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The socio-economics of sheep and goat farming in Greece, and the implications for future rural development[1]

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SUMMARY – The farming of sheep and goats is the most important activity in the animal production sector of Greece, both in terms of people benefiting from it (about 300,000 families) and the overall income (45% of the gross value of animal production). There are 9,200,000 sheep and 5,600,000 goats reared, where 95% of the adult females are milked mainly for cheese production. This paper presents the most recent characteristics of the sector in terms of production system, livestock utilized, livestock performance, farm economics, farmers' sociological profile, as well as the processing and marketing sector. The future implications of continuing the farming activity of sheep and goats in Greece are explored through the study of different scenarios, after examination of the frameworks (EU, national, regional) within which the sector is operating. It is concluded that this sector will continue to play the role of a driving-force which will continue supporting the presence of man in the LFAs of Greece.

Key words: Greece, sheep and goat farming, rural development.

RESUME – *"Socio-économie de l'élevage ovin et caprin en Grèce et implications pour le futur développement rural". L'élevage ovin et caprin est l'activité zootechnique la plus importante de Grèce, tant en termes de populations concernées (près de 300 000 familles) que de revenu agricole (45% de la valeur brute du revenu total de l'élevage). Il y a 9,2 millions d'ovins et 5,6 millions de chèvres, dont 95% des femelles adultes sont traites principalement pour la production de fromage. Ce papier présente les caractéristiques les plus récentes du secteur en termes de systèmes de production, de cheptel utilisé, de performances des troupeaux, de résultat économique des fermes, de profil sociologique des éleveurs mais aussi de transformation fromagère. Les implications futures de la poursuite de l'activité d'élevage ovin et caprin en Grèce sont explorées à travers l'étude de différents scénarios, après examen des cadres (UE, National, Régional) dans lesquels ce secteur évolue. On conclue que ce secteur continuera à être un moteur pour permettre la présence humaine dans les zones les moins favorisées de Grèce.*

Mots-clés : *Grèce, élevage ovin et caprin, développement rural.*

Introduction

Sheep and goat farming in Greece according to the latest survey is practised in about 300,000 farm units. Even when the units which breed more than 10 adult female animals are accounted, the number of these farms is no less than 155,000 with an average size of 84 sheep or 99 goats. In practice, the 9,200,000 sheep and 5,600,000 goats in Greece are utilizing the 10.5 million tones of herbage dry matter produced each year on the rough grazing lands of the country (Hadjigeorgiou and Papavasiliou, 1998) and finally contribute 45% to the gross value of animal production or 15% to the gross value of the Greek agricultural production.

Sheep and goats in Greece belong to dual-purpose breeds (milk and meat), being characteristic that among European countries, this country has the highest proportion of milked adult female sheep and goats (about 95% of the total). Most of the milk produced by these animals is transformed to cheese in industrial and artisan enterprises, whereas the rest of it is made into a variety of traditional products (these including yoghurt). Meat production is mainly orientated to lambs and goat-kids which are sold young, at low weights and relatively high prices (Zervas *et al.*, 1999).

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The major production system in the sector can be characterized as shepherded-extensive and covers 85% of the animal population. Sheep and goats are farmed in all regions of the country and spread more or less evenly. However, since the country is characterized by a mountainous relief and large numbers of islands, the largest proportion of the animals is farmed on Less Favoured Areas (LFAs), as they are defined in Dir. 75/268/EEC, where actually 80% of the sheep and 90% of the goats are bred.

Brief technical description of the sector

The systems of farming sheep and goats which are practised in the country can be classified to the following three groups (Kazakopoulos *et al*., 1998):

(i) Home fed: A small number of sheep and/or goats of highly productive breeds are kept indoors and bred intensively. The animals are fed large quantities of grains and by-products and limited amounts of forages and they usually perform above the average.

(ii) Intensive: This is mainly a system applied in lowlands, where sheep/goat units are of small to medium size (30-80 heads). The animals belong to high producing breeds or local breeds upgraded by cross-breeding and their performance is good. These animals are normally housed and they usually graze for some hours daily on pastures adjoining the unit and then fed supplements of concentrates and hay. Sheep energy requirements, in this system, are estimated to be covered by 53% from grazing and 47% from supplementary feeding (of which 41% concentrates and 6% roughage), whereas the respective values for goats are 73% from grazing and 27% from concentrates.

