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SECTORAL STUDY

Livestock Farming

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PLANNING AND IMPLEMENTATION:
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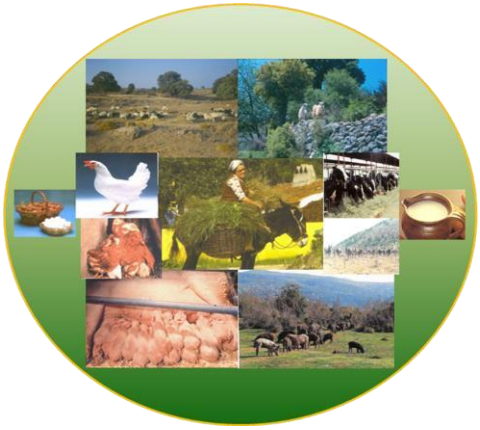
«Recharging Greek Youth to Revitalize the Agriculture and Food Sector of the Greek Economy»

Final Report

Sectoral Study 4.

Livestock farming



Athens, December 2015

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1. The importance of Livestock Sector in Europe

Through contributing €130 bn annually to Europe's economy, being 48% of total agricultural activity and creating employment for almost 30 million people, Europe's animal production sector is a major part of our economy and of European food supply. Animal products make important contributions to a healthy diet and are in increasing demand globally. This creates additional export opportunities for Europe, in terms of both products and expertise.

Europe's livestock sector plays a central role in realising food and nutrition security worldwide, as global demand for livestock products is expanding rapidly. All international organizations consider that this trend is sustainable and should even increase over the next few years. According to FAO and OECD, the increase in the consumption of animal protein on the planet is expected to continue at a rate of + 2% to + 3% per year during this decade. The European Union is the world's largest milk producer and the second meat producer after China.

Food production is a major part of the bio-economic system. The grand challenge in a global bio-based economy, which is focused on sustainable food security, is efficient production systems allied to effective allocation and use of the globally available biomass. This includes maintenance of diversity in order to sustain a resilient biomass production. Livestock production can ensure a circular agro-economy by converting plant biomass residues into high value proteins. There can be no agro-ecology without integrated plant and animal production.

In many parts of Europe, the animal production industry is inextricably linked with the vitality of rural social economic infrastructures. At the same time the livestock sector can present challenges to the environment and some aspects of human health. While the livestock sector offers multiple opportunities for contributing to a climate smart, sustainable and competitive Europe, it needs imaginative and innovative system approaches and strong, flexible industry-research links to implement the knowledge, technologies and know-how that will equip the sector to meet Europe's challenges for the future.

Some of the challenges to be overcome call for a better understanding of how animal production can contribute more effectively to the circular bio-economy, deliver ecosystem services and improvements in the food chain. We need to know how we can better select for and manage animals as biological entities; other opportunities call for improvements in the design and management of the production systems and food chains of which animals are just one part. These production systems should fit to the social, economic and technological challenges of today's society. This includes the need for socio-economic research on chain management, consumer attitudes and governance.

The expected increase of earth's human population by 50% in 2050 combined with the improved living standards of developing countries, high proportion of which is going to move to big cities, is expected to a sharp increase in animal origin products demand and consumption. This increase is estimated to be 20% for the developed countries and 100% for the developing ones. This increased production of animal products will need much more quantities of feedstuffs produced from cultivated land which is getting more and more limited for various reasons.

The target to increase the bio-fuels by 10%, at least up to 2020 for environmental reasons, has created a complex problem described as 3Fs (Feedstuffs–Food–Fuel). The solution of this problem is difficult since includes land use, food security, feedstuffs adequacy and environmental issues like conservation of natural resources.

The European Union policy in '70 was to increase the farm size and the intensity of production in order to meet the demand, and low prices. Later on gave emphasis on the multifunctional agriculture to keep sustainability of the agricultural land. However, the tendency was to move intensive livestock farming in low-land areas with abandonment of the less favored areas. The result of that was to support the extensive farming systems with subsidies in order to keep alive the upland and mountainous areas of Europe from socio-economic and environmental point of view.

On the other hand, the consumers today demand animal origin products of high quality and safe for their health, without disturbing the environment and keeping the welfare rules for the livestock at the same time. The products of those extensive livestock farming systems, even though they are of high quality, they will never be sufficient to feed the world or to be competitive due to their high production cost.

The current European Policy for the livestock sector is to support the extensive production systems with the objective to preserve the environment (avoiding for example under grazing and abandonment of the rangelands) and to keep them economically viable as much as possible. However, intensification occurs in many situations and the side effects of livestock production – positive or negative- become increasingly important.

2. The Livestock Sector in Greece

2.1. Introduction

The livestock sector consists one of the two main ones in the whole agriculture (primary production) representing 25% of the gross agricultural product of Greece while the plant sector represents 75%. However, the livestock sector is closely linked with the plant sector since most of the feedstuffs are of plant origin.

According to the Agricultural Policy of the European Union (EU) in Livestock Production, and the socio-economic situation of the Greek population some tendencies seem to appear and evolve the last few decades, compared to the past, which have as follows:

a. The number of farms is gradually reduced followed by a relatively smaller decline in farmed animals.

b. The farms' size is increased followed by higher productivity, higher feed efficiency, better management and welfare, and better quality of animal products (milk, meat, eggs). Despite all those, the competitiveness of the sector, as a whole, remains still low.

c. There is a general trend to intensification, despite the EU policy for extensification, for various reasons, based less and less on natural grasslands with respective increasing dependence on supplementary feeding, with the highest percentage of those to be purchased and the lowest to be home grown, and

d. A small proportion of livestock farmers is involved in alternative farming systems like organic, free range, traditional etc., which produce specific products with distinguished nutritive and organoleptic characteristics, selling them at higher prices. The economic crisis of the last few years has caused some changes in Greek mentality, where some young people of higher education level and qualifications show interest in livestock farming, forced by the unemployment situation, too.

The following Tables 2.1 to 2.5 present some of the main characteristics of the human population occupied in livestock and in mixed farming of Greece in 2014 (EL. STAT., 2014).

The tendency of Greek people to be self-occupied (because prefer to be "independent"), combined with the limited opportunities to find a job, creates an optimistic scenario for the development of livestock farming in Greece in terms of productivity, sustainability, and competitiveness. However, a national strategy for the sector's development is needed, by the Ministry of Rural Development and Food, who can give the appropriate priority to each sector according to their advantages and disadvantages they present. In the following chapter of this study-report each of the main livestock sectors is briefly described and discussed, including their perspectives for the coming years, especially for the young generation.

Table 2.1. Human population occupied in livestock and in mixed* farming in 2014 (*EL. STAT., 2015*).

Type of farming	Full time	Part time	Total
Livestock	47,216	4,402	51,618
Mixed	31,591	3,802	35,393

**Crop and animal production*

Table 2.2. Working force place in livestock and in mixed farming jobs.

Type of farming	Self-occupied with hired stuff	Self-occupied without hired stuff	Hired stuff	Assistant to family farm	Total
Livestock	2,171	36,027	2,513	11,907	51,618
Mixed	1,029	27,273	418	6,672	35,392

Table 2.3. Distribution of human population occupied in livestock and in mixed farming in 2014 in different districts of Greece.

District	Livestock farming	Mixed farming
Central Macedonia	7,063	3,071
West Macedonia	3,559	3,127
Epirus	5,664	3,569
Thessaly	6,696	2,943
Ionian Islands	1,046	-
West Greece	9,352	6,421
Sterea Hellas	3,805	392
Attica	1,300	496
Peloponnesus	2,102	3,103
North Aegean	2,780	731
South Aegean	204	1,565
Crete	1,585	8,461
Total	*51,618*	*35,394*

Table 2.4. Educational level of human population occupied in livestock and in mixed farming in 2014

Level of education	Livestock farming	Mixed farming
Ph.D. holders /Post graduate studies	-	-
University degree	1,631	1,024
Technical school's degree	1,887	1,169
Lyceum degree	12,452	7,875
Gymnasium (high school)	10,773	6,656
Primary school	22,864	18,430
Part of primary school	1,598	116
Without education	413	122
Total	*51,618*	*35,392*

Table 2.5. Degree Specialization of human population occupied in livestock and in mixed farming in 2014

Degree on	Livestock farming	Mixed farming
Life Sciences	69	-
Natural Sciences	-	496
Computer Sciences	153	-
Engineering –Industry - Constructions	2,374	2,048
Agricultural & Veterinarian Sciences	393	437
General education	44,964	31,789
Teachers	269	-
Human Sciences	1,306	144
Social, Economics, Law Sciences	910	-
Health Sciences Services	214	208
Others	153	148
Total	*51,619*	*35,392*

2.2. Current situation of milk production in Greece

Milk production in Greece has never been great, compared to other European countries, which is mainly due to high percentage of mountainous areas of the whole country's surface area. Because of that, the number of dairy cows has always been relatively small, and consequently Greece has always, also, been deficient in cow's milk and dairy products. The number of dairy farms and dairy cows is declining year by year, while the milk yield per cow and the farm size are increased. However, the country's annual cow's milk production is declining due to low profitability of the sector. Despite the relatively high milk prices the Greek dairy farmers get (about 0.42 Euros /kg), compared with those of other EU countries (0.26-0.36 Euros /kg), the high feeding cost (because the cows are kept indoors with no grazing at all) combined with rather inefficient management, makes the dairy farms economically no viable.

On the other hand, the sheep and goat sector has always produced higher quantities of milk compared to dairy cow sector, due to favour conditions of Greece for sheep and goat farming. This is explained by the long tradition of Greece from the ancient times, to keep sheep and goats and to transform their milk into many types of traditional cheeses like Feta, Kefalotyri, Graviera etc. Ninety percent of sheep and goat milk is transformed into cheeses and yoghurt, while the corresponding figure for the cow's milk is only 10%. 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.

Greece has a deficit of about 50% in milk and dairy products. However, there is a great number of cheese making plants all over the country and significant exports of cheeses and yogurt. Feta is the main exported cheese in increasing quantities year by year. The exported quantities of Feta cheese and yoghurt are shown in figures 2.1 and 2.2 respectively.

Figure 2.1. The exported quantities of Feta cheese (in'000 tones) during 2000-2014

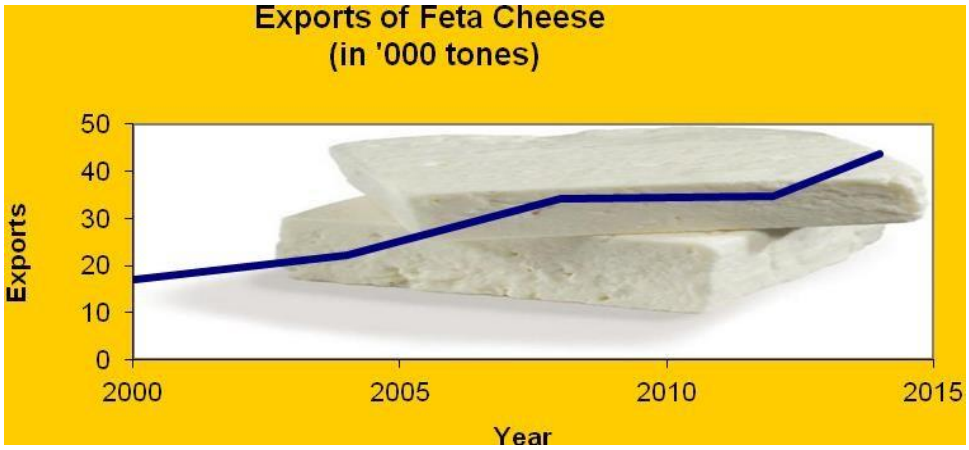
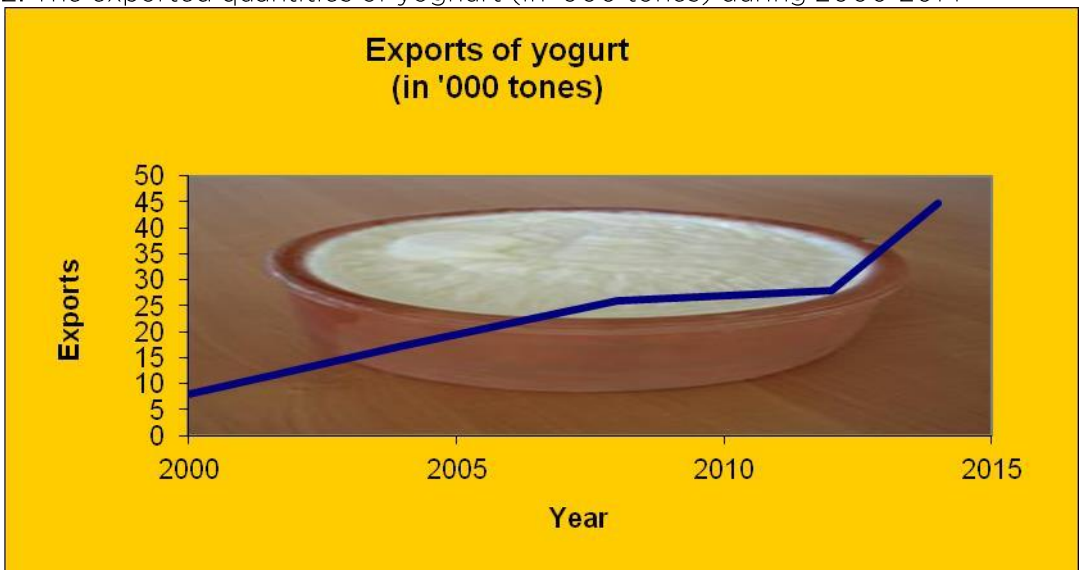


Figure 2.2. The exported quantities of yoghurt (in '000 tones) during 2000-2014



2.3. *Current situation of meat production in Greece*

The comparison (years 2012, 2013 and 2014) of the current available data from authoritative sources, such as ELGO-DIMITRA and ELSTAT (Katerinis, 2015) leads to specific conclusions regarding the production of meat in Greece, such as:

a) Fattening of cattle and beef production (including milk fed calves, fattening calves and buffaloes) has declined from 44,300 tonnes in 2012 to 37,600 tonnes in 2014. The slaughtering of domestic animals has shrinked to a greater extent than the corresponding non-domestic ones. The self-sufficiency of Greece from domestic cattle amounts to 17.5%.

b) Despite the slight decline observed, meat production from traditional sheep and goat farming still plays an important role in Greek primary production. The domestic production of sheep and goat meat reached the amount of 40,000 tonnes in 2014, resulting in a selfsufficiency of 76%.

c) Despite the intense global competitive environment in poultry production the selfsufficiency of Greece in poultry meat is at 85%. The poultry meat sector, although sensitive to price changes, has managed to address the emerging crises and survive in long term, mainly because of the large size of the farms, the implementation of modern farming methods, the very good organization of the production, and the appropriate marketing of the products.

d) The production of pork, although performed in a highly competitive environment as poultry meat, has been influenced far more by international crises, thus a continuously decreasing production (72,200 tonnes of meat in 2014 versus 76,420 in 2012 and 147,000 tonnes in 1990) has been observed, resulting in a current degree of self-sufficiency of up to 27%. Although the pig industry in Greece is considered one of the dynamic sectors of the rural economy (having a share of 18.6%, 25.8% and 35.5% for the years 2010, 2011 and 2012, respectively in the gross value of animal production), no attention was paid to the cost of production and the quality of the meat, and as a consequence the recovery from crises failed and turned out to be a non-competitive industry in the European market. The problem actually started in the early 1970s, where an attempt to develop the pig industry so as to meet the needs of the internal market in pork, combined with an impressive growth in domestic corn production, limited initially pork meat imports. However, this effort was not accompanied by technological support, thereby creating large pig farms without experience and technical infrastructure, which was based entirely on importing maternal genetic material from foreign firms, with low productivity rates and high production costs even today, and inadequate facilities. In addition to these, the erratic regulation policy of the sector (interventions in market price of meat, at a time when production costs increased much more than inflation, scarce and expensive financing, income loss due to excessive increase of interest rates, renumbering of debts without planning etc.) resulted in indebtedness of the sector, which was never addressed adequately.

The situation of pork production and the potential perspectives for improvement can be summarized in Figures 1 and 2 (Vakakis, 2012) which show the linear increase of pork consumption and the linear decrease in pork production from 1990 onwards. The figures 2.3 and 2.4 clearly indicate the continuous reduction of self-sufficiency, which is attributed to the slaughtering of approximately 54,000 sows during 2012, 2013 and 2014, which is very large number for the size of the domestic pig farming.

Figure 2.3. Domestic pork production ('000 tonnes) during 1990-2012 and prediction to 2020

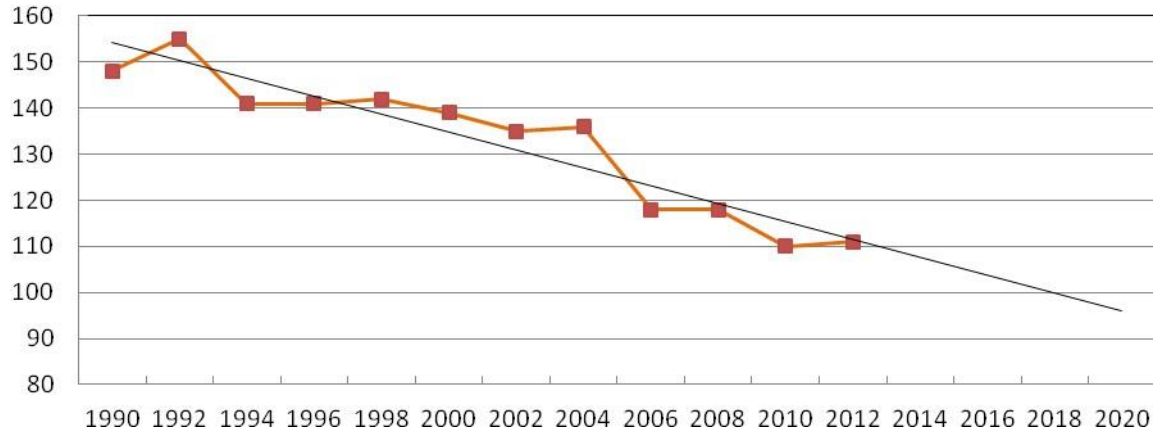
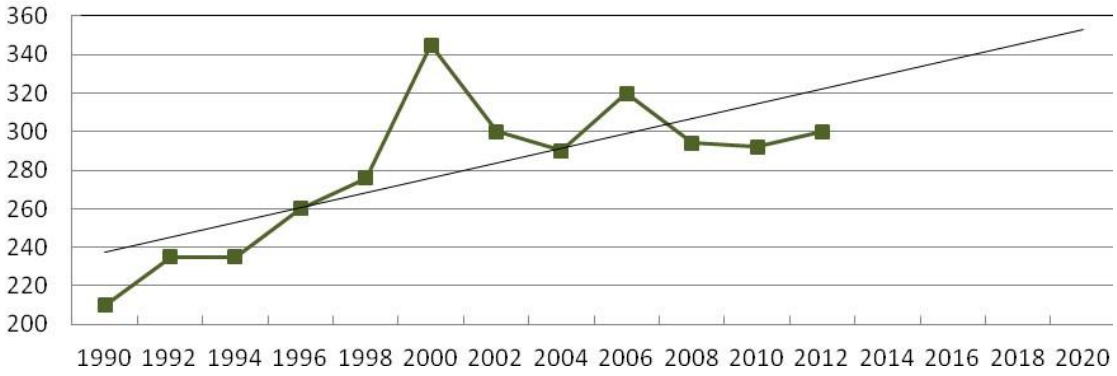


Figure 2.4. Pork consumption ('000 tonnes) during 1990-2012 and prediction to 2020



3. The Poultry Sector of Greece

3.1. Introduction

Poultry production refers to farming of avian species. Although chickens are not the only birds used, they account for around 95% of global poultry production, so in many ways poultry production is often synonymous to chicken farming. Other avian species that are also used are ducks, geese, guinea fowls, turkeys etc.

There are three major production directions in poultry production: a) egg production, b) meat production and c) chick production. The first two aim at the final consumer while the third provides the necessary animal material for the first two. All three aspects of production try to survive in a globally very competitive market, independent from subsidies, with high seasonal price fluctuations.

The hens that are used for egg production are exclusively hybrids produced by major breeding companies in Europe and in USA. At the egg farms they are purchased either as day old chicks or as

4.5 months old pullets according to the production system. They begin to produce eggs at the age of about 5 months and their production period is approximately 52 weeks. In that period each hen produces 300 eggs. Their daily feed consumption is about 120 g of concentrate feed. At the end of their production period they are removed and a new flock is established.

Commercial hybrids are also used for meat production. They can be fast growing (Cobb or Ross type), medium growing (Redbro or Colorpak type) or slow growing (Sasso type). In any case, meat production farms purchase day old chicks which are fattened for 42, 60 or 90 days, respectivelly. The average feed conversion ratio for the conventional meat production is around 1.9 (1.9 kg of feed for every 1 kg of meat) while for the medium growing hybrids the respective ratio is about 2.7. The whole production is organized in circles following the *all in-all out* system with intercepting resting periods.

Both in egg and meat production, the animal material that is used isn't produced in the farms. On the contrary, this starting task is accomplished by specialized farms, where the parent flocks are kept. These farms are usually connected to a hatchery which provides egg and meat chicks to the commercial farms.

Poultry farming can be separated in two major categories: the conventional and the alternative one. In the conventional poultry farming the birds spent all their lives in closed buildings where all the environmental conditions are mechanically adjusted. The products (eggs and meat) possess standard quality attributes and have very competitive prices compared to other livestock sectors.

The alternative production systems appear as a major global trend in the last decades. This category includes labels such as free range, organic, grain fed and others. In these production systems, several changes are applied in the major production parameters; for example, in the free range systems, the animals have access to outdoor areas where they combine exercise and grazing. Moreover, in the organic production systems, this is also accompanied with organic feed and longer fattening period. The purpose of all these systems is the production of better quality products and at the same time a better status of welfare of the animals is accomplished. Nevertheless, these products are more expensive for the consumer since an elevated production cost is unavoidable. Therefore, these products are targeted to selected consumer groups, especially those with high income and environmental consciousness.

