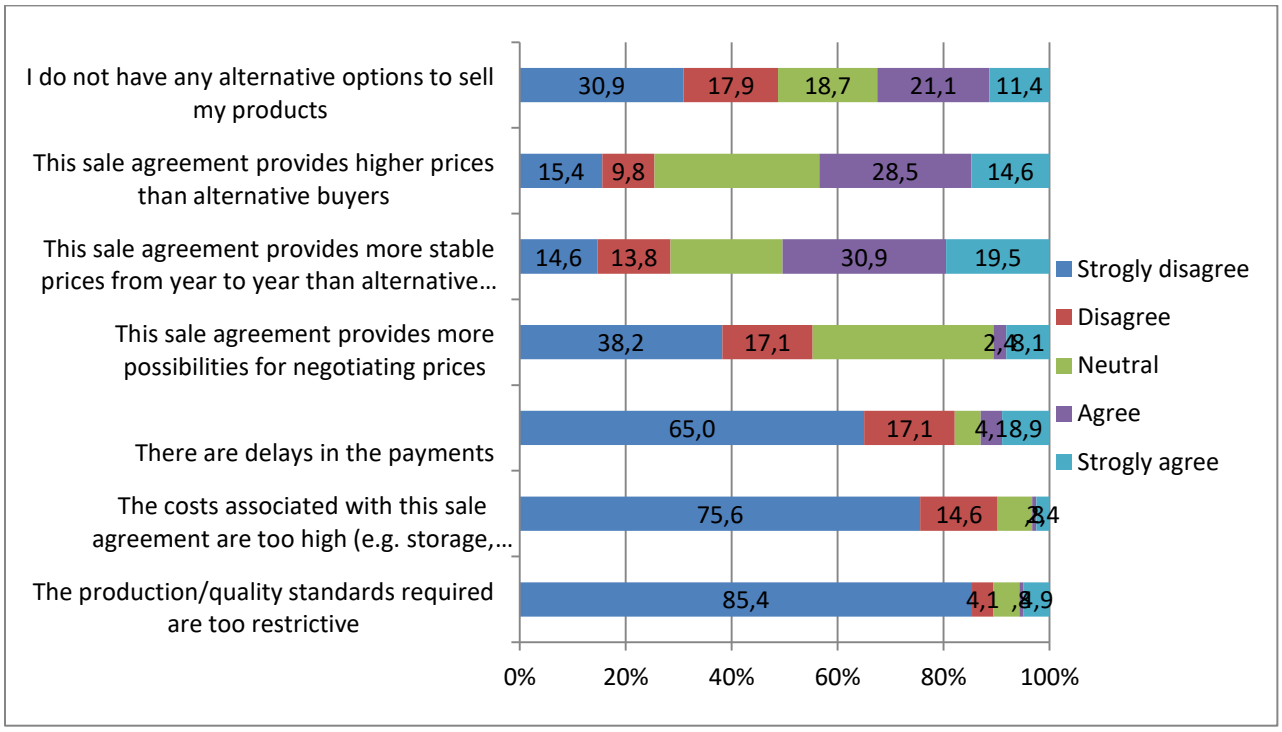


Figure 18. Producers' satisfaction with respect to the sale agreement from producers selling to individual business.

5.4 Sustainability

This section of the questionnaire asks farmers to express an evaluation about the sustainability of the sales agreement. Farmers participating in the survey, by a large majority, don't feel that the sale agreement has any impact on the environmental aspects of sustainability. More specifically, most farmers strongly disagree that the sale agreement has any impact in biodiversity maintenance by 53.7% (66 answers out of 148), while only 6 farmers strongly agree with that statement. Similarly, 40.7% of the participants strongly disagree with the notion that this sale agreement supports animal welfare, maintain water quality (67.5%) or maintains soil organic matter (54.5%).

The same perception seems to exist about the impact of the sale agreement on the societal aspects of sustainability, regardless if that sale agreement is with a cooperative organization or not. More analytically, 72 producers (58.5%) who had a sales agreement with individual business, strongly disagree that the sale agreement creates a good connection with buyers and input providers, whereas only 10 (8.1%) strongly agree with that statement. On the other hand, the producers that had a sale agreement with the cooperative strongly disagree by 44% (11 out of 25 answers) with this statement, yet 40% agree or strongly agree with this statement (5 answers in each response).

With regard to the statement that this sale agreement is enhancing the connection with other farmers, out of 148 producers, 79 (53.4%) strongly disagree and 25 (16.9%) disagree with that statement, while only 11 (8.9%) consider that this sale agreement has a positive impact in the connection with other farmers (8 agree and 3 strongly agree).

By 54.1% (80 answers out of 148) producers strongly disagree and by 14.9% (22 answers) disagree with the statement that this sale agreement has any impact to the societal recognition. Similarly, in the question whether this sale agreement has any impact in securing succession in the livestock farming business, most of the respondents strongly disagree by 60.1% (Figure 19).

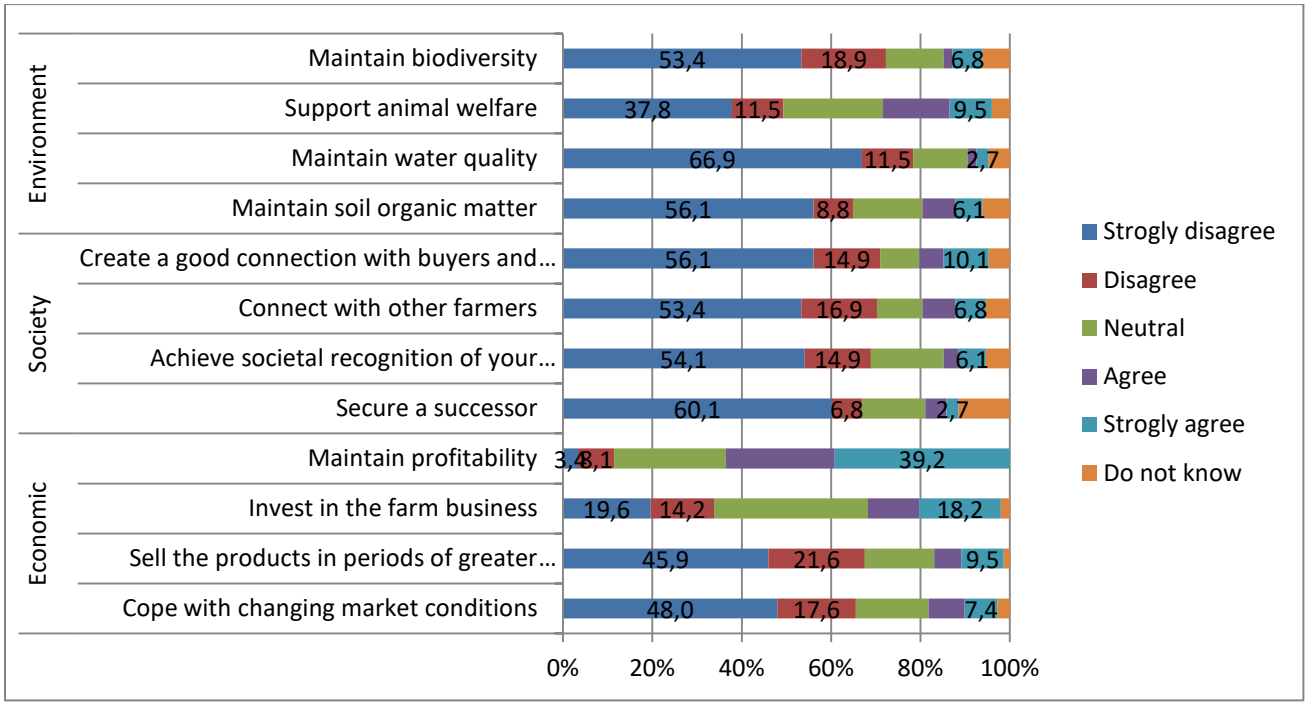


Figure 19. Potential impact of the agreement to sustainability

Answers are different regarding the questions on the effect of the sale agreement in the economic sustainability. There are no negative answers from the producers selling in the cooperative in the question whether this sale agreement help them maintain profitability; from 25 answers 16 strongly agree and 5 agree with this statement. The answers to this question are more evenly distributed in the case of producers selling to individual businesses. Although the majority of producers (42

answers) strongly agree and agree (31 answers) that this sale agreement helps them maintain profitability, there are producers that strongly disagree (5 answers), disagree (12 answers) and neutral (32 answers).

