

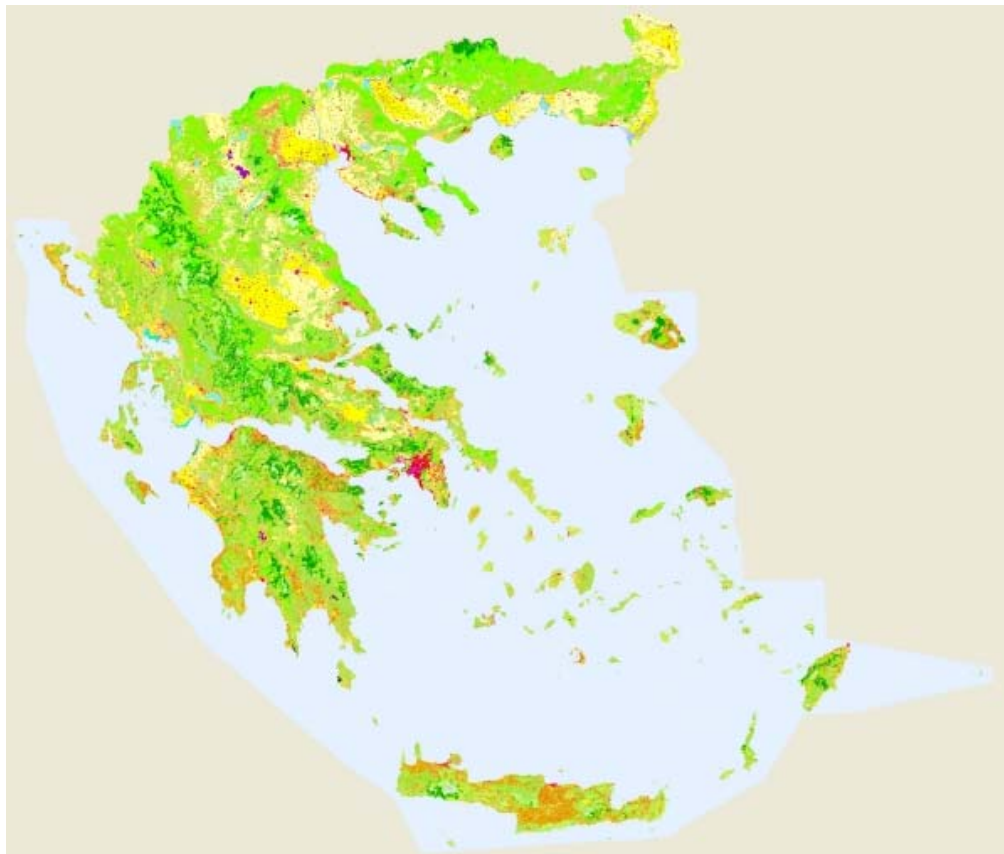
# **1. INTRODUCTION: HISTORY AND CURRENT STATE OF SHEEP FARMING IN GREECE**

## **1.1 Historical background**

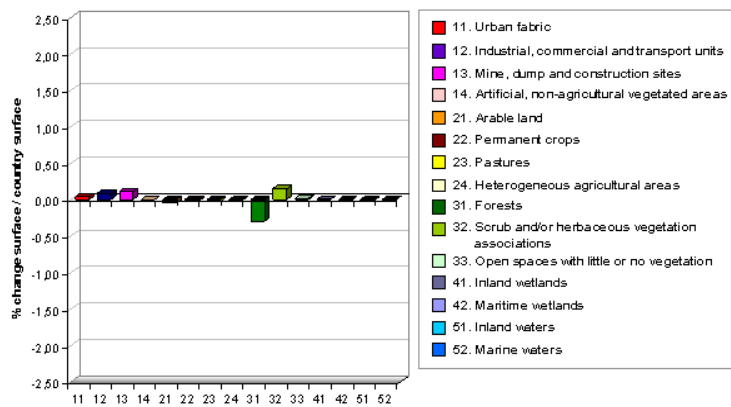
Sheep have been a resource which humans have been exploiting for millions of years (Rogdakis, 2001). The geographical, geomorphologic and climatic characteristics of Greece are particularly favourable to sheep farming. The mountainous terrain of the country, which proves difficult for other stock-raising, like bovine production, and the climatic conditions that allow for long periods of grazing have made sheep breeding a most important section of animal husbandry in Greece since ancient times, as it is generally the case in the wider Mediterranean geographical area (Kalaisakis, 1999). However, these areas, have recently suffered a strong decline in farming activity, mainly as a result of modern development forces, with the consequent abandonment of pastoral areas (Zervas, 1998; Rancourt et al., 2006). This situation led to changes in vegetation dynamics (mainly invasion of ligneous vegetation) and, therefore, in landscape structure and composition (Ispikoudis and Chouvardas, 2005).