3.2. Poultry production in numbers

3.2.1 Poultry meat

Greece, nowadays, presents a high level of self sufficiency in conventional poultry meat. According to the Greek Ministry of Rural Development and Food the self sufficiency for conventional poultry meat is about 85 %. Therefore, the national needs are covered by the internal production and a small proportion of imports. Also, occasionally there is a small amount of exports to nearby countries.

Specifically, according to EUROSTAT, in the year 2013 Greece produced 177.7 thousand tonnes of poultry meat which accounts for approximately 111.5 million heads of meat chickens (broilers).

As far as the alternative poultry products is concerned, there are not reliable statistics. There is a small national production that covers more or less the restricted national needs and probably occasionally imports happen. In addition there is also a worth mentioned production from family farms in the countryside that is marketed without national control. Finally, there are no records for national exports.

Poultry meat has always been very attractive to the consumers. According to FAO data in 2015 poultry meat consumption accounts for about 33 % (13.8 kg / person) of total meat consumption (41.3 kg / person) following pork which is the most popular meat in the world. The projection for 2030 is that poultry meat consumption will rise to 17.8 kg / person mainly in the expense of beef and ovine meat.

In 2012, the European annual consumption of poultry meat per person was 20.8 kg (31.5 % of total meat consumption) and it is expected to increase in the future. Specifically in 2022 the annual poultry meat consumption is expected to be about 21.2 kg / person. In Greece poultry meat is the second most popular meat after pork accounting for about 25 % of total meat consumption.

The main factors explaining its attractiveness are the relatively low and competitive pricing compared to the other types of meat and the absence of cultural or religious obstacles as well as its nutritional quality. Moreover, poultry meat has the advantage of the very short preparation time as well as the availability of a wide range of processed products and ready-tocook meals.

Obviously, poultry is a basic part of modern diet and its consumption throughout the world is expected to slightly increase. Taking into account that the world population is constantly increasing, larger quantities of poultry meat will be required in order to satisfy the demand in the future. As far as Greece is concerned, this increase will be much more intense because of the competitive consumer prices, and due to the current financial crisis.

Ninety percent of poultry meat production in Greece comes from professional farms while the rest 10% from family farms that cover mostly regional needs in isolated areas and islands. The professional farms are located mainly in Epirus and central Greece (more than 80 % of the total farms) where significant tradition exists and there is, also, an important potential for future development. On the other hand, in northern Greece and the islands, there is a lack of systematic production of poultry meat.

3.2.2 Eggs

Greece, nowadays, presents also a high level of self sufficiency in conventional eggs, which is about 95 %. According to FAOSTAT, the annual national production of hen eggs in 2013 was 103 thousand tonnes or 2.06 million eggs.

The world average egg consumption accounts for about 9 kg/person while the respective European figure is 12.7. In Greece the average annual egg consumption is about 11 kg /person. Few changes have been observed in these figures during the last decades, so the future projections are more or less of the same range.

Egg production is more or less evenly distributed throughout Greece. Table 3.1 presents the egg production distribution by Greece regions while table 3.2 presents the respective data for the professional farms. Attica is currently a major producer of eggs but little potential exists for further development of the sector. Peloponnese and Central Macedonia are the next two major egg producing regions with sufficiently more potential for further development. Very few amounts of eggs are produced in the islands, which are mainly supplied with such products from the mainland.

Table 3.1. Distribution of egg production in Greece by region

Region	Egg production (%)
Attica	28.5
Peloponnesus	21.5
Central Macedonia	18.6
Easter Macedonia-Thrace	8.3
Central Greece	9.4
Other	13.7

Source: Greek Ministry of Rural Development and Food, 2014

Table 3.2. Distribution of egg producing farms in Greece by region

Region	Egg producing farms (%)
Attica	40.6
Central Macedonia	32.1
Peloponnesus	6.9
Central Greece	5.5
Easter Macedonia-Thrace	1.7
Other	13.2

Source: Greek Ministry of Rural Development and Food, 2014

3.2.3. Organic poultry

At the EU level, there were 26.1 million organic poultry heads in 2011, of which 49 % were laying hens. The significance of the organic sector in the overall EU poultry sector is much higher for laying hens than for other poultry and this can be explained by two factors: on the one hand, strict regulations for organic husbandry and high costs of organic cereals and oilcakes constrain the development of organic poultry meat. On the other hand, consumer demand for organic eggs and the willingness of

consumers to pay price premiums is much higher than for poultry meat. France is the leading Member State in the organic poultry sector with more than
10.9 million birds, of which about one third are laying hens.

3.3. Obstacles and advantages of the poultry sector of Greece

3.3.1. Conventional poultry production

The main obstacles of the conventional poultry sector are:

- High capital investment
- Low profit margin
- Seasonal consumer price fluctuations
- Higher production cost due to expensive imported concentrate feeds (grains, oil seeds, minerals, vitamins etc)

The main advantages of the conventional poultry sector are:

- Contract agriculture, guaranteed product selling
- High level of automation, decreased level of human effort
- High level of knowhow, plenty of experts (animal scientists and veterinarians)
- Extremely appreciated product by the consumers
- Positive marketing projections for the future

3.3.2. Alternative poultry production

The main obstacles of the alternative poultry sector are:

- Low market share, specialized market
- Further market compression due to the financial crisis
- Elevated production cost due to expensive imported concentrated feeds (grains, oil seeds, minerals, vitamins etc)
- High use of land

The main advantages of the alternative poultry sector are:

- Higher profit margin
- High level of automation, decreased level of human effort
- High level of knowhow, plenty of experts (animal scientists and veterinarians)

- Products of high quality, export potential
- Potential for agro-tourism, e-commerce
- Positive marketing projections for the future
- Lower investment (compared with conventional)

3.4. Poultry production systems in Greece and their characteristics

In Greece conventional poultry meat production is dominated by four major companies which control more than 80 % of the market and are located in the region of Epirus. These companies control all the steps of production and they include hatchery, feed industry, slaughterhouses and processing plants. Two of them operate as associations of producers while the other two are privately owned and cooperate with producers in terms of contract agreement. There are, also, more than 10 other smaller companies in the market, rising thus the total number of the existing companies way over the respective European average.

Around 10,000 people are occupied in poultry meat production sector including producers under a contract, farm workers, slaughterhouse workers, processing plant workers, drivers etc. The level of scientific and technical competence is very high and there is a significant number of specialized animal scientists and veterinarians working in the area. The sector is characterized by severe competition which compresses the selling prices and minimizes the profit margin (average consumer price 2.20 Euro / kg carcass, average producer price 1.20 Euro / kg live weight).

Approximately 111.5 million of broilers are slaughtered each year in Greece and they are produced in a variety of farms ranging from small (15,000 heads) to bigger (100,000 heads) ones. In the contract production the producer receives from the "mother company" the day old chicks, the feed, the drugs and feed supplements as well as veterinary and technical assistance, and provides the building and the everyday care. After the average 42 days of fattening the mother company transfers the broilers to its slaughterhouse and a new circle of production begins. Contract production is the only way for a producer to enable in poultry meat production since there are no public slaughterhouses for poultry. At the same time there are few processing plants for poultry meat mostly delicatessen meat companies since poultry meat producing companies have their own facilities.

The conventional poultry production requires a high level of investment. Specifically, since chicken spent their whole life in closed buildings, a high construction and machinery cost is required. The buildings should be perfectly insulated and equipped with many types of machinery (feeding and drinking equipment, ventilation systems) and automatisms. There is no need for high investment in land but the operation of such a unit requires a certain level of technical knowhow. For example, a moderate production unit of 20,000 broilers demands a capital of about 100,000 €. Therefore, on the grounds that nowadays there is a limited loan capacity due to the financial crisis, it is probably difficult for a young producer to be occupied in the conventional poultry meat business.

In egg production the sector segmentation is more or less the same with some major differences. Here there are also three major producing companies with a nationwide distribution. There are also several smaller producing companies all over Greece with a more local network. The existence of small producers is encouraged by the fact that there is no need for a processing plant in order for the eggs to be marketed. Each company whether it is small or big, operates an egg candling facility which is the only prerequisite for egg marketing. In the egg producing sector as for the meat there is a high level of scientific and technical competence and the products are of high quality.

As far as the alternative poultry products are concerned, in the last years the major poultry companies have emerged in the production of organic as well as other types. There are also small companies in this sector and other family type ones. The market share for these kinds of products is relatively low but there are positive prospects for the future. Therefore there is plenty of room for new producers to occupy in this sector of poultry production.

The alternative poultry production requires a significantly lower investment than the conventional one. There is a higher need for land but the surface area needed for building construction is lower. This kind of farming is less intense than the conventional production and therefore it can be much easier managed by a person with no particular knowledge. The profit margin is greater than that in conventional production since alternative poultry products are marketed with higher prices due to their superior quality. They are targeted to a consumer audience characterized by their high financial capacity, their request for quality products of animal origin and their increased environmental consciousness. Finally, alternative poultry production could be combined with other forms of economic activity, like agro-tourism, which would make it more attractive and profitable.

3.5. Attractiveness for young people as employment opportunity

Most of the animal production sectors, including poultry production, are not considered to be attractive to the young people for several reasons. Firstly, while the work load is not very heavy, it is unevenly distributed during the day and also there is no day off during the year. Secondly, people who are occupied with animal production are faced as having low educational profile and have difficulties to blend in with other people of the same age and all the society in general.

Although these reasons are true, poultry production can provide a significant income in times when this cannot easily being found elsewhere. Moreover, the production could be organized in such a way that allows a certain state of freedom to the farmer (automatisms, trained staff).

3.6. The potential of a poultry farm for a successful agro food enterprise

The conventional poultry production is dominated by large industries which cooperate with producers in the form of contract agriculture. On the contrary, alternative poultry production is operated mostly by small producers or family farms. Therefore, if someone would like to work in the

conventional poultry industry, he would have to make a contract with some of the existing industries. In the second case, the alternative poultry production leaves more room for private initiative and the creation of a small enterprise.

Due to the current levels of self sufficiency, both fields of poultry industry (conventional and alternative) are open for new producers. However, the restricted national production of concentrate feeds results in a big import of grains and therefore in increased production cost.
Therefore, the export capacity of conventional poultry meat and eggs is limited. This could change in the case of the alternative poultry production where the quality of the product is more important than its final price. Consequently, the newcomers in the sector who wish to aim not only in the national but also in the international markets, must target in the production of high added value products such as organic, free range etc.

The modern way of living in the cities has led the people away from agricultural production and the environment in general. In an attempt to reconnect the people with the nature, the trend of agro-tourism was born. The whole concept relies on the accommodation in an organized farm where the visitors can participate in agricultural everyday life.

In Greece the idea of agro-tourism has developed in the last few years. There are some farms that provide this kind of services, mostly on plant than animal production. Big farm animals like horses and cattle are mostly used and relatively a small range of poultry. Therefore, there are opportunities for young farmers to create such operations and it would be far more interesting if they could combine the traditional poultry production with other avian species as well, like turkeys, pheasants, guinea fowls, ducks, geese etc.

E–commerce is a valuable business tool that has been increasingly developing in the last few years. As far as poultry marketing is concerned some attempts have been made but they are very limited. The truth is that with respect to foods, Greek consumers are very traditional and they prefer the personal contact with the supplier and the product itself. Therefore, the current considerations for e-commerce and poultry products are of little importance but in the future this will probably not be the case. So, it would be very wise for a young producer to include it in his business plan, especially those who will be occupied with the alternative poultry products.

The organic farming sector in Europe has rapidly developed in the past years. This increase characterizes not only the area under organic farming, but also the number of holdings and of overall organic operators registered in the EU-27. Organic farms are on average smaller than the conversional and larger than the free range ones, and their holders younger.

In Greece the organic food market share is relatively low according to the European average except for two major products, milk and eggs. Nevertheless, the prospects seem to be positive as more and more people cultivate a strong environmental consciousness. Organic products are popular among young people and especially young couples with children. Moreover, a significant percentage of young farmers try to enable in organic farming but they are discouraged by the bureaucratic delays of the Greek state. In the long term it seems probable that the Greek market will follow the European one and the share of organic products will rise significantly. Therefore, organic poultry farming is a promising

sector with high potential for export activities and it is worthwhile for a newcomer in agriculture to survey it.

3.7. Recommendations for starting livestock farming

Being occupied in agriculture can be very prosperous and self fulfilling. Nevertheless, there are several prerequisites that must be taken into account in order to ensure success. The major ones are:

a) Commitment. Working with the land and the animals can be very self fulfilling but it can be also very tiring. The person who will enable in agricultural production must do so after careful consideration. As most business decisions it takes time to yield and it needs a lot of everyday care and time. There is no day off during the year and this sometimes is hard to get used to.

b) Training. In order to achieve high outputs and success in poultry farming one should get some appropriate knowledge. There are several zootechnical practices that can ensure high production when applied correctly. Therefore the newcomer in agriculture should try to participate in relevant seminars or workshops and, for at least the first years have some technical assistant from an experienced professional. Moreover, since new data emerge constantly lifelong learning and updates are essential.

c) Funding. The ideal funding scheme would be a state supported low interest loan and European supported subsidies each year. Unfortunately nowadays and for the recent future there is no such thing in Greece. The state finances due to the financial crisis allow very little money to be spend in agricultural production and therefore the newcomers must invent new ways to fund their plan. Moreover, the EU subsidies were never substantial in poultry production and this is not expected to change in the future. Enabling thus in poultry production must be a business decision and be prepared with business terms. Consequently, a detailed business plan is necessary for someone to begin.

d) Feedstuffs. For every livestock farm the cost of feedstuffs accounts for about 70% of total costs. It is of high importance thus to find ways to cut down this cost. This could be done by selecting alternative feedstuffs, by producing home grown crops or by changing suppliers. There is a high seasonality in the prices of cereals and other feedstuffs and therefore changes in animals' diets by season are necessary. The newcomer must have technical support by an animal scientist in order to ensure high quality of animal feeding with the lowest possible cost.

e) Quality. Quality is probably the only way that a product can gain consumer notice and remain high in preference for long periods of time. The production of high quality poultry products requires the combination of all the above mentioned factors in an optimum balance. Quality is a function of the animal, the diet, the environmental conditions and the everyday care that it receives. Most importantly, to ensure success, quality must sustain the test of time, meaning that it must be steady and not to be compromised.

f) Marketing. A quality product means nothing if it cannot be communicated to the consumer and gain acknowledgement. There are several rules in marketing with the most important being "value

for money". The consumer must never think that he is being tricked in buying something seriously overpriced for its benefits.

4. The Swine Sector of Greece

4.1. Introduction

In Greece, approximately 106,500 sows are bred and produce 111,300 tonnes of meat, which is translated into a productivity of about 1,045 kg/sow/year (i.e. 16 pigs / sow/year with an average carcass weight of 65 kg). The productivity of the corresponding sector within the EU is 1,650 kg/year/sow (i.e. 22 pigs/sow/year with an average carcass weight of 75 kg). This low productivity is due mainly to the low genetic potential of sows and boars and other parameters, such as: a) the low feed conversion ratio, which results in nutrient losses and increased feeding costs, and environmental pollution, since the nutrients are excreted through faeces and urine, b) the low level of animal management and organization of pig farms, and c) the inappropriate in many cases facilities (any extensions and interventions were made with makeshift constructions having no specific plans, particularly at critical points of the farms, such as the ventilation, insulations, waste management, etc.). Therefore, the technological innovation and restructuring of the sector in order to reach the productivity of the EU is a prerequisite for survival.

The simultaneous declining production of pork and the increase of consumption, coupled with the assumption that the sector of agricultural production can have a significant role in economic recovery during the economic crisis experienced are elements which conclude that there are sufficient margins for growth of the pig industry, either towards the better organization and management of intensive farms, or towards free-range or organic farming, for which there seems to be great interest in our country. An important prerequisite for the survival and development, as mentioned before is the technological innovation and organizational restructuring of the pig industry.

4.2. The characteristics of a successful pig farm - inhibitory factors

The main characteristics of a successful pig farm can be summarized as follows:

a) High productivity. A high productivity should reach the level of 1,650 kg meat/sow/year, which is translated to the production of a minimum of 22 pigs/sow/year with a mean weight of 75 kg carcass as mentioned above. This requires proper organization, management and nutrition principally during reproduction (to achieve small labour intervals, large size of litters with a satisfactory weight, high milk production and reduced losses during lactation) and during growth-fattening derivatives (for the best possible exploitation factor food, reduce losses and high performance carcass). There are farms in Greek pig industry, which approach these sizes, but unfortunately this does not apply to all farms within the territory.

b) Modern infrastructure. The successful pig farms in our country are characterized by technological modernization, both in the reconstruction of existing infrastructure, and the creation of new facilities within a farm, which combine high animal welfare standards, low operating costs, high productivity, and low environmental impact and ensure high profits. Some of the domestic farms have been reconstructed with new buildings or other infrastructure such as wastewater tanks and biofuel production units.

c) Implementation of integrated management. Successful farms ensure internal scale economies through integrated economic and animal management in order to improve productivity, ensure the quality of the product and reduce production costs. This management applies to all production phases starting from the supply of raw materials for feed production in modern units within the farm, proper maintenance of hygiene conditions, slaughter and distribution of animals, as well as standardization of meat.

d) Appropriate capacity. The size is a critical factor in the economic viability of pig farms. Smaller units are usually characterized by insufficient expertise and hence efficiency, while large farms achieve better performance because they benefit both from increased expertise, as well as increased financial figures. Generally (data from technical and economic studies) one farm should have at least 200-300 sows to achieve good financial results.

In order to achieve the above characteristics, significant investment of time and resources is necessary. This is perhaps one of the main barriers to new entries in pig farming, which in combination with various social factors (professional reputation) inhibits the renewal and expansion of production in pig farming. However, the expansion of domestic pig industry is hampered by other factors as well, such as over-indebtedness of the pig farms, because of the historical conditions of high funding costs, outdated infrastructure, inadequate management, dependence on imported genetic material (boars, sows) and largely feed costs. All these factors result in low productivity, high production costs and therefore low competitiveness of the Greek pig industry. Therefore, despite the comparative advantage for a rapid increase in production in relation to red meat sectors, the swine sector, with some exceptions, is unable to tap the perspectives of the domestic market (low self-sufficiency).

4.3. Attitude of young people towards the swine sector

Pig farming has no good reputation in Greece since it is connected with hard life, low income, low educational level etc. Despite this, the financial crisis of the country has changed completely the way of thinking the last few years, particularly of the young people, who under the pressure of the current high unemployment rates attempt to enter the primary production. They investigate the possibility to get into the primarily production, with the intention to upgrade it and to give adding value to the produced products. This young generation has, usually, higher qualifications like foreign languages and knowledge of informatics, which makes easier to communicate with new markets.

The data available to the Agricultural University of Athens from human resource training seminars for different sectors of Agriculture showed a preference of the attendants (either with or without previous experience) in livestock farming (approximately 75 of them were interested and attended seminars on livestock farming). The evaluation of those seminars showed that the trained

people were very enthusiastic from the knowledge they got, and they would like to know more about the sector.

Despite this enthusiasm, it is not known how many young people finally entered the primary production and particularly swine sector. This is due to some social, economic or other factors, acting alone or in combination, such as: a) the need to move to remote regions (for young people living in large urban centers), b) the insufficient funding from the state, which requires the financial participation of stakeholders (with private funds and/or equity loans), c) the bureaucracy preceding the licensing and the foundation of a new farm. These factors outline a difficult situation, which is impairing the final entry in pig meat production.

However, following a proper training young people can improve significantly and become efficient managers of a farm with much better marketing of the farm's products. They will be able to implement new and appropriate technology, promote the products' quality and safety, and prevent environmental pollution, with better economic efficiency and profitability.

4.4. Parties involved in the aspiration of young people in the swine sector

There are several parties that can be involved in the aspiration of young people in the swine sector. The organization ELGO-DIMITRA (Hellenic Organization of AgricultureDIMITRA) acts under the supervision of the Ministry of Rural Development and Food. This organization consists of four divisions, one of which trains the young people in Agriculture. In each prefecture of Greece there is such a training center with all the required facilities. Thus, in cooperation with the Ministry of Rural Development and Food, and ELGO-DIMITRA these centers will be used for young farmers training in Animal Production.

The young people make use of computers and have access to websites from where they get a lot of information. So, the websites of the Agricultural University of Athens, the Ministry of Rural Development and Food, the local Municipalities, the local TV and radio stations, newspapers and magazines (like AGRENDA, AGROTYPOS etc.) on Agriculture and any other available mean will be used to communicate with young people and let them know about the whole program and its objectives. Subsequently, several tutorials will be organized and given to people are interested to join the program which it will be explained in details.

4.5 Existing facilities and areas of further development

The existing facilities (electricity, buildings etc.) in the intensive pig farming are adequate in several cases, but further improvement is necessary to become competitive in the
European territory, and to increase the self-sufficiency of Greece in pork. As mentioned above, there is a growth potential of the pig industry either towards the better organization and management of intensive farms, or towards free-range or even organic farming.

Improving the organization and management of intensive farms can be done with a focused and integrated program to further support the conditions of production and productivity, to the benefit of the consumers (added value product), the rural economy (linkage between feed production and pig farms, improvement of income and employment growth), the trade deficit in agricultural products and the environmental protection (reduction of soil and atmospheric pollution by pig manure). Such a

program should aim: a) to meet the technological, economic, organizational, environmental and social problems in the industry, b) to implement competitiveness criteria (increased productivity at the lowest possible cost), c) to improved production line and supply chain of key inputs, as well as final products, so as to minimize income outflows, d) to increase production and productivity of existing farms and in addition, the foundation of new farms, e) to the production of meat through certified process and f) to the establishment of farms for genetic material production (high potential sows and boars) in order to maintain a domestic reproductive potential independent of the high-cost imported genetic material.