In the question whether this sale agreement helps them invest in farm business, most of the producers chose the neutral answer by 34.5% (51 answers out of 148), while 19.6% (29 answers) strongly disagree and 17.6% (26 answers) strongly agree.

Regarding the question whether this selling agreement helps the producers sell when the prices are low we observe differences between the answers given by the producers with a sale agreement with the cooperation and those with individual businesses. While the answers are evenly distributed in the entire range of available answers in the case of the agreement with the cooperative, in the case of producers with agreement with individual businesses the majority of answers are negative, with 52.8% (65 out of 123 answers) to strongly disagree and 17.9% (22 answers) to disagree with this statement. The same applies for the last question of this category, which concerns the notion that this sale agreement helps them cope with changing market conditions. Again the answers from producers selling to cooperative are evenly distributed to the range of available answers while the answers of the producers who sell to individual businesses are accumulating by majority in the negative answers. More specifically, 52.8% (65 out of 123 answers) strongly disagree, 17.9% (22 answers) disagree, 15.4% (19 answers) are neutral and only 13 producers agree or strongly agree with this statement.

5.5 Strategies and drivers of farming

This section of the report is about the wider strategies producers adopt in their farming activities. Specifically, it asks about potential factors that may drive farming decisions in the future, such as adverse climatic conditions, pests, and market volatility. Producers were asked to rate from 1 (not at all) to 5 (strongly influenced) the factors that influence their decisions regarding their production and farming strategies for milk production.

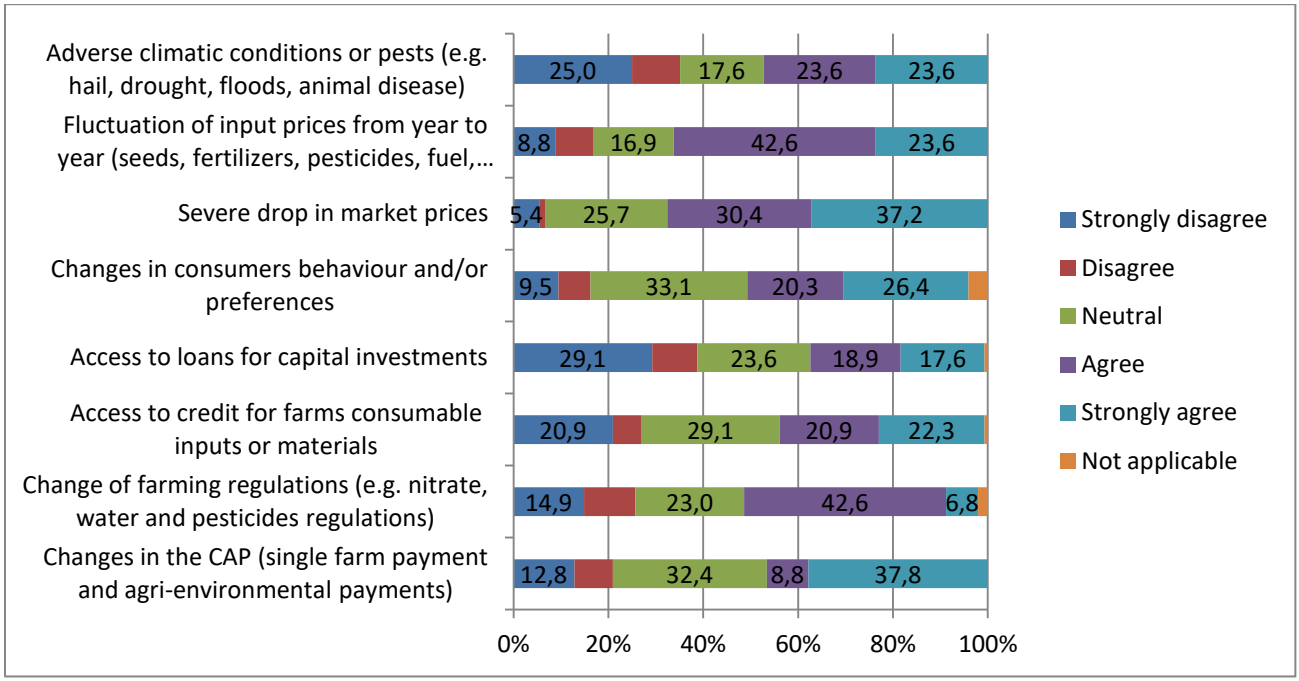


Figure 20. Factors that may influence farmers' decisions

In the question whether the adverse climate conditions or pests influence their decisions the answers given are relatively equally distributed along the scale between not at all influenced (25%) to considerably (23.6%) and strongly influenced (23.6%). On the other hand, fluctuating input prices seem to have a stronger influence to their production decisions since 42.6% (63 answers) stated that are considerably influenced, 23.6% (35 answers) are strongly influenced and 16.9% (25 answers) are somewhat influenced.

Severe drops in market prices seem to have a stronger influence to producers strategies since 37% of the producers participating in the survey stated that they are strongly influenced, 30.4% are considerably influenced and 25.7% somewhat influenced. The same applies to the changes in consumer's behavior or preferences where only 14 producers stated that their production decisions will not be influenced. Most of the producers stated that changes in consumers behavior will somewhat influence their production decisions (33.1%) while strongly influence state the 26.5% of the producers (Figure 20).

As far as it regards the factor of access to loans for capital investments producers views are divided, since 29.1% of the producers said that it doesn't influence their production strategies, 23.6% said that it somewhat influence their strategies, 18.9% said that it considerably influences their strategies and 17.6% that it will strongly influence their production strategies. The access to credit for farms consumable inputs or materials is also a factor that producers views are divided with most preferred answer the somewhat influence by 29.1%.

The factors that producers seem to be influenced by are the changes of farming regulations and changes in CAP. In the first case 42.6% stated that changes will influence their production strategies

considerably while changes in CAP will strongly influence the decision of 37% of the participating producers.

The last questions of the questionnaire are exploring the future plans of the producer for his farming business. The majority of the producers participating in this survey (60.1%, 89 answers) stated that they plan to maintain the existing scale of operations, while 37.2% (55 answers) stated that they plan to expand the existing scale of operations and only 3 stated that they plan to downscale the existing scale of operations.

As far as it concerns the production related changes, of 89 producers that stated that they intent to maintain the current scale of their farming business, 47 plan to invest more in production facilities and 12 to specialize their production. Only 4 producers intent to externalize particular aspects of their operations, 5 plan to insure against livestock losses while 4 have no specific plans for the future.

Out of 55 producers that plan to expand the existing scale of operation, 49 intent to invest more in production facilities and 24 plan to specialize their production. There are 7 producers who intent to externalize aspects of their operation and other 7 who intent to insure against production losses while there are other 4 who have no specific plans for the future. On the other hand, those 3 producers that intent to downscale the existing scale of operation didn't express any plans for the future.

Regarding the market related changes, 23 of the producers that intent to maintain the current scale of business operation stated they intent to add value to their milk production e.g. to convert to organic livestock production, 20 intent to diversify into new products, 20 to develop new sale channels for their production and 12 to develop new partnerships e.g. with other processors. From this category, only 2 producers express interest in insuring against volatile prices and cost to avoid loss of income while other 2 producers don't have any specific market plans.

Out of the 55 producers that intent to expand the existing scale of operation, 26 express the intention to add value to their production e.g. through the conversion to organic livestock farming, 23 to diversify into new products and 23 express the intention to develop new partnerships with e.g. other processors. In this category, 13 producers expressed interest in developing new sales channels, while, very few (7) express an interest in insuring against volatile prices and costs to avoid loss of income. Again, in this category there are two producers that have no specific market plans for the future.

The last question of the questionnaire concerns the current expectations the producers have for the succession of their farm. The majority of the producers (126 out of 148) don't have any expectations at present for the succession of the farm and only 12 expect of a family member to take over the farm. One producers stated that expects to sell the property and other two producers stated that their decision regarding the future of their farm business depends on the market.

