

# Local Breeds: Can they be a Competitive Solution for Regional Development in the World of ‘Globalization’? The Cases of Greek and Romanian Local Breeds

Sofia Belibasaki<sup>1</sup>, Evangelia Sossidou<sup>1</sup>, Dinu Gavojdian<sup>2</sup>

<sup>1</sup>NAGREF, Veterinary Research Institute, 57001, Themi-Thessaloniki, Greece

<sup>2</sup>Research and Development Station for Sheep and Goats, 325400, Caransebes, Romania

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## Abstract

The recent economic world crisis was a product based on the idea that globalized “free” economy market, is the only and ideal law for the development and well-being. In the whole world, countries had to change what it was common practice till today i.e. the tradition and the local economy rules according to the global mandates, namely ‘globalization’. In the same time, people are becoming more and more aware of the lost values, lost products, healthy-life, the changes of the environment, and turn to scientists and politicians for sustainable solutions. Livestock can make a positive contribution to the landscape and environmental management in this new world of globalization. Moreover, the local breeds are one of the main tools that hold people in rural areas and mountains, help the agrotourism and are connected to the tradition and culture of each area. This paper aims to present the role that local breeds could play to the regional development of the countries, including social, environmental and economical sustainability issues. The cases of Greek and Romanian local sheep and goats breeds are used as examples.

**Keywords:** Greece, globalization, local breeds, Romania, rural development, small ruminants

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## 1. Introduction

Recent economic world crisis, is a ‘product’ derived from the idea that globalized ‘free’ economy market is the only and ideal market for the development and the well-being. Thus, in the whole world, all the countries have to change the common routine practice they used till today i.e. they have to change the tradition and the local economy rules according to the global mandates. Globalization is oriented to the production of food that can be immediately absorbed from the market and can be defined by three main characteristics: (a) Production of the same product in different geographical areas of the world at the same time, (b) Big international companies buy the small-medium enterprises, and (c) Efforts for establishing new consumption prototypes. Thus,

the globalization of the economy is followed by the globalization of the production and food industry. This attitude led -and still leads- to flattening values, as well as to the urbanization and to the industrialization of life. The ultimate purpose is that urban population (soon at the country side too) consumes only private labeled products that ensure the minimum quality requirements, which have been already established by the power of the advertising global market. Nowadays, community, producers and scientists have to face the changes in the current way of living and well-being. People are becoming more and more aware of the lost values, lost products, healthy life, environmental and climate changes and they turn to scientists and politicians for sustainable solutions [1].

Livestock production is one of the main activities which can defense to the abused global market, as described above, through its positive contribution to the landscape and environmental management.

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\* Corresponding author: E.N. Sossidou,  
Tel +30-2310365383 Email [sossidou.arig@nagref.gr](mailto:sossidou.arig@nagref.gr)

Grazing animals, such as sheep and goats, play an important role in the maintenance and regeneration of pastures, heaths and moorlands due to their adaptation and organic resistance to modest feeding and housing conditions. Under this globalized environment, the term improvement in an agricultural system is related to the term sustainable and a sustainable agricultural system is one in which agricultural activities are economically, environmentally and socially sustainable. Indicators of sustainable development of a Livestock Production System must therefore address issues in all three areas and the interactions between them [2].

This paper aims to present the role that local breeds could play to the regional development of the countries, including social, environmental and economical sustainability issues. The cases of Greek and Romanian local sheep and goats breeds are used as examples.

## **2. The case of Greek sheep and goat sector**

### *2.1. State of Art*

Nowadays, sheep and goat production systems are one of the most active economic sectors in Greece, contributing with around 18% to agricultural income and representing more than half of the country's animal production [3].

Majority (over 85%) of the sheep and goats flocks are being reared in the mountain or marginal regions of the country, having an important economic, social and ecological role, and also contributing to the conservation of the environment [4].

The extensive production system is predominant, with 78% of the Greek sheep flock and 90% of the goats flock are being reared in low-input production systems [5].

