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Land Fragmentation and Consolidation in Albania

Sherif Lusho and Dhimitër Papa

Land Tenure Center

AN INSTITUTE FOR RESEARCH AND EDUCATION ON SOCIAL STRUCTURE, RURAL INSTITUTIONS, RESOURCE USE, AND DEVELOPMENT

UNIVERSITY OF WISCONSIN — MADISON

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CONTENTS

LIST OF TABLES

LAND FRAGMENTATION AND CONSOLIDATION IN ALBANIA*

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BRIEF HISTORY

Before the 1945 agrarian reform, Albania's agricultural land surface of 393,355 hectares was distributed as follows: 3.7 percent belonged to the largest landlords, 23.2 percent belonged to the large landowners, 12.7 percent belonged to the nation-state, and 60.4 percent belonged to the small and middle-sized landowners; 13.9 percent of the families did not have even a patch of land.

The 1945 agrarian reform changed the distribution of landownership. The largest landlords, which included merchants, artisans, and religious institutions, were expropriated and their land was distributed among the peasants according to the law of that time. Expropriated land was given to 70,000 families who either did not own any land or owned very little. In 1946, the redistribution of land under the agrarian reform was finished.

After this application of agrarian reform, land tenure structures (type of ownership and size of holdings) have continually changed according to the organizational form of the agricultural sector. In 1946, the first agricultural cooperatives were organized, and their number increased each year thereafter. In 1950, approximately 81.4 percent of the land belonged to private individuals, and only 8.6 percent belonged to the state sector and to cooperatives. But, as the years passed, the private sector was reduced and the state and cooperative sectors increased in size. During the years 1968–1970, the collectivization of agriculture was completed. Total agricultural land surface had increased to 600,000 hectares; 21 percent of that land was in the state-farm sector (NBSH) and 79 percent was in the cooperative sector as collective property. Until 1991, only these two forms of property in agricultural land existed, and Albanian law defined all land as state property. Agricultural enterprises, cooperatives, and other institutions retained use rights to land.

* We would like to thank Albert Dubali, David Stanfield, and Rachel Wheeler for their consultation during the implementation of this study.

In the early 1990s, when the political system changed and the centralized economy was transformed into a market economy, landownership also had to change. In applying Law No. 7051 of July 1991, approximately 383,000 families received about 500,000 hectares from the ex-cooperatives. In 1992, state-farm workers' families obtained the state-farm land. As a result of privatization, 480,000 farms were created.

1. LAND FRAGMENTATION: CAUSES AND DIMENSIONS

Land fragmentation refers to noncontiguous land parcels that are owned and tilled as a single enterprise. The problem of land fragmentation has been important in many countries since the seventeenth century. Considering both advantages and disadvantages of land consolidation, there have been numerous efforts to combine land parcels, but there is still no easy solution. The Food and Agriculture Organization (FAO) defines land consolidation as the formation of individual farms that have sufficient size, structure, and direction for productive use (King and Burton 1985, pp. 474–89). International organizations have attempted to consolidate fragmented landholdings into more efficient farms.

The causes of land fragmentation vary in different countries. Land fragmentation commonly results when implementing agrarian reform, but the phenomenon has developed in different ways in different countries. Social, cultural, economic, and physical processes (King and Burton 1985) are considered as causes of land fragmentation.

In Greece, during 1907–1983, about 1,500,000 hectares owned by personal and industrial enterprises were expropriated and given to 450,000 poor farmers who did not own land. Each family was given 4–6 parcels of land in different locations because the peasants insisted on having equal parcels of land of different qualities. According to the Greek tradition of inheritance, heirs receive equal patches in all the parcels or some heirs get the land while others get the trees on that land, further aggravating land fragmentation. Fragmentation of orchards and vineyards in Greece is more rapid than fragmentation of cropland and pastures.

Inheritance laws are of especial importance. Islamic laws of inheritance dictate an equal division of paternal property among all heirs after the death of the landowner. Land fragmentation increases when heirs seek equal parcels of various qualities (such as pasture and orchard). The Islamic law of land inheritance in Bangladesh means that after the death of the owner, the land is subdivided among the children (daughters are given half the size of their brothers' land) (Harris 1989). Land fragmentation through inheritance also occurs in Western Europe. Other causes of land fragmentation include land used for dowries, new buildings, charities, or religious organizations. Fragmentation is prevalent in southeastern Holland because of the larger families in this part of the country. In France the causes of fragmentation (MacPherson 1982, pp. 10–78) were traditional practices such as inheritance laws and lack of institutional rules for selling property (small parcels were often more profitable than larger ones).


Districts of Albania
Malesi e Madhe
Tropoja
Has
Shkodra
Puka
Kukes
Lezha
Mirdita
Dibra
Lac
Mat
Kruja
Bulqiza
Durres
Tirana
Librazhd
Kavaja
Peqin
Elbasan
Lushnja
Pogradec
Kucova
Gramsh
Fier
Berat
Korca
Devoll
Mallakastra
Skrapar
Tepelena
Vlora
Permet
Kolonja
Gjirokastra
Delvina
Saranda
kilometers
0
34
68
136

MAP 1

1.1 CAUSES OF LAND FRAGMENTATION IN ALBANIA

In Albania, land fragmentation is a relatively new phenomenon. It occurred during 1991–1993 as a result of the privatization of landholdings through the dissolution of agricultural cooperatives (where land was collective property) and state farms (where land was owned by the state). In total, 480,000 private farms were created. The following factors favored land fragmentation.

- During land division, each family was given land in various locations in order to have plots of the same quality of soil (fertility, irrigation capacity, cropland type) across households.
- Each family was given cropland, olive groves, vineyards, orchards, and, when available, vegetable gardens near the house.
- During land distribution, peasant families retained ownership over some land that they had received under previous allocations.
- Land distribution took account of both distance (between house and parcels) and physical conditions (hilly, flat, and mountainous land).

When the privatization of agricultural land in Albania was concluded, each family had a farm holding that was fragmented into many different parcels. Moreover, the previous cadastral sectors (large ex-cooperative fields) had been subdivided into parcels and distributed to a number of families. Farmers of the regions where we undertook our study have holdings that are fragmented into 1–10 parcels. If we consider the subdivision of ex-cooperative fields, in the district of Lushnja, 18–22 families in the commune of Krutje own fields of 10–12 hectares, and 1–15 families in the commune of Tërbufi (Çerma village) own fields of 12–16 hectares; in the district of Librazhd, 7–11 families in the commune of Hotolisht own fields of 4–6 hectares; and so forth. So land fragmentation in Albania appears to be a spatial and territorial phenomenon, which means subdivision into many parcels of farmland that cannot support rational utilization of land.

1.2 OBJECTIVES

This study concerns land fragmentation and consolidation after the process of land privatization in Albania. The objectives of the study are to:

- provide information on the level of land fragmentation in the districts included in this study;
- determine the impacts of land fragmentation (advantages and disadvantages);
- explore methods of land consolidation based on both Albanian and foreign experience; and
- disseminate the information and conclusions of this study throughout the country.

1.3 METHODOLOGY

Three districts were selected as representative of Albania's different geographic regions according to the following criteria: topography, ecology, land use, intensity of production, population density, and amount of land per capita. (See Map 1.) Lushnja District represents the flat region, which also has the most agricultural production in the country, more investments on the land, a better irrigation and drainage network, better opportunities for small businesses, more intensive use of fertilizers,

and experience and expertise with modern agricultural procedures. Vlora District represents the flat-hilly-mountainous area of the country, where land has average fertility and the structure of production consists of cereals and fruit trees. Librazhd District represents the higher-altitude topography, where land is steep and mountainous, population density is sparse, land fertility is low, and production is low. Map 1 shows the location of the districts in Albania.

Three communes within each district were selected as representative of different areas according to topography, land size, population density, and intensity of production. The same methodology was used to select three villages within each *komuna*. The 15–20 farmers interviewed in each village were not randomly selected, however; farm families that had a parcel on the same ex-cooperative field were chosen and information about their other parcels (in other parts of the village) were included in the data collection.

We also gathered information on agricultural production groups in the villages and interviewed agricultural specialists both in the districts and in other agencies about problems in those regions.

1.4 SOME MAIN CHARACTERISTICS

In this section, some main characteristics of land distribution, land type, and rural/urban population in the sample districts and communes are discussed. Table 1 presents these data for the sample area as a whole.

TABLE 1. Albania: Main characteristics of sample districts and communes, 1995

DISTRICTS & COMMUNES	LAND TYPE		LAND DISTRIBUTION			POPULATION DISTRIBUTION	
	% Flatland	% Hilly	Ha per capita	Ha per family	Parcels per family	% Village	% Town
Lushnja	74	26	0.38	1.74	3.4	72	28
Krutje	100	0	0.36	1.8	4.1	100	0
Tërbufi	100	0	0.32	1.5	3.5	100	0
Golemi	78	22	0.39	1.92	4.1	100	0
Vlora	68	32	0.30	1.48	4.4	50	50
Novosela	91	9	0.36	2.2	4.2	100	0
Qendër	45	55	0.30	1.23	6.5	100	0
Brataj	38	62	0.12	0.6	2.8	100	0
Librazhd	19	81	0.18	0.96	4.8	82	18
Prenjas	40	60	0.17	0.89	5.1	70	30
Orenja	0	100	0.19	1.01	3.3	100	0
Hotolisht	9	91	0.18	0.85	2.24	100	0

1.4.1 Lushnja District

Agricultural land in Lushnja District is, in general, highly productive flatland planted to crops (cereals, industrial plants, vegetables, fodder); the hilly area is planted with olive groves, orchards, and vineyards. Of the total agricultural land surface area, 90.6 percent is cropland, 8 percent is olive orchards, and 1.4 percent is fruit trees, orchards, and vineyards.