(iii) Extensive with or without transhumance: This system is applied on the LFAs and the animal flocks vary in size (100-600 heads) consisting of local breeds whose performance is not always satisfactory. Sheep and goats graze throughout the year but herbage intake is sufficient to meet the nutritional requirements of these animals only for 3-5 months (March-April to June-July). On annual basis in this system, it is estimated that concentrates, roughage and grazing contributed 36%, 26% and 38% of total energy requirements respectively for sheep and 15%, 2% and 83% respectively for goats.

At the accession of Greece to the EU, in 1981, there were recorded 8,316,000 sheep and 4,623,000 goats, which were farmed in 217,810 and 323,630 farms respectively. In the following years the populations of sheep and goats increased slightly (11% for sheep and 22% for goats, see Table 1), but the respective farms were reduced severely (43% for sheep and 51% for goats, see Table 2), due to specialization and reorganization of the sector.

Table 1. Evolution of sheep and goat populations farmed in Greece in the period 1981-1995 (proportional changes since 1981) (source: Ministry of Agriculture, Greece)

	1981	1991	1993	1995
Sheep	100	111.9	109.8	110.7
Goats	100	121.3	116.9	122.1

Table 2. Evolution of sheep and goats farms in Greece in the period 1981-1995 (proportional changes since 1981) (source: Ministry of Agriculture, Greece)

	1981	1991	1993	1995
Sheep	100	73.7	65.7	57.2
Goats	100	62.6	64.6	49.2

The development of the quantities of milk and meat produced in the period 1981-1995 followed a slight increasing trend, after the increase of the numbers of animals (Table 3). However, these changes were not strictly proportional, since sheep and goat meat increased by 3.8 and 17.8 percent respectively, due to reduced prices in the meat market and an even stronger competition in the sheep meat market. On the other hand, sheep and goat milk increased by 13.6 and 7.0 percent respectively, due to the relatively good prices that the sheep milk had and the low prices for goat milk.

Table 3. Evolution of the sheep and goat meat and milk quantities (in tons) produced in Greece in the period 1981-1995 (proportional changes since 1981) (source: Ministry of Agriculture, Greece)

	1981	1991	1993	1995
Sheep meat	100	103.7	103.3	103.8
Goats meat	100	114.0	117.4	117.7
Sheep milk	100	112.2	112.8	113.6
Goats milk	100	109.5	110.7	107.0

The populations of sheep and goats are evenly distributed within the country and their distribution is well associated with the distribution of the rangeland areas utilized by these animals (Table 4). Although a substantial reduction to the number of the nomadic and home fed animals is observed in the recent years and the flocks tend to be kept sedentary, the nutrition of the animals is largely based on the use of the available rough grazing lands which represent a large proportion (39,6%) of the total country land area. Most of this rough grazing area, around 83%, is located in mountainous and semi-mountainous regions and more than half of this (57,5%) are "communal pastures" (Polyzos, 1991) this meaning state owned pastures which are managed through the local councils. However, since the management of these pastures is insufficient and their grazing potential unevenly utilized (overgrazing in the lowlands and abandonment of lands on the inaccessible mountainous and semi-mountainous regions), their spontaneous productivity is declining, at least in the long term.

Table 4. Distribution of sheep and goats to the Greek regions as compared with that of the available rangeland areas (source: Ministry of Agriculture, Greece)

Region	Rangeland area (%)	Sheep (%)	Goats (%)
Sterea Ellas and Evia	19.01	17.64	18.37
Peloponissos	15.68	15.28	17.94
Ionian islands	2.08	1.41	2.73
Epirus	9.25	9.31	5.98
Thessalia	10.25	16.51	12.02
Makedonia	22.71	15.63	20.39
Thrace	4.75	4.11	5.44
Aegean islands	8.36	5.76	6.64
Crete	7.91	14.35	10.49
Total	100	100	100

Sheep and goats in Greece are mainly of dairy type, but these animals are highly variable in their morphology, body size, milking capacity, prolificacy, carcass composition and growth rate (Zervas, 1996). Nevertheless, these animals have a strong constitution and perfect adaptability to the harsh environmental conditions. The amount of milk produced per animal and year differs between breeds showing a considerable variation (Hadjigeorgiou and Papavasiliou, 1998) which ranges from 90 to 240 kg for sheep and 100 to 370 kg for goats. The amount of milk produced is actually a function of the daily produced milk and the lactation length both of which vary between breeds. The more productive dairy breeds have a longer lactation period which ranges between 200-230 days, while the average lactation length is between 160 and 180 days.