Most of the sheep and goat farming units are in mountainous and disadvantageous areas. For the year 2005, it was estimated that 110.000 farming units with more than 10 animals each were operating, while the average size of a unit was 84 sheep and 99 goats [6]. In such cases, there is a need for supporting the adaptation and modernization of education, training and employment systems to assist regions taking into account the general needs of areas facing structural difficulties with regard to economic and social conversion. Investments in education and

training are of great importance particularly in areas with limited market access.

The traditional extensive grazing methods used in Greece are very close to the organic production methods, making organic animal farming easier to be adopted by the farmers, which is confirmed by the large number of certified animals and the number of organic animal farms which is constantly rising [3]. Rangelands are found on mountainous and less favored areas and their development is related with the activities, such as pastoralism, recreation, tourism, wildlife and preservation of natural environment-multifunctionality of rangelands [7].

Production in Greek sheep and goats sector are being primarily orientated towards dairy production. 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.

On average, 60% of the total income in sheep production systems comes from milk and derived products and less than 40% from the meat production (lambs produced and culled animals). Therefore, the breeding objectives of genetic improvement schemes are being orientated towards milk yields increase [8].

In Greece the average consumption of sheep and goat meat is on average of 12-14 kg /inhabitant, four times that of the European Union's average consumption. With 85-90% of the market demand being covered by national production. The additional demand is covered by imports from neighboring Romania and Bulgaria for light lambs and live animals, or by importing frozen meat from New Zealand.

Due to the high interest of farmers for increasing milk production and the market demands, lambs are being weaned and marketed at a young age, with lambs being slaughter at body weights of 10-14 kg.

From a total of 104 PDO's (products with protected designation of origin) registered and produced in Greece, 21 are being traditional cheese products and 2 PDO's for fresh meat. This highlights the importance that the Greek producers and consumers give to quality and safety certified products. The traditional dairy and meat products and the local gastronomy are main elements of the civilization and the culture of population in the different areas of Greece, and this is because food,

except its nutritional value, also includes and a number of sociological symbols. The production, consumption and the commerce of animal products in Greece, represent the social and economical status of the citizens. Moreover, women contribution to sheep and goat and to traditional food production is much more that it is presented by the official statistical data. Women are the 'invisible' and for any purpose available 'work force' between housekeeping, farming and local marketing.

## 2.2. Evaluation of the Greek Sheep and Goats Industry

In Greece, there are a number of 27 sheep breeds, accounting for 8.9 million heads according to data provided by EuroStat [9].

Out of the 27 indigenous sheep breeds found in Greece, 9 might be considered endangered due to low numbers of the purebred populations.

The vast majority of the Greek sheep breeds belong to the Zackel strain, and are being characterized by the long-thin tail, and the coarse-carpet wool. Second most important strain, is represented by the Ruda group, characterized by more finer and more uniform fleece. Ruda strains are being found mainly in Macedonia, Thrace and in some of the Aegean islands [5]. Also, to a lesser extent, semi-fat-tailed types can be found, mainly in the East Aegean islands, most likely, the fat-tailed group was introduced from Asia.

The most numerous sheep breeds in Greece are: Karagouniko representing 32%; Mytilini representing 23%; Aigeopelagitiko representing 13%; Sfakia representing 9%; Karistou representing 7%; Frizarta representing 4%; Vlahiko representing 4% and Serrai representing 3% of the national flock [5].