In addition, free-range pig farming is of particular interest for our country in areas that have adequate pastures. A survey of the Department of Animal Husbandry of the Agricultural University of Athens (Deligeorgis et al, 2008), regarding this activity throughout the Greek territory, reported that free-range pig farming is mainly based on breeding domestic pig breeds or cross-bred animals (with improved lines). Free-range farming proved to be advantageous because: a) it requires low inputs (reduced facilities and feeding costs) hence, little investment is needed, b) it yields products to about 60% of the intensive pig breeding (that difference is attributed to significant losses of piglets and low growth rates) and c) it gives a quite fair income for the producers, given the preference of the consumers for meat produced by this type of rearing. This activity in more organized form in terms of management could certainly have much better results and therefore there are margins for improvement.

Given the above data, the reorganization of the existing farms (in terms of management, facilities etc.), the foundation of genetic material production farms and the further exploitation of the free-range farming potential are the areas that could further develop and absorb young producers. The later appears to be more attractive due to low investment requirements, low inputs and added-value product.

4.6 Existing training programs

The existing training programs should be slightly modified so as to assist the young people in selecting the sector in which they will enter. The aforementioned tutorials should present all the sectors of animal production with their advantages and disadvantages, the investment opportunities, the prerequisites to entrepreneurial success, the available funding schemes, the sectors' growth and export potential, the regional considerations, the potential for synergies with other sectors, the implications for agrotourism and/or e-commerce, the implications for free-range or organic farming, the training program for each sector, the swine in this case, in full details etc. A training program for the trainers of the young potential farmers will also be organized after selection of the available, properly qualified persons.

5. The bovine sector of Greece (Dairy cattle, Beef cattle, Buffaloes)

5.1. Capacity – prospects

The breeds that are being used for cattle breeding in Greece are the ones bred all over Europe. For meat production, the dominant ones are Limousin, Simmental, Charolais and Swiss (also with satisfactory milk production). In many cases there are mixed herds, which are usually bred extensively, with indigenous meat producing breeds, such as Vrachykeratiki, Katerinis and Sikias. For milk production, Holstein-Friesian breed is by far the most used. In less intensive holdings, other breeds, like Jersey, can also be found.

Finally, it is worth mentioning the breeding of the Greek buffalo, mostly in the wetlands of northern Greece, for both meat and milk production.

5.1.1 Meat production

There are three main production systems for the production of bovine meat: fattening calves, suckler cows and male dairy cattle for fattening.

In the *"fattening calves"* system animals are mainly imported from EU countries (e.g. France, Romania) at the age of 4-6 months (at a body weight of approximately 200-300 kg) and are bred intensively until slaughter weight is obtained (usually 500-600 kg). The profitability of this system is highly dependant on the initial body weight and the price of calves, and it is becoming less profitable as the animal weight increases.

"Suckler cows and their offsprings" (a cow belonging to a meat-producing breed or the offspring of a cross with one such breed, part of a herd used for rearing calves for meat production) are usually bred extensively making use of pastureland. In many cases the herds consist of Limousin, Limousin type or crossings with indigenous breeds, mostly Vrachykeratiki. The produced carcass is of medium quality but the meat has satisfactory organoleptic properties.

The *"male dairy cattle for fattening"* and to a lesser extent cows that have completed their productive life are another source of bovine meat. The produced carcass has lower value, as the genetic material is selected for milk production. This can be mitigated through breeding animals of dual purpose.

As far as the volume of production is concerned, according to data from the Greek Ministry of Rural Development and Food, in year 2011, 244,875 animals were slaughtered and 57,037 tonnes of bovine meat were produced. Beef meat consumption is approximately 180,000 tonnes, so it is concluded that Greece is highly deficient in bovine meat. More specifically, self sufficiency is about 17.5 % for bovine meat and the value of meat imports in general is the second higher, just below the petroleum products.

Greece makes important imports of bovine meet both from EU and third countries. In most cases, the price of imported meat is significantly lower than the domestically produced one. According to data from the Greek Ministry of Rural Development and Food, for 2014, the imports of bovine meat were 95,294 tonnes of fresh and 11,813 of frozen meat. Their value was 367.3 million and 39.6 million Euros, respectively. The most common countries for these imports are, in order of import volumes: France, Netherlands, Italy, Germany, Poland, Spain, Belgium and Denmark.

5.1.2. Milk production

Milk production is mostly done in intensive conditions. Cows are kept mostly indoors and milking systems are used. Feeding is based on concentrate feeds, corn silage and hay, and dairy cattle rarely have access to pastures. These holdings have high invested capital and the animals are of high genetic value.

Greek milk production, according to data from the Greek Agricultural Organization was approximately 610,000 tonnes in 2014. This quantity hardly covers the need for fresh cow's milk consumption. Important quantities of milk and milk products are imported. Imported milk is mostly used for the production of yogurt and desserts that are milk derived. There is no recent data about the level of imports but it is very roughly estimated that imports are three times the production. According to data from the Greek Ministry of Rural Development and Food of 2010 the imports for milk and milk products in general, were in 33ones: fresh products excluding cream 45,000, milk and buttermilk 30,500, cream 5,500, condensed milk 70,200, powder from whole milk 17,000, powder from skim milk 300, butter 5,700, cheese 64,500, melted cheese 2,500.

5.2. Accessibility – attractiveness for youth

Cattle's breeding, especially for meat, is not a very attractive sector for young people due to two main reasons: the very demanding conditions of work and the small margins of profit. While the demanding conditions of work are common in almost every sector of animal production, the small margins of profit are mainly due to the lack of pasture combined with the high cost of feed, both forages and concentrates.

Moreover, due to the high capital investment in dairy cows farms, a high level of success is observed. However, this high capital investment is an important reason for the lack of newcomers to the milk production sector.

5.3. Consumer habits & growth – export potential

5.3.1 Meat

Despite the difficulties that beef breeders face, the need of Greeks to consume local products, and the willingness to pay extra for it, gives them the opportunity to cope with the significant higher cost they encounter. Even if significant structural changes were made it would be almost impossible to be able to produce meat in a competitive way. The reason for this is mostly the high cost of feeding due, mainly, to lack of pastures.

With respect to cured bovine meat, it is not highly appreciated by Greek consumers with the slight exception of bovine sausages.

An exporting opportunity that should be further investigated is the production of high quality bovine sausages and other types of cured beef meat and their exports to Middle East countries.

5.3.2 Milk

The need to consume local products applies to milk and dairy products. Unfortunately, milk production does not cover the consumption needs and, as it was mentioned before, significant imports are being made. In this case, also, the imported products, in most cases, have lower price than the locally produced ones.

Nevertheless, Greece has significant potential to increase its output, boost exports and restrain imports of dairy products as well as in other major categories in agro food sector as, oils and fats, fruits and vegetables, and bakery products. The fact that Greece holds only 30 % of the
US "Greek style yoghurt markets, further emphasizes a clear commercial opportunity for Greece.

Greek yoghurt is a world known product for its taste and properties and it is considered by many as a functional food, mostly due to the probiotic bacteria that contains. In the past few years, big Greek dairy industries have made trade agreements and Greek yogurt can be found in most big supermarket chains all over the world.

For 2014 the exports of yogurt worth approximately 110 million Euros and for cheese, mostly from sheep and goat's milk, almost 325 million Euros. There is potential to increase the above mentioned figures as for the past years there was no product differentiation and effort to meet new market needs.

Beyond the Greek yoghurt, there are Greek PDO cheeses that can offer a push to dairy cattle farming. Most of them are made primarily from sheep's or a mixture of sheep's and goat's milk, there are two kinds of cheese whose mixture includes cow's milk (Kopanisti and
Metsovone) and two that are made exclusively from cow's milk (Naxos's Gruyere and San Michalis).

Finally, it is worth mentioning the breeding of the Greek buffalo mostly in the wetlands of northern Greece for both meat and milk production. These products are processed and produce high quality gourmet products.

5.4. Stakeholder analysis

In Greece, almost 650,000 cattle at 16,800 holdings are bred, from which 130,000 are milking animals at 3,350 holdings. They produce approximately 610,000 tonnes milk and 60,000 tonnes of bovine meat. Also, there are 3,500 buffalos producing meat and milk and 100 bisons. Cattle farming is a major sector of Greek agriculture and economy. Through cattle farming the two most important

products of people's diet are produced: milk and meat, which in fact in the most developed countries are the basic origin of proteins, fats and other elements like iron and calcium. Moreover, it provides basic and supplementary occupation to over 28,000 families and offers products to national economy that worth 215 million Euros.

Moreover, cattle utilize pastures, forages (silages, hays, grass etc.) and every kind of agro industrial by-products and turn them into products of high nutritional value which would be otherwise unexploited. Furthermore, it provides occupation and income to some other sectors too, like commerce and transportation. For all these reasons, cattle farming prevents the countryside's desolation.

Most of cattle holdings, whether they produce meat or milk, are located in northern Greece, more specifically in Eastern Macedonia and Thrace, Central Macedonia, Western Macedonia, Thessaly and, also, Western Greece.

In the Tables bellow the number of holdings with cattle by size class and region (Table 5.1) and number of cattle, by size class and region (Table 5.2), for year 2014 are presented.

Table 5.1. Holdings with cattle by size class and region in 2014

Regions	Total	1-2	3-5	6-9	10-19	20-29	30-49	50+
Eastern Macedonia and Thrace	3.224	558	559	427	436	334	280	631
Central Macedonia	3.176	189	265	249	420	322	444	1.287
Western Macedonia	1.388	134	160	152	280	266	164	233
Thessaly	1.656	238	89	130	114	120	129	836
Epirus	1.092	125	98	39	100	90	166	476
Ionian Islands	409	135	85	62	59	26	15	27
Western Greece	1.730	402	202	53	242	129	269	434
Central Greece	832	192	67	94	24	59	204	192
Peloponnese	893	263	284	0	129	62	62	94
Attiki	105	30	16	12	20	6	6	15

North Aegean	707	176	123	114	145	69	79	2
South Aegean	1.383	297	323	234	253	136	51	90
Crete	216	84	48	20	43	0	8	14
Total	16.812	2.821	2.317	1.585	2.264	1.620	1.878	4.328

In Greece the average cattle farm consists of 38 animals, while for milk production the average size is 23 milking cows per farm. Most of the farms (34.3 %) consist of 10 – 49 animals and they are followed by those of + 50 heads (25.7 %). The highest population of animals (almost 75 %) belongs to farms with more than 50 heads. Many of these farms are for both milk and meat production and are characterized by a lack in mechanical and building facilities.

Moreover usually they exist near villages where they cause environmental pollution.

Table 5.2. Number of cattle, by size class and region in 2014

Regions	Total	1 – 2	3 – 5	6 – 9	10 – 19	20 – 29	30 – 49	50 +
Eastern Macedonia and Thrace	185.877	284	985	1.907	5.572	8.175	17.479	151.473
Central Macedonia	115.732	397	301	1.037	1.649	2.808	5.071	104.469
Western Macedonia	104.145	1.115	2.304	3.152	5.557	8.256	10.524	73.236
Thessaly	59.495	249	318	337	1.493	2.121	6.558	48.420
Epirus	56.576	803	605	407	3.284	3.167	10.495	37.813
Ionian Islands	45.973	267	559	1.140	4.285	6.218	6.948	26.555

Western Greece	34.755	383	266	754	353	1.652	9.112	22.235
Central Greece	19.543	396	1.183	1.823	3.419	2.989	1.995	7.740
Peloponnese	16.427	263	995	0	1.553	1.457	2.329	9.831
Attiki	8.464	307	410	836	2.119	1.500	3.072	219
North Aegean	5.604	225	323	526	800	603	603	2.523
South Aegean	3.844	61	68	84	220	120	261	3.031
Crete	2.508	168	214	140	745	0	303	938
Total	**658.943**	**4.918**	**8.532**	**12.144**	**31.051**	**39.068**	**74.749**	**4.88.481**

Meat production farms in Greece are major in number but are characterized by a few numbers of animals. The systematic farms are few and meat production farms are occupied usually with fattening (in small percentage with breeding) of animals imported in young age. In Figures 5.1 and 5.2 the number of carcasses as well as the bovine meat production from 1991 to 2011 is presented.

From the two Figures it is clear that in the past 20 years there is a significant reduction in the animals slaughtered and consequently in the produced meat.

Figure 5.1. Number of carcasses produced from year 1991 through year 2011

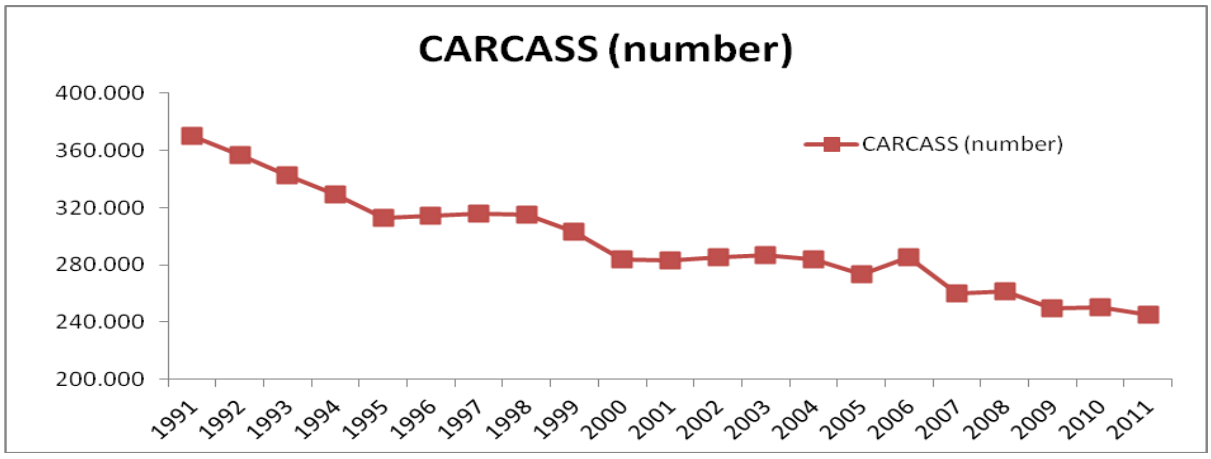
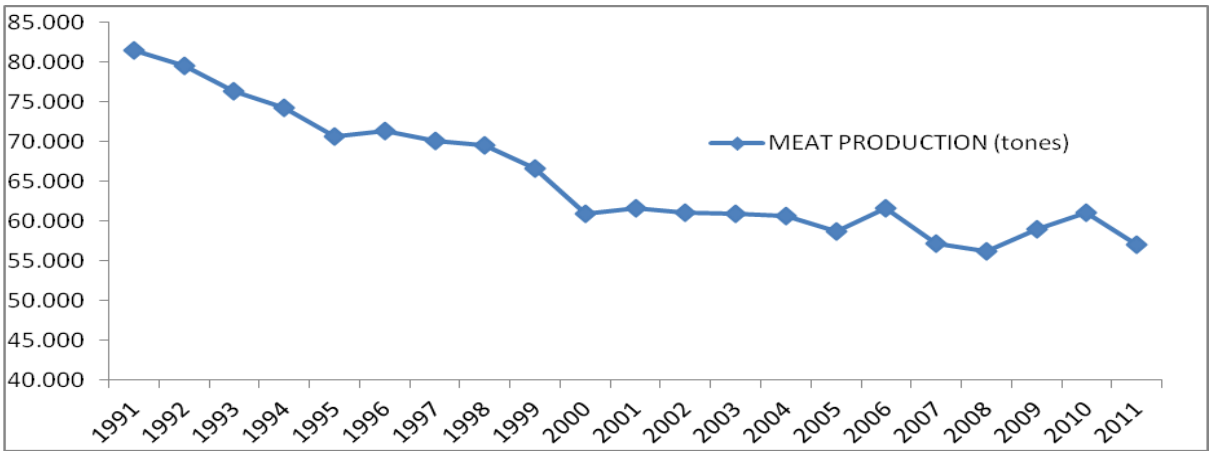


Figure 5.2. Bovine meat production from year 1991 through year 2011 (in tones)



There is a strong link between primary production and agrifood industries. Usually, these establishments are near the production area or the periurban one. Regarding meat there are over 100 slaughterhouses, 344 cutting plants, and 350 meat processing industries all over the country. Meat production usually is not conducted through contracts and the producer bears the cost of slaughtering.

As far as milk is concerned, there are 15 milk collection centers and more than 800 approved establishments for production of milk and dairy products but most of them process primarily sheep and goat's milk. Usually these companies have contracts with the producers and the bigger ones define

their price according to quality. In some cases they even provide the necessary inputs (eg. Feed, medicine) and know-how.

5.5. Implications for agro tourism

An important opportunity to promote Greek traditional products is to offer them in tourist areas. If a tourist tries and appreciates a Greek product for example cheese, there is high chance to buy it from local markets in Greece and try to find it at markets back home. So it is essential to have high quality Greek meat and dairy products in tourist areas. This would give the opportunity to establish holdings close to tourist areas, using local breeds, based on extensive or organic production, in order to produce high quality fresh milk, cheese, ice cream, yogurt and/or meat. These holdings may also provide housing for tourists that want to have a closer experience of agriculture and profit a complementary income.

5.6. Implications for e-commerce

There are no important cases for e-commerce for bovine meat or dairy products but there are sites online, usually with reference to sale points.

For example, there are dairy farms that cultivate their fields for the production of feeds, they produce milk, process it to other dairy products (as different kinds of yogurt, chocolate milk, cream, rye cream etc), and sell their products at the local market (Farma Ilias) or all over Greece (Koukakis Farm).

On the other hand there are examples of e-commerce for buffalo meat and processed products (kavourmas, smoked steak, smoked fillet, salami, sausages, smoked leg, kebab, burger) (Boras, Kerkini farm etc)

There are, also, examples for e-commerce (Mpekas family) of dairy products from buffalo milk (white cheese, variety of ice-creams, rice pudding, pudding from buffalo milk, kazan-dibi, kaimaki, choco-buffalo milk, buffalo yogurt, buffalo milk, buffalo butter, buffalo arian).

Another interesting example of innovative marketing, without intermediaries, is the cooperative company "THESgala- PIEs" which sells milk through automatic milk vending machines at Larissa (15 vending machines) and Thessaloniki (13 vending machines). Every day they offer fresh, pasteurized milk, which is collected by farms owned by the members of the Cooperative. The milk is pasteurized at modern and certified facilities and it reaches directly the tanks of the automatic vending machines. It is a closed system that does not allow any contact of the milk with the outside environment, which means that it retains as many nutrients as possible.

The consumer chooses the desired quantity, 1 or ½ liter, and packaging, glass reusable or singleuse plastic bottles. The Cooperative "THESgala- PIEs" was set up at the end of 2010. It consists of about 100 dairy farmers-members and their daily production is 120 tons of fresh cow milk, corresponding to 10 % of the domestic production.

5.7. Market opportunities for organic vs. conventional

In Greece organic meat and milk are not very attractive products, mostly due to their high cost and to the distrust of the consumers to the certification system.

According to data from the Ministry of Rural Development and Food in 2014, 70.346 bovine animals were bred organically from which 23,003 were intended for slaughter and 3,160 were dairy cows.

There are 49 establishments involved in processing organic meat but there is no data available concerning the ones that process bovine meat.

The number of the establishments involved in production of organic dairy products is 55 but also in this case there is no discrimination according to milk's origin.

5.8. Prerequisites to entrepreneurial success

5.8.1. Ensuring production and supply chain efficiency

This would entail actively supporting producers (especially small size) to increase their production and efficiency, through provision of technical know-how and enhanced collaboration. This could be achieved through:

- Knowledge transfer and training for practical and innovative issues both for new comers and current farmers.
- Business plans with various options (eg. Establishments for different number of animals or/and different weather conditions).
- Subsidies-loans targeted to appropriate sectors according to the national strategic plan.
- Establishment of an advisory system with accredited and appropriately qualified staff for monitoring and advising the farms during production.

5.8.2. Ensuring market access

- Seminars targeted to young producers for small markets and high quality products.
- Certification and documentation of products, regarding their quality.
- Adopt multiple, efficient and alternatively distribution channels (domestic channels, with a preference into tourist's entry, exit and accommodation points, international channels, focusing on high-end delicatessen stores, or shops in a shop in major multi-national retailers, e-commerce allowing global access to consumers, supported by an effective supply chain and logistics infrastructure).

- Development of producers associations.
- Develop inter–branch organizations.

5.8.3. Emphasize origin and extend the portfolio mostly in dairy products

- Continue growing and capture increasingly larger share of Greek yogurt by introducing greater product innovation (e.g. in packaging, variations) and communicating the Greek origin.
- Create a compelling (high value) Greek PDO offer locally and internationally promoting other high quality and popular cheeses (e.g. Graviera, Kasseri) include in broader campaigning (e.g. "Greek diet").
- Introduce new variations of yellow cheeses to compete against low-cost imports.

6. The Sheep and Goat Sector of Greece

6.1. Introduction

Since accession to the European Union in 1980, some elements of Greek agriculture have undergone marked intensification, including the poultry, swine and dairy sectors. However, traditional agricultural land use has generally remained unaffected. The most common form of traditional farming is extensive rearing of sheep and goats for milk and meat, with the livestock often herded in mixed flocks. This system covers much of the main land and is especially significant for nature conservation of mountainous areas. Together with early wood land clearances and sporadic forest fires, low intensity livestock rearing is responsible for the mosaic of evergreen scrub, conifer forest and rough pasture which characterizes much of the mainland and some of the islands.

Thirty (30) percent of the total area of Greece is arable land and 40% pasture land. Almost all (98%) the arable land is private, while 83% of the pasture land is public or communal. This pasture land is by 58% suitable for sheep and cattle grazing, while the remaining 42% is better suited to goats (browsers). Arable systems are often combined with seasonal grazing by sheep of stubbles and fallows. In many regions extensive livestock systems make use of (or even depend upon) some form of common or public grazing land. Although usually of low productivity, this land represents a large area and is generally available at low cost (or free).

Dairy sheep and goat farming mainly for milk production, is an important agricultural activity in Greece and is strongly associated with the utilization of the extensive unimproved grazing lands. These extensive farming systems make usually an optimum utilization of local natural resources and produce quality products with identity contributing positively to sustainable agricultural enterprises.