Socio-economic description of the sector

Economic data of the sheep and goat farms presented in this study are derived from FADN (Farm Accounting Data Network) in the length of the years 1989-1995. The data are averages of 263 farms with a technico-economic specialization in sheep and 133 farms of a respective specialization in goats, which for short will be called "sheep farms" and "goat farms" respectively. The units studied represent at the national level 20,133 and 13,343 sheep and goat farms respectively, of a similar specialization. These farms are all of a size greater than two European Standard Units (ESU), where 2 ESUs give a Gross Typical Profit of 2,400 ECUs. The average size of the sample farms is 21.1 Livestock Units (LU) for sheep and 31.9 LU for goat farms, where each LU is 6.5 sheep or goats.

The "gross farm income" of the farms specializing in sheep and goats was firstly compared with that of the "average country farm". It was clear that the income of "sheep" and "goat" farms was higher than that of the "average country farm". Moreover, the overall trend during the years 1989-1995 was that of stability, when the values were transformed to constant 1991 prices (Table 5). Although figures are given in GRDs they can be transformed to ECUs at a ratio of 0.00496 ECUs per GRD.

Table 5. Evolution of the "gross farm income" of "sheep" and "goat" farms and the "average country farm" during the period 1989-1995 (values are in constant 1991 prices and figures are in 1000 GRDs) (source: Tsimpoukas *et al*., 1996; Tsimpoukas *et al*., 1998)

	1989	1991	1993	1995
Sheep farms	4017	3884	4103	3715
Goat farms	4097	3678	4172	3898
Average farm	3361	3450	3251	3294

The "gross farm income" per LU had a similar evolution in the examined period for both types of farms (Table 6). However, "sheep" farms had a higher income per LU than "goat" farms, but the former depended stronger on subsidies and compensations. Moreover, the ratio of the "sheep farm income" over "goat farm income" was 3/2, which was identical to the price ratio of sheep-milk over goat-milk. Both farm types had income which was derived from crop production sales, whereas the self-consumption portion was found relatively small.

Table 6. Evolution of the "gross farm income" components per LU, of "sheep" and "goat" farms, during the period 1989-1995 (values are in constant 1991 prices and figures are in 1000 GRDs) (source: Tsimpoukas *et al*., 1996; Tsimpoukas *et al*., 1998)

Sheep farms	1989	1991	1993	1995
Crop production sales	11.9	9.4	7.1	9.0
Animal production sales	150.8	147.2	153.8	129.4
Subsidies and compensations	32.3	35.6	41.6	36.8
Self-consumption	9.2	10.1	10.0	7.6
Accountant differences	–2.3	–7.0	–6.3	–6.7
Gross Farm Income	201.9	195.2	206.2	176.1
Goat farms	**1989**	**1991**	**1993**	**1995**
Crop production sales	6.2	5.3	5.2	4.1
Animal production sales	102.3	95.9	106.2	88.7
Subsidies and compensations	25.7	20.9	34.8	31.6
Self-consumption	7.2	6.6	7.0	5.2
Accountant differences	–0.6	–2.3	–9.9	–7.3
Gross Farm Income	140.8	126.4	143.4	122.2

The "net farmer and family income" was a second variable to be compared. This figure is the product of subtraction of the "real expenses" (i.e. purchase of production materials, external labour and depreciation) from the "gross farm income" and associates with the viability of the unit. The "net farmer and family income" of the sheep and goat farms and that of the average country farm through the years 1989-1995 is presented in Table 7. The overall trend is a declining one for all specializations, though "goat" farms have a higher income than "sheep" farms and this in turn is higher than that of the "average country farm". "Goat" farms have a higher net income due to lower dependence on purchased feedstuffs, since goats are better adapted to utilize the available rangeland areas (Hatziminaoglou *et al.*, 1995).