In an extensive survey, on rare indigenous sheep breeds of Greece, [10] identified and described a number of 13 breeds. According to the authors, the following Greek breeds could be considered rare: Chios<sup>i</sup> with 6.500 heads; Anogia<sup>i</sup> with 5.000 heads; Kalaritiki<sup>v</sup> with 2.800 heads; Asterousia<sup>v</sup> with 2.500 heads; Kefalonia<sup>v</sup> with 2.000 heads; Skopelos<sup>v</sup> with 1.800 heads; Katsika<sup>v</sup> with 1.500 heads; Piliou<sup>v</sup> with 1.200 heads; Kokovitiki<sup>e</sup> with 700 heads; Florina<sup>e</sup> with 650 heads; Zakynthos<sup>e</sup> with 600 heads; Kimi<sup>e</sup> with 600 heads; Agrinio<sup>e</sup> with 450 heads; Sarakatsaniki<sup>e</sup> with 200 heads; Thrace<sup>e</sup> with 120 heads; Argos<sup>e</sup> with 110 heads and Ikaria<sup>e</sup> with 30 heads. Authors of the survey,

classified the 17 breeds into four groups, as follows: <sup>i</sup>insecure; <sup>v</sup>vulnerable; <sup>e</sup>endangered and <sup>c</sup>critical.

Generally speaking, in Greece the number of purebred animals might be considered low due to extensive and un-organized crossbreeding with exotic/indigenous improved breeds. Therefore the protection of rare breeds is imperative in order to preserve, not only the genetic material, but also the cultural and ethnological heritage of sheep farming [3].

Greece has the most numerous national goats flock, which represents roughly 45-50% of the entire goats populations found in Europe. Highlighting the importance given to this sector, and the economical implications.

As for the Greek goats breed structure, 96.9% are being represented by the local undefined populations, which normally are being named accordingly to the Islands or region they originate from. However, there are two indigenous goats breeds, namely Karystou and Skopelos, representing roughly 1.3 and 0.2%, respectively of the national flock. While imported exotic breeds like Saanen and Toggenburg are representing 1.5% of the national Greek goats flock.

Recent research findings have shown that local sheep and goat breeds are mainly low-input animals well adapted to the local environments and resistant to diseases. Examples are presented below:

- Rams from Sfakion sheep breed, which is very popular in Crete for its milk production and for their very low nutritional requirements (it is used to say that 'they are grazing stones and they are producing milk') were transferred to North Greece in order to collect and preserve their semen. None of the eight rams, succeed to ejaculate in artificial vagina, while no such problem exists in Crete.

- Chios rams that have been transferred from North Greece to Crete in order to improve the productivity traits of the local breeds, did not survive at a rate of nearly 70%. In the case they survived, a very well farming management system was practiced.

- Chios ewes were transferred from the Veterinary Research Institute of Thessaloniki to Crete. Our observations showed that the available pastures could not cover daily milk yield more than 1000 g.

- In Crete, local sheep and goats breeds seem to belong in scrapie resistant genotypes, as since

2001 to 2009, just two animals have been found to be sensitive to the disease [11].

- Since 1999, *Wohlfartia magnifica* has been recorded on the island of Crete, where it had caused significant health and welfare problems in livestock, particularly sheep and goats, which is the basis of the local dairy industry. Farmers and veterinarians had no previous experience of wohlfahrtiosis in Crete. The data show that the *W. magnifica* introduced to Crete came from somewhere in the central or eastern part of the species' range. During 2004 there was a disease outbreak in Crete. From our observations we understood that local breeds had a 'way' to be protected. They discovered caves in the mountains or, in certain cases, they gathered, very firmly, under the trees. On the contrary, the Chios breed animals, which have been transferred from the North Greece, were very sensitive to wohlfahrtiosis and couldn't follow the rest of the animals to the mountains, or they just lied expanded under the trees.

Except these experiences, it is worth to mention some activities that are connected with the development of the rural areas and the local animal breeds and the local products, such as agro-tourism activities and cheese production:

- In 2009, the 'Iakinthia' festival was devoted to the 'Shepherds of the Mediterranean'. Farmers showed the traditional way of cheese-making from their countries in the highlands of Crete.

- In Geraki, a small mountain village in the Heraklion area, on the 26 of July, a festival of a local cheese attracts more and more people every year.

-Also, during shearing period, a lot of local tourists –and not only- are visiting farms where real celebrations take place.