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7 Annex

7.1 Common Fisheries Policy suggestions (Luchtman et al, 2009)

1. *Prioritise ecological sustainability over the economic and social dimensions in a new hierarchal CFP objective relating to sustainable development.*
2. *Establish a viable legal framework for establishing high level principles and Community standards for Conservation Policy. The technical implementation (or operational decision-making) on conservation, including but not limited to, technical measures, management and recovery plans and annual effort and catch limits, would be delegated closer to the 'action' either through regionalisation or comitology procedures.*
3. *Aim to reduce the complexity and number of CFP regulations.*
4. *Clarify the rights, roles and responsibilities of decision makers, stakeholders, advisers and others involved in the fisheries management system in the light of new priorities.*
5. *Review the roles and relevance of the RACs, ACFA, STECF and ICES once the appropriate legal framework has been determined, so that form follows function and each advisory body is 'fit-for-purpose' and can meet the needs of management.*
6. *Develop and establish the boundaries for regional marine ecosystems within the existing boundaries set forth for the RACs and Ecological Risk Assessments (or Strategic Environmental Assessments) required to identify the high, medium and low risk activities and priorities for each eco-region.*
7. *Abandon the 'progressive implementation' approach to ecosystem-based management and replace with a new approach aimed at:*
    a. *Integrating ecosystem-based management into the overarching objective of a new basic fisheries regulation.*
    b. *Setting out a framework of fisheries-related, ecosystem-based Community standards within a comprehensive strategy.*

8 Expand recovery and long term management plans and develop 'Ecosystem-based Fishery Management Plans' which should include:

i. *Well defined 'ecosystem' boundaries: spatial and/or species and/or fishing gear related.*
ii. *Well designed and defined rights-based measures.*
iii. *Species-specific operational objectives, time bounded management or recovery strategies, and clear, unambiguous limit and target reference points for all major species.*
iv. *Pre-determined decision rules (HCRs) related to stock management and ecologically related species, using an explicit precautionary approach.*
v. *Relevant precautionary fishing effort and/or catch limitations for all sources of fishing mortality.*
vi. *vi Additional technical measures to complement effort and catch limits.*
vii. *Multi-species management strategies, including controlling discarding.*
viii. *Incidental bycatch and other ecosystem impact mitigation measures.*
ix. *Data collection requirements related to the species-specific operational objectives and other elements of the plan.*
x. *New and effective monitoring, control and surveillance requirements.*
xi. *Formalised use of Management Strategy Evaluations by scientific and technical advisors to provide stakeholders and decision makers with information about alternative decision scenarios.*
xii. *Establishment of guidelines for setting operational objectives and management plan-specific HCRs.*

xiii. *Extension of the HCR (and therefore MSY) concept to include the ecological dimension, like the decision rules that bind CCAMLR (Convention for the Conservation of Antarctic Marine Living Resources) to safeguard the ecosystem.*

7.2 Annex - Media Analysis

Abbreviation	Year	Title	Link
AGRC01	2015	ΣΕΚ(:Προτάσεις για τη βιωσιμότητα και την ανάπτυξη της κτηνοτροφίας)	http://www.agrocapital.gr/Category/News/Article/16685/sek-protaseis-gia-ti-biwsimotita-kai-tin-anaptyxi-tis-ktinotrofias
AGRC02	2015	«Ροκανίζει» το αγροτικό εισόδημα το κόστος παραγωγής	http://www.agrocapital.gr/Category/News/Article/14455/rokanizei-to-agrotiko-eisodima-to-kostos-paragwgis-
AGRC03	2013	Η ιστορία για την ίδρυση της Αγροτικής Τράπεζας της Ελλάδος	http://www.agrocapital.gr/Category/Afieromata/Article/5558/h-istoria-gia-tin-idrysi-tis-agrotikis-trapezas-tis-ellados-
AGRE01	2016	«Βόμβα» στις συνδεδεμένες για τα αιγοπρόβατα	http://www.agroekfrasi.gr/vomva-syndedemenes-gia-aigoprovata/
AGRE02	2016	Στα όρια της βιωσιμότητας οι τιμές στο γάλα	http://www.agroekfrasi.gr/sta-oria-viosimotitas-timi-sto-gala/
AGRE03	2016	Φέτα~ Ένας θησαυρός που χάνεται	http://www.agroekfrasi.gr/Feta-enas-thisauros-pou-xanetai/
AGRE04	2016	Η θέση της Ελληνικής υπαίθρου	http://www.agroekfrasi.gr/h-thesi-tis-ellinikis-ypaithrou/
AGRE05	2016	Ασύμφορη η καλλιέργεια της μηδικής	http://www.agroekfrasi.gr/asymfori-kaliergeia-midikis/
AGRE06	2016	Επιπτώσεις φορολόγησης πρωτογενούς παραγωγής και προτάσεις ανάπτυξης του γεωργικού τομέα	http://www.agroekfrasi.gr/epiptwseis-forologisis-prwtogenous-paragogis-protaseis-anaptyksis/
AGRN01	2015	Δρόμος για δραστήριους αγρότες η αναδιανομή επιδοτήσεων	http://www.agronews.gr/business/oloklиromenes-parousiaseis/arthro/128291/dromos-gia-drastirious-agrotes-i-anadianomi-epidotiseon-/
AGRN02	2015	Εισφορές και φόροι κλείνουν το σπίτι της κτηνοτροφίας	http://www.agronews.gr/?pid=190&la=1&aid=134809

Abbreviation	Year	Title	Link
AGRN03	2015	Ακριβότερη ως 70% η σίτιση των ζώων στην Ελλάδα	http://www.agronews.gr/agora/kosti-eisroon/arthro/133591/akrivoteri-os-70-i-sitisi-ton-zoon-stin-ellada/
AGRN04	2015	Ενέχει κινδύνους η αλλαγή ορισμού των βοσκότοπων σύμφωνα με Τζελέπη	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/137828/enehei-kindunous-i-allagi-orismou-ton-voskotopon-sumfona-me-tzelepi/
AGRN05	2012	Έντονο ενδιαφέρον για κατοχύρωση βοσκοτόπων και ντόπιων φυλών	http://www.agronews.gr/business/fakeloi/arthro/78435/edono-endiaferon-gia-katohurosi-voskotopon-kai-dopion-fulon/
AGRN06	2013	Η τυροκόμηση για «μικρούς» είναι εφικτή	http://www.agronews.gr/?pid=160&la=1&aid=98755
AGRN07	2011	Καρασμάνης: Ανοχύρωτη η ελληνική κτηνοτροφία	http://www.agronews.gr/news/politics/arthro/65065/
AGRN08	2013	Σβήνουν οι νομάδες	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/92733/svinoun-oi-nomades-/
AGRN09	2013	Σε φθίνουσα πορεία η κτηνοτροφία αναζητά στήριξη στις συνδεδεμένες	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/100985/se-fthinousa-poreia-i-ktinotrofia-anazita-stirixi-stis-sundedemenes/
AGRN10	2014	Στην πρώτη θέση της Ευρώπης η ελληνική αιγοτροφία	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/119077/stin-proti-thesi-tis-europis-i-elliniki-aigotrofia-/
AGRN11	2014	Ανακοίνωση ΣΥΡΙΖΑ για την επαγγελματική αλιεία	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/110906/anakoinosi-suriza-gia-tin-epaggelmatiki-alieia/
AGRN12	2014	Η νέα αλιευτική πολιτική της ΕΕ ευνοεί τους μικρούς ψαράδες	http://www.agronews.gr/business/programmata/arthro/110312/i-nea-alieutiki-politiki-tis-ee-eunoei-tous-mikrous-psarades-/
AGRN13	2016	Κόβουν το ψάρεμα σε αλιείς που έχουν χρέη στον	http://www.agronews.gr/ekmetaleuseis/ktinotrofikes-farmes/arthro/138863/kovoun-to-psarema-se-alieis-pou-ehoun-hrei-ston-oga/
AGRN14	2016	Μεγάλη καταστροφή η επιστροφή	http://www.agronews.gr/diatrofi-agrotourismos/nomothesia/arthro/138361/megali-katastrofi-i-