Seventy percent of the arable land is privately owned while 30 percent is state-farm land given in usufruct. The size of the ex-cooperative fields in the flatland area varies from 8 to 16 hectares. The inhabitants of the 120 villages represent 72 percent of the district's total population of 150,000 individuals.

Agriculture is the traditional economic activity of this area; for many years the region of Lushnja made the largest contribution to agricultural production in the country. There are more than 27,400 private farms, with 0.38 hectare per person and 1.74 hectares per family. Each family owns an average of 3.4 parcels. Consult Tables 1–3 in Annex A for some selected characteristics of the three Lushnja communes.

Commune of Krutje. The first cooperative of Albania, created in 1946, was located in Krutje. This commune has a surface area of 3,914 hectares of flatland (0.36 hectare per person, 1.8 hectares per family, and an average of 4.1 parcels per holding). Field crops are grown and stockbreeding is well developed. A population of 9,350 persons resides in Krutje.

Commune of Tërbufi. We studied the villages in the Shkumbini River area. The total land surface comprises 4,485 hectares of flatland (0.32 hectare per person, 1.5 hectares per family, and an average of 3.5 parcels per holding). Mostly field crops are cultivated (cereals, vegetables, fodder, beans). The population numbers 12,750 people.

Commune of Golemi. The total land surface is 2,644 hectares of primarily flatland. Field crops are grown throughout the flat area, while field crops, olive groves, orchards, and vineyards are cultivated on the hilly land. There is an average of 0.39 hectare per person, 1.92 hectares per family, and 4.1 parcels per holding. There are 6,700 inhabitants.

1.4.2 Vlora District

Vlora District consists of flat and hilly land in the southern littoral area of Albania. Field crops are produced on the flatland (68.5%) while both orchards and field crops are cultivated on the hilly land (31.5%). One special area (the coast of Himara) is planted only with olive groves and citrus trees. Fifty percent of the population lives in villages. At the district level, there is an average of 1.48 hectares per family. Consult Tables 4–6 in Annex A for some selected characteristics of the three Vlora communes.

Commune of Novosela. The commune is located along the Vjosa River; its land is totally flat and highly irrigable. The main crops are cereals, fodder, and legumes. There is an average of 2.2 hectares per family.

Commune of Qendër. This commune consists of flat and hilly land, and 55 percent of the surface area is planted with olive groves and vineyards. There is an average of 1.23 hectares per family.

Commune of Brataj. This commune has the hilliest land in Vlora District (62.5% of the hilly land of Vlora region). There is an average of 0.6 hectare per family. Traditional agriculture consists of stockbreeding and cultivating cereals and fodder crops.

1.4.3 Librazhd District

This district, in the northeastern part of Albania, consists of mainly hilly and mountainous land. The average amount of arable land distributed is 0.18 hectare per person and 0.96 hectare per family. Land fertility is low or average. The land is planted to cereals, tobacco, and orchards. There are 80,900 inhabitants, of whom 82 percent live in 68 villages and 18 percent live in 2 cities, Librazhd and Prenjas. Consult Tables 7–9 in Annex A for some selected characteristics of the three Librazhd communes.

Commune of Prenjas. This commune is located in the area of the district that is mostly flatland. Unfortunately, the magnesium (Mg) content in the soil is high, negatively affecting fertility. There is an average of 0.89 hectare per family; the population of 17,260 persons is mostly rural (70%).

Commune of Orenja. The population of Orenja is 9,600 inhabitants. The commune operates in mountainous land, allowing an average of 1.01 hectare per family. Land fertility and irrigation capacity are low.

Commune of Hotolisht. The commune of Hotolisht has a population of 6,400 inhabitants. It has mountainous land with low fertility and a low level of mechanization. The average farm holding is 0.85 hectare.

1.5 DIMENSIONS OF FRAGMENTATION

The contemporary process of fragmentation in Albania was the subdivision of large agricultural fields into smaller parcels and the creation of farm holdings of noncontiguous parcels.

1.5.1 Land fragmentation and farm size

The 45 farms per commune (135 farms per district) that we studied can be grouped according to size. Table 2 displays the relationship between average farm size and average parcel size. Most of the farms are small, between 1–2 hectares; 62.2 percent of farmers in Lushnja own such a farm, 40.75 percent in Vlora, and 23.7 percent in Librazhd. There is a positive relationship between farm size and parcel size. In Lushnja, the average farm size is 1.66 hectare while the average parcel size is 0.41 hectare; in Vlora, the average farm size is 1.36 hectare and the average parcel size is 0.35 hectare; and in Librazhd, the average farm size is 0.8 hectare and the average parcel size is 0.22 hectare (twice as small as in Lushnja).

Annex A contains tables on the characteristics of land fragmentation which show the differences among communes and among villages in each commune. Within Lushnja District, for example, the difference in land size and fragmentation among villages is not great, while in Vlora District, there is great variance among Brataj, Novosela, and Qendër.

TABLE 2. Characteristics of farm fragmentation and size by district (Lushnja, Vlora, and Librazhd)

DISTRICT	TOTAL ARABLE LAND (ha)	TOTAL NO. OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN SIZE OF PARCEL (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATEGORIES (ha)	NUMBER OF FARM HOLDINGS	TOTAL LAND IN CATEGORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATEGORY (ha)
Lushnja							0–0.5	5	1.68	0.33	3.7
							0.51–1	12	9.49	0.79	8.9
							1.01–2	84	126.64	1.50	62.2
							2.01–3	28	64.89	2.31	20.7
							3.01–4	5	16.94	3.38	3.7
							4.01–5	1	5.01	5.01	0.7
Subtotal	224.6	523	4.1	0.4	3.9	675	-	135		1.66	100
Vlora							0–0.5	21	6.55	0.31	15.6
							0.51–1	29	21.25	0.73	21.5
							1.01–2	55	83.27	1.51	40.8
							2.01–3	29	69.52	2.39	21.5
							3.01–4	1	3.01	3.01	0.7
Subtotal	183.6	524	3.9	0.3	4.5	725	-	135		1.36	100
Librazhd							0–0.5	28	11.69	0.41	20.8
							0.51–1	75	55.67	0.74	55.5
							1.01–2	32	41.17	1.28	23.7
Subtotal	108.5	480	3.6	0.2	2.9	765	-	135		0.80	100.0

Farm families have ended up with small parcels of land for several reasons:

- a large number of peasant families still live in villages (65% of the population during the land privatization process);
- the rate of population increase in villages is faster than the increase in arable land surface (the peasant population increased 2 times in the 1960–1989 period while arable land increased only 0.53 times);
- the area of arable land per person in Albania is low (0.24 hectare), which is lower than in the majority of European countries (within Albania, this index is lower in hilly and mountainous areas than in flatland areas);
- the division of land, without any criterion of previous ownership (before the 1945 land reform), did not permit the formation of large properties;
- parcels in many cases have been occupied by the families which had previously owned them, even when agricultural land was divided according to the 1991 law; and

- farmers have not left the land due to the limited possibility of employment and ownership in other sectors of the economy.

At least temporarily, many industrial enterprises are not functioning, so many unemployed workers who lived in villages have returned to the land. When we asked farmers about selling or renting the land, their frequent response was: "Actually, we're not going to rent or sell it, because it's the only property we have right now; moreover, we haven't any other possibility of being employed."

In Table 3, the parcels of the 135 farms we studied are classified into 9 groups according to size. The smaller (with regard to land) districts and communes have parcels of smaller size compared with the larger districts. In Librazhd District, 33 percent of the parcels were 0.1 hectare or smaller; in Vlora District, 22 percent of the parcels were 0.1 hectare or smaller; and in Lushnja District, 15 percent of the parcels were 0.1 hectare or smaller. Parcels of more than 0.8 hectare numbered 13 percent in Lushnja District, 10 percent in Vlora District, and 4 percent in Librazhd District. The small size of parcels highlights the need to consolidate the farmland into fewer parcels; this problem is awaiting solution.

TABLE 3. Land parcels according to size, by district (135 holdings)

DISTRICT	# OF PARCELS	PARCEL SIZE (in hectares)								
		<0.05	0.06–0.10	0.11–0.20	0.21–0.30	0.31–0.40	0.41–0.50	0.51–0.80	0.81–1.0	>1
Lushnja	523	30	47	110	77	52	54	87	32	34
%	100	5.74	8.99	21.03	14.73	9.94	10.32	16.64	6.12	6.5
Vlora	524	31	83	110	67	68	40	71	33	21
%	100	5.92	15.84	20.99	12.79	12.98	7.63	13.55	6.3	4.0
Librazhd	480	81	78	146	68	39	25	25	10	8
%	100	16.88	16.25	30.41	14.17	8.13	5.21	5.21	2.08	1.67

1.5.2 Land fragmentation

Few farms have all their land in only one parcel. Table 4 shows the number of farmholdings by level of fragmentation in each commune (45 farms per commune). In the district of Lushnja, 16.3 percent of farms have land in two locations, while 83.7 percent of them have 3–8 parcels. In the district of Vlora, only 5.2 percent of farmers have one parcel, while 80 percent have 2–5 parcels and 14.8 percent have 6–9 parcels. In the district of Librazhd, 18.5 percent of farmers have one parcel, 57.8 percent have 2–5 parcels, while 23.7 percent have 6–10 parcels. Of the 405 farms (in 3 districts), only 25.9 percent of them possess 1–2 parcels, while 57 percent of them have 3–5 parcels and 17.1 percent have 6–10 parcels. Farms that have cropland and orchards are the most fragmented: farm households have 4–9 parcels in the villages of Panaja and Hoshtimë (commune of Qendër, district

of Vlora), where 53 percent and 55 percent, respectively, of the land is planted to orchards, olive groves, and vineyards. In the village of Sherishta (also commune of Qendër), each farmer owns 4 parcels (hilly land, vegetable land, and olive groves). We asked peasants of three villages of this district, "How many parcels would you like to own?" The most frequent answer was, "Two or three parcels, cropland and olive groves, and, if possible, vineyard land, too."