Table 7. Evolution of the "net farmer and family income" of "sheep" and "goat" farms and the "average country farm" during the period 1989-1995 (values are in constant 1990 prices and figures are in 1000 GRDs) (source: Tsimpoukas *et al*., 1996; Tsimpoukas *et al.,* 1998)

	1989	1991	1993	1995
Sheep farms	2338	2171	2360	2034
Goat farms	2747	2322	2773	2472
Average farm	1998	2003	1789	1840

The "net farmer and family income" can plausibly be compared with the "reference income". It is which is the average of all the non-agricultural activities in the country, therefore we calculated that the "net income" per "Human Labour Unit" employed in "sheep farms" was 57% of the reference income, while in "goat farms" was 66% and in the "average farm" 70% respectively.

The evolution of the indicator "gross farm income" over "real expenses and depreciation" during the period 1989-1995 was also explored (Table 8). It was clear that "goat" farms had a higher ratio (this showing higher returns on given expenses), while "sheep" farms and the "average country farm" had similar indicators.

Table 8. Evolution of the indicator "gross farm income over real expenses and depreciations" of "sheep" and "goat" farms and the "average country farm" during the period 1989-1995 (source: Tsimpoukas *et al*., 1996; Tsimpoukas *et al*., 1998)

	1989	1991	1993	1995
Sheep farms	2.4	2.3	2.4	2.2
Goat farms	3.0	2.7	3.0	2.8
Average farm	2.4	2.4	2.2	2.3

A second indicator, that of "proportion of subsidies on gross farm income" was also examined. This indicator shows the dependence of farm income on subsidies, and the evolution of this in the period 1989-1995 (Table 9) was of increasing trend for all types of farms, mainly due to decline of the "sales income". This also demonstrates the increasing importance of the agricultural policies applied (mainly EU policies), in supporting the family income in LFA's, therefore maintaining the existence of human populations on these areas. Through this indicator, "sheep" farms appeared less dependent on subsidies than the other two comparatives, which can be attributed to the relatively good prices of the sheep-milk. The proportion of subsidies on "gross farm income" of sheep and goat farms in Greece is very low when compared with other cash crops such as tobacco and cotton (Tsimpoukas *et al.,* 1996).

Another important element of the farm economics is the work invested. Table 10 shows the distribution of the available workforce (total, family and hired) at three classes of farms according to their economic size (expressed in ESUs). The larger the size of the enterprises the faster the rate the utilised workforce is increasing, which can be explained by the fact that sheep and goat farming in Greece is practised in an extensive manner (Hadjigeorgiou and Papavasiliou, 1998). Another important determinant of the "net farmer and family income" is the productivity of labour, this usually

being improved by increasing the flock size. Family labour is used almost exclusively in farms, this allowing for a higher "net farmer and family income" of the farms. Moreover, there is no large difference between "sheep", "goat" and the "average country farm" in the proportion the family workforce participates to the total. Furthermore, sheep farms utilize in large family labour while for goat farms the greater the size the more hired labour is used.

Table 9. Evolution of the indicator "proportion of subsidies on gross farm income" of "sheep" and "goat" farms and the "average country farm" during the period 1989-1995 (source: Tsimpoukas *et al*., 1996; Tsimpoukas *et al*., 1998)

	1989	1991	1993	1995
Sheep farms	14.7	17.3	19.5	20.5
Goat farms	16.8	15.8	23.9	25.7
Average farm	16.7	19.6	25.9	26.3

Table 10. Total available workforce (family and hired) (in HLU/farm) used in "sheep" and "goat" farming sectors and the average Greek farm classified in three ESU classes (figures are averages of years 1993-1995) (source: Tsimpoukas *et al*., 1998)

	Total available workforce				Family workforce				Hired workforce			
	2-16	16-40	>40	Mean	2-16	16-40	>40	Mean	2-16	16-40	>40	Mean
Sheep farms	1.80	2.30	2.80	1.87	1.80	2.10	2.80	1.80	0.00	0.20	0.00	0.07
Goat farms	1.73	2.07	3.55	1.87	1.63	1.97	2.10	1.80	0.03	0.13	1.45	0.10
Average farm	1.70	2.10	2.50	1.80	1.60	1.80	1.80	1.60	0.10	0.30	0.70	0.13