Small ruminants (sheep and goats) are the most efficient transformers of low quality forages into high quality animal products with distinguished chemical composition and organoleptic characteristics. There is a wide range of sheep and goat farming systems from highly extensive, based

on natural grasslands or rangelands, to very intensive ones, based on natural grazing and supplementary feeding. Usually, the systems which are under comparison are those based mainly on pasture vs. the indoor (intensive) ones.

The level of intensification of each farming system is linked with the nutritional value of fodders as well as the quantity of offered concentrates. In many cases the feeding system and the feed efficiency determines the economic viability and sustainability of sheep and goat farms.

In recent years, consumers have demanded healthier food and have paid increasing attention to the hedonistic aspect of products. For instance, milk and meat fatty acids composition and cholesterol content have important repercussions on human health. Meat color is an important parameter influencing consumer purchasing choice, while flavor, juiciness and tenderness are evaluated during eating. It is well known that animal dietary regimen strongly affects meat color and the fatty acids composition of meat and milk as well as their flavor. Most of the sheep and goat milk is transformed into cheese. The cheese quality depends closely on the composition and quality of milk. This milk can be evaluated by various criteria such as: dietetic, nutritional, sanitary, technological and after cheese making under aspects of gustative, theological, gastronomic and hedonic.

The great number of traditional speciality products, mainly coming from extensive sheep and goat farming systems, have specific originality and authenticity which are due to animal breeds, to natural feed resources these animals use, to limiting routine medication, to no applications of artificial fertilizers and agrochemicals to grazing areas, and to specific technology used for their processing. These should be continued to produce and marketed according to consumer's demands and expectations which include safety, quality, typicity and traceability.

6.2. Sheep and goats farming in numbers

The sheep and goat sector in Greece represents:

- 18 % of the gross agricultural product, and
- 32 % of the gross livestock product.

Greece according to EL.STAT (2014) has 9,356 million dairy sheep in 132,060 farms, holding the forth place in the European Union (EU) total sheep population (1st Great Britain with 39%, 2nd Spain with 25%, 3rd France with 11%, 4th Greece with 10%), and 4,387 million dairy goats in 111,506 farms, holding the first place in the EU total goat population (1st Greece with 45%, 2nd Spain with 25%, 3rd France with 10.4%, 4th Italy with 8.3%).

The sheep and goat sector of Greece together, produces 30% of the total sheep and goat's milk produced in EU. Greece holds the second place in sheep milk (1st Italy with 28.5%, 2nd Greece with 24.5%, 3rd Spain with 14%, 4th Romania with 12%), and the third place in goat milk
(1st Spain with 24.3%, 2nd France with 24.3%, 3rd Greece with 20%, 4th Italy with 8.1%).
According to FAOSTAT (2013) China holds the first place in sheep milk production (1,121,000 tones,), Turkey the second (843,000 tones), Italy the third (836,815 tones) and Greece the forth one (643,571 tones).

The average annual milk production from sheep is 520,173 tones and from goats 123,398 tones, used mainly for cheese making (ICAP, 2014). Greece has 21 certified cheeses as PGO (Products of

Geographical Origin) with Feta cheese being the most import one. Greece holds the 18th place in dairy products exports with 1.2% worldwide. The 81.3% is exported in EU countries and the 7.7% in N. America (Greek speaking population).

The last five years the exports of dairy products increased by 38% in quantity and by 22% in value. FETA cheese is in the first place of dairy products exports, regarded by the consumers as food of high nutritive value. However, only 9% of the consumers know that Feta is produced only in Greece, while 31% of them accept that the Greek Feta is superior, and 43% know that Feta cheese is produced in Greece as well (as by other countries, too). Sheep and goat milk consists of 42.6% and 10.1% of the total milk produced in Greece respectively, indicating that Greece is the only EU country where sheep and goat milk production is higher than that produced by cows.

The sheep meat production in Greece holds the 4th place (1st Great Britain with 39%, 2nd Spain with 17.2%, 3rd France with 11.8%, 4th Greece with 9.8%), and the goat meat the 1st place (1st Greece with 55.4%, 2nd Spain with 17.9%, 3rd France with 11.6%, 4th Cyprus with 5%).

6.3. Obstacles and advantages of the sheep and goats sector of Greece

The main obstacles of sheep and goat sector are:

- Inefficient organization of farms.
- Inefficient efforts for farms development and modernization.
- Very slow technological penetration (e.g. use of milking machine).
- Relatively high livestock losses, mainly from health problems.
- High production cost due to low performance of the livestock, no balanced feeding and not efficient farm management.
- Old aged farmers of low educational level.
- Wide spread farms of long distance from towns with inadequate infrastructures.
- Inappropriate animal housing, usually of low welfare level.
- Inexistence of grassland management because they are state owned and in many cases they are overgrazed.
- Inexistence of strategy for marketing the sheep and goats products (milk and meat).

The main advantages of sheep and goats sector are:

- There are no restrictions and competition from other European countries.

- There is growing demand for sheep and goat milk and dairy products (e.g. feta cheese, yoghurt etc.).
- Relatively easy conversion of sheep and goat conventional farms to organic ones.
- Great potential for economic improvement of the farms by appropriate livestock breeding, balanced feeding, machine milking, better management etc.

A development of the sheep and goat sector can be done through:

- Improvement of selected farms from the existed ones by applying and entering the Programme of Agricultural Development 2014-2020, funded by EU which is subsidized by 40-60%.
- Establishment of new farms of variable capacity under the above EU Programme.
- Creation of livestock (sheep-goats) farming parks with a minimum of five farmers cooperating as a group.
- Making use of pre-signed commercial contracts between milk processors (cheese making) – feed millers and feedstuff (crop) producers (contract agriculture).
- Continuous provision of scientific and technical support to farmers by animal Scientists and Veterinarians
- Development and promotion strategy for traditional local dairy and meat products after evaluation and technical improvement.

6.4. The main production sheep and goats farming systems in Greece and their characteristics

The dairy sheep and goats farming systems which are practiced in Greece could be grouped, according to the degree of intensification, breed characteristics, land dependency, flock size, stock feeding origin, performance, volume of production etc. in two main simplified

classes:

a. The extensive one, which is the most typical, based primarily on poor, semi-natural forage resources (grassland, scrub and woodland, often mixed), especially common in uplands and mountains. The animals belong to local breeds, well adapted to the area, of relatively low requirements and performance, resistant to diseases, with no balanced feeding, dependant on subsidies, of medium to large units in size (150-500) who stay usually in permanent installations. In practice, the majority of these are family sheep and goats farms and make use of a variety of feed resources usually locally available at low cost. In addition, feed additives, antibiotics or other pharmaceuticals for diseases prevention are not usually used, while the pasturelands receive no application of artificial fertilizers nor agrochemicals, and no agricultural management other than grazing. Many farmers of this system are elderly with uncertain future of without successor, and in the process of running down or abandoning the pasture lands of low productivity often because of

poor income. The weakness of tenure and the state ownership status of pastures has had, so far, a negative influence on their sustainability.

b. The intensive one, is based mainly on purchased feeds and partly on forages provided by the farm after cultivation (e.g. alfalfa, cereals for hay making etc.) The animals belong to genetically improved breeds, of relatively high requirements and performance, with balanced feeding and higher feed efficiency, no subsidies dependant, of medium to large size units (300 – 3.000 heads), with good permanent installations and use of advanced technology like machine milking, artificial insemination, artificial rearing of lambs/ kids etc. The last few years the tendency is to intensive farms with capital investment with the objective to produce milk for Feta cheese and yoghurt making. Most of these farms have a very good management.

Between these two farming systems there is a wide variation of mixed systems such as summer pasture /winter indoors of alternatively indoors/outdoors subject to climate conditions.

Pasture systems are considered more often as more extensive than indoor systems. However, for each of those systems, the level of intensification is linked with the nutritional value of fodder as well as the quantity of offered concentrates.

Actually, what matters at the end of the day is the economical sustainability of the farming system practiced in each case which should be based on farming the most suitable animal species, the most appropriate animal breed, the most efficient farming system for the area which is technically feasible and environmentally friendly, with the proper management.

6.5. Attractiveness of sheep and goats farming to young people as employment opportunity

Sheep and goat farming has no good reputation among the Greek society since it is connected with hard life, low income, lower educational level etc. and it is considered as a second class job. Thus, almost none of the farmers wants its children to be his successors in sheep/goat farming business. Any family wants to educate its children and to finish at least the high school in order to have better chances to be trained for a better job.

Despite those family objectives and expectations, the financial crisis of the country has changed completely the way of thinking the last few years, especially of the young generation which faces the serious problem of unemployment. It has been seen that a proportion of young people, even small, of higher educational level (with University degree) investigates the possibility to get into the primarily production, with the intention to upgrade it and to give adding value to the produced products. This young generation has, usually, higher qualifications like foreign languages, knowledge of informatics which makes easier to communicate with new markets.

Some of these young people like very much livestock farming, with or without experience and/or knowledge on farming. This was obvious from the Seminars organized by the Agricultural University of Athens in 2013 for different sectors of Agriculture, where a lot of young people (almost all of them University graduates) were interested to attend these seminars. About 75 of them were interested and attended the seminar on livestock farming.

The evaluation of those seminars showed that the trained people were very enthusiastic from the knowledge they got at the seminars, and they would like to know more about the sector. So far, it is not really known if some of those people (or how many) went to practice these business, but in reality there are many obstacles for that.

The main obstacles in this case are lack of:

- available capital to be invested,
- proper infrastructures, and
- appropriate technical experience.

However, the young people after a proper training can be better and more efficient managers of a farm with much better marketing of the farm's products. They can implement new and appropriate technology, promote the products quality and safety, and prevent environmental pollution, with better economic efficiency and profitability.

The young people who want, think of, and finally decide to go into farming, have already finished their national service in army and their studies, and they have experienced unemployment. So, they are more mature and they can make more stable and safe decisions for their future.

In case the family has a piece of land or a farm, things are usually easier because the required capital for investment can be lower. The obstacle in this case is the acceptance by the parents of their children decision to go into farming, and particularly to livestock farming. The conservative and old way of parents' thinking could be an additional obstacle in many cases.

The ideal could be the cooperation of young farmers as *"group of producers"*, with minimum of five for livestock farming, using the EU Programmes for Agricultural Development (ΠΑΑ 2014-2020).

The young, better educated people can understand and follow much better the consumer's demand and expectations for better quality products, of high safety, with respect to environmental and welfare issues. They can, also, investigate and identify the growth potential of specific markets and apply to them for greater profitability. All the above initiatives and activities can improve and secure the farm's sustainability.

An agro-food enterprise, like a livestock farm, in order to be successful, should be identify the most appropriate sheep /goats breed for the area where the farm will be allocated, the most appropriate and profitable farming system (extensive, intensive, semi-intensive) which is technically feasible, economically efficient and environmentally friendly, the appropriate size, the best and more efficient management to produce high quality and safe for the consumer products of low cost. The local, regional, country and European market potential for the farms products should, also, be investigated thoroughly before entering the livestock farm business or enterprise.

6.6. The potential of a dairy sheep /goat farm for a successful agro food enterprise

One of the most important factors for a successful agro-food enterprise is the demand of the produce and the potential to sell it at a good value. For a sheep/goat farm, such potential exists, and is expected to continue in the future, since the milk is transformed into PGO cheeses (like Feta, Graviera etc.) of high demand due to their high quality and reputation. Other advantages of the sector are:

- lack of competition from other European countries. Countries like Italy, France and Spain, who are also sheep/goat milk producers, are interested to import sheep/goat milk (and lamb meat) from Greece,

- relatively low investment capital compared with that required for a dairy cow, swine or poultry farm,

- there are favourable conditions in Greece for such an enterprise due to climate, tradition, breeds variability and availability, experience and advanced technology in sheep/goat farm management and cheese making technology.

Thus, being sure that there is certain demand of the products of a sheep/goat farm, attention should be paid on the farm type and its operation. Particular attention should be paid, and advice should be asked for the appropriate breed, the size of the farm and the farming system (extensive-intensive). The size of the farm and the farming system will be decided through the business plan. Sheep/goat farms can be established everywhere in Greece. The exact allocation will depend on the available land and its infrastructure (available grassland, roads, electricity, water etc.). Preferably, should be in a reasonable distance from cheese making plants and from the market in principle. The breed will, also, depend on the farming system which will be implemented.

If a "*group of producers*" will be created with sheep/goat farms, a cheese making plant can be organized and established after a few years to give adding value to milk by transforming it into cheese. Such a well organized farm can, also, sell replacement stock in higher prices.

All the above activities are based on knowledge and experience which the young farmer should get by theoretical and practical training.

Other alternatives for a sheep/goat farm are:

a. Organic farming: en extensive conventional sheep/goat farm can easily converted to organic, since the grasslands of Greece accept no fertilizers or agrochemicals applicatication. The milk from such organic farm can be transformed into organic cheese which can be sold with regular or e-commerce in higher prices.

b. An extensive or semi-intensive sheep/goat farm cooperating with Hotels and Restaurants to sell its products as traditional ones, or to connect its activities with agro-tourism. In this case the allocation of the farm should be appropriate and in the right region to be easily accessible.

c. A "*group of producers*" can have a mutual contract with crop producers and cheese makers for cooperation as follows: the crop producers will supply the sheep/goat farmers with feedstuffs under certain agreed price, the sheep/goat farmers will supply the milk to cheese making plants under, also, certain agreed price, and the cheese making plans will supply the dairy products to supermarket, and so on. With this way there are guaranteed inputs and outputs of each enterprise.

All those alternative opportunities, and maybe some more, for entrepreneurial success prerequisite, as it was mentioned before, knowledge and experience. Any new person entering livestock farming should know the critical factors. These critical factors together with basic technical knowledge should be presented and analyzed in training courses of a month, at least, duration or of 100-120 teaching hours. After this theoretical approach, a practical experience should be gained by working in a farm for at least two months during the periparturient period which is the most critical. During this period the new potential farmers should learn how to handle the pregnant animals, the new born lambs/kids, how to feed each group of animals, how to look after them, to milk, to clean and to manage the whole farm properly.

In the theoretical classes will learn about feeding, breeding, diseases prevention and basic treatments, hygiene conditions, housing, keeping records on performance and finances, basic economics, marketing, management practices, milk technology grazing, feedstuffs production and preservation, environmental production, animals' welfare etc.

It is expected that in each prefecture will be a group (smaller or bigger) of young people, with some or without any farming experience, interested to start sheep/goat farming. Apparently, the University staff cannot go everywhere to train these people. On the other hand the potential young farmers cannot afford (from money and time point of view) to stay in Athens or in Thessaloniki for a month to attend the theoretical classes. Thus, the proposal it to train first the trainers at the University and to be in a continuous contract with them for any additional help they may need.

After this training course, some of the best sheep/goat farms will be selected and it will be arranged to accept these young farmers to get practical experience by working at the farm for at least two months.

6.7. Recommendations for starting livestock farming

Having experience in sheep/goat farming, it is recommended (as it will be shown in the business plan for a sheep farm) to start with a sheep farm of 200 ewes, which is a manageable size, to get experience by facing all sort of problems with minimum risk and then to expand gradually in a safer way and at a lower cost. The invested capital will also be less to start with. This needed capital could be taken by joining appropriate EU Programmes such as the Programme of Agricultural Development 2014-2020 (ΠΑΑ), subsidized by 40% for individual farmers and by 60% for "*group of producers*". The Bank of Piraeus is prepared and interested to give loans for such investments. After 3 to 5 years of establishment the farm can start expanding with its own reproduction stock by 10-20% every year with the objective to reach a farm of 500 dairy productive ewes in seven years of in ten years time from the start. This size is economically viable and can give a satisfactory income to the farmers as a family enterprise.

There is an optimism for sheep/goat farming success at present and for the next years to come, based on sheep/goat milk demand for dairy products like Feta cheese, yoghurt etc. The organoleptic characteristics of these products, which are due to local animal's breeds, to climate and to vegetation, are superior of high demand which safeguards a reasonable price for the milk and consequently for the farmer. This is an important and significant advantage for the sheep/goat farmers.

At the country level there is a deficit in sheep/goat milk for Feta cheese making and due to that the cheese making plans are very interested to support existing and new sheep/goat farms. The big dairy companies of Greece are very interested too for the same reasons. The Piraeus Bank due to the optimistic forecast is ready to support such investments in sheep/goat farming through the contracts among crop (feedstuffs), producers, cheese making plants, dairy industry and livestock farmers.

This interest for sheep/goat milk production exists for intensive and for extensive farms. As it has been explained earlier on in this study, the new farms will be allocated to easily accessible places in any area of Greece with the required infrastructure like roads, electricity, water and available land for grazing and/or cultivation for forages and cereals production.

Cheese making plants exist more or less everywhere in the country.

7. The perspectives of the Greek Livestock Production

Greece apparently, as EU member, is affected by the European Agricultural Policy. Apart from that, due to the small farm size, to lower productivity, to wide spread of farms in the upland and mountainous areas of Greece, to aged farmers etc., the competitiveness and the economic viability of livestock farms are much lower.

The situation and the perspectives of the different livestock sectors in Greece, briefly, are the follows.

7.1. Swine and Poultry Sector

Both these sectors try to survive in a global very competitive market, independent from subsidies, with high seasonal price fluctuations which affect significantly their economic viability. At the same time both sectors are much better organized and integrated compared to the rest ones, on an entrepreneurial basis, and better adapted to European legislation. The extensive part of those sectors is relatively limited, but has particular interest for some reasons which have been already presented in the detailed analysis of each sector later on in this study– report.

The self-sufficiency of Greece in poultry meat and eggs is quite high approaching 85% and 95% respectively. Even though the poultry sector is relatively sensitive and vulnerable in high prices' fluctuations, due to is relatively big farm's size and modern farming practices applied, in combination with an adequate infrastructure and well organized products marketing the sector can face seasonal market crises and survives in the long term.

The swine sector has been affected much more from some international crises which resulted in low self-sufficiency of pork meat 27%) with no real perspective to be increased. Even though it was

an enterprised–dynamic field at the beginning, it could not manage to keep the production cost at a competitive level and to be sustainable. However, today the swine farms are specialized with application of modern technology and improved performance compared to the past.

7.2. The Cattle Sector

The dairy cattle sector, with a self-sufficiency in cow's milk about 50%, sold mainly as pasteurized fresh milk, has great support by the Greek dairy industry. The dairy cows farms are intensive, with expanding application of technology, keeping the cows indoors all year round with zero grazing. The highest proportion of them are mixed (crops and livestock production) with moderate milk yield. The milk production cost is relatively high due to high percentage of purchased feedstuffs (some forages and almost all the concentrates), to inefficient management and to low productivity. However, they get paid at higher prices, compared to the rest European dairy cow farmers, because the demand for cow's milk is quite high, at least at present. The dairy cattle farming system becomes more intensified with crops and livestock increasingly integrated.

The beef cattle sector has a very low self sufficiency 17.5%) despite the high demand for beef meat of Greek origin and the relatively high beef meat consumption. The beef sector cannot expand because the available grassland is very limited. Thus, the fattening stock is kept indoors and fed intensively with marginal profitability. The subsidies support of this sector is very important for the economic viability of the farms.

7.3. Sheep and Goat Sector

The sheep and goat sector, with a self-sufficiency of 76% and 85% for meat and milk respectively, consists the main livestock sector for decades in Greece with a very significant importance from economic, social and environmental point of view. The farming systems applied are diverse, from extensive to intensive ones, with a tendency to be more intensive the last few years. The number of farms is declining with a corresponding increase of their size. The productivity of the livestock is increasing and the management of the farms is gradually improved. However, a great percentage of sheep and goat farms are traditional of low productivity and dependant on EU subsidies. In addition to that, a significant, also, percentage of sheep, mainly, farms are mixed (crops such olive trees, vine yards, vegetables, cotton, cereals etc. and sheep for milk production).

The dairy sheep-goat sector has the best perspectives among the rest ones (poultry, pigs, dairy and beef cattle) because there is no real competition from other European countries, the products produced are of high quality, like Feta cheese, due to local breeds, to natural vegetation and to climate conditions of Greece.

Greece is well-suited for sheep-goat farming because most of its land used (mountainous and semi-mountainous) does not have alternative uses. On the other hand, the extensive sheep and goat farming systems preserve biodiversity and present soil erosion and land degradation. Such sustainable livestock production systems interact in a positive way with the rural population and the need for

development the environmental threats and the aspects of consumer safety and expectations for quality products of animal origin.

In Greece, approximately 106,500 sows are bred and produce 111,300 tonnes of meat, which is translated into a productivity of about 1,045 kg/year/sow (i.e. 16 pigs/sow/year with an average carcass weight of 65 kg). The productivity of the corresponding sector within the EU is 1,650 kg/year/sow (i.e. 22 pigs/sow/year with an average carcass weight of 75 kg). This low productivity is due mainly to the low genetic potential of sows and boars and other parameters, such as: a) the low feed conversion ratio, which results in nutrient losses and increased feeding costs, and environmental pollution, since the nutrients are excreted through faeces and urine, b) the low level of animal management and organization of pig farms, and c) the inappropriate in many cases facilities (any extensions and interventions were made with makeshift constructions having no specific plans, particularly at critical points of the farms, such as the ventilation, insulations, waste management, etc.). Therefore, the technological innovation and restructuring of the sector in order to reach the productivity of the EU is a prerequisite for survival.

The simultaneous declining production of pork and the increase of consumption, coupled with the assumption that the sector of agricultural production can have a significant role in economic recovery during the economic crisis experienced are elements which conclude that there are sufficient margins for growth of the pig industry, either towards the better organization and management of intensive farms, or towards free-range or organic farming, for which there seems to be great interest in our country. An important prerequisite for the survival and development, as mentioned before is the technological innovation and organizational restructuring of the pig industry.

Conclusions

After the analysis of each animal production sector presented so far, it is concluded that for newcomers to animal production who have limited capital to invert, with relatively lower risk and higher potential to be economically sustainable, the recommended more promising entrepreneurial activities are:

a. Alternative poultry farming (like organic, free range etc.) for eggs and /or meat production, combined or not with other forms of economic activity, like agro tourism.

b. Free range or organic swine farming for meat production.

c. Free range beef cows farming for fattening beef calves production, combined with its owned butcher's shop, and

d. Sheep/goat farming under the most appropriate farming system (extensive, semiintensive, intensive) which is technically feasible, economically efficient and environmentally friendly, mainly for milk production and secondarily for meat production and/or replacement stock sale.