TABLE 4. Land fragmentation, by district and commune

COMMUNE	NO. OF HOLDINGS BY PARCEL FRAGMENTATION (no. of parcels)									
DISTRICT	1	2	3	4	5	6	7	8	9	10
Krutje	-	9	16	14	5	1	-	-	-	-
Tërbufi	-	6	15	21	2	1	-	-	-	-
Golemi	-	7	3	7	13	10	3	2	-	-
Lushnja	-	22	34	42	20	12	3	2	-	-
%	-	16.3	25.2	31.1	14.8	8.9	2.2	1.4	-	-
Novosela	3	1	14	22	5	-	-	-	-	-
Qendër	-	-	-	17	8	3	12	4	1	-
Brataj	4	18	19	4	-	-	-	-	-	-
Vlora	7	19	33	43	13	3	12	4	1	-
%	5.2	14.1	24.4	31.9	9.6	2.2	8.9	3.0	0.7	-
Hotolisht	12	18	10	3	1	1	-	-	-	-
Prenjas	7	7	-	2	3	10	6	7	2	1
Orenja	6	7	12	12	3	5	-	-	-	-
Librazhd	25	32	22	17	7	16	6	7	2	1
%	18.5	23.7	16.3	12.6	5.2	11.9	4.4	5.2	1.5	0.7

2. ADVANTAGES AND DISADVANTAGES OF FRAGMENTATION

Land fragmentation is not always disadvantageous, though there are more disadvantages than advantages.

2.1 ADVANTAGES OF LAND FRAGMENTATION

The following factors are considered major advantages of land fragmentation:

- **Risk reduction.** Having several different parcels avoids the risk of production failure on all the land. This risk is not of great dimension in Albania, however, and cannot be considered as a primary advantage; only 1.7 percent of farmers considered risk reduction to be an advantage of fragmentation.
- **Diversified crop production.** In our study villages, the farmers usually own land of three different qualities or categories. Of interviewed farmers, 31.8 percent considered having all three land categories as an advantage of fragmentation. In some cases, though the arable land is homogeneous and belongs to the same category, farmers still prefer to have separate parcels.
- **Production coordination.** The possibility of tilling different parcels with different crops at different times is considered another advantage of land fragmentation. In the villages of Hoshtimë and Panaja (Qendër Commune, Vlora District), where 55 percent of the land consists of olive groves and vineyards, both output and income were high because farmers were able to work on different parcels of land at different times of the growing season.

2.2 DISADVANTAGES OF LAND FRAGMENTATION

Many authors (see MacPherson 1982) consider fragmentation as a restrictive factor of production. We asked farmers in the study areas about the problems they had with irrigation, mechanization, fertilization, transport, and agronomic practices. Problems due to land fragmentation are classified as follows:

- restricts agricultural modernization (mechanization, irrigation, agronomic practices);
- inhibits improvement of the land and heightens risk of abandonment of some parcels; and
- creates economic and production problems because of increased time, work, and organization required by the parcels' distance.

The following subsections present the opinions of the 405 farmers regarding the disadvantages of fragmentation.

2.2.1 Agricultural modernization

Land privatization caused many problems with regard to mechanization, irrigation, transport, and agronomic practices. We explore each of these problems separately.

Mechanization. Fragmentation into small parcels may make mechanization inefficient, particularly the use of tractors, because of the form and dimensions of the parcels. Sergent (see MacPherson 1982) has studied the fragmentation of land in France since 1952, and he considered numerous parcels as the most restrictive as well as the most costly factor to increasing agricultural production.

In Albania, mechanization in farming has been reduced because of the subdivision of cooperative fields, while farmers increasingly use human and animal power. In the villages of Brataj, Hotolisht, Orenja, and Prenjas, farmers used their own labor and animal power when spring sowing began. When we interviewed the 405 farmers, 39 percent of them answered that "mechanization is reduced because of the small size of parcels," 33 percent said that "mechanization is reduced because the cost is rising every day," 5 percent answered that "we can't till the parcel corners and

the land system is confused," and 4 percent said that "we lose time and fuel." Nineteen percent of the farmers suggested changing the structure of mechanization to favor smaller implements, planting the same crops in one parcel, enlarging the properties, and removing the hedges.

- It is difficult to use tractors because parcels are small and tractors are not easily maneuverable; it is estimated that the tractor wastes 15–20 percent of the work hours on a parcel smaller than 0.3 hectare. When there are more then three parcels at a distance of 0.8–1 kilometer, the cost of mechanization increases by 10–15 percent.
- Some farmers are sowing their parcels while neighboring parcels are either being harvested or in another stage of crop cultivation; thus it is difficult to use mechanization.
- Tractors cannot be used in the corners of the parcels, so farmers must till the corners manually.
- Time and fuel are lost when tractors are moved between parcels; farmers prefer to use their own labor and animals, which is less expensive.
- Tractors and vehicles are efficient on large parcels but not in small, hilly, and mountainous areas.

Irrigation and drainage systems. Of interviewed farmers, 23.2 percent said that land fragmentation restricts the system of irrigation because of the following reasons.

- The current irrigation system, built for large cooperative fields, is inefficient now because the land is fragmented into numerous parcels.
- The irrigation system has been neglected during the last four years and is currently not functioning.

Another 48.4 percent of the farmers said that they restrict each other during the process of irrigation because they sow different crops on a single ex-cooperative field. They could improve the irrigation process if they planted the same crop in the same ex-cooperative field. (The remaining 28.4% of the interviewed farmers did not respond.)

The same problems apply to the drainage system; in some areas drainage systems do not function, especially in Prenjas (where there is high magnesium content[1] in the soil), in Tërbufi (where there are bogs), and in Novosela (where there is salinization). Since land has been privatized, farmers have not invested in improving the systems of drainage and irrigation because they lack the necessary capital.

Agronomic practices. When interviewed, 65.4 percent of the farmers said that fragmentation restricted use of appropriate agronomic practices. There is no rotation of crops; farmers plant the same crop year after year on the same parcel. Especially in the hilly and mountainous areas, 30–40 percent of the cropland was always sowed to wheat. Farmers seldom plant hoed crops because of problems with the irrigation system and the lack of water; farmers are therefore obliged to sow wheat. The other 34.6 percent of farmers did not respond.

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[1] A high magnesium content in soils lowers the fertility, affects the physical characteristics of the land, and causes plant toxicity. Chemical testing of soils in Prenjas showed that the ratio between magnesium and calcium was 1.6:1, much higher than the normal 1:2–3. We did this type of soil analysis in Prenjas because this is also a problem in many areas of the country.

Because of the shape and size of parcels, farmers cannot apply modern technology (mechanization, irrigation, and the like) in 15–20 percent of the parcels. Land consolidation would reduce the number of irregular parcels and specialists could provide additional assistance.

2.2.2 Fragmentation and land use

Farmers generally take care of the best-quality parcels, while they abandon small parcels far from the village because they lose time and money on these holdings. In 1994, in the communes studied in Lushnja District, farmers cultivated 97.4 percent of the land surface; in Vlora District, they cultivated 74.3 percent of the land, and in Librazhd District, they cultivated 75.8 percent. Land with low fertility and far from the village was often not planted. Even low-fertility land, however, would be cultivated if it were attached to a larger, principal parcel. In Vlora and Librazhd districts, where, respectively, 12.6 percent and 11.86 percent of the farmers own between 7 and 10 parcels (compared to only 3.7% of the farmers in Lushnja), the overall use of land was lower than in Lushnja.[2]

The consequences of fragmentation, such as loss of land and use of infrastructure, depend on the shape and dimensions of the parcels. When ex-cooperative fields are subdivided into parcels of 6–8 meters, 5–6 percent of the surface area per hectare is lost. This is why in the district of Lushnja there are better results where the length of parcels is from 16 to 23 meters. In the villages of Prenjas, Kotodesh, and Aliban (Librazhd District), some farmers own parcels of 6–8 meters in width which have been subdivided from an ex-cooperative field 23 meters long. The consequences are catastrophic because mechanical tilling of land is restricted and other infrastructure (e.g., drainage and irrigation canals) is rendered useless. These infrastructural works were built based on the large fields that were formed when the cooperatives were created. Use of irrigation and drainage canals and roads becomes difficult when these large fields are divided into small parcels that are cultivated with different crops on different schedules.

When the farmers were asked about an optimal parcel size, 13 percent responded, “The parcel size is optimal when it is large enough to use mechanization, irrigation, and drainage”; 34.8 percent responded, “the size of the ex-cooperative field”; 8.4 percent said, “1–2 hectares”; and 9.1 percent said, “2–3 hectares.” The opinion of agricultural specialists favors parcel enlargement through land consolidation.

There have been changes in land fertility since land distribution because of different systems of cultivation and use of fertilizers. We analyzed the soil of farmers’ parcels in the village of Krutje. Although the land was fragmented 3–4 years ago and there was no significant difference of humus among the parcels, the level of phosphorous[3] already varies greatly across parcels. Another problem is the low fertility of small parcels that are far from the villages because farmers do not fertilizer them. When the 405 farmers were interviewed, 92 percent said they used nitrogenous fertilizer (which acts quickly). Of the farmers in Lushnja District, 79 percent used phosphoric fertilizer, while

[2] In another district, Gjirokastra (Dropulli Commune), a large quantity of land was also not planted.