The distribution of work offered in the farm, from family members, at the three classes according to the farm economic size (expressed in ESUs) is appearing on Table 11. It is evident that the farmer himself contributes more than 55% of the utilised labour, while the farmer's spouse contributes about 30% and the rest of the used labour (about 15%) is supplied by other family members. Family members are particularly important in operating sheep farms and clearly contribute more than the average, whereas this is more prominent as the size of the units increases. The contribution of the farmer is greater on the "average country farm" than the other two comparatives. However, it becomes evident from Table 12 that "sheep" and "goat" farms require longer hours of work than the "average farm", since the former are requiring 101.8 and 105.5% of Human Labour Unit (HLU) respectively, while the latter is utilizing HLU by 75%.

Table 11. Contribution of the family members to the total available, non paid, family workforce used in "sheep" and "goat" farming sectors and the average Greek farm classified in three ESU classes (figures are averages of years 1993-1995) (source: Tsimpoukas *et al*., 1998)

	Farmers work/total work				Spouse work/total work				Member work/total work			
	2-16	16-40	>40	Mean	2-16	16-40	>40	Mean	2-16	16-40	>40	Mean
Sheep farms	0.556	0.477	0.357	0.556	0.296	0.222	0.286	0.296	0.111	0.238	0.357	0.129
Goat farms	0.613	0.509	0.583	0.557	0.265	0.253	0.142	0.260	0.102	0.169	0.200	0.129
Average farm	0.625	0.556	0.556	0.625	0.250	0.259	0.203	0.271	0.062	0.167	0.203	0.083

The age of the farm leader is an interesting element of their sociological profile. The average age is appearing in Table 13 through the period of years 1989-1993 and for the three farming directions. The average age of the Greek farmer and that of the Greek sheep farmer is 50 years, while the goat farmers are 2 years younger than the average.

Table 12. Proportion of the work offered by family members (in relation to the MWU) used in sheep and goat farming sectors and the average Greek farm classified in three ESU classes (figures are averages of years 1993-1995) (source: Tsimpoukas *et al.,* 1998)

	2-16 ESU	16-40 ESU	> 40 ESU	Mean
Sheep farms	101.3	103.3	105.2	101.8
Goat farms	106.4	104.4	124.0	105.5
Average farm	72.4	82.8	86.3	74.9

Table 13. Average age of the farm leader in "sheep" and "goat" farming sectors and the average country farm in the period 1989-1993 (source: Tsimpoukas *et al.,* 1996)

	1989	1990	1991	1992	1993
Sheep farms	50.7	48.8	50.8	50.6	50.7
Goat farms	47.6	47.9	47.8	48.4	48.3
Average farm	50.8	49.8	50.4	51.6	50.8

In a different study (Theodoropoulos, pers. comm.), where the structure of the sheep and goat farms in the Prefecture of Trikala (an LFA in Central Greece) was explored, the age of the respective farmers, on a sample of 57, was found to distribute as follows:

25-29 years of age	5.25%
30-44 "	12.30%
45-64 "	68.45%
65 and over	14.00%

On the same sample the education level was found to distribute as follows:

No school at all	31.58%
Some years of elementary school	15.79%
Elementary school (6 years in total)	26.32%
High school (9 years in total)	12.28%
High school (12 years in total)	5.26%
Technical school (12 years in total)	7.02%
Over 12 years of school	1.75%

The hard working conditions required by the extensive production system applied in sheep and goat farming have negative implications for this profession that is considered as "non socially acceptable". In addition, the heads of these farms are old enough and with a low educational background, which largely explains the reluctance of the sheep and goat farmers to improve the farming system, especially if no succession prospects exist.

Not surprisingly, the farmer's children are reluctant to follow that profession and these farms face an important succession problem. According to a survey (Goussios *et al*., 1989), on a sample of 630 livestock holdings, only 20.7% had succession potential, 36.5% did not have any such potential and the rest were uncertain about their succession prospects.