### 3. The case of Romanian sheep and goats sector

#### 3.1. State of Art

In Romania, sheep and goats breeding had always played an important role, mainly in less developed, rural, and mountain areas, where the production systems are strongly linked to local traditions, native breeds and animal products.

Nowadays, Romanian sheep and goats national flock represents 11.331.000 heads [12]. With pasture surfaces of 4.929.200 hectares, which could sustain a national flock of 16.000.000 heads, and with the high demands for exporting meat to

other European Union member states (consolidated markets in France, Italy and Greece) and to Arab States, the sheep and goats Romanian breeding sector registers an annual growth of 3.5-5%.

Most of the pastures are found in highland areas, 77.8%, while in lowlands, where the pressure for arable surfaces for crop production is higher, the pastures represent only 22.2%. Most of the highlands pastures are natural and unimproved, which could lead to large scale organic production if proper governmental policies and payment schemes will be implemented.

During the last decade, the focus on production has remarkably changed sheep and goats management, emphasizing the breeding of a small number of very productive and selected exotic breeds. Therefore, the intensification of production systems and the success of industrial breeding have led farmers to abandon several autochthonous genotypes. Moreover, dairy and meat products derived from the Romanian farms are not certified for their quality and safety (PDO – protected designation of origin, PGI – protected geographical indication and/or TSG – traditional speciality guaranteed), although they are well known and preferable among Romanian consumers. This prevents the protection and the promotion both of the local breeds and their products.

#### 3.2. Evaluation of the Romanian Sheep and Goats Industry

Incomes registered recently from the Romanian sheep sector are orientated primarily on the meat production covering 72% of farmers income, followed by milk production (23%), while less than 5% is registered from the wool and skin productions [13]. This highlights the importance of meat production within the sheep production systems.

Usually, multi-purpose breeds are being reared (meat-milk-wool productions) and are orientated primarily towards meat production. However, sheep and goat meat internal consumption is low, of 3.9 kg/inhabitant/year, while the highest demand for lamb meat is registered around Easter time, due to religious beliefs.

Half of the farmers, normally market the lambs born in January and February at live weights of 15-20 kg before Easter, and additionally milk the ewes for a period of 4-5 months, in order to

produce cheese. On average, the local breeds produce between 40-70 milk per milking period but yields can vary, according to the breed, selection levels and feeding management.

Some farmers focus their entire production on meat production due to high prices of lamb meat and also, due to the constraints for milk and cheese production (legal framework, prices, labour). In this case, lambs are being kept on pastures with their dams until they reach 30-35 kg live weight and are being exported mainly to the Arab States. Culled adult animals, which represent around 15-20% of the flock, are being sold to abattoirs, and they are being processed into pastrami and other traditional meat-products.

In Romania, two indigenous and natural strains can be found, breeds belonging to the Zackel and the Ruda strains. The most important breed is represented by Turcana from the Zackel strain, which accounts for over 70% of the national flock, followed by the Tsigai group, which accounts for around 20% of the national flock. Merino strains represent around 7-8% of the Romanian flock, being reared mainly in the lowlands, due to low adaptation of the breeds to high altitudes, lower temperatures and in general harsher production conditions. Romanian Karakul, which is reared mostly in North-Eastern part of the country, in the Moldova area, along with its crossbreeds are accounting for 1.4% of the national flock. This breed is reared for milk, meat and fur production. Ratca breed is also belonging to the Zackel strain, and is found in the Banat region, mainly in Caras-Severin County. The breed is under an governmental conservation program, with 2.020 animal being registered in the herd-book. Ratca breed is found throughout the common Romanian-Serbian and Hungarian borders, which was brought in the region most likely from Egypt by Roman settlers. Generally, sheep breeds and ecotypes are being reared in purebred, the crossbreeding being practiced in only 1.4% of the national flock [14].