[3] We tested the soil of 15 parcels in the village of Krutje (Krutje Commune, Lushnja District), all on the same ex-cooperative field and adjacent to one another. Although it has been just four years since the land was distributed and privatized, we found big differences of phosphorous, which is one of the main elements necessary for land fertility and plant nutrition. Of the 15 farmers, 30% did not use phosphoric fertilizer and the other 70% used small quantities.

in Vlora, only 24 percent did, and in Librazhd, 43.7 percent. When the farmers were asked about fertilizer, 8.7 percent said that fertilizer was not available at the opportune time, 55.7 percent said that fertilizer prices were high, and 7.7 percent, that they do not use fertilizer. Of responding farmers, 27.9 percent said that fertilizer prices should be lowered. The high price of the fertilizer is still a problem.

None of the farmers have considered investing in the land. They have no capital and they have not agreed to invest jointly in the larger ex-cooperative fields, which were subdivided. When asked about this problem, 16 percent of the farmers said, "We cannot invest in different parcels, but all the farmers need to invest in one larger piece of land [such as the ex-cooperative field]"; 7.6 percent consider the previous infrastructural system as nonfunctional; and 19.7 percent suggest that government provide funds for investment. The best solution would be an agreement among the farmers to invest together in the larger ex-cooperative field. The government could invest in the irrigation system.

2.2.3 Fragmentation and production

The majority of economists, agronomists, and sociologists maintain that land fragmentation restricts economic production. This study shows that after fragmentation, production was lower compared to previous years. Area planted to cotton, tobacco, soya, and sunflower was reduced. In addition to fragmentation, the lower production is caused by transformation of the centralized economy into a market economy, defects in the systems of irrigation and drainage, high prices, and limited experience of the farmers.

Farmers lose productive work time when they move between different parcels. In the commune of Krutje, they travel 4.5 kilometers (one way) to each parcel; in the commune of Tërbufi, 3.1 kilometers; in the commune of Golemi, 4.1 kilometers; in the commune of Brataj, 5.6 kilometers; in the commune of Hotolisht, 1.7 kilometers; and in the commune of Orenja, 3.2 kilometers. This is why the farthest parcels are not planted. Land consolidation would reduce the time and expenditures required for travel.

The role of agricultural specialists has been diminished because of land fragmentation and the avid involvement of landowners who supervise the land themselves. In the district of Lushnja, in the commune of Krutje, 50 percent of the survey families occupied themselves in agriculture, and in the commune of Tërbufi, 39.5 percent (46.6% for all three communes of Lushnja District). In the three communes of Librazhd District, 34 percent of the population works in agriculture, but since their production is insufficient to sell in the market, farm families cannot provide themselves with basic necessities; as a consequence, they look for off-farm work. Besides electing to emigrate, 9 percent of the population in the commune of Hotolisht and 4 percent of the population in the commune of Orenja participate in off-farm work. Incomes and profits are higher from off-farm work than in the agricultural sector.

Some scholars think that fragmentation is not always a harmful process. Bentley (1990) maintains that private property fragmented the land in northern Portugal and that the less land people have, the better it is used. But his study takes place where stockbreeding is the most important activity and, because of government subsidies, milk is the most profitable product. This also occurs in Albania when farms of many parcels have high production. For example, in the village

of Hoshtimë (Qendër Commune, Vlora District), where farmers own more than 5 parcels (arable land, vineyards, and olive groves), agricultural activity is profitable.

Having analyzed this issue, however, we think production would have been higher if farmers owned fewer parcels. The majority of the interviewed farmers prefer one parcel to several noncontiguous parcels; 15 percent of the farmers (especially in the orchard areas) prefer 2–3 parcels (arable land, olive groves, and vineyards).

3. LAND CONSOLIDATION: POLICIES AND OBJECTIVES

3.1 ISSUE OF LAND CONSOLIDATION IN THE LITERATURE

The objectives of land consolidation include:

- grouping of separate parcels to reduce the negative effects of fragmentation;
- reduction of production costs; and
- encouragement of more effective agricultural plans and projects.

Land fragmentation is a major problem in agriculture and land consolidation can alleviate its consequences. Since the end of World War II, the governments of many countries have approved legislation in favor of land consolidation; they have attempted to implement consolidation programs but only a few have been successful. Greece, in 1948, initiated a consolidation program whereby if the majority of farmers who owned at least half of the land in an area voted in favor of consolidation, the procedure was voluntarily implemented. In 1959, obligatory consolidation was initiated. In the 1960s, a significant part of the Greek population moved to the city and abandoned villages and the land. As a consequence (Keeler and Skuras 1990, p. 73), average farm size increased from 3.1 hectares in 1950 to 4.56 hectares in 1985, and the average number of parcels per holding decreased from 7.1 to 5.9. Both forms of consolidation (voluntary and obligatory) were at their height in 1965–1974. In the 1981–1985 period, the average size of parcel increased from 0.612 hectare to 0.765 hectare (in 1950, it was 0.47 hectare). In 1980, the government approved a law to appropriate abandoned land and to give parcels to farmers who did not have sufficient land. The status of fragmentation of arable land in Greece has improved during the last 40 years. Approximately 21 percent of the arable land has been consolidated.

The authors of the University of Wisconsin Center for Cooperatives article (1994) explore the question, "Is consolidation the solution?" They describe different consolidation strategies in countries under different political conditions. Both Danish (in 1981) and Finnish (in 1957) governments approved land consolidation laws. Good results were obtained in Britain, Germany, Switzerland, and Austria before 1990. In Cyprus, the number of parcels per holding was reduced by half during the 1946–1985 period. In India, land consolidation began in the nineteenth century when voluntary consolidation was encouraged and farmers were told the advantages of consolidation. By 1939, the majority of farmers had accepted consolidation. In 1953, the government agreed to improve the system of irrigation and construct roads. As a consequence, production and farm size increased.

Consolidation was encouraged in Holland, West Germany, France, and Spain during the twentieth century. In Holland, since 1924, land consolidation schemes (particularly obligatory

programs) have been of great importance to increasing agricultural production. In France, to encourage consolidation at the end of the nineteenth century, the government eliminated taxes for farmers who consolidated their holdings. Consolidation became obligatory later in some areas of France; as a result, the average number of parcels per holding was reduced four times. In Spain, a consolidation program (Lera de Isla 1964) began in 1953, reducing the number of parcels. In 1966, a government law forced people to sell parcels under 2 hectares to an immediate neighbor or pay big fines. Later on, the government determined the minimal size of a parcel and paid the consolidation costs, but then the farmers whose lands were consolidated were charged a 5 percent land tax. Ten years later, central and local consolidation agencies were formed.

Consolidation programs involve both direct and indirect costs. Direct costs include such activities as moving fences. Indirect costs involve reorganizing the farm internally to accommodate the larger land parcels. At the beginning, consolidation is usually voluntary, but then becomes obligatory and focuses on creating holdings with fewer parcels. These programs are subsidized by government. In order to avoid or decrease the adverse effects of fragmentation, farmers have begun to join together to form organizations to exchange parcels among participants and to arrange the planting of combined parcels with the same crop.

3.2 EXCHANGE OF PARCELS OF LAND

Few of the interviewed farmers have exchanged parcels in the study villages. In the village of Çerme e Vogël (Tërbufi Commune), five farmers exchanged parcels, which measured, respectively, 0.88 hectare, 0.39 hectare, 0.01 hectare, 0.39 hectare, and 0.01 hectare, with five other farmers who owned parcels of the same size. In the village of Çerme Proshka (Tërbufi Commune), two farmers exchanged parcels of 0.187 hectare. In the village of Prenjas (Prenjas Commune), two farmers exchanged two parcels measuring 0.037 hectare and 0.063 hectare. In the village of Novosela, one farmer exchanged a parcel of 0.7 hectare, and in the village of Alibali, a farmer exchanged a parcel of 0.7 hectare. Many interviewed farmers said they were interested in exchanging some of their parcels but thought it was illegal. They were waiting for a law permitting land exchanges to be approved by the cadastre and reflected on the land titles of the district. This is why many farmers have not exchanged their land parcels.

In some cases, the land could be easily exchanged, especially parcels carved out of the same ex-cooperative field and belonging to the same extended family.

There are two reasons that the farmers hesitate to exchange parcels:

- They doubt the existence of legislation that allows the exchange of parcels.
- They possess parcels of different levels of fertility (this is most likely the case when parcels have been carved out of different ex-cooperative fields but not those formed from the same field).

In the village of Prenjas (Prenjas Commune), 40–50 farmers owned 70 parcels which had been subdivided from one ex-cooperative field of 22 hectares. Many of those farmers owned several parcels located in different parts of the field, though, in fact, the land quality, including physical and chemical characteristics, of the parcels is the same. The consolidation of each farmer's holding into

a single bigger parcel would reduce farmers' problems. In these cases, obligatory consolidation would eliminate or reduce restrictions on the infrastructure system.

3.3 FARMERS' AGREEMENTS OF PLANTING THE SAME CROPS

When farmers plant different crops on the same ex-cooperative field, they have difficulty in using tractors and other machinery as well as irrigation, drainage, and transport systems. In order to restrict these negative consequences, some farmers have agreed to plant the same crop on adjoining parcels.

In the village of Bubullima (Lushnja District), 87 farmers who owned 163 hectares on 15 ex-cooperative fields of 7–14 hectares agreed to sow wheat; so did 40 farmers in Hysgjokaj (Lushnja) who owned 25 hectares on 5 ex-cooperative fields; 83 farmers in Divjaka (Lushnja) who owned 32 hectares on 3 ex-cooperative fields; 85 farmers in Ballagati (Lushnja) who owned 79 hectares on 10 ex-cooperative fields; and 34 farmers in Kotodesh (Prenjas Commune) who owned 11.2 hectares on adjoining parcels. We also found this practice on ex-cooperative vegetable fields and on vineyards in the village of Hoshtimë.