Abbreviation	Year	Title	Link
		της βινζότρατας	epistrofi-tis-vinzotratas-/
AGRN15	2014	Μείωση των αλιευτικών ποσοστώσεων για την Ελλάδα	http://www.agronews.gr/business/oloklиromenes-parousiaseis/arthro/117198/meiosi-ton-alieutikon-posostoseon-gia-tin-ellada/
AGRN16	2016	Οι προτάσεις και τα αιτήματα των παράκτιων αλιέων	http://www.agronews.gr/agora/organoseis/arthro/139668/oi-protaseis-kai-ta-aitimata-ton-paraktion-alieon-/
AGRN17	2013	Υπεγράφη το πρόγραμμα αλιευτικών δεδομένων	http://www.agronews.gr/business/programmata/arthro/104443/upegrafi-to-programma-alieutikon-dedomenon-/
AGRN18	2013	«Έγκλημα» οι εισαγωγές πατάτας λένε καλλιεργητές	http://www.agronews.gr/agora/organoseis/arthro/100106/eglima-oi-eisagoges-patatas-lene-kalliergites/
AGRN19	2016	Νοικοκυραίοι θυσία στην «ιδέα» του καψοκαλύβα	http://www.agronews.gr/agora/organoseis/arthro/139101/noikokuraioi-thusia-stin-idea-tou-kapsokaluva/
AGRN20	2013	Το ακριβό ρεύμα διώχνει τους αγρότες από τις αρδευόμενες καλλιέργειες	http://www.agronews.gr/?pid=156&la=1&aid=105464
AGRN21	2011	Αγροτική Πίστη	http://www.agronews.gr/business/fakeloi/arthro/72751/
AGRN22	2014	Βραχνάς για την επιχειρηματικότητα το υψηλό κόστος εφοδίων, λένε οι Νέοι Αγρότες	http://www.agronews.gr/agora/kosti-eisroon/arthro/118136/vrahnas-gia-tin-epiheirimatikotita-to-upsilo-kostos-efodion-lene-oi-neoi-agrotes-/
AGRN23	2015	Εκτός μάχης στη δεκαετία 1 στις 2 εκμεταλλεύσεις	http://www.agronews.gr/?pid=160&la=1&aid=133071
AGRN24	2012	Η απειλή της «φούσκας» πάνω από την ελληνική γεωργία	http://www.agronews.gr/?pid=156&la=1&aid=90450
AGRN25	2014	Η έλλειψη εγχώριων πρώτων υλών αιτία για το υψηλό κόστος	http://www.agronews.gr/agora/kosti-eisroon/arthro/115142/i-elleipsi-eghorion-proton-ulon-aitia-

Abbreviation	Year	Title	Link
		παραγωγής	gia-to-upsilo-kostos-paragogis/
AGRN26	2013	Η καθετοποίηση είναι η απάντηση στο κόστος διάθεσης των προϊόντων	http://www.agronews.gr/agora/organoseis/arthro/97915/i-kathetopoiisi-einai-i-apadisi-sto-kostos-diathesis-ton-proiodon/
AGRN27	2013	Κερδίζει πόντους η αγροδιατροφή	http://www.agronews.gr/?pid=156&la=1&aid=93073
AGRN28	2014	Σε αδιέξοδο από το υψηλό κόστος παραγωγής οι αγρότες των Μεγάρων	http://www.agronews.gr/agora/kosti-eisroon/arthro/111198/se-adiexodo-apo-to-upsilo-kostos-paragogis-oi-agrotes-ton-megaron-/
AGRN29	2011	Στο «κόκκινο» αρκετές αγροτικές εκμεταλλεύσεις	http://www.agronews.gr/agora/pliromes/arthro/66421/
AGRN30	2013	Τα τρακτέρ θέλουν δουλειά για... ολόκληρο το χρόνο	http://www.agronews.gr/?pid=156&la=1&aid=93643
AGRN31	2015	Εκποίηση αγροτικής περιουσίας φέρνει το συνεταιριστικό ν~σ, λέει ο Τάσος Κανταράς	http://www.agronews.gr/agora/organoseis/arthro/135227/ekpoiisi-agrotikis-periousias-fernei-to-sunetairistiko-ns-leei-o-tasos-kadaras/
AGRN32	2013	Μονόδρομος η συνεργασία για την βιωσιμότητα των αγροτικών νοικοκυριών	http://www.agronews.gr/agora/organoseis/arthro/101546/monodromos-i-sunergasia-gia-tin-viosimotita-ton-agrotikon-noikokurion/
AGRN33	2013	Αξία στις μεταβιβάσεις δικαιωμάτων δίνει η σταδιακή εφαρμογή της ΚΑΠ	http://www.agronews.gr/?pid=186&la=1&aid=94801
AGRN34	2016	Λίγες οι Ομάδες Τοπικής Δράσης που κράτησαν όρθιο το Leader	http://www.agronews.gr/business/programmata/arthro/140763/liges-oi-omades-topikis-drasis-pou-kratisan-orthio-to-leader/
AGRO01	2015	Μεσοπρόθεσμη στρατηγική για την προβατοτροφία ζητούν οι αγροτικές οργανώσεις	http://www.agro24.gr/agrotika/agrotikes-organoseis/mesoprothesmi-stratigiki-gia-tin-provatotrofia-zitoyn-oi-agrotikes

Abbreviation	Year	Title	Link
AGRO02	2015	Απόφαση για τον αριθμό των μετακλητών εργατών γης ανά στρέμμα και προϊόν	http://www.agro24.gr/agrotika/symvoyles/nomothesia/apofasi-gia-ton-arithmo-ton-metakliton-ergaton-gis-ana-stremma-kai
AGRT01	2016	Αγορά αγροτικής γης, ένα σημαντικό πρόβλημα για τους αγρότες σε Ελλάδα και Ευρώπη	http://www.agrotypos.gr/index.asp?mod=articles&id=96500
AGRT02	2016	Μ. Κεφαλογιάννης: Οι τράπεζες δημιουργούν πρόβλημα στην ολοκλήρωση των χρηματοδοτούμενων επενδύσεων μέσω Leader (4/7/2016 16:37)	http://www.agrotypos.gr/index.asp?mod=articles&ID=99209
ALI04	2015	"Διαχειριστικά μέτρα…~" Ένας χρόνος μετά	http://alieftikanea.gr/diachiristika-metra-enas-chronos-meta/
ALI05	2013	ΟΛΟΚΛΗΡΩΜΕΝΟ ΣΧΕΔΙΟ ΠΡΟΩΘΗΣΗΣ ΚΑΤΕΨΥΓΜΕΝΩΝ ΑΛΙΕΥΜΑΤΩΝ	http://alieftikanea.gr/%CE%BF%CE%BB%CE%BF%CE%BA%CE%BB%CE%B7%CF%81%CF%89%CE%BC%CE%B5%CE%BD%CE%BF-%CF%83%CF%87%CE%B5%CE%B4%CE%B9%CE%BF-%CF%80%CF%81%CE%BF%CF%89%CE%B8%CE%B7%CF%83%CE%B7%CF%83-%CE%BA%CE%B1%CF%84%CE%B5%CF%88/
ARX01	2011	«Πτώχευση» της αλιείας με…μηχανότρατα	http://archipelago.gr/ptochefsi-tis-aliias-me-michanotrata/
ARX02	2011	Επενδύουν στο χάος για να αποδομήσουν την αλιεία	http://archipelago.gr/ependioun-sto-chaos-gia-na-apodomisoun-tin-aliia/
ARX03	2010	Μόνιμος παραβάτης του ευρωπαϊκού κανονισμού για την αλιεία στη Μεσόγειο το ελληνικό κράτος	http://archipelago.gr/monimos-paravatis-tou-evropaikou-kanonismou-gia-tin-aliia-sti-mesogio-to-elliniko-kratos/
ARX04	2016	Οι θάλασσες αδειάζουν, οι έλεγχοι	http://archipelago.gr/i-thalasses-adiazoun-i-elegchi-apousiazoun/