In ancient times, sheep and shepherds are inextricably tied to the mythology and the legends of the time; sometimes illustrating the history of the expeditions into far lands (the Argonaut Expedition), and other times tied to didactic stories (Aesop's tale of the little shepherd). Sheep breeding comprises an important part of the ancient Greek economy as testified by Homer and Hesiod. During the Byzantine years sheep farming became widespread in the whole expanse of the Byzantine Empire in contrast with the Central European regions which turned more to other livestock (Eustathiou, 1996). In the 18<sup>th</sup> and 19<sup>th</sup> century the tradition continues and the flocks move throughout the Ottoman Empire, something that becomes more difficult in the 20<sup>th</sup> century with the establishment of national borders.

During the 1920s the country undergoes geopolitical changes and along with that sheep farming is transformed as well. An important influx of population due to the annexation of western Thrace and immigrants from Asia Minor, many of whom were farmers and livestock farmers, leads to a decrease in land available for grazing, as it was then given to crops, and there is a changeover from expansive to intensive farming. The once flourishing nomadic sheep farming, by the Saracatsan in Thrace, the nomads of Thessalia and others, falls into decline (Hatziminaoglou, 1999). At the same time different indigenous breeds of sheep are threatened with adulteration due to cross breeding, or even with extinction. During the 1940-50s large number of sheep farmers move from the mountainous areas to the lowlands and until the 1960s sheep cross breeding becomes extensive. After the 1960s there is an effort to improve the breeds more systematically and to restructure sheep farming. However, contrary to other countries' practices that aim to improve animal stock by selectively improving pure breeds, in Greece a policy of extensive crossbreeding is applied, leading to the demise and extinction of some rare indigenous breeds (Rogdakis, 2001, Hatziminaoglou, 1999).



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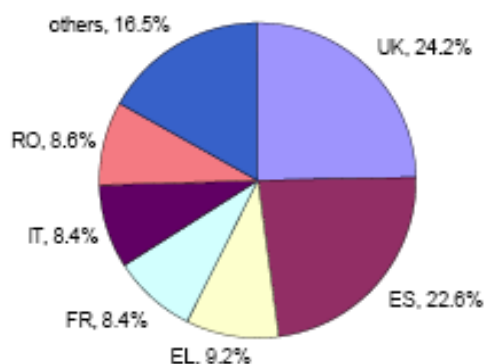


**Figure 1.** Corine Land Cover 2000 of Greece.

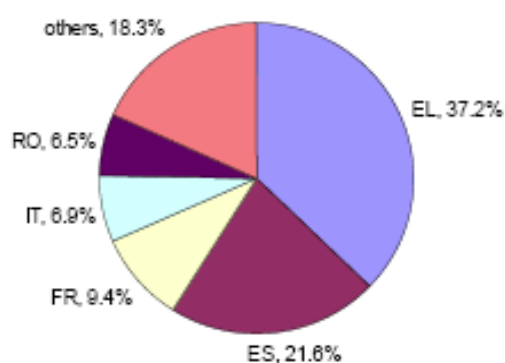
## 1.2 Sheep farming in Greece today

Today sheep and goat-raising is one of the most active economic sectors in Greece, contributing around 18% to agricultural income and representing more than half of the country's animal production. Being the fifth country in the EU in sheep and goat production, about 45% of the total number of goats in Europe is raised in Greece. The number of animals in 2005 was estimated around 14m sheep and goats according to the Ministry for Rural Development and Food and the Hellenic Statistical

Service, raised mostly in small family units and following extensive grazing methods for a majority of 85% of them.