When farmers plow and plant their land at the same time, production results are better than when they perform these tasks at different times. They save 2–3 percent of their land (since all the surface area is planted), fuel consumption is 5–6 percent lower, and cost of transport is 5–6 percent lower. The difficulties that farmers face during irrigation are also reduced and farmers find it easier to apply agronomic practices.

Farmers need to be supported by credit from the state because agricultural banks do not offer loans for consolidation activities. An ex-cooperative field planted totally in vineyards, for example, has fewer problems than a field planted in different crops each year. The state should therefore give priority to farmers who plant parcels which are located on the same ex-cooperative field in vineyards or orchards by making credit available to them.

3.4 WORKING TOGETHER

As mentioned in the previous section, sometimes farmers work as a group in order to reduce the negative effects of land fragmentation and subdivision. In most cases, these farmers are brothers or father and sons. Examples from different villages of farmers' working together in 1994 are presented in the following paragraphs.

3.4.1 Aliban

In the village of Aliban, three brothers' families together worked their combined land area of 6.45 hectares, without considering parcel boundaries, and divided the production into three parts according to the size of each family's holding. Of the total area, 92 percent was planted in cereals, vegetables, and fodder. Since the surface area planted to the same crops increased, the yield of the land was 10–15 percent higher than other farmers' land.

Also in Aliban, the families of a father and a son worked together. The entire holding of 3.26 hectares was subdivided into three equal parcels and the families planted and tilled the land together. The output was divided into parts according to the amount of land owned.

3.4.2 Poro

In the village of Poro (Novosela Commune), two farmers (father and son) farmed together. They owned 1.02 hectares each and planted one crop on each parcel. They divided the production into parts in proportion with the surface area planted.

3.4.3 Lepenica

In the village of Lepenica, the families of three brothers worked their combined area of 1.42 hectares (which was divided into 2 parcels) together. Their production of wheat was divided according to each family's holding size.

3.4.4 Gjormi

In the village of Gjormi, three families (father and two sons) owned two adjoining parcels for a total of 1.04 hectares. Each parcel was planted with a different crop.

3.4.5 Panaja

In the village of Panaja, three families (father and two sons) worked their land (5 parcels totaling 3.45 hectares) together. Each family owned 1.15 hectares. The families together paid total expenditures and allocated income according to the amount of land owned. By applying higher levels of agricultural technology (e.g., fertilizer), they were able to cultivate two to three crops per year and produce high yields. They cultivated mainly watermelon and vegetables but also had olive groves.

In all the above cases, output and income levels were higher than those of other farmers in the village. These families expressed a desire to cooperate within the extended family if they had the means and capital to use mechanization and other improved technology.

3.5 AGRICULTURAL PRODUCTION GROUPS

The organization of farmers into agricultural production groups mitigates more of the negative effects of land fragmentation than private farming does. We studied the "Progresi" production group in the Manza region of Durrësi and the groups of "Gjaza," "Savra," "Fara," and "Kashtë Bardhë" in the Lushnja region. In the last few years, these production groups have had positive results. Many of these groups have faced problems; some have been able to overcome the difficulties while others have disbanded. In 1994, these production groups had access to land under two tenure models: private ownership, and government rental.

3.5.1 Progresi production group

The Progresi production group, founded in January 1992 in the village of Manza, consists of 36 families (250 people) who own an area of 36 hectares. Each family owns 1 hectare of land, though

not in a specific place for there are no parcel boundaries. If one of the families leaves the group, it is given land on the edge of the Progresi land. The 36-hectare holding consists of 6 parcels of 3–6 hectares each. Each family owns an additional 0.4-hectare plot, which is not group property.

The production group board (consisting of president, agronomist, economist, and treasurer) successfully manages activities and finances. The production group contributes 13–15 permanent workers who work the land with 20–30 part-time workers, who do not own any land. There are three work groups in charge, respectively, of the first planting, the second planting, and the mechanized tasks. The workers were paid 100 leks in 1994 for 15 days of work; the president was paid 30 percent more, and the agronomist was paid 20 percent more.

The process of mechanization expanded every year. In 1992, the Progresi production group did not privately contract its mechanized tasks, and in 1993, it paid for mechanized services. By 1994, the group owned its own pool of machinery. During the 1992–1995 period, the production group purchased equipment and vehicles (such as motor pump, transport vehicle, sprinkling pump, and milling machine), which cost 84,000 leks. A Swiss agency supplied credit of 2.62 million leks for buying tractors and storehouses. Now the group plants primarily vegetables and watermelon on approximately 60% of its land.

The production group's financial results have been positive. In 1992, it made a profit of 800,000 leks; in 1993, 1,080,000 leks; and in 1994, 171,917 leks. In 1994, production was lower because Albania imported the same agricultural products at lower prices. In 1992, 1993, and 1994, Progresi invested 2,000, 3,000, and 480 leks per land unit (0.1 hectare). The bank raised interest rates from 8 percent (1992) to 39 percent in the following years.

Agricultural production is higher for a production group than on private farms because the group applies many agronomic practices. It employs a high degree of mechanization for both tilling and sowing. The production group plants a large area of land to one crop. Output is consequently higher and expenditures are lower. The land-use coefficient[4] was 1.2–1.6 (indicating more than one planting) while other farmers' land was not replanted. The production group uses high-quality seeds and fertilizer (5.3 quintals[5] per hectare of fertilizer and 150 quintals per hectare of manure). It improved its drainage and irrigation system, sold its production both wholesale and retail, and used transport vehicles which were in good condition. As a consequence, many families in this village are hoping to become members of the Progresi production group.

3.5.2 Fara production group

The Fara production group was organized in the village of Grabian (Lushnja District) in 1993. The 82 families of the group rented 282 hectares from the state. The total area consists of 29 parcels of arable land of 10 hectares each. The central council and the president (who is an agricultural specialist) direct the production group, but there is neither an economist nor a treasurer. Members are paid according to the size of their rented land area.

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[4] A land-use coefficient of 1 indicates one planting and harvesting on a parcel. Higher coefficients indicate multiple planting and harvesting during one agricultural year.

[5] In Albania, 1 quintal = 100 kilograms.

In Fara, production and finances for the years 1993–1994 were unsatisfactory. In 1994, 60 percent of the surface was planted in wheat, for which the output was 28–30 quintals per hectare, one of the lowest in the region. The production group thinks this was due to its small machinery stock—it needs to rent tractors and other machinery, which is expensive. Because of insufficient use of fertilizer (2.2 quintals per hectare) and low levels of mechanization, other agronomic technology (e.g., drainage and irrigation) is ineffective

3.5.3 Savra production group

The Savra production group, which was organized in the village of Saver (region of Lushnja) in 1993, consists of 8 families (50 persons) who own 11.9 hectares on 3 parcels. The group cultivates mainly wheat, vegetables, maize, and alfalfa. The economic result is positive and profitable; in 1994, expenditures on arable land were 366,000 leks while income was 1 million leks, which was divided among members according to their land size. The production group does not possess any machinery or transport vehicles but leases from others.

3.5.4 Gjaza production group

The Gjaza production group was organized in the commune of Krutje (Lushnja District) in 1993. It consists of 15 families (60 persons) who own 20.6 hectares of land broken into 3 parcels. In addition, there are 4 other workers. The group cultivates mainly wheat, maize, and vegetables. Although it uses agronomic practices (e.g., drainage and mechanization), it obtains the same results as private farmers because of mechanical problems as well as financial and fertilizer shortages.

3.5.5 Kashtë Bardhë production group

When problems arise, some farmers leave the production group. For example, the Kashtë Bardhë production group, successfully organized in the commune of Karbunara (Lushnja District) in 1991, consisted of 17 families who owned an area of 19 hectares divided into 3 parcels at a distance of 3.5 kilometers from the village. Of the total area, 59 percent produced vegetables and seeds for a seed company. Profits increased from 12,000 leks per hectare in 1992 to 27,500 leks per hectare in 1993/94. Profits were divided into two parts: 35 percent was distributed according to land area, and 65 percent was given according to amount of work invested. Each person who worked was paid 350 leks per day. In 1994, this organization stopped functioning because of defects in the production group's statutes and rules. Disagreeing with one another, members left the group.

3.5.6 Advantages and problems

Our study included the question: "What are the advantages and disadvantages of the farmers' production groups compared to private farms?" The most important advantage mentioned by respondents is the consolidation of their fragmented parcels and the reformation of ex-cooperative fields. Other advantages follow: increased levels of mechanization, less loss of land, preservation of existing infrastructure (irrigation and drainage systems), and more efficient coordination of agricultural tasks (e.g., plowing and planting). Still another advantage is the increased possibility of placing products on the market.

When the 405 farmers were asked, "What form of organization can reduce land fragmentation?" 59 percent responded in favor of the farmers' production groups. In the farmers' opinion, an average size of 30–50 hectares is optimal for an agricultural production group.

Some of the production groups that we studied succeeded and some failed. We found many problems when studying the stability of production groups. The groups owned their land or rented land from the state. Production was higher when the group owned the land, as in the case of the Progresi production group in the district of Durrësi. When the group rented land, as in the case of Lushnja production groups, possession was not guaranteed and users could not predict future activity. A possible solution is long-term leasehold contracts, whereby the production groups could organize their activities, investments, and transport.

The state should give priority to agricultural production groups, delivering long-term credit with low interest rates. The study revealed that the production groups were not receiving enough support. The Progresi group repaid one loan of 800,000 leks with 8 percent interest but did not pay another credit of 1.5 million leks on time because of its higher (39%) interest rate. Fortunately, when the state stopped supplying credit, the Progresi group was assisted by a Swiss confederation which delivered a credit line of 2.3 million leks. The production group will repay this credit within 6 years. Overall, the state has supported only one of the Lushnja production groups with credit.