Abbreviation	Year	Title	Link
		απουσιάζουν-Καθημερινή, Γιάννης Ελαφρός,	
ARX05		Παράκτια Οικοσυστήματα	http://archipelago.gr/ti-kanoume/thalassia-prostasia/paraktia-oikosistimata/
CSR01	2015	Συμβολαιακή γεωργία-κτηνοτροφία: Κοινωνικό… συμβόλαιο	http://csrnews.gr/18937/%CF%83%CF%85%CE%BC%CE%B2%CE%BF%CE%BB%CE%B1%CE%B9%CE%B1%CE%BA%CE%AE-%CE%B3%CE%B5%CF%89%CF%81%CE%B3%CE%AF%CE%B1-%CE%BA%CF%84%CE%B7%CE%BD%CE%BF%CF%84%CF%81%CE%BF%CF%86%CE%AF%CE%B1-%CE%BA%CE%BF%CE%B9
DKL01	2016	Τράπεζα Πειραιώς: Μειώνονται τα επιτόκια σε Κάρτα Αγρότη και Συμβολαιακής	http://www.dikaiologitika.gr/eidhseis/agrotika/100881/trapeza-peiraios-meionontai-ta-epitokia-se-karta-agroti-kai-symvolaiakis
EASTH01	2012	ΟΙ ΣΥΝΕΤΑΙΡΙΣΜΟΙ ΣΤΟ ΣΤΟΧΑΣΤΡΟ	http://www.eas-thesprotias.gr/newsflashes/newsflash/oi-sineterismoi-sto-stoxastro.html
EFSYN01	2016	Οι κτηνοτρόφοι ρίσκαραν και βγήκε το «Γιαννιώτ'κο»	http://www.efsyn.gr/arthro/oi-ktinotrofoi-riskaran-kai-vgike-gianniotko
EFSYN02	2014	Στο απυρόβλητο και με μεθόδους μαφίας η παράνομη αλιεία	http://archive.efsyn.gr/?p=197743
EFSYN03	2015	«Καμία οινοπαραγωγός χώρα δεν επέβαλε φόρο στο κρασί»	http://www.efsyn.gr/arthro/kamia-oinoparagogos-hora-den-ehei-epivallei-foro-sto-krasi
EFSYN04	2016	«Χρειάζεται εθνικός διατροφικός σχεδιασμός»	https://www.efsyn.gr/arthro/hreiazetai-ethnikos-diatrofikos-shediasmos
EFSYN05	2016	Με τους συνεταιρισμούς η λύση του αγροτικού	https://www.efsyn.gr/arthro/me-toys-synetairismoys-i-lysi-toy-agrotikoy
EFSYN06	2016	Να δούμε και τη θέση του αγρότη	https://www.efsyn.gr/arthro/na-doyme-kai-ti-thesi-toy-agroti
EFSYN07	2016	Οι αγρότες στενάζουν στην Ελλάδα	http://www.efsyn.gr/arthro/oi-agrotes-stenazoyn-stin-ellada-ton-mnimonion

Abbreviation	Year	Title	Link
		των Μνημονίων	
ELE01	2016	Με το βλέμμα στραμμένο στο Πάσχα και τους εμπόρους…	http://www.eleftheria.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%AC/item/110755-%CE%BC%CE%B5-%CF%84%CE%BF-%CE%B2%CE%BB%CE%AD%CE%BC%CE%BC%CE%B1-%CF%83%CF%84%CF%81%CE%B1%CE%BC%CE%BC%CE%AD%CE%BD%CE%BF-%CF%83%CF%84%CE%BF-%CF%80%CE%AC%CF%83%CF%87%CE%B1-%CE%BA%CE%B1%CE%B9-%CF%84%CE%BF%CF%85%CF%82-%CE%B5%CE%BC%CF%80%CF%8C%CF%81%CE%BF%CF%85%CF%82%E2%80%A6.html
ELE02	2016	«ΣΕΡΤΙΚΟ»~ Ντόπιες ποικιλίες καπνών αναζητούν ευρωπαϊκή σήμανση	http://www.eleftheria.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%AC/item/99622-%C2%AB%CF%83%CE%B5%CF%81%CF%84%CE%B9%CE%BA%CE%BF%C2%BB-%CE%BD%CF%84%CF%8C%CF%80%CE%B9%CE%B5%CF%82-%CF%80%CE%BF%CE%B9%CE%BA%CE%B9%CE%BB%CE%AF%CE%B5%CF%82-%CE%BA%CE%B1%CF%80%CE%BD%CF%8E%CE%BD-%CE%B1%CE%BD%CE%B1%CE%B6%CE%B7%CF%84%CE%BF%CF%8D%CE%BD-%CE%B5%CF%85%CF%81%CF%89%CF%80%CE%B1%CF%8A%CE%BA%CE%AE-%CF%83%CE%AE%CE%BC%CE%B1%CE%BD%CF%83%CE%B7.html
ELE03	2016	Ανησυχία ντοματοπαραγωγών για τις χαμηλές τιμές του ~Νομικού~	http://www.eleftheria.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%AC/item/99815-%CE%B1%CE%BD%CE%B7%CF%83%CF%85%CF%87%CE%AF%CE%B1-%CE%BD%CF%84%CE%BF%CE%BC%CE%B1%CF%84%CE%BF%CF%80%CE%B1%CF%81%CE%B1%CE%B3%CF%89%CE%B3%CF%8E%CE%BD-%CE%B3%CE%B9%CE%B1-%CF%84%CE%B9%CF%82-%CF%87%CE%B1%CE%BC%CE%B7%CE%BB%CE%AD%CF%82-%CF%84%CE%B9%CE%BC%CE%AD%CF%82-%CF%84%CE%BF%CF%85-%CE%BD%CE%BF%CE%BC%CE%B9%CE%BA%CE%BF%CF%8D.html
ELE04	2016	Η γεωργία, τα προβλήματά της και το μέλλον της	http://www.eleftheria.gr/%CE%B1%CF%80%CF%8C%CF%88%CE%B5%CE%B9%CF%82/%CE%AC%CF%81%CE%B8%CF%81%CE%B1/item/104154-%CE%B7-%CE%B3%CE%B5%CF%89%CF%81%CE%B3%CE%AF%CE%B1,-%CF%84%CE%B1-%CF%80%CF%81%CE%BF%CE%B2%CE%BB%CE%AE%CE%BC%CE%B1%CF%84%CE%AC-%CF%84%CE%B7%CF%82-%CE%BA%CE%B1%CE%B9-%CF%84%CE%BF-

Abbreviation	Year	Title	Link
			%CE%BC%CE%AD%CE%BB%CE%BB%CE%BF%CE%BD-%CF%84%CE%B7%CF%82.html
ELE05	2016	Στα σκαριά Ομάδα Παραγωγών Λαχανικών	http://www.eleftheria.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%AC/item/100433-%CF%83%CF%84%CE%B1-%CF%83%CE%BA%CE%B1%CF%81%CE%B9%CE%AC-%CE%BF%CE%BC%CE%AC%CE%B4%CE%B1-%CF%80%CE%B1%CF%81%CE%B1%CE%B3%CF%89%CE%B3%CF%8E%CE%BD-%CE%BB%CE%B1%CF%87%CE%B1%CE%BD%CE%B9%CE%BA%CF%8E%CE%BD.html
ELEP01	2013	Οι 10 πληγές της ελληνικής κτηνοτροφίας	http://www.enet.gr/?i=news.el.article&id=340730
ELEP02	2010	Με τους ψαράδες της Ν. Μηχανιώνας	http://www.enet.gr/?i=news.el.article&id=136410
ELEP03	2013	Στα δίχτυα των ισχυρών η παράκτια αλιεία	http://www.enet.gr/?i=news.el.article&id=356339
ELEP04	2010	Τα αργύρια της επιδότησης βούλιαξαν τ' αλιευτικά μας	http://www.enet.gr/?i=news.el.article&id=148475
ELG01	2014	«Να αντιμετωπίσουμε τη γεωργία μας ως επένδυση»	http://www.ellinikigeorgia.gr/antimetopisoume-georgia-os-ependusi/
ELG02	2013	Αγροτικές Ανώνυμες Εταιρείες~ Προς ένα νέο είδος αγροτικού συνεταιρισμού!	http://www.ellinikigeorgia.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%AD%CF%82-%CE%B1%CE%BD%CF%8E%CE%BD%CF%85%CE%BC%CE%B5%CF%82-%CE%B5%CF%84%CE%B1%CE%B9%CF%81%CE%B5%CE%AF%CE%B5%CF%82/
ELG03	2015	ΑΠΟΨΗ~ Η καρτελοποίηση του πρωτογενούς τομέα	http://www.ellinikigeorgia.gr/kartelopoiisi-protogenous-tomea/
ELG04	2014	Ολοκληρωτική «αναζωογόνηση» του αγροτικού τομέα	http://www.ellinikigeorgia.gr/oloklirotiki-anazoogonisi-agrotikou-tomea/
ELG05	2013	Πράσινη ανάπτυξη και γεωργία	http://www.ellinikigeorgia.gr/%CF%80%CF%81%CE%AC%CF%83%CE%B9%CE%BD%CE%B7-