A small farm with all animal species (horses, cows, pigs, sheep, goats, hens, turkeys, geese, ducks, rabbits, dogs, cats etc.) or only companion animals, combined with agro tourism, could be another alternative profitable activity.

Training programs for new young farmers

The Ministry of Rural Development and Food has an organization, named ELGODIMITRA (Hellenic Organization of Agriculture-DIMITRA), which has one Division (out of four) dedicated to young people training in Agriculture. In each prefecture of Greece there is such a training center with all the required facilities. Thus, in cooperation with the Ministry of Rural Development & Food, and ELGO-DIMITRA these centers will be used for young farmers training in Animal Production.

The young people make use of computers and have access to websites from where they get a lot of information. So, the websites of the Agricultural University of Athens, the Ministry of Rural Development and Food, the local Municipalities, the local TV and radio stations, newspapers and magazines (like AGRENDA, AGROTYPOS etc.) on Agriculture and any other available mean will be used to communicate with young people and let them know about the whole programme and its objectives. Then, special talks will be organized and given to people are interested to join the programme which it will be explained in details.

Apparently, in these meetings will be presented all the sectors of animal production with their advantages and disadvantages, the investment opportunities, the prerequisites to entrepreneurial success, the available funding schemes, the sectors growth and export potential, the regional considerations, the potential for synergies with other sectors, the implications for agrotourism and/or e-commerce, the training programme etc.

A training programme for the trainers of the young potential farmers will also be organized after selection of the available, properly qualified persons.

References

Deligeorgis S, Papavasileiou ., Fegeros K., Rogdakis E. 2008. Free-range farming of domestic swine breeds. Proceedings of the 24th Annual Meeting of the Hellenic Association for Animal Production, October 2008, Arta, Greece.

Katerinis G., 2015. The continuous decline in meat production in Greece: the recent data from ELGO-DIMITRA. Meat News, 26-27.

Vakakis F., 2013. Swine sector: current situation and perspectives. Available at http://www.vakakis.gr.xelixis.net/Background/VA/4_enimerosi/Arthra/Prooptikes%20Xoireiou_kreatos_06_2013.pdf. Accessed on 10th November 2015.

Appendix

BUSINESS PLAN 1.

Free Range Poultry Farm

EXECUTIVE SUMMARY

This business plan aims to give instructions and guidelines on the construction & operation of a small to medium sized poultry farm in Greece. As the country faces a deep economical crisis and recession, with unemployment rate around 27%, it is essential to reconsider the establishment of new enterprises, small or medium sized, that can be an efficient tool to support local economic development and enforce people staying at their regions of origin.

The described poultry farm is small to medium size local farm in any countryside or rural area, exclusively rearing free range chicken, providing chicken meat and eggs for sale. The farm targets the local market of individual consumers as well as hotels & touristic accommodations which prefer healthy food choices and prefer to purchase food from an environmental sustainable production. This poultry farm business plan is an example for a successful small business operation with the above characteristics.

1. COMPANY AIM & SHORT DESCRIPTION

The main aim of the poultry farm is to provide local and/or regional consumers – individuals or businesses - with premium quality products, healthy poultry meat and eggs, reared free range in a farm which values the environment and follows environmentally sustainable production procedures, maintaining efficient supplies for the community. This can be a family business that plans on producing & distributing free range chicken & eggs to restaurants, home delivery food centers, hotels, schools, bakery and catering businesses and supermarkets, at affordable prices for a healthy & environmentally sustainable product. The specific poultry farm will also offer services such as delivery to regular customers with big or special orders.

Moreover, since local and regional development is recognized to have a profound role in overall national development efforts, poultry production (meat & eggs) is particularly important for the rural economy & social life and substantially contributes to the regional rural development and to the maintenance of the rural social cohesion.

A business initiative as such, is familiar to people living in small cities and villages, as many of them are involved in backyard poultry rearing. In addition, a small – medium sized poultry farm does not require big investment and can be operated as a family business. Free range poultry production in general, has lower market entry costs and thus is attractive to small farmers with limited resources. Furthermore, the quantities of the products, which are eggs and poultry meat, are in principal more easily distributed and absorbed by local markets.

Poultry meat & eggs can be produced in a very effective way – business & social wise - and can be categorized as one of the lowest cost animal protein production with a low environmental impact. Poultry meat & eggs have significant nutritional value with high amounts of protein and low fat content and consist a suggested food choice from dieticians & doctors in many cases. In addition, there are no religious restrictions connected with poultry meat consumption, therefore it is consumed almost worldwide from a wide range of consumers. The absence of consumption restrictions result in accessible & reasonable final consumer prices and in meeting the challenge of feeding the growing world population. Therefore, in general, poultry meat & eggs, satisfy the growing need to provide food, raw materials and energy to more than nine billion people in a sustainable way.

Today in Greece, successful business operation is a chance to be exploited and is an indispensible tool to the country's development and increase of employment. To this end, the primary sector consists a priority for strategic decisions which ensure & enhance enterprises operation in the specific sector.

Nowadays, it is a necessity to build a business on the primary sector with new tools for employment, business as well as the environment.

Since the conventional poultry production is dominated by large industries which cooperate with producers in the form of contract, alternative poultry production is operated mostly by small producers or small family farms with restrictions in applying environmental requirements and healthy rearing of chicken. Additionally, employment in the conventional poultry industry requires a contract with some of the existing industries which are not local and results to dependable work with limited income. This provides room for growth for alternative free range poultry production private initiatives.

In conclusion, due to the current levels of business effectiveness, self sufficiency & autonomy, both fields of poultry industry (conventional and alternative) are open for new producers. The investor's profile is that of a young person, educated and trained to the operation of a contemporaneous SME, able to invest from his own funds an adequate amount between 33000 €, and capable of seeking out subsidies funds.

Taking into consideration that the required initial capital is between 120000 and 130000 €, a 25 % of the initial capital should be constituted by own funds. Therefore, own funds will amount up to 30,000 € and the residual investment fund will be covered by subsidy funds or a business loan.

Conclusively, the basic idea of this business model for young entrepreneurs is the operation of a successful SME in the primary sector, the poultry sector, which will operate in a modern and innovative way and will contribute to local and regional development, respecting local ethics, taking into consideration environmental protection and presenting a high level degree of corporate social responsibility.

2. COMPANY TARGETS

As a case study, the presented model is a poultry farm unit with two sub-units:

a. An egg production of approximately 300,000 eggs per year (850 eggs approximately per day) and

b. A chicken meat production of approximately 27,000-28,000 kg broiler meat annually.

The main characteristic of this poultry farm is the free range rearing system. Under specific circumstances, free range chickens, can produce significant quantities of high quality food. The eggs are classified as category A. As regards egg production, 1000 pullets, designated for egg production, will be bought at the age of 15 weeks and will be bred for approximately a year. Each one of them can produce, after the 22nd week of its life, approximately 300 eggs per year.

With regard to chicken meat production, the target is the slaughter of up to 1000 poultry per month, with an average weight per unit 2.5 - 3 kg. That means approximately 2300-2500 kg poultry meat production per month.

At a first stage, the local market with the lowest cost for promotion and delivery, consists the main sales target. Main prerequisite for this, the local market to be able to absorb produced quantities for all products (eggs & chicken meat). For this reason, a thorough & analytic market survey before the investment would be important for examining the existing market consumption and the possibilities of market growth as result of introducing new products with comparative advantage and added value versus the existing products.

In conclusion, the target is the creation and build of a modern automated poultry farm SME sized for free range poultry rearing that is efficient and rewarding.

3. FUNDING SOURCES

	Egg production	Meat production	Overall Poultry Farm

Private equity fund (individual funds)	14556.3	17842.5	32398.0
%	25 %	25 %	25 %
Bank loans	11695.0	14324.0	26019.0
%	20.3 %	20.3 %	20 %
Public funding programs	31973.8	39203.5	71177.3
%	54.7 %	54.7%	55 %
TOTAL	58225.0	71370.0	129595.0

4. BUSINESS ESTABLISHMENT PROCEDURES

The poultry rearing and the eggs trading should be done according to the regulation (EK) 589/2008.

Law No. 4056/2012 (Gov.Gaz.52/A/2012) "Arrangements for livestock and farming systems and other provisions" deals with establishing measures for livestock production. The law establishes measures for the general management of livestock holding grounds and feedlots (size, location, minimum separation distances, etc) as well as the legislative and administrative requirements for obtaining a license to operate.

According to law 4056/2012 enforcement, major changes instituted in the way of the licensing of livestock facilities. The new law provides:

- Creation of one-stop service, of the Directorate of Rural Economy and Veterinary of the local regional units within the limits of which are established farms, which will be the single point of contact for farmers to public service.
- Changing the licensing process, the shape "first control and after authorization" in shape "temporary authorization by submitting the prescribed documents and the taking of the obligation by the natural or legal persons of requirements and conditions set by law. Following the control of declared commitments and conditions, after autopsy, the competent authority shall issue the final license". Temporary licensing terms, depending on the category of the livestock facility, concern either the administering supporting documents deposit or the preauthorization to issue installation permit.
- Control livestock buildings not only in the authorization but also subsequently with mandatory regular and random checks. Mandatory checks are carried out in the first year after the licensing of livestock buildings and then every two years, and the temporary checks whenever deemed appropriate.
- Recording licensing livestock buildings by creating a separate electronic registry. Legal framework

The licensing and operation of livestock facilities is now governed by the provisions of the l. 4056/2012, but requires checks and compliance with the terms and obligations of National and EU legislation on:

1. environmental protection and public health

2. hygiene and animal welfare
3. health & safety of work
4. the construction method of the livestock buildings, property and legitimate land uses
5. forest protection

Livestock facilities

The term livestock facility means all the necessary infrastructure for the rearing of any animal species, including:

- The enclosed court within the limits of which the farm is established.
- All the main and auxiliary buildings (e.g. stables, offices, house stableman, feed preparation room, weighing, etc.) and / or all of the sheds (stabling and ancillary) located within the fenced field.
- All the necessary electrical engineering installations for the operation of the facility, such sanitation, treatment and biological treatment of waste, transport and water supply, electricity, etc. All the warehouses as feed storage, tools and products of livestock farm serving the purpose and operation of, and within the limits of the pitch.

Categories of livestock facilities

I. FIRST CLASS: makeshift shelters

It includes casual animal enclosure for which no planning permission is required (building permit under the provisions of the l. 4067/2012).

II. SECOND CATEGORY: Farming installations made within the frame of a greenhouse under approved construction types or farming installations made under approved standard construction up to 300 square meters.

Includes livestock facilities that: manufactured greenhouse frame, according to the approved types of livestock shelters (fixed and mobile) as defined in Nos. 5888 / 02.03.2004 CMD Ministers of Environment, Planning and Public Works and Agriculture and for which compliance is issued within approval of the installation design by the competent urban planning instead of building permit.

III. THIRD CATEGORY: Farming installations for which building license is required

Includes livestock facilities for which the building permit is required (building permit under the provisions of the l. 4067/2012).

Documents folder for application

As defined in n. 4056/2012 required documentation should be submitted to the competent authority, one-stop-shop, before the autopsy. This documentation must contain:

1. Proven declaration of activity initiation to the competent tax office.
2. Property titles: contract and a certificate of transcription or rental with transfer to the relevant ground books or concession decision or judgment rental.
3. Legality documents of the existing buildings: building permit required or exemption from building permit by the competent authority or exemption decision from demolition or arbitrary statement.
4. Land use Certificate for cases of livestock buildings categories 2.aa, 2.vv and c of Article 2 of Law. 4056/2012.

5. Site plan dependent on the state coordinate system (EGSA 1987) and coverage diagram.
6. Map from the Army Geographical Service 1: 5000 with the marked location of the facility.
7. Architectural plans, required by the relevant and parallel legislation.
8. Certification of static efficiency (in all cases excluding shelters).
9. Certificates of approval of the type and manufacturing standards as appropriate.
10. Documents Environmental licensing: depending on the category to which the farm is classified the folder must include: waste disposal study (where required), decision of approving of waste disposal study (where applicable) environmental impact assessment (EIA) decision approving environmental conditions (ETAD) or classification of the facility to Standard Environmental Commitments (EAP) or certificate of exemption from environmental permitting, in cases of fodder plants in Article 13 of Law. 4056/2012 special ecological assessment for facilities within the boundaries of Natura either as an integral part of the Environmental Impact Studies (EIS).
11. Other documents as appropriate:
    - Archaeology authorization if the livestock facility is spaced wholly or partly outside Zone A ′ of declared archaeological sites.
    - Approving forest service for livestock facilities sited in forests, forested and deforested areas (woods, parks) and generally in areas outside approved urban plans, out of range of settlements and outside regulated receptors productive activities.
    - Decision General Secretary of the Region in the event that required derogation excellence.
    - Regional Unity decision to reduce the distance from the field boundaries accompanied by technical - Explanatory Memorandum.

Competent licensing authority

Competent Licensing Authority (CLA) is the Directorate of Rural Economy and Veterinary of the competent Regional Unity within the limits of which the rearing facility is established.

The owner submits supporting documentation to the Department of Rural Economy and Veterinary of regional unit concerned.

Temporary Installation license

The concerned owner submits all supporting documentation to the Department of Rural Economy and Veterinary of regional unit concerned.

After the administrative completeness check of the dossier submitted by the service, the same day the Temporary Installation License is given to the concerned breeder.

For all categories of livestock buildings, after the temporary license for installation, the deposit slip is issued in the case of shelters as well as the authorization prior approval of installation is granted in the case of other categories.

Temporary installation license has installation license power until the issuance of permanent residence and is valid for one (1) month in the case of shelters and up to three (3) months in the case of other categories.

Licensing process for livestock installations

The proposed poultry farm fall into the category below:

Second category / Livestock installations built with greenhouse frame under construction approved types:

1) Submission by the natural or legal person, to the AAA, the following documents:

a) Application including: the capacity of the livestock facility, expressed in number of livestock, the geographical location of the facility with reference, the applicant's contact address.
b) Affirmation of l. 1599/1986 (GG 75 A) as defined in Article 6 p. 4c of n.4056 / 2012.
c) Environmental impact study (EIS) for livestock category A installations 'or Declaration of the designer or the operator of the facility to undertake the pilot environmental commitments (EAP) for livestock category B installations'.
d) Report geotechnical consultant, describing the satisfaction of livestock performance data of the livestock facility.

2) Granting of the TEMPORARY LICENSE INSTALLATION to the breeder on the same day after checking the completeness of the submitted dossier. This license has an establishment permit valid until check compliance with the operating conditions of the installation.

3) Submit folder for the authorization of establishment, after the completion of construction and thirty (30) days before the transfer of livestock, including:
a) Request the applicant's data,
b) Temporary installation license,
c) Certificate of compliance of the design as described in detail in point II.1 of Article 2 of Chapter II of this.

4) Installations' autopsy, draw up protocol and issue of the definitive license.

5. COMPETITIVE ADVANTAGE

The main innovation in the proposed poultry farm is based on the location of the farm & the development perspective in a rural area by young entrepreneurs, operating a modern small to medium sized unit based on environmental sustainable production procedures and healthy products standards.

Company's policy & operation guarantees that:

1. Public health is first priority
2. Production procedures & policy will be guaranteed & customer will be assured
3. The poultry farm will build a strong customer relationship
4. Maintaining and developing the relation with their processors
5. Supply of only superior quality products
6. Provide training and development to all employees.

1) Innovation is in the installation unit

The farm unit will be modern, a good example for comparison standard, a small family business with modern and innovative installations.

For local community and in general, the environmental status and impact of the company's activities hold a key role to customer product preference for a special product. Today, most people are very sensitive to environmental issues, thus an installation has to respect the environment and take all the necessary measures to prevent any pollution, waste, odors and optical pollution. It is the farm's respect to the environmental impact that will influence either the choice or the boycott of its products by the customer. Consumers usually are sensitive to production procedures influencing either the product or their living environment. Additionally, many consumers care for the working conditions of the product they buy (i.e. some don't purchase products made by mass production industries employing children).

2) The size of the company

The proposal concerns a small medium size poultry farm, which is differentiated from big factories on the one side and from the small traditional chicken house from the other side. This organized family sized poultry farm can operate as a model for other districts.

The basic aim of a modern poultry farm is to attract, guide, and motivate young people graduated from HEIs or Technological with an entrepreneurial spirit to develop business initiatives. It is time for a lot of young after finishing their studies to go back to their hometown, create their own business and enrich local economy & society.

The Greek economic model as well as the Mediterranean one (Italian, Spanish) favors the operation of small medium business. With the current financial & social status, some prerequisites are essential: modern facilities, modern marketing, sales and distribution procedures with environmental sustainable production. A small production able to cover the local market, with medium adequate portions but with a systematic way based on quick response and just in time practices. This is the main innovation of this business.

The quantities of produced products can easily be absorbed by the local market on daily or weekly deliveries.

3) Quality of products The main products are:

a) Eggs from free range hens

b) Meat from free range broilers

c) Byproducts (chicken droppings)

The choice of the free range system in relation to the complementary rearing of high nutritional value either in powder or in full cereals (wheat, corn, barley), provide tasty products of high nutritious value for people and of excellent quality.

The company operates using an internal quality system which guaranties the quality of production chain and of the final product.

Certified operation with ISO standards is a company priority. This is also an additional innovation for this size and this kind of business.

4) Branded company – branded products

It is common practice that visitors on villages are looking for local, village eggs or chickens or other products (meat, honey, cheese) sometimes either to eat or to buy. Most of these products are of no-name production or sometimes origin, and probably sometimes are imported. An additional innovation of this company will be the creation of a strong trade mark for the company and its products as well as built promotion activities for the local kitchen and dietary habits.

In general our product strategy is to win the hearts & tastes of our consumers and establish a brand image through heavy marketing campaign from the 1st year, using diverse market network, market chain management, optimum inventory level and the policy "customer is the 1sth and No1 priority".

5) Small medium investment with satisfactory annual profit

Company's installation land will be based in rural areas with low land cost (or even zero cost in case the investor already owns the land). This will be a basic advantage to start a business. The investor's profile is that of a young person, educated and trained to the operation of a contemporaneous SME, able to invest from his own money an adequate amount between 30000 – 35000 euro and capable of seeking out subsidies funds. Private funding for the installation is only 25 % of the overall investment fund, which can be a motive for such initiative. The initial investment capital is estimated to 35000

euro for the poultry farm (including facilities & mechanical equipment) and is considered to be a low investment for an attractive business operation with a short payback period.

Relative profit for the 1st three years is estimated to amount to 86000 approximately

6) Profitable business

There are a lot of factors that make poultry farming profitable business:

- Regardless of the economic situation, food is a necessity and since domestic birds are consumable; that makes poultry farming feasible.
- With the increased awareness on the health implications of red meat; there's an increased demand for white meat and birds are a source of white meat.
- Use of new processing options, can differentiate the product from the products of others.
- Ensure quality product with affordable price.
- Provide hygienic and nutritious feeding that may help to attain distinguishable quality factors like color and taste of meat.
- The price of white meat is cheaper than the red meat.

7) Social corporate responsibility & environmental awareness

Corporate social responsibility is a company policy, which means that the company will undertake all the requested measures to protect the environment, to respect the workers rights, to provide to its customer's high added value products in reasonable prices, to contribute to local development with respect to fair competition. Additionally, the company will participate in local festivities for vulnerable citizens in order to enhance spreading healthy nutrition to all people (and not only customers).

8) Innovation in marketing and sales

Since the innovation is mainly on the products offered (healthy free range chicken meat & eggs from an environmental sustainable production) and considering the fact that the business is addressed to young entrepreneurs, with internet & new technologies awareness, the company will use all technology & other marketing resources in order to make its products known.

Indicatively, the company will use internet presence with advertisements in local e-newspapers, e-commerce service offering company & products description & policies as well as e-ordering services and quick delivery. Another marketing mean will be social media company presence. Moreover, the company can participate in the local flee market in order for the local community to learn about the new company, its activities and its aim.

Finally, free samples in restaurants & hotels or other potential big customers, can be distributed in any cases that the business management decides to be known in a specific market.

9) Contingency plan

As we considered poultry production risks, the company will have to make contingency plans for unprecedented events or occurrences. As per the health risks, the plan will be scheduled with a veterinary doctor that will have regular checkups of the chickens while controlling the production process. Another contingency plan regards insurance that will protect our assets. One of the risks we have to face, the occurrence of a fire outrage will be curbed by placing fire extinguishers at strategic places.

6. MARKET

6.1 MARKET SEGMENTATION

Eggs and poultry meat produced by free range poultry and cooked with local recipes can be proven products of a dynamic market.

Chicken meat and eggs will be distributed to restaurants, gourmet shops, hotels, community centers, bakeries and catering businesses in the local area of the farm and in the region. Our focus will be on big customers - local & regional - highly acclaimed hotels, restaurants as well as gourmet markets which supply meat to the various customers.

Main target group would be the high end consumers (business & individuals) vying for the best possible product (chicken & eggs). We want to displace the purchase of a mass production product (meat & egg) with a high quality healthy product.

Hotels & restaurants consist a potential customer with room for market growth and penetration for the poultry farm products. For example, an original pilot livestock farm provides access to visitors & tourists through partnerships with businesses in the tourism industry and by promoting local products in hotels and other accommodation, by gastronomic tourism development activities, etc.

The new producer can change the traditional poultry production and rejuvenate the market. They have to introduce and follow the principles of modern and clean installations, high quality hygienic branded local products, with innovation in the production line and efficiency in the services offered.
It is also of great importance to produce and promote the idea of nutritious eggs for special target groups e.g. nutritious eggs for healthy babies and children. Additionally, to persuade and guide local people, visitors and tourists to the natural healthy nutrition.

Individuals are a small sector in the market segmentation. They are a pretty large group but they buy a relatively small amount of eggs.