The influence of the state, by delivering credit or investing in drainage and irrigation, is of great importance. When supported by credits, production groups can more easily consolidate land, build storehouses and administrative centers, and apply new technologies of mechanization and infrastructure. Many problems arise from insufficient farm machinery and inputs. The price of imported fertilizers is very high, whereas Albanian fertilizer is much cheaper but demand is much higher than supply. As for machinery, taxes on it should be lower so that the agricultural production groups can afford its purchase. The government can also help by supplying credits to buy needed machinery.

The state can also support the farmers in creating different forms of organization. In Greece, for example, some farming organizations store farm production and others supply farm machinery. Currently, in Albania, although many organizations support the development of agriculture, they are not well coordinated among themselves nor have they developed good links with the agricultural sector. They are, therefore, unable to help resolve the legal, organizational, financial, and marketing problems facing farm organizations. State and agricultural specialists should train Albanian farmers in establishing and managing different types of farmer organizations. There is experience in this type of training. The University of Wisconsin Center for Cooperatives, for example, has researched and developed programs for assisting cooperative ventures in organization and in meeting the economic and social needs of their members. This includes training in the production and marketing activities of a competitive economy.

In other countries, there have been different forms of organization with positive effects for reducing fragmentation. In 1989, Stanfield and Childress (1990) studied farm cooperatives in Central America by analyzing the organization of worker-managed agricultural enterprises. These cooperatives obtained high yields of African palm oil, cereals, cotton, and rice. A group farm of this model has three characteristics: (1) the group to whom the land is adjudicated collectively owns all the assets (land and capital); (2) the group distributes the profits according to work contributed; and

(3) the cooperative members perform most of the agricultural tasks. Some of these cooperatives had higher yields than private farms in Central America. Under this form of organization, the state retains some control over land rights because the cooperative cannot sell land without permission from the National Agrarian Institute. After the death or retirement of a member, another family member can serve as replacement in the cooperative.

3.6 THE LAND MARKET

Before the 1991 privatization process, the state owned all land and did not allow selling, buying, or renting of land. Legalizing land transactions, both rentals and sales, can facilitate the consolidation of farm holdings through land selling or renting, especially when people leave the villages and move to the cities. We think the land market can serve as a means for consolidating landholdings. Legislation that permits formal land transactions would recognize the fact that people are moving out of rural areas. Consolidation will also be facilitated with the expansion of tourism, industry, infrastructure, and migration.

Table 5 presents the responses to questions about leasing and selling of land. When the farmers were asked about willingness to rent out land, 281 (69.7%) of them answered "no," while 122 (29.3%) of them answered in different but more positive ways. Of these 122 farmers, 49 (12.2%) replied "yes," and 73 (18.1%) said that they were waiting for legislation that allows renting of land. When farmers were asked about buying or selling land, the majority said, "We need a law of land transactions"; 8.7 percent agreed to sell or buy the land; 3.32 percent were waiting for approval of the law; and 4.6 percent would not agree to either selling or buying land because of the lack of employment opportunities in other sectors.

TABLE 5. Responses regarding land market transactions

TYPE OF TRANSACTION	NO	YES	WAITING FOR LAW	YES, IF HAD MORE LAND	PERHAPS IN THE FUTURE
Renting (n=403)	281 (69.7%)	49 (12.2%)	73 (18.1%)	-	-
Sales (n=391)	220 (56.2%)	34 (8.7%)	97 (24.9%)	18 (4.6%)	22 (5.6%)

The pattern of farmers' opinions was different across the three districts of our study. Among the farmers who were in favor of renting land, 55.1 percent resided in the district of Vlora, 26.5 percent in the district of Lushnja, and 18.4 percent in the district of Librazhd. These are usually farmers who have left their villages or are planning to leave. The farmers in Lushnja District are not interested in renting out their land because they own relatively large areas that are very fertile. Agriculture has typically been their main activity and has become a highly commercialized

production process. The same conditions apply in Librazhd District, where there are few possibilities of alternative employment.

In the course of our study, many farmers expressed insecurity about their landownership rights. This is another reason that legislation is needed to permit land transactions. The issue of previous owners (i.e., pre-collectivization owners) also needs to be resolved. The legality of the land certificates (*tapi*) issued during redistribution must be strengthened.

Government should regulate land transactions for an initial period in order to help farmers consolidate their holdings through sale or rental. For example, regulated land transactions could favor consolidation by permitting sales to farmers within the village and not to foreigners for a certain period of time. In Vlora District, 14 farmers suggested this option. The law could favor, first, family members, then, former owners, and, then, farmers whose land adjoins boundaries with the seller's land.

3.7 PROGRAMS OF CONSOLIDATION

Although land fragmentation is fairly new in Albania, its consequences are quite serious. The state has no experience with consolidation, moreover, and farmers are finding it difficult to resolve their problems. Farmers are secure only about their own pieces of land. They do not consider enlarging or consolidating their landholdings in Albania because of diverse factors such as nostalgia for the land, distrust of cooperative forms, difficulty in applying agronomic technology, and constraints on financial activity. The majority of farmers, however, agree that the disadvantages of fragmentation are greater than the advantages. They also see that the negative effects of fragmentation increase as the number of parcels increases.

There are numerous disputes among farmers with regard to previous farm boundaries. Many families that owned land before the 1946 agrarian reform want their old properties returned to them. Some are trying to force the present owners off their old landholdings or are looking to exchange the parcels they received from the distribution program with the parcels they had before the reform. Thus, some farm families are interested neither in improving the land they received nor in consolidating their holdings, since they are afraid of the ex-owners' claims.

Albania is among the European countries with the least amount of agricultural land per person and the smallest size of properties. We would suggest that some solutions to its problem of land fragmentation could be based on consolidation programs and agricultural development.

3.7.1 Education and organizational structures

In many countries, measures for voluntary consolidation of landholdings have been greatly extolled while fragmentation of holdings has been greatly disclaimed. Of farmers responding to our survey, 60–70 percent agreed that fragmentation was harmful and that landholdings should be consolidated. When farmers were asked specifically about consolidation, they replied that the government should inform them about the experiences of other countries. They are interested in directly experiencing these processes. The state, scientific institutions, and foundations should educate farmers about fragmentation and consolidation with the help of the press, radio, and television and should help farmers visit other countries that have attempted consolidation programs. These organizations

should encourage land consolidation, coordination to plant the same crop on adjoining parcels, and investment in and maintenance of drainage and irrigation systems.

The government is concerned about land distribution and is searching for solutions to the farmers' problems, but it also should organize and apply policies that encourage consolidation and restrict fragmentation. Its organization of local and national groups, consisting of farmers, specialists, experts, and representatives of the Ministry of Agriculture, would reinforce the process of land consolidation.

3.7.2 Consolidation in action

Land fragmentation seems to be increasing, especially for the smaller properties. Farmers should pool their land, participating in programs of consolidation while restricting land fragmentation. Both the land market and the voluntary combination of separate parcels can be parts of this consolidation program. But the program may not be completely successful because of inadequate financial support and reluctance of farmers to exchange land.

The main objective of consolidation is enlarging agricultural units by reducing the number of parcels in a holding through voluntary and obligatory association. The specific goals of a consolidation program are:

- organization of local and national groups for land consolidation,
- obligatory land redistribution in indicated areas,
- organization of the land market, and
- application of consolidation schemes that produce farm holdings of one or a few parcels.

Among the objectives of obligatory consolidation are land improvement and protection from soil degradation. The process of land degradation has already begun with salinization in the districts of Vlora and Lushnja and with high magnesium content in the commune of Prenjas (Librazhd District) due to restricted drainage and improvement measures.

Some parcels pose problems because they have irregular shapes, restricting the processes of mechanization, drainage, irrigation, and transport. Such problems were found especially in parcels that were smaller than 0.45 hectare in size. In these cases, obligatory exchange of smaller parcels with adjacent larger holdings would support the process of consolidation.

A consolidation program would need planning and long-term funding from the government as well as provision of infrastructure, drainage, and irrigation systems. Looking toward a national consolidation plan, application of these methods could begin with consolidation in one district (maybe Lushnja) and then proceed to some villages in Vlora and Librazhd. A group of experts could design the consolidation plan and funding scheme.

Consolidation will entail direct expenditures such as changing parcel boundaries and indirect expenditures such as reorganizing the consolidated farms. The state could subsidize consolidation expenditures and impose land taxes according to a long-term consolidation scheme. The state could also encourage farmers to consolidate their landholdings by waiving their land taxes for a period of 3–5 years.

The consolidation program should determine the minimal size of a parcel which should not be subdivided. The minimal parcel size should not be smaller than 0.45 hectare on the plains in order to allow mechanized tilling and raking.

3.7.3 Legislation

The state should pass legislation to govern consolidation and restrict fragmentation, particularly because in the last few years many farmers have left their villages for different reasons. In the commune of Qendër (Vlora District), for example, 10 families rented out or sold their land and moved to the city, expecting the land transactions law to be passed.

The inheritance law in Albania should be modified to assure that changes in landownership between sons and daughters, divorced persons, older and younger family members, and so forth are properly recorded. Legislation should specify how the land is to be subdivided and what the minimum parcel size should be. The Spanish Civil Law of 1989, for example, allows one heir to own a farm while the other heirs are compensated in cash; the farm remains a single unit. After land privatization in the district of Lushnja, in contrast, 1,000 new families have broken off from their original families and each was given land from family properties.