Abbreviation	Year	Title	Link
			%CE%B1%CE%BD%CE%AC%CF%80%CF%84%CF%85%CE%BE%CE%B7-%CE%BA%CE%B1%CE%B9-%CE%B3%CE%B5%CF%89%CF%81%CE%B3%CE%AF%CE%B1/
ELG06	2015	Συνέντευξη~ Η συμβολή της αγροτικής οικονομίας στην ανάπτυξη της χώρας	http://www.ellinikigeorgia.gr/sunentneuxi-suvoli-agrotikis-oikonomias-anaptuxi-xoras/
ELG07	2015	Συνέντευξη~ Η συμβολή της αγροτικής οικονομίας στην ανάπτυξη της χώρας – Μέρος ΙΙ	http://www.ellinikigeorgia.gr/sunenteuxi-meros-ii-sumvoli-agrotikis-oikonomias/
ELG08	2013	Κλιματική αλλαγή και γεωργία	http://www.ellinikigeorgia.gr/klimatiki-allagi-kai-georgia/
ELG09	2016	Ομάδες Παραγωγών~ Το κλειδί της επιτυχίας!	http://www.ellinikigeorgia.gr/omades-paragogon-to-kleidi-tis-epituxias/
ELT01	2016	Γίνε για μια μέρα… ψαράς	http://www.eleftherostypos.gr/ellada/22363gine-gia-mia-mera-psaras/
EPAL01	2015	Στρατηγική μελέτη Περιβαλλοντικών Επιπτώσεων ΕΠΑΛ 2014 -2020 υφιστάμενη κατάσταση	http://www.alieia.gr/articles/programmatiki-periodos-2014-2020/
ETH01	2013	Μεγάλες προοπτικές από το ελληνικό γιαούρτι...	http://www.ethnos.gr/epaggelmatikes_eukairies/arthro/megales_prooptikes_apo_to_elliniko_giaourti-63850820/
ETH02	2008	Απεργία πείνας από 500 ψαράδες παράκτιας αλιείας	http://www.ethnos.gr/oikonomia/arthro/apergia_peinas_apo_500_psarades_paraktias_alieias-852464/
ETH03	2016	Αγροτόσημο για όλους τους μετανάστες	http://www.ethnos.gr/oikonomia/arthro/agrotosimo_gia_olous_tous_metanastes-64318695/
ETH04	2015	Σαρωτικές αλλαγές στους αγροτικούς συνεταιρισμούς- Εθνικό Μητρώο και Ελεγκτική Αρχή	http://www.ethnos.gr/koinonia/arthro/sarotikes_allages_stous_agrotikous_synetairismous_ethniko_mitroo_kai_elegktiki_arxi-64273870/

Abbreviation	Year	Title	Link
ETH05	2013	Συνεταιρισμοί - φαντάσματα: Εσπειραν «σφραγίδες», θέρισαν χρέη	http://www.ethnos.gr/koinonia/arthro/synetairismoi_fantasmata_espeiran_sfragides_therisan_xrei-63920148/
ETH06	2016	Βάζει λουκέτο στους υπερχρεωμένους συνεταιρισμούς	http://www.ethnos.gr/oikonomia/arthro/bazei_louketo_stous_yperxreomenous_synetairismous-64348705/
ETH07	2015	Ο πόλεμος των 11 ημερών για το γάλα	http://www.ethnos.gr/oikonomia/arthro/o_polemos_ton_11_imeron_gia_to_gala-64279625/
ETH08	2016	Κοινοτικά κονδύλια ύψους 336 εκατ. € για την αλιεία	http://www.ethnos.gr/ergasia/arthro/koinotika_kondylia_ypsous_336_ekat_gia_tin_alieia-64423789/
GEO01	2016	Δ Ε Λ Τ Ι Ο Τ Υ Π Ο Υ για την αλλαγή του καθεστώτος παρασκευής γιαουρτιού στην Ελλάδα	http://www.geotee.gr/lnkFiles/20160412062931_4.pdf
GEO02	2016	Άρθρο Λαμπρόπουλου ΓΕΩΤΕΕ	http://www.geotee.gr/
GEO03	2016	Δελτίο τύπου Γεωτεέ για τη Φέτα	http://www.geotee.gr/
HA01	2015	~Να μη σαπίζουν οι σοδειές στα δέντρα~	http://www.avgi.gr/article/5750246/-na-mi-sapizoun-oi-sodeies-sta-dentra-
HA02	2015	Αστική γεωργία	http://www.avgi.gr/article/5925933/astiki-georgia
HA03	2015	Ύφεση και αγροτικός τομέας	http://www.avgi.gr/article/5834047/ufesi-kai-agrotikos-tomeas
HM01	2015	Καινοτομία και γενετική βελτίωση μπορούν να δώσουν νέα ώθηση στην προβατοτροφία	http://www.imerisia.gr/article.asp?catid=26515&subid=2&pubid=113443929
KAR01	2015	Ο Δήμος Μουζακίου συμμετέχει στη Θεσσαλική Εδαφική Συνέλευση για τη Γαλακτομική Αλυσίδα	http://www.karditsalive.net/karditsa/%CE%BF-%CE%B4%CE%AE%CE%BC%CE%BF%CF%82-%CE%BC%CE%BF%CF%85%CE%B6%CE%B1%CE%BA%CE%AF%CE%BF%CF%85-%CF%83%CF%85%CE%BC%CE%BC%CE%B5%CF%84%CE%AD%CF%87%CE%B5%CE%B9-%CF%83%CF%84%CE%B7-

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			%CE%B8%CE%B5%CF%83%CF%83%CE%B1%CE%BB%CE%B9%CE%BA%CE%AE-%CE%B5%CE%B4%CE%B1%CF%86%CE%B9%CE%BA%CE%AE-%CF%83%CF%85%CE%BD%CE%AD%CE%BB%CE%B5%CF%85%CF%83%CE%B7-%CE%B3%CE%B9%CE%B1-%CF%84%CE%B7-%CE%B3%CE%B1%CE%BB%CE%B1%CE%BA%CF%84%CE%BF%CE%BC%CE%B9%CE%BA%CE%AE-%CE%B1%CE%BB%CF%85%CF%83%CE%AF%CE%B4%CE%B1
KTH01	2016	Δεν υπάρχει μαγική λύση για τη γεωργία	http://www.kathimerini.gr/851219/opinion/epikairothta/politikh/den-yparxei-magikh-lysh-gia-th-gewrgia
KTH02	2006	Σωτήρια για τη γεωργία η «εισβολή» μεταναστών	http://www.kathimerini.gr/257146/article/epikairothta/ellada/swthria-gia-th-gewrgia-h-eisvolh-metanastwn
KTH03	2015	Απώλεια εσόδων και νόθευση ανταγωνισμού από την παράνομη διακίνηση οπωροκηπευτικών	http://www.kathimerini.gr/834282/article/oikonomia/epixeirhseis/apwleia-esodwn-kai-no8eysh-antagwnismoy-apo-thn-paranomh-diakinhsh-opwrokhpeytikwn
KTH04	2016	Δεν θα γίνει η εκτροπή του Αχελώου	http://www.kathimerini.gr/848138/article/epikairothta/ellada/den-8a-ginei-h-ektroph-toy-axelwoy
LN01	2011	Σε απόγνωση οι ψαράδες-Να «βυθίσει» γρι γρι και μηχανοτράτες απειλεί ευρωπαϊκός Κανονισμός	http://www.lesvosnews.net/articles/news-categories/agrotika/se-apognosi-oi-psarades-na-vythisei-gri-gri-kai-mihanotrates
LNET01	2015	Πως έγινε η μεγάλη… λεηλασία στην Αγροτική Τράπεζα Ελλάδος	http://www.larissanet.gr/2015/09/24/pos-egine-i-megali-leilasia-stin-agrotiki-trapeza-ellados/
MRDF01	2010	Σύνοψη Συμπεράσματα 20 10	
MRDF02	2011	Polyzou_CAP	Υπουργείο Αγροτικής Ανάπτυξης και Τροφίμων
NB01	2015	«Ο εκσυγχρονισμός της γεωργίας μπορεί να συμβάλει στη μείωση του κόστους παραγωγής»	http://www.newsbeast.gr/greece/arthro/1839416/o-eksigchronismos-tis-georgias-bori-na-simvali-sti-miosi-tou-kostous-paragogis