The part of the market that the business targets to supply large amount of eggs are the industries that need eggs. The company can strategically placed the farm close to these industries. They are bakeries, restaurants, schools, home delivery food centers and retail shops.

Additionally, medium quantities home delivery orders are another market segment to be targeted (depending on the order's quantity). Homes generally use eggs in the preparation of edibles like chicken burger, chicken pie, salads, omelets, soup etc.

The parts of our target market interested in live chickens are small scale poultry consumers (directly or indirectly). We have considered the needs of each section of the target markets and we plan on meeting these needs effectively.

Our preferred market segmentation is divided as per the following graph:

6.2 LAND LOCATION ANALYSIS

The land should be of sufficient size for the proposed farm and in a location that facilitates the business success and profitability. An ideal poultry farm should be sited where there's a large availability of cheap land and at the same time, should be close to areas with high to medium population density.

First of all there are regulations for the distance of the farm from urban areas and from the neighboring buildings. This means that the selected land must be on the outskirts of cities or near villages, but also in a location where there is easy access for visiting as well as for the transportation of goods. Additionally, access to electricity, internet –telecommunication networks and water supply is very important.

Birds should have protection from adverse weather conditions, predators and risks to their health. So the choice of an area with moderate climate conditions and not high temperature differences between summer and winter, must be examined very carefully. Chicks are sensitive to large temperatures fluctuations.

Birds should also have access to a well-drained lying area all the time. Birds should be encouraged to use the outdoor area by the provision of adequate, suitable, properly managed vegetation, outdoor scratch whole grain feeding, a fresh water supply and overhead cover, all sufficiently far from the house to encourage birds to range.

For the egg production unit, a land of total area 4.000 square meters is required for 1000 chickens that is 4m² per hen. This land must be hedged with wire netting to guard the chicken. The wire netting will be supported on metallic posts and will have approximately 1.8 m height.

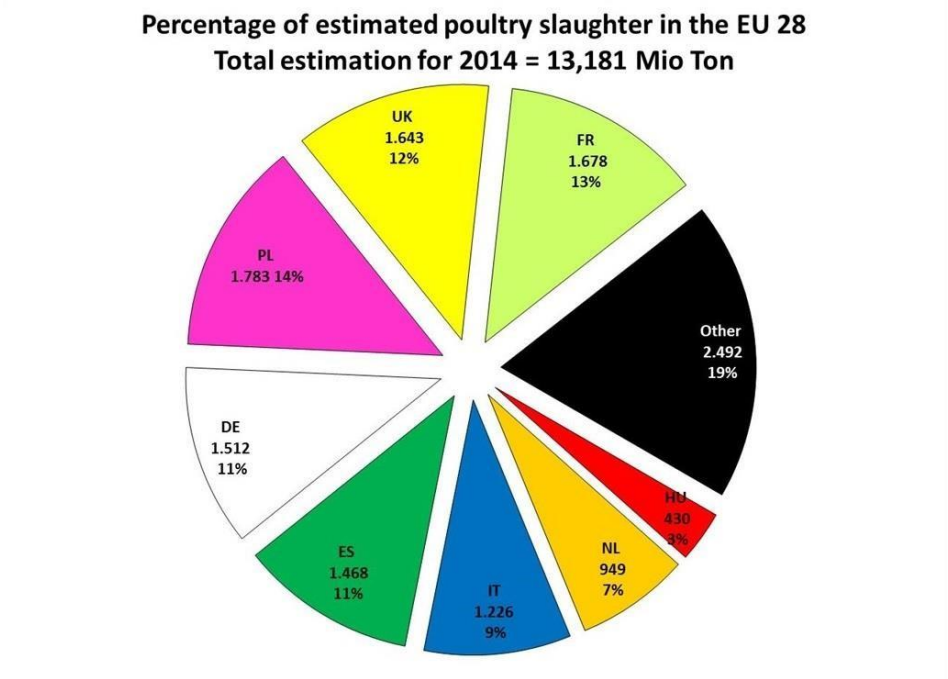
For slaughtering approximately up to 1000 broilers per month and taking into consideration that the company will start with 1000 broilers and average rearing time 2.5 months, this means that at the same time 3000 chickens will be reared. That means that the necessary area for meat free range poultry production is around 12.000m². This land also must be hedged with wire netting as above. Finally a total area of 16000 m² is required for both activities.

6.3 COMPETITION ANALYSIS

Poultry meat

The European Union is one of the world's top producers in poultry meat and an exporter of poultry products. Over the years the market organisation for poultry sector was improved to ensure the development of the sector, the quality of the products and consumers protection while harmonizing the entire market.

In 2014 the 13.1 million tons of poultry meat production along with the imports (0.8 Mio T) and exports (1.5 Mio T) kept the self-sufficiency level in European Union at 103%. The leading countries in poultry meat production are Poland (13.7 %), France (12.7 %), closely followed by UK (12.4 %), Germany (11.4 %) and Spain (11.1 %). These five countries ensure 61.3% of the EU production of poultry meat.



Source: http://ec.europa.eu/agriculture

The EU imports of high value products (poultry breasts and other high value added products, such as cooked preparations etc.) are mainly from Brazil (60% of total EU poultry meat imports) and Thailand (30 %). In 2014, the average value of imports was 2.59 EUR/kg.

Exports are of lower value (1.37 EUR/kg) but the range of products as well as the range of destinations is much wider. Half of exports are shared between five destinations (South Africa, Benin, Hong Kong, Saudi Arabia and Ukraine) while the other half goes to a long list of countries.

Eggs

The European Union is the world's second egg producer and a net exporter of eggs and egg products.

Efforts to improve the market organisation for the egg sector were made since the introduction of the CAP (Common Agriculture Policy), and, in order to ensure the development of the sector, new measures to improve the quality of the products, to protect the consumers and to harmonize the entire market were adopted.

As from 1st July 2008, eggs and poultry meat legislation is integrated in the Single CMO [Council Regulation (EC) No 1234/2007 of 22 October 2007 establishing a common organization of agricultural markets and on specific provisions for certain agricultural products]. Under this Regulation the legislation applying to the eggs sector and poultry sector was simplified by repealing Regulations 2771/75 (Common Market Organisation for eggs), and 2777/75 (Common Market Organisation for poultry meat).

Current situation in Greece

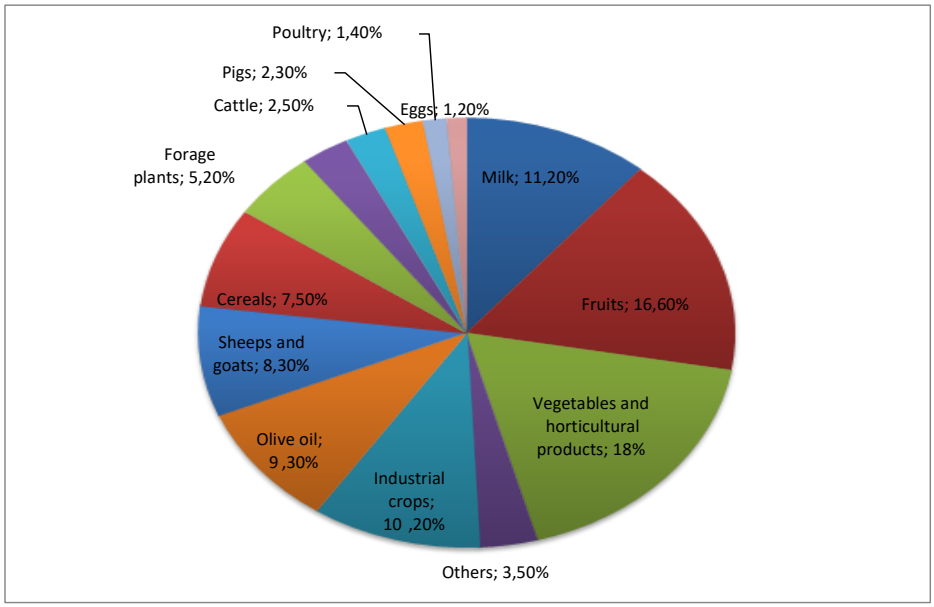
Poultry farming in Greece is one of the most dynamic sectors of the rural economy, which represents 5 % of the total value of agricultural production. Organized poultry companies in Greece annually produce 120 million chickens and 1.8 billion eggs. The total production almost covers the domestic demand. In the sector there are around 50 companies of various sizes.

In the meat production sector, approximately 2000 farmers operate, mainly in organizedvertically integrated companies. The chicken production is concentrated by 45% in the mainland, 27 % in Central Greece and 18 % in Macedonia and Thrace.

The egg production is more evenly distributed, but a large percentage still comes from Attica. The organized sector companies directly employ over 4,000 people. Aviaries employ around 6,000 people respectively.

The overall poultry industry employs about 5.000 jobs related to collection and cleaning services, raw materials and finished transport, processing workshops, grill etc. The Greek Poultry absorbs annually more than 500,000 grain (wheat and corn). From the Greek production mainly absorbs fodder qualities, which, due to competition and transportation costs, hardly are exported.

Nowadays, Greece, presents a high level of self sufficiency in conventional poultry meat and eggs. According to the Greek Ministry of Agriculture **the self sufficiency for conventional poultry meat is about 80 % and for chicken eggs is about 95 %.** Therefore, the national needs are covered by the internal production and a small proportion of imports. Also, occasionally there is a small amount of exports to nearby countries.



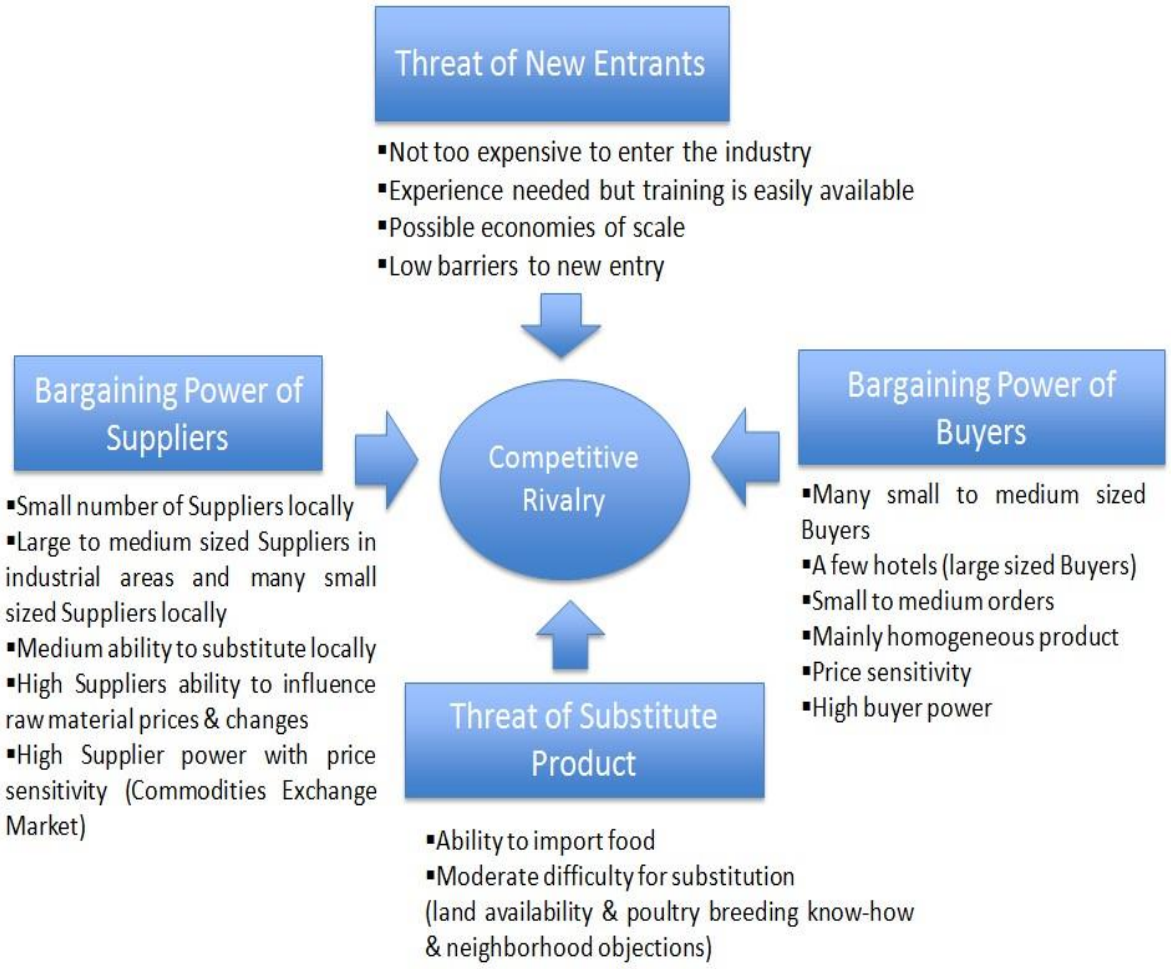
Output components (2009-2013 average)

Source: Eurostat, Economic Accounts for Agriculture (values at constant producer prices). Updated: December 2014.

Porter five forces analysis

Porter five forces analysis is a framework that attempts to analyze the level of competition within an industry and business strategy development.

The picture below presents a brief analysis of the 5 forces model for a poultry farm in a rural location in Greece:



The competitive intensity and therefore attractiveness of the poultry industry depends mainly on the local competition analysis and on company's product differentiation. Attractiveness in this context refers to the overall profitability. The specific five forces analysis, showed the poultry local farm is an attractive business for young entrepreneurs with a small to medium sized farm, who will use their know-how and technology, in order to produce free range poultry meat & eggs of superior quality, keeping costs & production under control, respecting the environment as well as keeping an intensive and constant marketing policy and promotional activities.

Main issues critical to the effectiveness & business viability:

- The size of the business (suitable for a local or regional consumption demand)
- The size of the production (suitable for a local or regional consumption demand)
- The product quality
- Suppliers prices
- Abiding with environmental policies
- Continuous health control & inspections on chickens

SWOT ANALYSIS

Strength	Weakness
• Produce high quality eggs • Relatively good infrastructure systems • Modern & effective marketing system • Eggs and chicken are not seasonal products and can be eaten any time of the year • In this area, the poultry business hasn't been over-exploited • Satisfying annual income • Free range poultry rearing system is a system of ecological products • It is not too expensive to enter the industry • Low barriers to new entries • Short payback period	• For the proposed size the needed initial capital is not very easy to be available for a small entrepreneur • Outbreak of disease can ruin entire business in a go • The smell can be quite disturbing • Objections from local community
Opportunities	**Threats**
• Expansion into scale production of by products (fertilizer) • Promotion of sales to neighboring towns • Increase of production and sales to other regions • Use all by-products or create product differentiation based on market demand (i.e. producing egg white in packaging)	• More competition • Avian diseases • Threat of import of fresh and frozen chickens and eggs • Feeding material prices can fluctuate (from Stock Exchange)

6.4 BASIC MARKET CHARACTERISTICS

Consumer habits

The main factors explaining its attractiveness are the relatively low and competitive pricing compared to the other types of meat and the absence of cultural or religious obstacles as well as its nutritional quality. Moreover, poultry meat has the advantage of the very short preparation time as well as the availability of a wide range of processed products and ready-to-cook meals.

Regarding the consumption of eggs, the world average kg/person is about 9 kg / person while the respective European figure is 12.7. In Greece the average annual egg consumption is about 11 kg /

person. Few changes are observed in these figures during the last decades so the future projections are more or less at the same range.

Competition

Poultry market competition is not so intense, however it still exists. The reasons are:

- Poultry products are not branded products (with few exceptions); hence what usually matters is effective positioning and timing.
- Poultry market is not crowded; it's a seller's market.
- Most poultry produced are sold through informal channels.
- Competition is usually found within local products and imported ones.
- There are many poultry farmers however, many of them are backyard farmers, small scale and their production is too low to satisfy the overall demand of customers.

Since, main business priority will be that customer comes 1st and it is also important for the customer to have the same feeling and experience from the company's products & service.

We are here to provide quality affordable chicken products.

We expect the business to grow and start working at a full scale regional level. This will be achieved through hardworking of management team and efficiency & effective use of materials and time is the key to be successful over the competitors.

7. PRODUCTS AND SERVICES

7.1 PRODUCT DESCRIPTION

The company will offer free range chicken meat and eggs to the targeted market. The products shall be distributed into a number of distributors - supermarkets, public - flea markets, bakeries, or hotels & restaurants and in the company's own retail space for easy access for marketing agents and consumers.
Main products

a) Eggs : Small, Medium, Large & XL eggs as well as category B eggs
b) Chicken meat from free range poultry

8. PRODUCTION PROCEDURE

8.1 DESCRIPTION OF PRODUCTION PROCEDURE

The production unit is divided in two sub units working simultaneously at the same total area.

- Unit 1 is for eggs production from free range poultry farm
- Unit 2 is for meat production from free range poultry farm
- Unit 1 is extended in 4000 m^2
- Unit 2 is extended in 12000 m^2

The two units are separated by wire netting.

Production procedure for Unit 1

As already mention the purpose of operation of this unit is the production of chicken eggs for human consumption, quality category A, in a free range poultry farm.

The rearing of chickens and the promotion of the eggs to the market will be done according the regulation EK nr 589/2008.

The start of rearing is done with the purchase of 1000 pullets, egg production hybrids of high productivity (i.e Lohmann Brown), for egg production at the age of 15 weeks and their placement at the rearing cabin, after careful cleaning and sterilization of the room.

Food and water supply will be ensured through automated relative equipments.

After the 18th week of birds life is expected the beginning of the egg-laying, while after the 22nd week of their life is expected the production of commercial eggs.

The eggs are candled for quality control reasons, classified according to their weight stamped with the unit rearing code, packaged, and stored in a conditioning room, until the transfer to the customer.

Total duration of hen rearing is 80 weeks. After this tie the hens are slaughtered and follow new rearing.

During the rearing time, every day control of good equipment operation is done, as well as control of chicken's behavior.

The trained personnel are obliged to follow strictly bio-security rules, as well as to apply the required program of vaccination.

The health of animals and the safety of derived eggs must be ensured.

The annual production from a hen is expected to be 300 eggs.

Production procedure for unit 2

The purpose of this unit is the production of free range broilers for slaughtering net weight 2 2.5 kg. The start of the rearing will be done with the purchase of 1000 broilers, medium grow at the age of 1 day and their placement at the rearing cabins after careful cleaning and sterilization of the room.

Food and water supply will be provided through an automated system.

This will repeated every month to keep the monthly production stable to 1000 poultries.

The total rearing time for chicks will be 60-70 days.

To ensure continuous production is necessary the construction of three chambers and ensure the correct operation of the cyclic system all in – all out.

During the rearing time is necessary to apply all the rules for the control good operation of the equipments and the hygiene conditions for the health of animals as the chicken rearing has been described above.

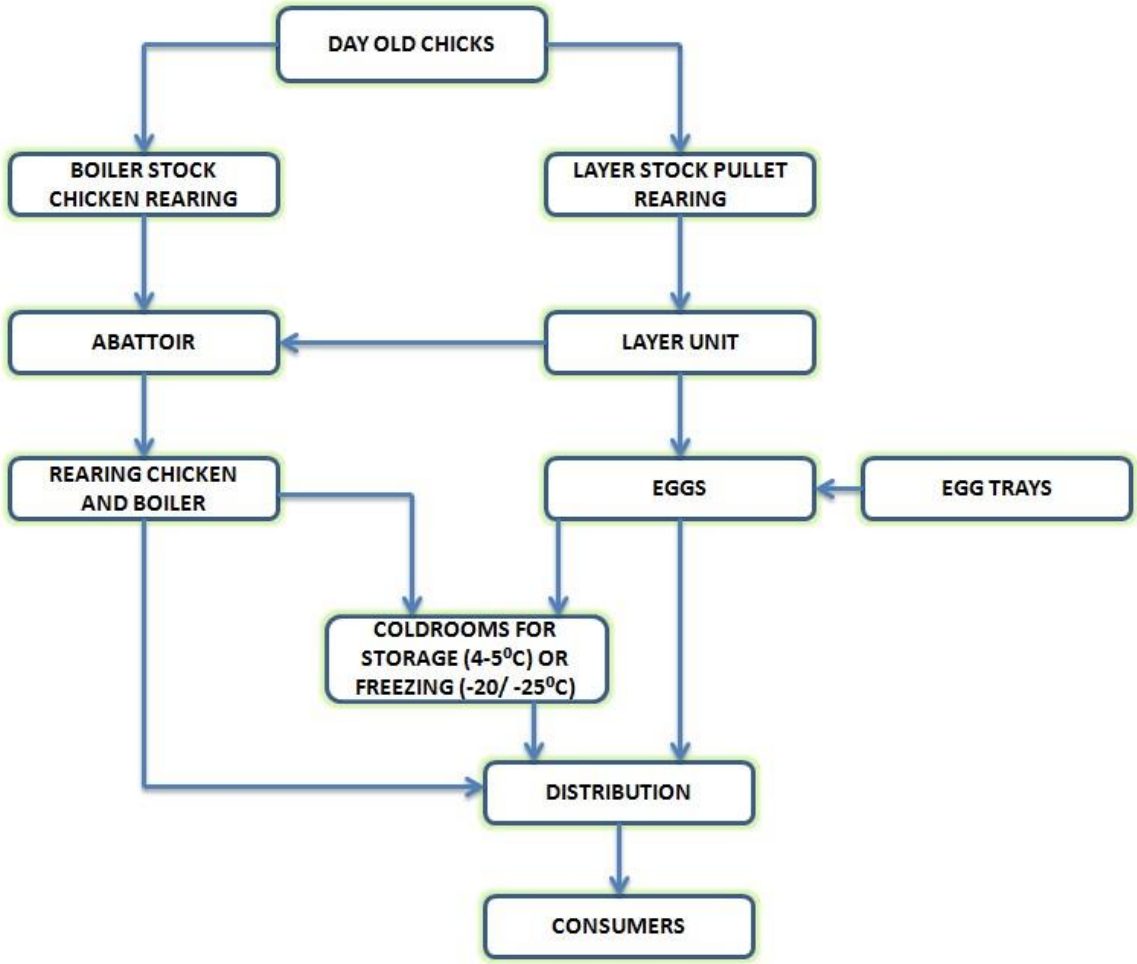
For both units the basic principle of poultry free range system is that the birds will stay most of the time of their life out of the buildings, outdoors and only in the nights and on bad weather conditions inside.