Currently, 19 herd-books for sheep breeds are being recognized by the Romanian National Agency for Genetic Improvement and Reproduction in Animal Husbandry, out of which 10 are considered native breeds, and 9 exotic, imported genotypes. From the 10 breeds that are included in Herd-Books, 8 of them are being included in conservation programs, due to the low number of animals, thus the following breeds

might be considered vulnerable, with breeding ewes number lower than 5.000 heads breeding females: Black headed Tsigai of Teleorman with 4.030 heads; Rusty Tsigai with 1.271 heads; Karakul with 3.664 heads; Palas Merino with 4.415 heads; Suseni Merino with 978 heads; Cluj Merino with 202 heads; Transylvanian Merino with 2.396 heads and Ratca breed, with 2.020 heads.

Local Merino strains were the most numerous breeds in Romania 20 years ago, representing over 45% of the national flock, but due to the wool markets collapsing, they are being replaced in most of the regions with Turcana breed, and in a lesser extent with Tsigai strains.

Goats are reared in Romania mainly for milk production, meat being regarded as a marginal product, with little economical importance. Nowadays, the Romanian goat flock is accounting 964.487 heads [14]. In order to maximize milk production, kids are being slaughtered at a very young age and live weights of 8-10 kg. Culled animals are being sold for Virsli sausages and goat pastrami, or are used for internal family consumption. Two main production systems are used to rear goats, the extensive production (with over 90% of the goats being reared extensively), when local goat breeds are being used (the unimproved Carpatina and Alba de Banat) and the intensive production system, when exotic specialized breeds are used (Saanen, French Alpine). Recently, in order to improve the meat production, by means of growth rates and carcass quality, meat production specialized South African native Boer breed was introduced into Romania.

Goat milk produced in Romania is often mixed with sheep milk, for cheese making. Goat cheese is not regarded as a traditional-cheese, however, some products can be found in markets, due to the consumers interest and the common idea that goats milk and products derived are healthier than those from other ruminant species.

Local breeds performance are generally low. Carpatina breed which is representing over 90% of the Romanian goats flock has an average milk production of 135-290 kg milk/lactation, when reared in highlands, and lowlands, respectively and an average prolificacy rates of 130-160%. Better performing Alba de Banat breeds, is native found to western Romania, and produces yields of 300-500 kg milk/ lactation, when managed

extensively and semi-intensively, respectively. With an average prolificacy of the breed of 200-225%. However, Alba de Banat breed is an endangered population, with 603 animals being registered and tested in the breeds Heard-Book currently.

Overall, sheep and goats breeds reared in Romania are predominantly indigenous, and crossbreeding is practiced in a small scale, mainly under intensive production systems. There is no threat for the purity of the native breeds. However, attention should be given to some of the endangered breeds, like Ratca and Alba de Banat, who might prove their values in the future, because of the organic resistance to specific rearing conditions or diseases, encountered in the areas where they are native to.

It can be concluded that the sheep and goats breeding industries are of great importance for the sustainable development of the agricultural sector, and there is still potential for the increase of both national flocks and production yields. However, quality monitoring systems have been overlooked, with the threat that some traditional products may be lost in the future, because of deficient marketing and management in this sector. Local breeds and products obtained from them, either meat or dairy products, can be used for developing proper marketing strategies. Awareness of the consumers and general public opinion should be given more importance by the specialists and decision makers in order to promote and ensure sustainable development of the animal production sector in general, and in particular of sheep and goats industries. Governmental decision agents, dairy producers and Breeds Societies should pay greater attention to register, label and market the local products, for their added values, and market niche.

#### **4. Conclusions**

» Livestock can make a positive contribution to the landscape and environmental management in this new world of globalization. Moreover, the local breeds are one of the main tools that hold people in the main lands and mountains, help the agro-tourism and is connected to the tradition and culture of each area.

» Research has to play a key role, as there is the need to use new knowledge in order to ensure that local products can be healthy and of high quality,

while preserving their unique, traditional characteristics (taste, smell, appearance etc).

» Authorities, Scientists and Farmers have to well design and coordinate their efforts towards the protection and the preservation of the local breeds and the PDO products following the sustainable principles of agricultural development.

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