Abbreviation	Year	Title	Link
NB02	2016	Υπεραλιεύεται το 96% των ιχθυαποθεμάτων της Μεσογείου	http://www.newsbeast.gr/environment/arthro/2131703/iperalievete-to-96-ton-ichthiapothematon-tis-mesogiou
NF01	2015	Το μικρό είναι όμορφο	http://www.naftemporiki.gr/story/973516/to-mikro-einai-omorfo
NM01	2016	ΟΜΠΡΕΛΑ ΠΡΟΣΤΑΣΙΑΣ ΖΗΤΟΥΝ ΟΙ ΚΤΗΝΟΤΡΟΦΟΙ – Αυτόματοι Πωλητές Γάλακτος και στην Δράμα	https://news.makedonias.gr/2016/03/429540/
OIK01	2015	περί βοσκοτόπων	http://oikotrives.gr/periodiko/ellada/peri-voskotopon-kakouros-theodosiou/
PAA01	2015	ΡΑΑ 2014 - 2020 15_2_2015	http://www.agrotikianaptixi.gr/index.php?obj=2dfe1946b3003933
PAR01	2014	Για αφανισμό της αγελαδοτροφίας μιλούν η ΠΕΚ και η Ένωση Φυλής Holstein Ελλάδας	http://www.paragogi.net/2458/gia-afanismo-ths-ageladotrofias-miloyn-h-pek-kai-h-enwsh-fylhs-holstein-elladas
PAR02	2014	Ζοφερό τοπίο για την εγχώρια γαλακτοπαραγωγή	http://www.paragogi.net/3233/zofero-topio-gia-thn-egxwria-galaktoparagwgh
PAR03	2013	Θανάσης Βακάλης~ Πάνω από όλα να βάζουμε το «εμείς» και όχι το «εγώ»	http://www.paragogi.net/1827/thanashs-vakalhs-panw-apo-ola-na-vazoyme-to-emeis-kai-oxi-to-egw
PAR04	2013	Πεβερέτος~ Καταστροφικό ντόμινο για τους κτηνοτρόφους	http://www.paragogi.net/860/peveretos-katastrofiko-ntomino-gia-toys-kthnotrofoys
PAR05	2014	Ψάρια~ Βρέθηκε προσωρινή λύση, αλλά για business plans ούτε λόγος	http://www.paragogi.net/2419/psaria-vrethhke-proswrinh-lysh-alla-gia-business-plans-oyte-logos
PAR06	2015	Επιχειρώντας … αλλιώς, … ΤΟΠΙΚΑ …	http://www.paragogi.net/4304/epixeirwntas-alliws-topika
PENA01	2013	Είναι δύσκολο να είσαι Αγρότης και τραγικό να είσαι Νέος Αγρότης ~ Π.Ε.Ν.Α.	http://www.neoiagrotes.gr/el/content/einai-dyskolo-na-eisai-agrotis-kai-tragiko-na-eisai-neos-agrotis

Abbreviation	Year	Title	Link
PEP01	2013	Απάντηση σε ανοικτή επιστολή της ΠΕΠΠΑΕΣ της 10/1/2013 και της επιστολής της 8/2/2013.	http://www.pepma-net.gr/el/deltia-typou/deltia-pepma
PEP02	2011	κραυγή αγωνίας για την Μέση Αλιεία	http://www.pepma-net.gr/el/deltia-typou/deltia-pepma/113--kraugiagonias-giatinmesialieia
PSG01	2014	Αύξηση του ποσού για την ζωική παραγωγή ζητά ο ΣΕΚ	http://www.paseges.gr/el/magazines
PSG02	2014	Τα… ΑΤΜ γάλακτος του Συνεταιρισμού ΘΕΣγάλα & στη Θεσσαλονίκη	http://www.paseges.gr/el/magazines
PSG03	2016	ΘΕΣγάλα: η ελληνική γαλακτοπαραγωγή σε τροχιά καταστροφής	http://www.paseges.gr/el/news/THESgala:-h-ellhnikh-galaktoparagwgh-se-trohia-katastrofhs
PSG04	2015	Μέτρα για την βιώσιμη ανάπτυξη της κτηνοτροφίας ζητά ο ΣΕΚ από την κυβέρνηση	http://paseges.gr/el/news/Metra-gia-thn-biwsimh-anaptyxh-ths-kthnotrofias-zhta-o-SEK-apo-thn-kybernhsh
PSG05	2010	Τζανέτος Καραμίχας: Πρέπει να ρίξουμε το βάρος στην παραγωγή νέου πλούτου- Αγροτικός Συνεργατισμός Δεκέμβριος 2010	http://www.paseges.gr/el/magazines?from=2010&to=2010
PSG06	2016	Κώστας Σκιαδάς~ Μία αντίφαση με δραματικές συνέπειες!!!	http://www.paseges.gr/el/news/Kwstas-Skiadas:-Mia-antifash-me-dramatikes-synepeies
PSG07	2015	«Γερνούν» και λιγοστεύουν οι αγροτικές εκμεταλλεύσεις	http://www.paseges.gr/el/news/Gernoyn-kai-ligosteyoyn-oi-agrotikes-ekmetalleyseis
PSG08	2011	ΘΕΣΕΙΣ ΠΟΛΙΤΙΚΗΣ ΤΗΣ ΠΑΣΕΓΕΣ ΓΙΑ ΤΗΝ ΑΝΑΣΥΓΚΡΟΤΗΣΗ ΤΩΝ	http://www.paseges.gr/el/news/Oi-theseis-ths-PASEGES-gia-to-plaisio-anasygkrothshs-twn-

Abbreviation	Year	Title	Link
		ΑΓΡΟΤΙΚΩΝ ΣΥΝΕΤΑΙΡΙΣΤΙΚΩΝ ΟΡΓΑΝΩΣΕΩΝ ΤΗΣ ΕΛΛΑΔΑΣ	agrotikwn-synetairismwn
SIN01	2015	Έλλειμμα στρατηγικής για την ανάπτυξη του αγροτικού τομέα διαπιστώνουν οι αγροτικοί συνεταιρισμοί	http://sinidisi.gr/agrotika/53913-elleimma-stratigikis-gia-tin-anaptiksi-tou-agrotikou-tomea-diapistonoun-agrotikoi-sinetairismoi
TB01	2012	Από τις στάνες στα πέρατα της Γης - κοινωνία	http://www.tovima.gr/society/article/?aid=475027
TB02	2015	€4,7 δισ. για την αγροτική ανάπτυξη - οικονομικές ειδήσεις της ημέρας	http://www.tovima.gr/finance/article/?aid=726946
TB03	2016	«Κλειδί» για την ανάπτυξη ο αγροδιατροφικός τομέας - οικονομικές ειδήσεις της ημέρας	http://www.tovima.gr/finance/article/?aid=774582
TB04	2015	Ελλάδα~Έκτακτα μέτρα για την κάλυψη γεωργών ελέω ρωσικού εμπάργκο - κοινωνία	http://www.tovima.gr/society/article/?aid=722341
TB05	2012	Ελλειψη χρημάτων στάση... γεωργίας! - γνώμες	http://www.tovima.gr/opinions/article/?aid=471912
TB06	2014	Η αλγεβρική εξίσωση των αγροτικών επιδοτήσεων	http://www.tovima.gr/opinions/article/?aid=662432
TB07	2015	Πρόκληση της δεκαετίας το νέο μοντέλο της γεωργίας - οικονομικές ειδήσεις της ημέρας	http://www.tovima.gr/finance/article/?aid=693902
TB08	2013	Φράουλες, αίμα και κέρδη στη	http://www.tovima.gr/society/article/?aid=508506

Abbreviation	Year	Title	Link
		Μανωλάδα	
TB09	2014	Τι κρύβει η συμφωνία για το γάλα	http://www.tovima.gr/opinions/article/?aid=578677
TB10	2011	Ερημώνουν τα ελληνικά εδάφη	http://www.tovima.gr/ecology/article/?aid=402378
THE01	2015	Συρρικνώνεται η κτηνοτροφία στη Μαγνησία «Θ»	http://e-thessalia.gr/192886-2/
TN01	2014	Μεγάλες φουρτούνες από τις μικρές ψαριές	http://www.tanea.gr/news/economy/article/5086749/megales-foyrtoynes-apo-tis-mikres-psaries/
WRC01	2016	Συνεταιρισμοί και εργατικός έλεγχος στην Ελλάδα του 20ού αιώνα	http://www.workerscontrol.net/el/authors/synetairismoi-kai-ergatikos-elegxos-stin-ellada-toy-20oy-aiona
YPA01	2016	Το μακρύ πλοκάμι των ελληνοποιήσεων	http://www.ypaithros.gr/%CE%B1%CE%BB%CE%B9%CE%B5%CF%8D%CE%BC%CE%B1%CF%84%CE%B1-%CF%80%CE%BB%CE%BF%CE%BA%CE%AC%CE%BC%CE%B9-%CE%B5%CE%BB%CE%BB%CE%B7%CE%BD%CE%BF%CF%80%CE%BF%CE%B9%CE%AE%CF%83%CE%B5%CF%89%CE%BD/
YPA02	2016	Όσα νομοθετούνται δεν έχουν σχέση με ό,τι συμβαίνει στη θάλασσα	http://www.ypaithros.gr/%CF%8C%CF%83%CE%B1-%CE%BD%CE%BF%CE%BC%CE%BF%CE%B8%CE%B5%CF%84%CE%BF%CF%8D%CE%BD%CF%84%CE%B1%CE%B9-%CF%83%CF%87%CE%AD%CF%83%CE%B7-%CE%BC%CE%B5-%CE%B8%CE%AC%CE%BB%CE%B1%CF%83%CF%83%CE%B1/
YPA03	2015	Υψηλά πρόστιμα σε αλιείς	http://www.ypaithros.gr/%CF%85%CF%88%CE%B7%CE%BB%CE%AC-%CF%80%CF%81%CF%8C%CF%83%CF%84%CE%B9%CE%BC%CE%B1-%CF%83%CE%B5-%CE%B1%CE%BB%CE%B9%CE%B5%CE%AF%CF%82-%CE%B3%CE%B9%CE%B1-%CE%B1%CE%BC%CF%86%CE%B9%CE%BB%CE%B5%CE%B3/
YPA04	2015	Κραυγή αγωνίας από τους αλιείς του Βόλου	http://www.ypaithros.gr/%CF%87%CF%81%CE%AE%CF%83%CF%84%CE%BF%CF%82-%CE%BE%CF%85%CF%81%CE%B1%CE%B4%CE%AC%CE%BA%CE%B7%CF%82-%CE%B1%CE%BB%CE%B9%CE%B5%CE%AF%CF%82-%CF%84%CE%BF%CF%85-