General principles of operating a poultry farm that apply to all rearing facilities are:

- buildings and their equipment should contribute to the physiological needs of animals and protect their health
- the working conditions are comfortable
- the operation of poultry farms do not create problems of environmental pollution
- The buildings and their equipment is the most suitable both technologically and economically.
- There must be freedom of movement of animals and if the restriction, there is enough space for their physiological needs and behavioral needs.

- The materials and the equipment with which they come in contact animals should not be harmful to them.
- To ensure proper temperature, humidity and lighting.
- At the same time should be the area which should be enclosed, where you will live the day and grazing chickens and suitable sheltered areas to protect them at night.
- The covered area can-warehouse is necessary to have good insulation and ventilation to maintain constant temperature heat in winter and coolness in summertime, and also have water and electricity. Apart from food and water, the temperature and air quality are key to the development and health of the chickens.
- Generally poultry consists of mainly resistant species, but the farmer must be careful that:
- The feed should be based on a healthy diet, which includes cereals, such as wheat and corn, added vitamins and minerals. There must be continuous access to fresh, clean water.
- The temperature (for farms indoor) must be constant for optimal comfort for the birds. Chickens are sensitive to extreme temperatures when combined with high humidity and can die from overheating.
- Good ventilation of the house is also a key to prevent the concentration of carbon dioxide, ammonia and dust produced by birds and to avoid respiratory problems in chickens. The mulch should be dry. The wet litter can cause skin problems in chickens and affect air quality. However, the mulch should not be too dry to avoid dust problems in the house.
- Chickens must also be able to move comfortably in place and not be squeezed on top of one another.
- The aviary should have good lighting and necessary darkness for 8 consecutive hours in order to ensure good growth.
- Although durable, chickens are scared very easily and may be injured or trampled by others thus, it is preferable to avoid noises. Moreover, at least twice a day, chickens should be inspected for potential health problems.

Production flowchart

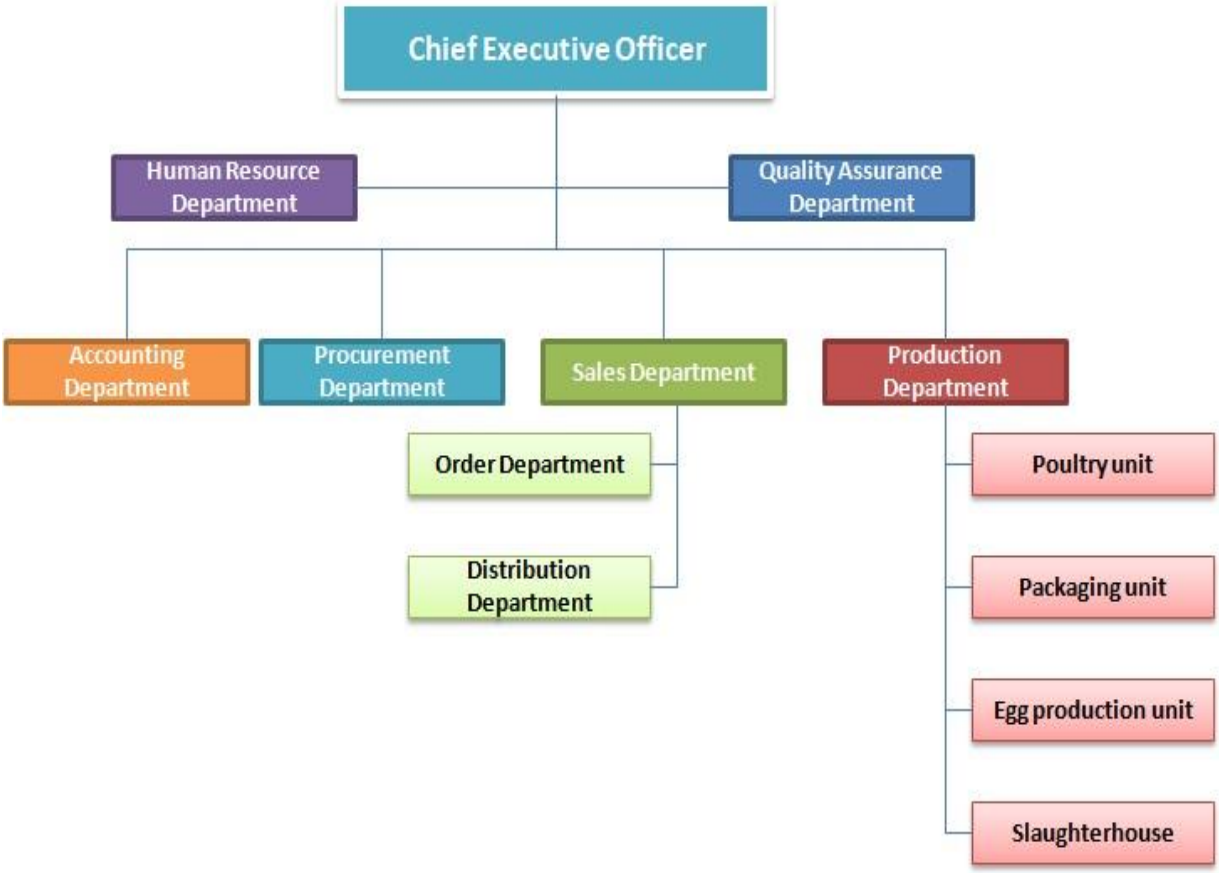


8.2 SUPPLY OF RAW MATERIALS

Supply of raw materials will be a ready feed from industries.

8.3 PRODUCTION EMPLOYEES & COMPANY STRUCTURE

Skillful employees are necessary for the successful implementation of business activities. Basic technical know-how and training is vital for the farm's innovation. Initially, the farm can be operated by a 3-4 family members and as it grows it can develop to the following structure:



Except from the main production labor, the company should cooperate on a part-time basis with veterinary doctors, drivers and technician that will be paid by the hour.

Apart from the main employees (family members), labor in poultry farms are usually unskilled laborers who take care of the poultry services, guard the chicken and its products and make deliveries. Their skills differ and they can also be temporary labor.

The food technicians prepare balanced fodder mixtures complying with the fodder concentrate. Labor size in poultry production is usually unstable.

8.4 PRODUCTION EQUIPMENT ANALYSIS – PURCHASING COST – PAYMENTS – SUBSIDIES

The proposed project deals with the creation and operation of a free range poultry farm rearing of:

a) Broiler chickens for meat production

b) Hens for eggs production
The two rearing units are subdivision of one unit of enterprise.

Poultry Unit ONE - Chickens rearing for meat production

Requested infrastructure

a) Land 12000 m^2 hedged with wire netting to guard the birds

b) 3 poultry chambers green house type, of 84 m² each for rearing of birds as well as for protection from bad weather conditions (cold, rain, wind ,high temperatures)

c) slaughter chamber of 50 m².

d) silo

e) feeders, drinkers, thermometers, poultry roost ,etc

f) refrigerators

An estimated analysis on the cost of investment is presented at the following table:

TECHNICAL POULTRY MEAT DATA

MEAT PRODUCTION FREE RANGE

Slaughter of 1000 broilers per month with rearing period : 70 days and net weight after slaughter : 2.5 – 3 kg. There will be three rearing chambers.

DESCRIPTION	QUANTITY	UNIT (€)	PRICE	TOTAL (€)	TOTAL (€)
ESTABLISHMENT EXPENSES– FIXED COST					
LICENSE				1000	
CHICKEN HOUSE (without equipment)	3 x 84 m²	110		27720	
SILO+FOOD TRANSPORT				9000	
FEEDERS				4000	
DRINKERS				2400	
PERCHES				400	
CONTROL PANEL				3000	
LAMPS				150	
INSTALLATIONS				2000	
LAND	12000 m²			ownership	25000 €
FENCING	900m	8		7200	
SLAUGHTERING BUILDING	50 m²			10000	
SLAUGHTERHOUSE' EQUIPMENT				3000	
SLAUGHTERHOUSE' FRIDGES				1500	
TOTAL				71370	96370

OPERATING COSTS				
ANIMAL MATERIAL (meat hybrid)	13200	0,50	6600	
BEDDING (from hay)			1200	

DIET	85800 kg	0,45	38610	
VACCINES			1000	
WORK (4 hours/day)	1460 hours	4	5840	
BILLS (WATER & ELECTRICITY)			1000	
SUPPLIES			1000	
TOTAL			55250	

INCOME 27.000 meat X 4,5 euro/kilo = 121.500€

Poultry Unit TWO – egg production

TECHNICAL POULTRY EGG DATA

EGG PRODUCTION FREE RANGE

1000 chickens for egg production, bought in 4.5 months age, rearing for 1 year with avg production : 300 eggs per chicken per year

DESCRIPTION	QUANTITY	UNIT PRICE(€)	TOTAL (€)	TOTAL (€)
ESTABLISHMENT EXPENSES– FIXED COST				
LICENSE			1000	
CHICKEN HOUSE (without equipment)	125 m^2	110	13750	
LAND	4000 m^2		ownership	12000 € buy
FENCING	300 m	8	2400	
EQUIPMENT				
SILO+FOOD TRANSPORT			3000	
FEEDERS			2000	
DRINKERS			1300	
PERCHES			200	
CONTROL PANEL			1000	
LAMPS			75	
INSTALLATIONS			2000	
EGG PRODUCTION BUILDING	50 m^2		10000	
EQUIPMENT FOR EGG PRODUCTION			5000	
FRIDGES			1500	
CAR			15000	
TOTAL			58250	
OPERATING COSTS				
ANIMAL MATERIAL (EGG HYBRID)	1000	4,20	4200	
BEDDING			100	
DIET	43200 kg	0,42	18144	
VACCINES			1000	
WORK (5hours/day)	1825 hours		7300	
BILLS (WATER & ELECTRICITY)			1000	

CAR EXPENSES			5000	
TOTAL			36744	

INCOME 83,749.2 €

Operating Mode - Eggplant	
Annual	
Working days	300 days
% eggs for sales	0.94
Small eggs production 6 %	16920
Medium eggs production 39.2 %	110544
Large eggs production 50.5 %	142410
XL eggs production 4.3 %	12126
Production of unsuitable - faulty eggs – category B	18000

Operating Mode - Meat production
Annual
Overall meat production consists of 1000 birds x 2.25 Kg x 12 monthly production periods Overall meat production per year : 27000 kg

9. MARKETING MIX COMPANY STRATEGY

9.1 SALES PRICING DEFINITION

Our marketing strategy is:

- To anticipate and respond to consumer preferences for content & service.
- Attract, excite and retain an adequate audience of consumers to our products.
- Create and maintain successful strategic alliances with high value partners.
- Build our brand rapidly and substantially.
- Build customer loyalty.
- Provide timely availability of budget and feeds.
- Compete effectively against better established rivals.

The design of the proposed business model, for a poultry farm free range rearing system, is based on innovation principles, with high value products. High end quality goods, produced with respect for the environment and with social sensitivity.

The production of a traditional natural product like egg or poultry meat can lead to a high added value product. This can be done by choosing a production method (free range rearing), which ensures hygienic food, tasty product and high rate nutrition value.

Consumers demanding this type of poultry product are generally willing to pay more for the system, which includes raising poultry on grassy pasture to deliver a product that is considered to be healthier and tastier, as well as more environmentally sound.

The policy of the company is to address its products to people who prefer healthy food with specific characteristics produced with natural ways. Target groups as such are sensitive for choosing products produced with an environmental friendly way, from companies acting with a high degree of corporate social responsibility and respect of the consumer needs.

The policy is to produce on semi industrial scale, medium size, optimum quantities, of a traditional basic need product, but with main product characteristics differentiation. The company will create a strong brand & apply and qualify a relevant pricing policy. In this respect, the introduction of new products in the market will use distinguished advantages and any open market availability. A differentiated – in high quality and reasonable price – product can fill relevant market gaps.

The aim is the sale price to be based on quality standards, of well controlled and certified production. The farm will invest on quality, on branding, on consumer's information, on sustainability, on close and personal relation with the consumer, on responding to his needs and claims, on respecting his demands and listening his views. The company will be an open business, close to the market, producing for the market and learning from this.

That means that the entrance to the market won't be by the low prices, but with product differentiation and with prices higher than the ones of the industrialized and massive production eggs & chicken meat, but with prices relevant to product's quality.

In any case, the pricing policy should provide profit margin for a three (3) years investment payback period time as well as offer an affordable high quality product to the consumer.

The pricing policy can be flexible, but the company basic rule is to create a profitable business with limited loan burdens.

Well selected customers on prices relative to the product quality with a controlled production and sales quantities can be a safer choice for payments receipt.

Current market prices vary from 2.8 € to 6.0 € per kg for chicken meat and mainly from systematic & mass rearing farms. The alternative farming products prices vary and in order for the business to be profitable consistent with the above characteristics and targets forecast, the proposed sales price 4.5 euro/kg for chickens with average slaughtered weight 2.5 - 3 kg.

Total annual income from meat sales 27000 kg x 4.5 euro/kg =121,500€.
For eggs sale, today the sale prices vary from to for eggs produced from systematic rearing of laying chicken.

For eggs produced through alternative farming systems (free range rearing) the prices vary from 0.20 € to 0.60 €.

The proposed price in this business plan for a profitable sub unit of egg production from chicken reared on a free range system is as follows:

Eggs category A

- Medium (M) + Large (L) size price 0.30 euro/egg
- Extra Large (XL) size 0.54 euro/egg Category B
- Small (S) and crack-broken 0.10euro/egg

- The calculation is for annual production and disposal of 110.544 M and 142.410 L eggs, total 252.954
- The annual income with sale price 0.30 euro/egg is 75886.2 euro -12126 (XL) eggs X 0.54 euro/egg = 6063 euro annually -18000 cat B eggs x 0.10 euro/egg = 1800 euro annually

9.2 DISTRIBUTION

The company will plan on servicing its customers by providing home delivery for customers who are willing to buy at least a certain amount of products.

In the future, a small restaurant-bakery could be created that has eggs as its main menu. It will be like a breakfast restaurant and a bakery together. The major ingredient in most goods will be eggs and chicken meat.

The free range eggs will be sold through the farm shop using road side signage as an advertising medium, sold cheaply enough they should generate a flow of customers coming on to the holding which should create the opportunity to sell them other produce.

9.3 PROMOTION & COMMUNICATION STRATEGY

The farm intends to maintain an extensive marketing campaign that will ensure maximum visibility for the business in its targeted market. Below is an overview of the marketing strategies and objectives of the company. Marketing Objectives

- Establish relationships with veterinarians, local farms, and chicken distributors throughout the target market.

- Implement a local campaign with the Company's targeted market via the use of flyers, local newspaper advertisements, and word of mouth advertising.
- Develop an online presence by developing a website and placing the company's name and contact information with online directories.

Marketing Strategy

A number of marketing strategies, that will allow the farm to easily target buyers within the target market, will be used. These strategies include traditional printed advertisements and ads placed on search engines on the Internet. The farm will also use an internet based strategy. This is very important as many people seeking local services, such as chicken farms, now the Internet to conduct their preliminary searches. The farm will be registered with online portals so that potential customers can easily reach the business. The Company will also develop its own online website showcasing the facility, its inventory of chickens, preliminary pricing information, and contact information. Finally, there will be developed ongoing referral relationships with veterinarians that regularly work with owners of farmers of chickens. As time progresses, the aim is, these referral relationships with become and invaluable source of revenue for the business.

10. FINANCIAL ANALYSIS

Table 1. Investment Project Implementation Value & Timescale Analysis

Category	Value	% Implementation	1st Semester	% Implementation	2nd Semester	% Implementation	3rd Semester	% Implementation	4th Semester
Buildings	75070.00	1.000	75070.00	0.000	0.00				
Mechanical Equipment	27025.00	0.500	13512.50	0.500	13512.50				
Installations	0.00	0.500	0.00	0.500	0.00				
Special facilities	9500.00	0.50	4750.00	0.50	4750.00				
Other equipment	0.00					1.00			
Transportation means	15000.00			1.00	15000.00				
Landscape design									
Other infrastructure costs									
Know-How (outsourced)									
Other intangible costs	3000.00			1.00	3000.00				
TOTAL	129,595.00		93,332.50		35,262.50				

Table 2. Buildings & Equipment

a. Egg Production

A/A	Description	Number of Birds	Required area (m^2) per Bird	Price per m^2	Price €
1	Land acquisition				
2	Construction of rearing chamber	1000	0,125	110,00	13750.00 €
3	Site palling	1000	4,000	0,60	2400.00 €

4	Building candling	1000	0,050	200,00	10000.00 €
5	Silos & food transportation				3000.00 €
6	Feeders				2000.00 €
7	Drinkers				1300.00 €
8	Perches				200.00 €
9	Control panel				1000.00 €
10	Lamps				75.00 €
11	Setting switchboard				2000.00 €
12	Equipment for candled centre				5000.00 €
13	Refrigerators				1500.00 €
14	Car purchase				15000.00 €
15	Authorization				1000.00 €
16					
17	**Total Equipment Costs – Egg Production**				**58225.00 €**

b. Chicken Meat Production

A/A	Description	Number of Birds	Required area (m^2) per Bird	Price per m^2	Price €
1	Land acquisition				
2	Construction of rearing chamber	3000	0,084	110,00	27.720,00 €
3	Site palling	3000	4,000	0,60	7.200,00 €
4	Building for slaughtering	1000	0,050	200,00	10.000,00 €
5	Silos & food transportation				9.000,00 €
6	Feeders				4.000,00 €
7	Drinkers				2.400,00 €
8	Perches				400,00 €
9	Control Panel				3.000,00 €
10	Lamps				150,00 €
11	Setting switchboard				2.000,00 €
12	Equipment for slaughter centre				3.000,00 €

13	Refrigerators	1.500,00 €
14	Authorization	1.000,00 €
	Total Equipment Costs – Meat Production	71.370,00 €

Table 3. Annual Operating Costs

a. Egg Production

	Quantity	Price per Unit	Total Cost
Animal material - nesting hybrid	1.000	4,20	4.200,00 €
Bedding material (straw)			100,00 €
Nutrition	43.200	0,42	18.144,00 €
Vaccines - preparations			1.000,00 €
Labor cost (5 h/day)	1.825	4,00	7.300,00 €
Water & Electricity			1.000,00 €
Mileage			5.000,00 €
Total Annual Operating Cost – Egg Production			36.744,00 €

b. Chicken Meat Production

	Quantity	Price per Unit	Total Cost
Animal material - nesting hybrid	13.200	0,50	6.600,00 €
Bedding material (straw)			1.200,00 €
Nutrition	85.800	0,45	38.610,00 €
Vaccines - preparations			1.000,00 €
Labor cost (4 h/day)	1.460	4,00	5.840,00 €
Water & Electricity			1.000,00 €
Miscellaneous			1.000,00 €
Total Annual Operating Cost – Meat Production			55.250,00 €

c. Overall Plant Production Cost

	Meat Quantity	Eggs Quantity	TOTAL COSTS
Animal material - nesting hybrid	13.200	1.000	10.800,00 €
Bedding material (straw)			1.300,00 €

Nutrition	85.800	43.200	56.754,00 €
Vaccines - preparations			2.000,00 €
Labor cost (4 h/day)	1.460		5.840,00 €
Labor cost (5 h/day)		1.825	7.300,00 €
Water & Electricity			2.000,00 €
Miscellaneous			6.000,00 €
Total Annual Operating Cost – Overall Plant Production			91.994,00 €

Table 4. Turnover analysis forecast

a. Egg Production

			Amount in €				
Description	Quantities	Sales Price per Unit	1st Year	2nd Year	3rd Year	4th Year	5th Year
a. Domestic Sales							
Small size eggs 6 %	16.920,00	0,30	5.076	5.076	5.076	5.076	5.076
Medium size eggs 39,2 %	110.544,00	0,30	33.163	33.163	33.163	33.163	33.163
Large size eggs 50,5 %	142.410,00	0,30	42.723	42.723	42.723	42.723	42.723
XL size eggs 4,3 %	12.126,00	0,54	6.548	6.548	6.548	6.548	6.548
Category B eggs	18.000,00	0,10	1.800	1.800	1.800	1.800	1.800
Poultry for retract	960,00	1,00	960	960	960	960	960
Subtotal			90.270	90.270	90.270	90.270	90.270
b. Exports							
Subtotal			90.270	90.270	90.270	90.270	90.270
TOTAL PRODUCT SALES			90.270	90.270	90.270	90.270	90.270
OTHER SALES							
OVERALL TURNOVER			**90.270 €**	**90.270 €**	**90.270 €**	**90.270 €**	**90.270 €**

b. Chicken Meat Production

			Amount in €				
Description	**Quantities**	**Sales Price per Unit**	**1st Year**	**2nd Year**	**3rd Year**	**4th Year**	**5th Year**
a. Domestic Sales							
Sales of meat	27.000	4,50	121.500	121.500	121.500	121.500	121.500
b. Exports							
Total (a+b)			121.500	121.500	121.500	121.500	121.500
TOTAL PRODUCT SALES			121.500	121.500	121.500	121.500	121.500
OTHER SALES							
OVERALL TURNOVER			**121.500 €**	**121.500 €**	**121.500 €**	**121.500 €**	**121.500 €**

Table 5. ESTIMATED RAW MATERIALS QUANTITIES & VALUES CONSUMPTION a. Egg production

FORECAST ON BASIC RAW MATERIALS QUANTITIES CONSUMPTION						
Description	Measurement Unit	Quantity				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
Animal Material (egg breeding hybrid)	Pieces	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00
Nutrition	Kgr	43200	43200	43200	43200	43200
Vaccines - Preparations	Recision	1,00	1,00	1,00	1,00	1,00

FORECAST ON BASIC RAW MATERIAL VALUE CONSUMPTIO ɹ						
Description	Price per Unit	Value in €				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
Animal Material (egg breeding hybrid)	4,2	4.200	4.200	4.200	4.200	4.200
Nutrition	0,42	18.144	18.144	18.144	18.144	18.144