4. SURVEY CONCLUSIONS

We implemented this study of land, both privately owned and rented from the state, in Albania to show the problems and consequences of fragmentation (advantages and disadvantages) and to explore methods of consolidation (current and prospective). Land fragmentation in Albania resulted from the dissolution of agricultural cooperatives and state-run enterprises and the method chosen to redistribute land among village families. Families were given various land parcels of different quality (flatland, hilly land, and mountainous land, for instance).

Our study selected three communes in each of three districts as well as three villages in each commune. A total of 15–20 farmers in each village (a total of 405 farmers) was asked about their farm parcels and fragmentation.

In Lushnja District, 74.8 percent of the respondents owned farms of 2 hectares or less and in Vlora this figure was 77.8 percent. In contrast, in Librazhd District, 76.3 percent owned farms of 1 hectare. Farm size in the hilly, mountainous areas was smaller than in the flatlands. In the hilly commune of Brataj (Vlora District), 86.7 percent of the farmers owned not more than 1 hectare of land, while only 13.7 percent of them owned 1–2 hectares. In the flatland commune of Novosela, only 4.5 percent of the farmers owned less than 1 hectare, while 95.5 percent of them owned 1–3 hectares.

In addition to small farm holdings, land fragmentation in Albania is widespread. In the three study districts, farmland holdings incorporated from 1 to 10 parcels. Of 135 farms in the district of Lushnja, only 16.3 percent consisted of 2 parcels while 83.7 percent had 3–8 parcels. In the district of Vlora, 52 percent of the farmers owned 1 parcel, 80 percent owned 2–5 parcels, and 14.8 percent owned 6–9 parcels. In the district of Librazhd, 18.5 percent of the farmers owned 1 parcel, 57.8 percent owned 2–5 parcels, and 24.2 percent owned 6–10 parcels. Only 25 percent of the 405 farms in our study consisted of only 1–2 parcels. The proportion of parcels that were 0.2 hectares in

size was 35.8 percent in Lushnja District, 42.7 percent in Vlora District, and 63.5 percent in Librazhd District.

Small farm size in Albania is a consequence of the small amount of agricultural land available per person (an average of 0.24 hectare per person) and the high proportion (65%) of the Albanian population living in rural villages. As a direct consequence of privatization, 480,000 small and fragmented farms were formed. Enlarging and consolidating these farm holdings is necessary because the economic situation of village farmers depends on the size of their farms.

Farmers consider fragmentation as more harmful than useful. They realize that having parcels in different areas reduces the risk of total production failure and assures access to land with different levels of fertility. However, farmers are more aware of the disadvantages of fragmentation, especially relative to the process of agricultural modernization (mechanization, irrigation, and application of agronomic technology). Among responding farmers, 39 percent lose time with less mechanization and more animal traction; 48.4 percent interrupt one another during the process of irrigation because they plant different crops (this is why it is necessary to modify the irrigation system according to landownership, which cannot be done with fragmented holdings); and 65.4 percent experience difficulty applying agricultural technology. In the hilly, mountainous villages, where farmers cannot apply the new technology, 30–40 percent of the surface area was planted to wheat year after year.

Some of the land was not cultivated because of fragmentation. In the districts of Vlora and Librazhd, 25 percent of the area was not planted, usually the small, and mostly distant, parcels of low fertility. In many cases parcels were separated into 3–4 patches of land, further restricting the use of irrigation, drainage, and mechanization. Of responding farmers, 13 percent thought a parcel size that permitted mechanization and use of in-place irrigation and drainage infrastructure would be optimal; 34.8 percent favored a parcel size that approached that of the ex-cooperative field.

We support the idea of enlarging parcel size and implementing obligatory consolidation schemes. Fragmentation not only creates many economic problems but also reduces overall production. Farmers lose time traveling to their parcels and lose money with transportation costs and mechanization needs. In the commune of Krutje, farmers on average walk 4.5 kilometers from house to individual parcel; in the commune of Tërbufi, 3.1 kilometers; in the commune of Golemi, 4.1 kilometers; in the village of Brataj, 5.6 kilometers (see Tables B1–B9). The grouping of landholdings into one or two parcels would limit the disadvantages and diseconomies of fragmentation.

5. LAND CONSOLIDATION: PLANS AND PROGRAMS

In order to reduce or avoid the negative effects of fragmentation, farmers encourage programs of consolidation. They agree with the following methods:

1) **Exchanging parcels of land:**
   Farmers agree to the exchange of parcels in many cases, but they question the legality of this action. It is easier to exchange parcels when a family owns several tracts in the same ex-cooperative field. This form of consolidation should be supported by law.

2) **Planting the whole ex-cooperative field with the same crop:**
Especially in the district of Lushnja, some farmers have agreed to plant large areas with the same crop (wheat, vegetables, vineyards, fruits, and so on). This method saves land and production expenditures and reduces some problems. Orchards should be primarily supported through state investment.

3) **Farming in groups:**
In the six groups we analyzed, production and incomes were higher compared to individual farmers. The land-usage coefficient was also 1.4–1.5 times higher. Farmers finance production costs together and divide the production and income among themselves according to parcel size of each family. Agricultural production groups represent an advanced form of cooperation. In Durrësi District, the Progresi production group, which consists of 36 families owning an area of 36 hectares, is very successful. But in spite of the advantages, there still are many problems, such as insufficient credit lines, high interest rates, no supportive legislation, and little machinery. We think that the Ministry of Agriculture should support an agricultural production group in the district of Lushnja as a pilot project to create institutional elements and financial mechanisms that help other farmers.

Production groups that rent land from the government could better plan their activities if the land is given in private ownership or long-term lease. The state can give priority to these groups, delivering credits with low interest rates. New forms of organization and cooperation should be used in order to more efficiently collect and market farmers' production and provide inputs.

4) **Creating a land market:**
Land consolidation and enlargement of parcels are related to the land market (buying, selling, or renting land). Many farmers are interested in legalizing the land market. Legislation should be approved and implemented in order to resolve the problems of ex-owners, to develop tourism, to reduce emigration, and to employ people. For the time being, the land market should not permit foreigners to buy land but should give priority to family members, ex-owners who live in the village, and farmers with adjoining land. The state should support these processes of consolidation.

5.1 PROGRAMS OF CONSOLIDATION

Although fragmentation is a relatively new process in Albania, its negative effects are serious. The state should implement programs of consolidation with the following objectives: creation of viable farms, improvement of the landownership structure, enlargement of fragmented holdings, construction of infrastructure, avoidance of land abandonment, reduction of production costs, and improvement of systems of irrigation, tilling, and mechanization. Consolidation can be achieved by:

- encouraging voluntary exchanging parcels, grouping of farmers and parcels, and selling or buying land);
- exposing farmers to other experiences of land consolidation and fragmentation;
- improving the consolidation structure with the participation of farmers, specialists, experts, and representatives of the agriculture ministry;

- enacting legislation that supports consolidation and restricts fragmentation (laws on ownership, inheritance, transactions, and renting of land);
- determining the minimum size for farm holdings that cannot be further fragmented (the fragmentation of farm holdings less than 1 hectare should not be allowed and parcels less than 0.4 hectare in field area should not be subdivided);
- implementing models that encourage consolidation by providing long-term public financing;
- coordinating consolidation programs with infrastructure, irrigation, and drainage projects in order to hasten combination and increase production;
- documenting land registration in a process that is parallel to the consolidation schemes; and
- redistributing land wherever the negative consequences of fragmentation are unavoidable.

  This last measure, redistribution of land, can be implemented by applying the following actions:
  - obligatory consolidation in the areas where state farmland has been given in usufruct;
  - obligatory consolidation where fragmentation is most harmful and there are possibilities of consolidation;
  - obligatory exchange of parcels among farmers who own land within the same ex-cooperative field as well as when fragmentation affects mechanization, irrigation, and drainage, or where land degradation is occurring; and
  - preparation of consolidation schemes that give state support to farmers who consolidate their land into one or a few parcels (farmers who participate in consolidation programs could be exempt from paying land taxes for 3–5 years, or the consolidation schemes could compensate obligatory exchange of land with cash, or the state could offer financing for consolidation and then charge the farmers land taxes).

5.2 FURTHER RESEARCH

Now that we have gathered some information about land fragmentation and its consequences, we make the following suggestions for further research:

- study of the different causes and processes of fragmentation and of the changes that take place during the process;
- compilation of consolidation programs and models, including the application of these plans in one pilot district such as Lushnja and in some villages of Vlora and Librazhd; and
- study of consolidation programs during the next few years, beginning with an area of 5–10,000 hectares and gradually extending to other regions and districts.