**Figure 2.** Distribution of sheep population in the E.U. in 2007. *Source Eurostat*



**Figure 3.** Distribution of goat population in the E.U. in 2007. *Source Eurostat*

YEAR	NUMBER OF SHEEP	NUMBER OF GOATS	TOTAL NUMBER
1911	3.565.442	2.618.043	6.183.485
1929	5.805.646	4.179.214	9.984.860
1950	5.911.947	3.161.034	9.072.981
1961	8.191.836	4.331.627	12.523.463
1971	7.482.660	4.243.780	11.726.440
1983	6.681.980	3.632.300	10.314.280
1991	8.692.286	5.336.443	14.028.729
1999	8.752.668	5.327.201	14.079.869
2002	9.058.117	5.669.198	14.727.315
2007	10.079.903	4.987.092	15.066.995

**Table 1.** Distribution of sheep and goat population in Greece (1911-2007). *Source: National Statistical Service of Greece (NSSG)*

**Livestock products: 2002-2006**

Products	<i>In tons</i>				
	2002	2003	2004	2005	2006
Meat	472.117	474.678	491.774	498.584	458.864
Beef, veal	73.176	74.428	77.128	72.576	72.988

<i>Pork</i>	109.605	11.087	107.521	109.414	108.470
<i>Mutton, lamb</i>	96.183	96.985	93.538	92.557	94.340
<i>Goat</i>	59.199	59.881	57.759	57.404	57.762
<i>Other</i>	133.953	132.297	155.828	166.633	125.303
Butter	4.140	4.184	3.793	3.077	3.101
Milk	2.069.097	2.066.834	2.038.308	2.054.309	2.064.694
Cheese hard	38.083	38.552	47.136	45.222	37.800
Cheese soft	132.335	126.426	122.449	125.947	120.036
Myzithra	12.864	12.593	13.071	12.591	15.887
Milk cream	6.323	5.656	5.526	5.245	5.062
Eggs	105.321	87.145	100.504	100.086	99.480
Honey	15.674	15.734	15.911	16.267	16.218

**Table 2.** Livestock products: 2002-2006  
*Source: National Statistical Service of Greece (NSSG)*

However, in the later years there is a tendency for organized sheep and goat farming units, with a decrease in the number of productive animals that are raised by nomadic methods. About 85% of the grazing land is in mountainous areas and more than half are communal land. As a result, a large part of the communal grazing land is degraded. Spatially the production of sheep and goats does not present any differentiation throughout the country. Due to the geomorphology and climate of Greece, most of the sheep and goat farming units are to be found in mountainous and disadvantageous areas. For the year 2005, it was estimated that 110.000 farming units with more that 10 animals each were operating, while the average size of a unit was 84 sheep and 99 goats (MRDF, 2007).

The traditional extensive grazing methods used in Greece are very close to the organic husbandry methods, making organic animal farming easier for farmers and shepherds, a fact which is confirmed by the large number of certified animals. Out of the 380.000 certified goats in Europe, 49% are to be found in Greece (MRDF, 2007). The number of organic animal farms is constantly rising. Of all the organic animal production in the country in 2004, 49% were goats and 30% sheep with increasing trends (MRDF, 2004)

One differentiating element from the rest of the European countries is the fact that in Greece sheep and goats are raised for milk production rather than meat, leather or wool (MRDF, 2007, Christodoulou, 1999). From this, 90% of sheep and 80% of goat's milk is used in cheese-making, especially for the production of Feta and other traditional Greek cheeses, but also for the production of yogurt. The produced sheep and goat milk is sufficient to cover the national market, with a minimum of imports not affecting the market.

In Greece the average consumption of sheep and goat meat is four times that of the European one and according to 2004 data, 86% of the market is covered by local

production. The remaining is covered with imports from neighbouring Romania and Bulgaria of meat and livestock, or frozen meat from New Zealand and other countries. The preferred average weight of the animals in the Greek market is of the lowest in the EU and the world, where it is common to consume animals of older age (mutton) (MRDF, 2007).

### 1.3 Indigenous sheep breeds in Greece

The presence of sheep in the geographical area of Greece is lost in the mists of time. The indigenous breeds are the result of genetic material of many types and origins (Hatziminaoglou, 1999). In the mainland and the islands breeds descendant from the **Zackel**<sup>1</sup> category are mostly present, while all the highland and some of the lowland breeds belong to this category. To a lesser extent, breeds from the north-east of the country and in some of the Aegean islands belong to the **Ruda**<sup>2</sup> category, which have a finer fleece. Furthermore, in the islands of the eastern Aegean there are semi-fat-tailed breeds of sheep, which are influenced by the breeds from Asia. Today, many of the breeds have been mixed due to random cross-breeding, while quite a few indigenous breeds are becoming rare or extinct. It is believed that the pure-breed sheep correspond to only a 10% of the current livestock population (Hatziminaoglou, 1999). According to the research by the Agricultural University of Athens, a number of indigenous Greek breeds like the Drama Native breed, the Katafigion breed, the Roumloukion breed, the Levkimmi breed and the finer-fleeced Chalkidiki breed can be considered extinct (Rogdakis, 2001).