Vaccines - Preparations	1000	1.000	1.000	1.000	1.000	1.000
SUM		23.344	23.344	23.344	23.344	23.344

b. Meat production

FORECAST ON BASIC RAW MATERIALS QUANTITIES CONSUMPTION						
Description	Measurement Unit	Quantity				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
Animal Material (meat breeding hybrid)	Pieces	13.200,00	13.200,00	13.200,00	13.200,00	13.200,00
Nutrition	Kgr	85800	85800	85800	85800	85800
Vaccines - Preparations	Recision	1,00	1,00	1,00	1,00	1,00

FORECAST ON BASIC RAW MATERIAL VALUE CONSUMPTION						
Description	Price per Unit	Value in €				
		1st Year	2nd Year	3rd Year	4th Year	5th Year
Animal Material (meat breeding hybrid)	0,5	6.600	6.600	6.600	6.600	6.600
Nutrition	0,45	38.610	38.610	38.610	38.610	38.610
Vaccines - Preparations	1000	1.000	1.000	1.000	1.000	1.000
SUM		46.210	46.210	46.210	46.210	46.210

Table 6. OTHER ESTIMATED COSTS

a. Egg production

(values in €)

A/A	Expenditure - Cost Category	1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Industrial water					
2	Fixed Assets Insurance Cost					
3	Other insurance cost					

4	Cost for royalty fees etc					
5	Royalty costs (mines, quarries, etc.)					
6	Security costs					
7	Cleaning costs	7.300,0	7.300,0	7.300,0	7.300,0	7.300,0
8	Local government taxes					
9	Employee nutrition					
10	Operating costs for environmental protection & rehabilitation	5.000,0	5.000,0	5.000,0	5.000,0	5.000,0
11	Other industrial costs (to be mentioned)					
TOTAL		12.300,0	12.300,0	12.300,0	12.300,0	12.300,0

b. Meat production

(values in €)

A/A	Expenditure - Cost Category	1st Year	2nd Year	3rd Year	4th Year	5th Year
1	Industrial water					
2	Fixed Assets Insurance Cost					
3	Other insurance cost					
4	Cost for royalty fees etc					
5	Royalty costs (mines, quarries, etc.)					
6	Security costs					
7	Cleaning costs	5.840,0	5.840,0	5.840,0	5.840,0	5.840,0
8	Local government taxes					
9	Employee nutrition	0,0	0,0	0,0	0,0	0,0
10	Operating costs for environmental protection & rehabilitation	1.000,0	1.000,0	1.000,0	1.000,0	1.000,0
11	Other industrial costs (etc.)					
TOTAL		6.840,0	6.840,0	6.840,0	6.840,0	6.840,0

Table 7. TOTAL PRODUCTION COST

Values in €

Cost Analysis	1st	2nd	3rd	4th	5th
Raw material	69.554	69.554	69.554	69.554	69.554
Auxillary production material	3.300	3.300	3.300	3.300	3.300
Packaging material					
Overall cost of technical staff wages					
Overall cost of employees salaries					
Mileage - Plant operating costs (electricity, gas, fuel, etc.)					
Maintenance cost					
Third parties services cost					
Other costs **	19.140	19.140	19.140	19.140	19.140
TOTAL SALES PRODUCTION COST - before depreciation	91.994	91.994	91.994	91.994	91.994

Table 8. REQUIRED WORKING CAPITAL ANALYSIS

(value in €)

Bind for:	Binding Days	Operating Years				
		1st	2nd	3rd	4th	5th
(1) Raw & auxillary material inventory	30	462	462	462	462	462
(2) Semi product inventory						
(3) Product reserves						
(4) Customer Credits (open & checks, etc)	30	1.215	1.215	1.215	1.215	1.215

(5) Required liquidity						
- Minus Raw Material & Other Material Purchase Credits						
REQUIRED WORKING CAPITAL		1.677	1.677	1.677	1.677	1.677

Funding forms

Equity	1.677	1.677	1.677	1.677	1.677
a. Self-Financing	1.677	1.677	1.677	1.677	1.677
b. New Third Party Investment					
External Equity	0	0	0	0	0
a. Medium-term					
b. Short-term					

Borrowing Limit

Interest Rate

Notes

a. Required purchasing time for raw & other materials (domestic or imported)

5 DAYS (days)

b. Purchasing terms :

(%)

In cash (%)

On credit 100,0% (days)

Duration of credit 60 DAYS months, days...)

c. Raw material duration in production procedure

240

d. Sales terms : (%)

	In cash	
(%)		
(days)	Open Account	
	Average Credit Duration	60

Table 9. INVESTMENT LOAN ANALYSIS

LOAN AMOUNT	25.819,00 €	Years
INTEREST RATE	7,87%	
LOAN DURATION	12,0	
PAYMENT TERMS	EQUAL ANNUAL AMORTIZATION INSTALLMENTS	

Payment Year	Interest	Repayment	Annuity	Loan Remaining Amount
1	2.031,96	1.371,06	3.403,01	24.447,94
2	1.924,05	1.478,96	3.403,01	22.968,99
3	1.807,66	1.595,35	3.403,01	21.373,63
4	1.682,10	1.720,91	3.403,01	19.652,73
5	1.546,67	1.856,34	3.403,01	17.796,38
6	1.400,58	2.002,44	3.403,01	15.793,95
7	1.242,98	2.160,03	3.403,01	13.633,92
8	1.072,99	2.330,02	3.403,01	11.303,90
9	889,62	2.513,39	3.403,01	8.790,50
10	691,81	2.711,20	3.403,01	6.079,30
11	478,44	2.924,57	3.403,01	3.154,73
12	248,28	3.154,73	3.403,01	0,00
TOTAL	15.017,14	25.819,00	40.836,14	

Table 10. OVERALL INVESTMENT ANNUAL DEPRECIATION ANALYSIS

			ANNUAL DEPRECIATION (ΣΕ €)				
	DEPRECIATION RATE %	AMOUNT FOR DEPRECIATION	1st Year	2nd Year	3rd Year	4th Year	5th Year
BUILDINGS	8,0%	75.070,0	6.005,6	6.005,6	6.005,6	6.005,6	6.005,6
MECHANICAL EQUIPEMENT	10%	25.025,0	2.502,5	2.502,5	2.502,5	2.502,5	2.502,5
MECH.& OTHER INSTALLATIONS							
SPECIAL INSTALLATIONS	10%	9.500,0	950,0	950,0	950,0	950,0	950,0
OTHER EQUIPMENT	10%	0,0	0,0	0,0	0,0	0,0	0,0
TRANSPORTATION MEANS	15%	15.000,0	2.250,0	2.250,0	2.250,0	2.250,0	2.250,0
LANDSCAPE FORMULATION	8%		0,0	0,0	0,0	0,0	0,0
INFRASTRUCTURE	8%		0,0	0,0	0,0	0,0	0,0
KNOW-HOW							
OTHER COSTS (CONSULTANCY,etc)	15%		0,0	0,0	0,0	0,0	0,0
HOTEL EQUIPMENT							
TOTAL			11.708,1	11.708,1	11.708,1	11.708,1	11.708,1

Table 11. ANNUAL INCOME STATEMENT

in €

	1st Year	2nd Year	3rd Year	4th Year	5th Year
TOTAL TURNOVER	212.220	212.220	212.220	212.220	212.220
Minus : Sales Cost	91.994	91.994	91.994	91.994	91.994
GROSS OPERATING PROFIT	120.226	120.226	120.226	120.226	120.226
Minus : Management Cost					
Minus : Distribution Cost					
Minus : Taxes (Other than income tax)					
OPERATING RESULTS	120.226	120.226	120.226	120.226	120.226
Plus : Other income					
Minus : Other costs					
RESULTS before TAXES & DEPRECIATION & INTERESTS	120.226	120.226	120.226	120.226	120.226
Minus : Long term loan interests					
Minus : Construction period interests					
Minus : Long term investment loan interests					
Minus: Short term investment loan interests					
Minus: Leasing installments					
RESULTS before TAXES & DEPRECIATION	120.226	120.226	120.226	120.226	120.226
Minus : Total Depreciations	11.708	11.708	11.708	11.708	11.708
RESULTS BEFORE TAXES	108.518	108.518	108.518	108.518	108.518
Minus: Income Tax	21.704	21.704	21.704	21.704	21.704
NET RESULTS	86.814	86.814	86.814	86.814	86.814

Table 12. ESTIMATED CASH FLOW ANALYSIS

	Construction Period		OPERATING PERIOD				
	-1	0	1o	2o	3o	4o	5o
INPUT (A1)							

RESULTS BEFORE TAXES, DEPRECIATION & INTERESTS			120.226	120.226	120.226	120.226	120.226
OUTPUT (B1)							
Investment costs							
Working capital costs			1.677	1.677	1.677	1.677	1.677
Total (B)			1.677	1.677	1.677	1.677	1.677
Cash Flows (C1=A1-B1)	128.595	0	118.549	118.549	118.549	118.549	118.549
CASH FLOW BALANCE	128.595	0	118.549	118.549	118.549	118.549	118.549

Table 13. ESTIMATED CAPITAL FLOWS

OPERATING CYCLE	Construction period	1st Year	2nd Year	3rd Year	4th Year	5th Year
A. Input						
Profit before Depreciation		120.226	120.226	120.226	120.226	120.226
Own capital investment	32.149		0	0	0	0
Long term loans	25.819	0				
Working capital		1.677	1.677	1.677	1.677	1.677
Suppliers debit		0	0	0	0	0
Gov. subsidies	70.627		0 (επιδ.τ)	0 (επιδ.τ)	0 (επιδ.τ)	0 (επιδ.τ)
Fixed assets sales						
Other sources						
Total A	128.595	121.903	121.903	121.903	121.903	121.903
B. Output						
Investment costs			0	0	0	0
Other pre-operating costs						

Construction period Interests						
Other required investment costs						
Repayment of investment loan		1.371	1.479	1.595	1.721	1.856
Tax		21.704	21.704	21.704	21.704	21.704
Dividents						
Owners remuneratio n						
Other outputs						
Total B		23.075	23.183	23.299	23.424	23.560
CHANGE OF WORKING CAPITAL		98.828	98.721	98.60 4	98.479	98.343

Table 14. INDICATORS

	1st Year	2nd Year	3rd Year
Internal Rate of Investment	6,4	6,4	6,4
Profit Margin Ratio	72,21 %	72,21 %	72,21 %

11. OVERALL RESULTS SUMMARY

After almost five years since inception of the economic crisis in Greece, more and more people turn to the primary sector and to the establishment of small-medium sized enterprises at their regions of origin.

This poultry farm business plan is an example for a successful small-medium business operation in any countryside or rural area that creates societal benefits, like healthier food and environmentally friendly products.

Nowadays consumers are becoming more aware of the nutritional value of the foods they eat. This knowledge, together with the current emphasis on being physically fit and trim, has led to an increase in the emphasis on "healthier" foods. Poultry and egg products are natural candidates to meet this emerging demand because of their high nutrient content and relatively low caloric value. They are a good source of high-quality, easily digested proteins; egg proteins have traditionally been a standard by which other proteins are evaluated.

Greek local and regional development has a profound role in overall national development. Successful business operation is an important tool to country's development and increase of employment. This prototype alternative free range poultry farm does not require big investment (approximately 35.000 euro is the private funds) and that gives the advantage for an operation as a family business (with an estimated turnover of 221.220 euro and estimated net results of 86.814 euro from the 1st year). Also it forms a good example, of a smallmedium sized enterprise that can help people to build a profitable business supporting local economic growth.

BUSINESS PLAN II Dairy Sheep Farm Background information

1. Location: Trikala Area
2. Economic Sector: Dairy Sheep Farm
3. Farming operations: Milk and Meat Production
4. Establishment Year: 2016
5. Type of ownership: family-owned agricultural business

BRIEF DESCRIPTION OF THE BUSINESS PLAN

This business plan describes the establishment of a dairy sheep farm in Trikala area of Greece aiming mainly for milk production, under a semi-intensive farming production system. The breed of sheep will be used is Chios who has high milk yield and prolificacy. The overall objective of the farm is to increase its size to 500 breeding ewes in the next eight years in order to be economically sustainable. The increase of the farm will be based on its own replacement stock by keeping the required selected female lambs each year. The feeding of the farm will be done by purchased concentrates and home grown forages, and partly by grazing the available grassland around the farm. The milk will be sold in a neighboring milk plant for Feta Cheese making and the remaining lambs for meat in the local market.

1. OBJECTIVES AND BRIEF DESCRIPTION OF THE DAIRY SHEEP FARM

The objective is to organize and establish a dairy sheep farm mainly for milk production. The farm will start with 200 breeding ewes of Chios breed in order to get the necessary experience in farm management, and because the required capital for investment will be much lower at the beginning. Gradually, the farm will be expanded to 500 breeding dairy ewes in order to be economically viable and sustainable.

2. OBJECTIVES OF THE SHEEP FARM

The overall objective of this dairy farm is to produce over 170,000 lit of sheep milk per year for Feta Cheese making, by keeping dairy ewes of Chios breed of high milk yield, under a semi intensive production system. The selected lambs of the farm will be sold as replacement stock at high prices to other farmers.

3. WAYS OF FINANCING THE SHEEP FARM

Table 1. Farm Financing

	1st year
Own capital	74.452 €
%	34%
Bank loans (interest 8%)	74.452 €
%	34%

State subsidies	69.061 €
%	32%
Total	217.965 €
%	100%

This fund will be used to finance the following needs

	Value (€)
Constructions and equipments	138.123
Acquisition of livestock	48.400
Working Capital 1st year	31.442
Total	217.965

4. ESTABLISHMENT PROCEDURE BY LAW

For a new farm establishment it is necessary to follow a certain procedure to get license (articles 5 & 6 of law No 4056/2012, appendix 1.G. N. 4014/2011, 1958/1301-2012 KYA, 20741/27-04-2012 KYA, N. 4014/2011), for the excreta handling and management (FEK 1709, issue 2, 17/08/2015) and for the required capital for investment.

5. Competitive advantage

The competitive advantage of this farm, as business, is that in eight years time will be able to sell replacement stock of high genetic value in high prices (at least double than those by selling the lambs for meat) and to convert its milk into Feta Cheese by its cheese making plant. Modern management techniques, like artificial rearing of lambs and artificial insemination of ewes will, also, be applied to increase the farm's profitability.

6. Market

6.1 Market segmentation

The dairy sheep farm will produce mainly milk and obviously meat. The milk will be sold to Feta Cheese making plants, which exist in the area and are looking for sheep milk (there is great and continuously increasing demand) and the lambs to local meat market at the beginning, and for replacement later on.

6.2 Analysis of the establishment place

The farm will be established in a village, named Pigi in the prefecture of Trikala, in a private piece of land of 0.6 hectares surface area. Apart from the private land 15 hectares will be rented for grazing and for home grown feedstuffs (like alfalfa hay, cereals etc.)

6.3 Competition

There will be no problem of competition since there is a great demand for sheep milk for cheese making which is exported. This demand is expected to grow since the produced sheep milk is declining for various reasons (mainly because of the abandonment of activity of older farmers) and the demand for Feta cheese is increasing.

6.4. Main farm characteristics /The expected market development and the farm's position

As it has been mentioned, the demand for Feta Cheese exports is increasing and thus the demand for sheep milk is increasing too. This farm is planning to be increased in size and may be to transform its milk into Feta cheese itself. In this case its profitability and sustainability will be increased. The lambs' marketing as replacement stock to other farms will, also, help the farms' profitability.

7. Products and Services

7.1 Products and services description

The first eight years, at least, the farm will sell milk to a cheese making plant. When the farm will reach its max size (500 breeding ewes), where will have about 170 tonnes milk, will decide to make its own cheese making plant to transform its milk into Feta cheese or to other dairy products (e.g. yoghurt). Then, an attempt could be made to export the cheese for a better price.

8. Production

8.1 Description of production

The farm will organize the reproduction cycle of the ewes in such a way to have milk all year round by having lambings at three seasons of the year (programmed mating). Sheep farms which can offer milk and milk fed lambs all year round get higher prices about 10%.
For 200 ewes and 40 female lambs it is estimated a mortality rate of 3%, fecundity amounts to 97% and twin-lambing rates 1.5. The milk yield per ewe is 300 kg / year.

8.2 Purchase of feedstuffs and other needed materials

The feeding cost of a dairy sheep farm is about 70% of the total cost. The feedstuffs prices at harvesting (cereals and forages) are relatively low. Thus, the farm will try to purchase the required feedstuffs at the harvesting season to save quite a lot of money. The farm is located in an area where cereals and forages are produced in surplus for sale.

The rent of the natural grassland is estimated at 1.500 €/year and the cost of bought feed (concentrate and alfalfa hay) is calculated annually at 26.947 €.
In particular it :

Concentrate composition(5) and its cost

Corn grain	33.0
Barley grain	20.0
Wheat bran	15.0
Soybean meal	12.0
Sunflower meal	18.0

Calcium carbonate	0.4
Dicalcium phosphate	0.6
Salt	0.7
Minerals vitamin premix	0.3
Total	100
Cost (€/kg)	0,244
Total purchased quantity (Kg)	79.515

Concentrate for suckling lambs (%)

Corn grain	50.0
Soybean meal	30.0
Wheat bran	12.0
Milk powder	5.0
Minerals vitamin premix	3.0
Total	100
Cost (€/Kg)	0,442
Total purchased quantity (Kg)	146

and alfalfa hay (41.400 Kg) bought for 0.18 €/Kg

8.3 Farm personnel

The farm will be run by the young farmer who will be helped by his parents. If it is needed, two external persons will be hired for a few days (e.g. at lambing season). When the farm will be increased in size, then two external persons will be hired for the whole year.

8.4 Work plan

At the beginning, when the farm has only 200 breeding ewes the owner of the farm will take care of feeding, milking, cleaning etc. the sheep, by having the appropriate facilities to do so (e.g. milking machine) easily and effectively. The produced milk is usually collected by the cheese making plant and the lambs are sold at the farm. Thus, no much time is needed for marketing the farm's products. Later on the farm will have two persons to take care of all these jobs, thus the owner will have more available time for sales, better management, etc.

8.5 Construction, Machinery and livestock cost analysis

The farm will consist of 200 ewes, 10 rams and 40 female lambs for replacement. The total cost of the livestock is 48,400 Euros (200€/ewe, 350€/ram, 140€/female lamb). The cost of the buildings (contractions) is 138,123 Euros including all necessary equipment like milking machine, silo for the concentrate feeds, feeders, drinkers, shearing machine, machine for artificial rearing etc. In particular, the cost of construction is 86,798 €, the cost of milking machine is 20,000

€, the cost of silo (5 ton) is 7,000 € and the cost of other equipment is 24,325€.

9. Strategic plan according to marketing - Sale prices determination

The cost of milk production is estimated to be 0.98 Euros /kg and that of lamb meat 4.0 Euros /kg. The sale prices are: for milk 1.1 Euro /kg, for lamb meat 4.5

Euros/kg and for adult animal's meat (ewes, rams) 3.0 Euros/kg. Thus, the output of the sheep farm will be:

- From milk: 1.1 Euro/kg x 300 kg/ewe/year x (194/200) ewes = 64,020

Euros

- From meat: 4.5 Euros/kg x 10 kg/lamb x 251 lambs= 11,295 Euros

  3.0 Euros/kg x 25 kg/ewe x 30 ewes= 2,250 Euros

The subsidies from the natural grassland (15 hectares) by the Common Agricultural Policy of the EU will be 25 Euros/hectare = 15 hectares= 3,750 Euros All of the above represent total annual revenues of 81,375 €.

10. Annual production costs

Table 1. presents the annual production costs of the farm. The total amount is 69.173 €, of which the variable and fixed capital cost regards 49% and 51% of the annual costs, respectively. The non paid costs represent 27% of the total amount.

Table 1.

Factors of production	Production costs	Variable costs	Fixed costs	Paid costs + depreciation	Non paid costs
1) LAND					
α) non paid rent of family farm land (owner family)	240		240		240
β) rent paid for farm land	1,500		1,500	1,500	
TOTAL	1,740	0	1,740	1,500	240
2) WORK					
α) non paid wages of family work	10,200		10,200		10,200
β) waiges paid	400	400		400	
γ) contribution of health insurance and pension	2,504		2,504	2,504	
δ) Interest of work costs	524		524		524
TOTAL	13,628	400	13,228	2,904	10,724

3) CAPITAL					
a) Fixed Capital					
1) depreciation	5,513		5,513	5,513	
2) interest of fixed capital	12,305		12,305	5,956	6,349
3) Maintenace of constructions and equipments	1,691		1,691	1,691	
4) Insurance of constructions and equipments	986		986	986	
5) Interest of maintenance and Insurance of constructions and equipments	107		107		107
TOTAL	20,602	0	20,602	14,146	6,456
a) Variable capital					
1) consumable inputs	26,947	26,947		26,947	
2) contribution of agricultural insurance	304	304		304	
3) farming overheads	4,495	4,495		4,495	
4) other costs	180	180		180	
5) Interest of variable capital	1,277	1,277	0	0	1,277
TOTAL	33,203	33,203	0	31,926	1,277
TOTAL OF PRODUCTION COSTS	69,173	33,603	35,570	50,476	18,697

11, Economic results

Table 2 presents the annual economic indices for the farm,

Table 2,

Economic Outcome	
Revenue	81,315 €
Profit	12,142 €
Gross profit	47,712 €
Farm family income	30,839 €
Return on total assets	14.33%
Return on equity	17.71%

The annual profit is 12,142 € and the Farm family income amounts 30,839 €, The Return on equity estimated at 17.71% which is much higher than the interest of borrowing (8%).

12, Final conclusions (evaluation, economic sustainability)

A new dairy sheep farm starting with 200 ewes and aiming to reach 500 ewes in eight years time, making use of bank loans and the EU subsidies can be a successful enterprise with good income, and economically sustainable, since there is a growing demand for sheep milk, Thus, if the management of the farm will be appropriate the profit will be very satisfactory,