Processing of milk and marketing of cheese

The processing sector of sheep and goats milk in Greece is characterized by a large number, of small size, and scattered in space, cheese making factories. Although the numbers of cheese making

factories are declining (Table 14) there still is a significant number of them operating in the country. However, these units do not appear competitive on a European level since the average annual production per unit approaches as low as 175 tons (Table 14). The distribution of cheese making factories is associated with the structure and the prevailing production system in sheep and goat sector.

Table 14. Number of cheese making factories and their average annual production by type of cheese (1988-1994) (source: Ministry of Agriculture, Greece)

	Number of units			Average annual production (tons)		
	1988	1991	1994	1988	1991	1994
Soft cheese	794	567	623	85.5	115.1	142.4
Hard cheese	390	275	278	40.5	46.7	45.6
Semi-hard cheese	164	55	56	82.3	138.2	266.1
Whey cheese	412	461	582	14.2	15.7	18.2
Total cheese	939	674	727	110.0	137.9	174.6

The small size of flocks of sheep and goats and their wide dispersal, often in isolated and remote areas where the pasture lands are located, are the most important reasons behind the development of a large number of cheese making factories, but of small capacity.

Moreover, it is estimated that about 1/3 of the cheese produced is made on the farm for self consumption and sale through informal networks.

Furthermore, the fact that these units operate periodically (about 6 months a year), since the milking period of sheep and goats lasts 5-6 months, restricts the economic returns of the operation of these enterprises. However, there is a trend towards the reduction of the number of cheese making factories and the number of the people they employ, and an increase in the average number of employees per unit as demonstrated on Table 15.

Table 15. Development of the number of milk processing units (including cheese making factories) and their employees in the period of years 1971-1991 (source: NSSG, Industrial Research)

	1971	1981	1991
No. of milk industry units	1423	1160	848
Number of employees	3228	3141	2673
Employed persons per unit	2.3	2.7	3.2

The improvement in transportation conditions during the last decade on the one hand (roads, transportation means) and the creation of large Super-Market (SM) chains on the other hand, played an important role to the decrease in cheese units. According to a survey produced by "Nielsen" and published in the Greek Journal of "Food and Beverages" under the title "Survey of family consumption in the regions of Athens and Thessaloniki ", SM accounted for more than 50% of the cheese sales of all types of cheese (see Table 16) with second more important being the special shops (Delicatessen). Moreover, these large SM created the need to establish the flow of cheese products at constant quality and volume, demanded large quantities of these products at competitive prices and asked for novel products. These and other demands, at both technical and financial levels, made that small cheese making units could not sustain for long.

Table 16. The distribution of cheese sales in various shops in the regions of Athens and Thessaloniki

	Supermarkets	Small SM	Groceries	Special shop	Producers	Other
Feta	47	2	15	22	12	2
Kasseri	56	3	15	23	1	2
Kefalotyri	54	2	13	25	3	3
Graviera	52	4	10	26	4	4
Edam/Gouda	67	1	7	20	0	5
Special cheeses	68	15	8	8	0	1

Discussion

The sector of sheep and goats farming in Greece has had a strong connection with rural areas since ages. This sector was always utilizing effectively the natural resources of the rural areas, this primarily including the indigenous vegetation, for the production of valuable goods. However, the viability of the units operating in the sector was always associated with the particular socio-economic conditions in the area, such as the net family income, the legal framework for the use of land and the social acceptance of those involved. The level of income from farming sheep and goats mainly depends on the size of the flock, irrespective of the animal's productivity (Apostolopoulos and Rogdakis, 1996).

Farmers rely more on the increase of the flock size which results in increasing family income from subsidies and other compensations, rather than increasing physical productivity. This can interpret why farmers are more interested in improving labour efficiency by increasing the size of the flock per person employed, maintaining the extensive character of the production system and receiving more subsidies per person employed, than making capital investments (Spathis *et al.*, 1998). A strong deterrent against capital investments would also have been the high interest rates for borrowing in the recent years, sometimes approaching 33% but being no less than 15%, while the capital profitability did not exceed 4.6% for sheep farms and 5.7% for goat farms.