Abbreviation	Year	Title	Link
			%CE%B2%CF%8C%CE%BB%CE%BF%CF%85/
YPA05	2016	Ψυχορραγεί η επαγγελματική αλιεία στην Κρήτη	http://www.ypaithros.gr/%CF%88%CF%85%CF%87%CE%BF%CF%81%CF%81%CE%B1%CE%B3%CE%B5%CE%AF-%CE%B7-%CE%B5%CF%80%CE%B1%CE%B3%CE%B3%CE%B5%CE%BB%CE%BC%CE%B1%CF%84%CE%B9%CE%BA%CE%AE-%CE%B1%CE%BB%CE%B9%CE%B5%CE%AF%CE%B1-%CF%83%CF%84/
YPA06	2016	ΑΓΡΟΤΙΚΟ ΖΗΤΗΜΑ~ Υπάρχει λύση;	http://www.ypaithros.gr/%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CE%B9%CE%BA%CE%BF-%CE%B6%CE%B7%CF%84%CE%B7%CE%BC%CE%B1-%CF%85%CF%80%CE%AC%CF%81%CF%87%CE%B5%CE%B9-%CE%BB%CF%8D%CF%83%CE%B7/
YPA07	2016	Δυσβάσταχτο το κόστος του γεωργού για τα λιπάσματα	http://www.ypaithros.gr/%CE%B4%CF%85%CF%83%CE%B2%CE%AC%CF%83%CF%84%CE%B1%CF%87%CF%84%CE%BF-%CE%BA%CF%8C%CF%83%CF%84%CE%BF%CF%82-%CE%B3%CE%B5%CF%89%CF%81%CE%B3%CE%BF%CF%8D-%CE%BB%CE%B9%CF%80%CE%AC%CF%83%CE%BC%CE%B1%CF%84/
YPA08	2016	Καινοτόμος εφαρμογή για αγρότες	http://www.ypaithros.gr/%CE%BA%CE%B1%CE%B9%CE%BD%CE%BF%CF%84%CF%8C%CE%BC%CE%BF%CF%82-%CE%B5%CF%86%CE%B1%CF%81%CE%BC%CE%BF%CE%B3%CE%AE-%CE%B3%CE%B9%CE%B1-%CE%B1%CE%B3%CF%81%CF%8C%CF%84%CE%B5%CF%82/
YPA09	2016	Λεμόνι~ Τσιμπάνε οι τιμές, αυξάνονται οι εκτάσεις	http://www.ypaithros.gr/%CE%BB%CE%B5%CE%BC%CF%8C%CE%BD%CE%B9-%CF%84%CE%B9%CE%BC%CE%AD%CF%82-%CE%B1%CF%85%CE%BE%CE%AC%CE%BD%CE%BF%CE%BD%CF%84%CE%B1%CE%B9-%CE%B5%CE%BA%CF%84%CE%AC%CF%83%CE%B5%CE%B9%CF%82/
YPA10	2016	Στρέφεται στις Ομάδες Παραγωγών ο Α.Σ. Ελασσόνας	http://www.ypaithros.gr/%CF%83%CF%84%CE%B9%CF%82-%CE%BF%CE%BC%CE%AC%CE%B4%CE%B5%CF%82-%CF%80%CE%B1%CF%81%CE%B1%CE%B3%CF%89%CE%B3%CF%8E%CE%BD-%CE%B1%CF%83-%CE%B5%CE%BB%CE%B1%CF%83%CF%83%CF%8C%CE%BD%CE%B1%CF%82/
YPA11	2016	Τα λιπάσματα, το υψηλό κόστος και οι δασμοί	http://www.ypaithros.gr/%CE%BB%CE%B9%CF%80%CE%AC%CF%83%CE%BC%CE%B1%CF%84%CE%B1-%CF%84%CE%BF-%CF%85%CF%88%CE%B7%CE%BB%CF%8C-

Abbreviation	Year	Title	Link
			%CE%BA%CF%8C%CF%83%CF%84%CE%BF%CF%82-%CE%BA%CE%B1%CE%B9-%CE%B4%CE%B1%CF%83%CE%BC%CE%BF%CE%AF/
YPA12	2016	Όσπρια~ Στροφή των αγροτών σε βιώσιμα προϊόντα	http://www.ypaithros.gr/%CF%8C%CF%83%CF%80%CF%81%CE%B9%CE%B1-%CE%B1%CE%B3%CF%81%CE%BF%CF%84%CF%8E%CE%BD-%CE%B2%CE%B9%CF%8E%CF%83%CE%B9%CE%BC%CE%B1-%CF%80%CF%81%CE%BF%CF%8A%CF%8C%CE%BD%CF%84%CE%B1/
YPA13	2016	Αγροδιατροφικός τομέας~Τεχνολογία και ισχυρό branding «κλειδιά» για την ανάπτυξη	http://www.ypaithros.gr/%CE%B1%CE%B3%CF%81%CE%BF%CE%B4%CE%B9%CE%B1%CF%84%CF%81%CE%BF%CF%86%CE%B9%CE%BA%CF%8C%CF%82-%CF%84%CE%BF%CE%BC%CE%AD%CE%B1%CF%82%CF%84%CE%B5%CF%87%CE%BD%CE%BF%CE%BB%CE%BF%CE%B3%CE%AF%CE%B1-%CE%BA/
YPA14	2016	Που λεφτά για ανανέωση στόλου;	http://www.ypaithros.gr/%CF%80%CE%BF%CF%85-%CE%BB%CE%B5%CF%86%CF%84%CE%AC-%CE%B3%CE%B9%CE%B1-%CE%B1%CE%BD%CE%B1%CE%BD%CE%AD%CF%89%CF%83%CE%B7-%CF%83%CF%84%CF%8C%CE%BB%CE%BF%CF%85/
YPA15	2016	Ο Αχελώος δεν εκτρέπεται, η Θεσσαλία κινδυνεύει ή παρεκτρέπεται;	http://www.ypaithros.gr/%CE%B1%CF%87%CE%B5%CE%BB%CF%8E%CE%BF%CF%82-%CE%B4%CE%B5%CE%BD-%CE%B5%CE%BA%CF%84%CF%81%CE%AD%CF%80%CE%B5%CF%84%CE%B1%CE%B9-%CE%B8%CE%B5%CF%83%CF%83%CE%B1%CE%BB%CE%AF%CE%B1/
YPA16	2016	Φάρμα Φαρμάκη-Κατρή~Πρότυπο σύγχρονης κτηνοτροφίας	http://www.ypaithros.gr/%CF%86%CE%AC%CF%81%CE%BC%CE%B1-%CF%86%CE%B1%CF%81%CE%BC%CE%AC%CE%BA%CE%B7-%CE%BA%CE%B1%CF%84%CF%81%CE%AE%CF%80%CF%81%CF%8C%CF%84%CF%85%CF%80%CE%BF-%CF%83%CF%8D%CE%B3%CF%87%CF%81%CE%BF%CE%BD%CE%B7/
XN01	2016	Βιώσιμη λύση για το αγροτικό	http://www.haniotika-nea.gr/viosimi-lisi-gia-to-agrotiko/