The highland Greek breeds refer basically to the same type of sheep (mountain Zackel) but get their different names due to geographical and historic reasons and they include the Vlach breed, the Sarakatsan (also Karakachan, Karatsaniko)- the breed of the nomadic Sarakatsan shepherds, the Boutsiko breed, the Sitia the Psiloris and Sfakia breeds from Crete, the Arvanitovlachiko breed. Their raising is following a semi-extensive system, with the flocks moving to the highlands during the summer (Hatziminaoglou, 1999). The raising method, if done properly, can offer environmental benefits in the fragile Mediterranean environment and offer opportunities for organic sheep farming. From the highland breeds the Boutsiko breed is of special interest, and it is bred mainly in the northwest and western Greece. The Sfakia breed is also of interest. It amounts to about 60.000 animals, bred in the western part of Crete and is a hardy breed. It is mainly used for milk production and cheese making.

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<sup>1</sup> *Zackel sheep*: a group of horned breeds of sheep widely dispersed through Europe and Asia. Used for carpetwool, meat and milk. Mostly white, some are brown, black or pied. Males have long spiral horns, females may be polled. Most breeds have long, thin tails. Greek milk, carpetwool or meat sheep, polled or horned, usually white with black or red spots on face and legs. (Saunders Comprehensive Veterinary Dictionary, 3 ed. © 2007 Elsevier, Inc.)

<sup>2</sup> Each Balkan country has a finer-fleeced type, in addition to the predominant coarse-wooled Zackel. A common name for these is Ruda (uniform-wooled) sheep, and MASON (1967) states that they perhaps are derived from the Romanian Tsigai. However, the primary breed may be the Kivircik of Turkey. (FAO, 1978)

The lowland Zeckel sheep breeds include the Karagouniko (a common breed, the second most numerous in Greece) which is found in the Palamas-Trikkala area of Thessaly, and, also, in the Macedonian plains and in Boeotia and it is raised by semi to full intensive methods. Another lowland breed, of the Ruda type this time, is that of Serrai, a stationary breed kept on the plain of the same name in northern Macedonia and raised mainly for milk production (FAO, 1978). Thraki is the Greek name for the Kivircik breed, the finest-wooled sheep of Turkey. It is also a lowland breed of the Ruda type of sheep, and is now endangered due to low prices in wool.

The Arta breed (Frisarta) found in the lowlands of Arta and Preveza in the western part of Greece, is the result of crossbreeding in the last forty years between Friesian breed and Greek breeds of Arta. This breed has the best milk production rate than the other Greek breeds and a good meat production, however, it needs more care and is a lot more sensitive to pulmonary diseases (Hatziminaoglou, 1999).

Furthermore, there are also the island indigenous breeds, from which four out of five are rare or endangered (Rogdakis, 2001). The Chios breed (in Chios island) has a very good milk production and is well adapted in most climates, however, its population is declining. In the island of Chios it is mostly raised for private household consumption, whereas in the mainland of Greece and in Cyprus it is raised with intensive methods. Another endangered island sheep breed raised mainly for household consumption, despite its good milk production performance, is that of Skopelos found in Skopelos and the North Sporades islands of the Aegean. The Kumi breed is a similar and related breed, which is also rare, although it is bred for study purposes and therefore it is not endangered (Hatziminaoglou, 1999). The breed of Zante, in the island of Zante in the Ionian sea, is one of the largest in size, with a rather good milk production performance, which is bred only for private household production. It is believed to be a crossbreed, similar to the Italian breed of Bergamasca, imported by the Venetians (Hatziminaoglou, 1999, Rogdakis, 2001).

Quite different from these island breeds is the Lesvos breed, which is a more common breed, of medium production, which has been crossbred in several parts of Greece. The interest in this breed focuses on its ability to produce even under unfavourable conditions.

Generally speaking, in Greece the number of pure breed animals is quite low due to extensive and unorganised crossbreeding with imported breeds. Therefore the protection of the remaining rare breeds is imperative in order to preserve, not only the genetic material, but also the cultural and ethnological heritage of sheep farming.



Locations (many generalized) of the Zante, Imroz, Vlach, Sarakatsan, Drama Native, Florina, Karagouniko, Sfakia, Psiloris, Sitia Serrai, Roumloukion, Thraki (Kivircik), Argos, Chios (Sakiz), Odemis, and Dağlic breeds, FAO 1978.