In recent years some of the basic geo-political elements of the past have changed. Subsequently, sheep and goat farming is in the process of transformation under the pressure of the internal social factors and the global environment. The role of subsidies in supporting European agriculture is rediscussed under "Agenda 2000", prices of raw materials and final products are changing due to opening of the global markets. Consumption habits are also changing due to the introduction of new marketing policies and conditions. The future of the sector is now re-examined. To our opinion the options are still open. Choisis and Vallerand (1996) recognized three possible scenarios for the sector which are schematically presented in Fig. 1:

(i) The extensification scenario is the most possible for the mountainous and the marginal areas of the country. In those areas there is a low population density, low productivity, very low level of investments, therefore rural development appears difficult to occur. The few jobs that can be created will basically be at the primary sector of the economy.

(ii) Some of the marginal areas because of specific characteristics may have an advantage over others. These can be neighbouring to cities, having scenic value or having some infrastructure and because of these the areas have the chance to divert to pluriactivity. In this direction the income of the rural areas derives from a variety of activities (such as the various forms of tourism, the creation of small industries, etc.). This scenario can support a variety of jobs in all three sectors of the economy and sustain an acceptable number of people in an area.

(iii) The intensification scenario is likely to happen when medium to large industries of the sector are established in an area and cultivate the sector mainly to the direction of low cost products. This model can create infrastructure in an area and a variety of jobs in all sectors of the economy. However, pollution and social degradation problems often are connected with such an option.

(iv) In the case of Greece we can imagine a fourth scenario between intensification and pluriactivity based on the mass of small cheese making units, which can create development "nuclei" by offering to collect milk for the production of special products.

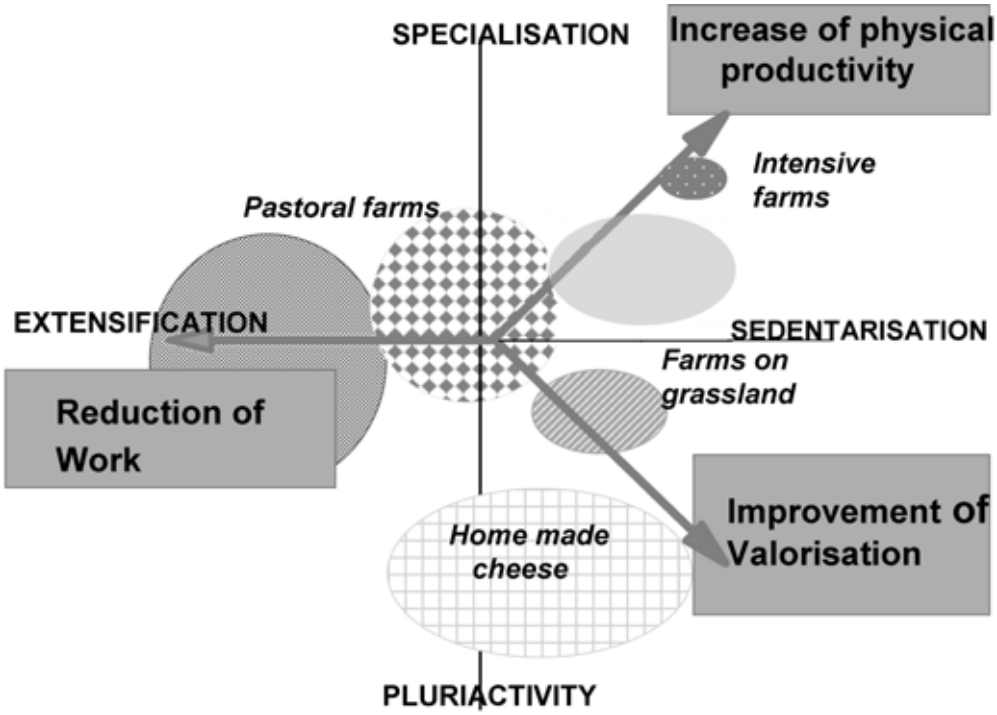

Fig. 1. Organization directions of the sheep and goat farming systems.

The issue of rural development is a multidimensional problem. However, it is clear that the primary sector (i.e. agriculture) is a key lever to this direction. Sheep and goat farming is very likely to continue the role of a locomotive in continuing to support the existence and progress of humans on the LFA's.

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