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ANNEX A: TABLES

TABLE A.1. Characteristics of farm size and fragmentation, Komuna Krutje (Lushnja District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY (ha)
Krutje							0–0.5	-	-	-	-
							0.5–1	1	0.56	0.56	6.7
							1.01–2	14	21.14	1.51	93.3
Subtotal	21.7	63	4.2	0.34	8.5	59	-	15	21.70	1.41	100.0
Zhyme							0–0.5	1	0.30	0.30	6.7
							0.51–1	3	2.41	0.80	20.0
							1.01—2	8	12.08	1.51	53.3
							2.01—3	2	4.65	2.32	13.3
							3.01–4	1	3.06	3.06	6.7
Subtotal	22.5	51	3.4	0.44	2.5	67	-	15	22.50	1.50	100.0
Rrupaj							0–0.5	-	-	-	-
							0.5—1	2	1.54	0.77	13.3
							1.01—2	9	14.90	1.65	60.0
							2.01–3	4	9.13	2.28	26.7
Subtotal	25.6	39	2.6	0.65	2.3	69	-	15	25.57	1.70	100.0
Komuna							0–0.5	1	0.30	0.30	2.2
Level							0.51–1	6	4.51	0.75	13.3
							1.01–2	31	48.12	1.54	68.9
							2.01–3	6	13.78	2.29	15.4
							3.01–4	1	3.06	3.06	2.3
Totals	69.8	153	3.4	0.45	4.5	195	-	45	69.77	1.55	100.0

TABLE A.2. Characteristics of farm size and fragmentation, Komuna Tërbufi (Lushnja District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTRANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Cerme							0–-0.5	-	-	-	-
e Vogel							0.51–-1	1	0.95	0.95	6.7
							1.01–2	10	14.63	1.46	66.7
							2.01–3	3	7.32	2.44	20.0
							3.01–4	1	3.23	3.23	6.6
Subtotal	26.1	61	4.1	0.43	2.9	91	-	15	26.13	1.74	100
Cerme							0–-0.5	-	-	-	-
Proshke							0.51–1	1	0.87	0.87	6.7
							1.01–2	10	14.54	1.45	66.7
							2.01–3	4	9.0	2.25	26.6
Subtotal	24.4	51	3.4	0.47	3.1	82	-	15	24.41	1.62	100
Cerme							0–-0.5	-	-	-	-
Shkumbin							0.51–1	-	-	-	-
							1.01–2	11	15.34	1.39	73.3
							2.01–3	3	6.65	2.21	20.0
							3.01–4	1	3.49	3.49	6.7
Subtotal	25.5	45	3.0	0.56	3.3	79	-	15	25.48	1.69	100
Komuna							0–-0.5	-	-	-	-
Level							0.51–1	2	1.82	0.91	4.5
							1.01–2	31	44.5	1.43	68.9
							2.01–3	10	22.98	2.29	22.2
							3.01–4	2	6.72	3.36	4.5
Totals	76.0	157	3.4	0.48	3.1	252	-	45	76.02	1.68	100

TABLE A.3. Characteristics of farm size and fragmentation, Komuna Golemi (Lushnja District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Golem i							0–0.5	1	0.38	0.38	6.7
Madh							0.51–1	3	2.39	0.79	20.0
							1.01–2	10	15.56	1.55	66.7
							2.01–3	1	2.42	2.42	6.6
Subtotal	20.8	63	4.2	0.33	3.2	77	-	15	20.75	1.38	100
Golem i							0–0.5	-	-	-	-
Vogel							0.51–1	-	-	-	-
							1.01–2	8	12.80	1.60	53.3
							2.01–3	6	14.03	2.33	40.0
							3.01–4	1	3.38	3.38	6.7
Subtotal	30.2	95	6.3	0.31	6.1	84	-	15	30.2	2.01	100
Allprenaj							0–0.5	3	1.00	0.33	20.0
							0.51–1	1	0.77	0.77	6.7
							1.01–2	4	5.65	1.41	26.7
							2.01–3	5	11.68	2.33	33.3
							3.01–4	1	3.77	3.77	6.7
							4.01–5	1	5.01	5.01	6.6
Subtotal	27.9	55	3.6	0.50	3.0	67	-	15	27.88	1.85	100
Komuna							0–0.5	4	1.38	0.34	8.9
Level							0.51–1	4	3.16	0.79	8.9
							1.01–2	22	34.02	1.54	48.9
							2.01–3	12	28.13	2.34	26.7
							3.01–4	2	7.16	3.57	4.4
							4.01–5	1	5.01	5.01	2.2
Totals	78.9	213	4.7	0.37	4.1	228	-	45	78.86	1.75	100

TABLE A.4. Characteristics of farm size and fragmentation, Komuna Novosele (Vlora District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATEGORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Novosele							0–0.5	-	-	-	-
							0.51–1	-	-	-	-
							1.01–2	8	12.33	1.54	53.3
							2.01–3	7	16.96	2.42	46.7
	29.3	54	3.6	0.54	-	82	-	15	29.29	1.95	100
Poro							0–0.5	-	-	-	-
							0.51–1	1	0.96	0.96	6.7
							1.01–2	8	11.57	1.44	53.3
							2.01–3	6	15.0	2.5	40.0
	27.5	51	3.4	0.54	4.84	81	-	15	27.53	1.83	100
Aliban							0–0.5	-	-	-	-
							0.51–1	1	0.87	0.87	6.7
							1.01–2	8	14.18	1.77	53.3
							2.01–3	6	13.64	2.27	40.0
	28.7	55	3.7	0.52	4.42	73	-	15	28.69	1.91	100
Komuna							0–0.5	-	-	-	-
Level							0.51–1	2	1.83	0.91	4.5
							1.01–2	24	38.08	1.58	53.3
							2.01–3	19	45.60	2.40	42.2
Totals	85.5	160	3.6	0.53	4.96	236	-	45	85.51	1.90	100

TABLE A.5. Characteristics of farm size and fragmentation, Komuna Qendër (Vlora District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Panaja							0–0.5	-	-	-	-
							0.51–1	5	4.30	0.86	33.3
							1.01–2	8	12.15	1.52	53.3
							2.01–3	2	4.38	2.19	13.4
	20.8	90	6	0.23	4.9	89	-	15	20.82	20.82	100
Hoshtim							0–0.5	-	-	-	-
							0.51–1	1	0.47	0.47	6.7
							1.01–2	6	10.01	1.67	40.0
							2.01–3	7	17.50	2.5	46.6
							3.01–4	1	3.01	3.0	6.7
	31.0	101	6.7	0.30	5.6	74	-	15	30.99	2.06	100
Sheri							0–0.5	1	0.37	0.37	6.7
shishte							0.51–1	2	1.64	0.82	13.3
							1.01–2	11	14.96	1.46	73.3
							2.01–3	1	2.04	2.03	6.7
	19.1	60	4	0.31	3.1	75	-	15	19.01	1.26	100
Komuna							0–0.5	1	0.37	0.37	2.2
Level							0.51–1	8	6.41	0.80	17.8
							1.01–2	25	37.12	1.49	55.6
							2.01–3	10	23.92	2.39	22.2
							3.01–4	1	3.01	3.0	2.2
Totals	70.9	251	5.6	0.28	4.6	238	-	45	70.8	1.57	100

TABLE A.6. Characteristics of farm size and fragmentation, Komuna Brataj (Vlora District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Brataj							0–0.5	6	1.56	0.26	40.0
							0.51–1	8	5.74	0.72	53.3
							1.01–2	1	1.01	1.01	6.7
	8.3	35	2.3	0.23	5.7	75	-	15	8.32	0.55	100
Gjorm							0–0.5	6	1.64	0.27	40.0
							0.51–1	5	3.39	0.67	33.3
							1.01–2	4	5.81	1.45	26.7
	10.8	42	2.8	0.25	8.7	87	-	15	10.82	0.72	100
Lepenic							0–0.5	8	2.98	0.37	53.3
							0.51–1	6	3.89	0.65	40.0
							1.01–2	1	1.25	1.25	6.7
	8.1	36	2.4	0.22	2.5	89	1	15	8.12	0.54	100
Komuna							0–0.5	20	6.18	0.31	44.5
Level							0.51–1	19	13.01	0.68	42.2
							1.01–2	6	8.07	1.34	13.3
Totals	27.3	113	2.5	0.24	5.6	251	-	45	27.26	0.60	100

TABLE A.7. Characteristics of farm size and fragmentation, Komuna Hotolisht (Librazhd District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. OF PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Hotolisht							0–0.5	1	0.15	0.15	6.7
							0.51–1	11	8.86	0.80	73.3
							1.01–2	3	3.83	1.27	20.0
	12.9	27	1.8	0.47	1.6	91	-	15	12.85	0.85	100
Dardhe							0–0.5	3	1.43	0.47	20.0
							0.51–1	4	2.57	0.64	26.6
							1.01–2	8	9.08	1.22	53.4
	13.1	26	1.7	0.50	1.0	100	-	15	13.08	0.87	100
Velcan							0–0.5	8	3.47	0.43	53.3
							0.51–1	6	3.89	0.65	40.0
							1.01–2	1	1.15	1.15	6.7
	8.5	48	3.2	0.17	2.4	67	-	15	8.51	0.56	100
Komuna							0–0.5	12	5.05	0.42	26.7
Level							0.51–1	21	15.33	0.73	46.7
							1.01–2	12	14.06	1.17	26.6
Totals	34.4	101	2.2	0.34	1.7	258	-	45	34.44	0.76	100

TABLE A.8. Characteristics of farm size and fragmentation, Komuna Prenjas (Librazhd District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Prenjas							0–0.5	3	1.25	0.41	20.0
							0.51–1	8	6.50	0.81	53.4
							1.01–2	4	4.62	1.15	26.6
	12.4	109	7.2	0.11	8.8	78	-	15	12.37	0.82	100
Kotodesh							0–0.5	-	-	-	-
							0.51–1	9	6.75	0.75	60
							1.01–2	6	8.15	1.35	40
	14.9	96	6.3	0.16	2.6	78	-	15	14.9	0.99	100
Bardhaj							0–0.5	5	2.0	0.4	33.3
							0.51–1	10	7.25	0.72	66.7
	9.3	25	1.7	0.37	0.3	98	-	15	9.25	0.61	100
Komuna							0–0.5	8	3.25	0.40	17.8
Level							0.51–1	27	20.50	0.76	60.0
							1.01–2	10	12.77	1.27	22.2
Totals	36.5	230	5.1	0.16	3.9	254	-	45	36.52	0.81	100

TABLE A.9. Characteristics of farm size and fragmentation, Komuna Orenja (Librazhd District), by village

VILLAGE	TOTAL ARABLE LAND (ha)	TOTAL NUMBER OF PARCELS	MEAN NO. OF PARCELS PER HOLDING	MEAN PARCEL SIZE (ha)	MEAN DISTANCE TO PARCEL (km)	TOTAL NO. PERSONS IN SAMPLE FAMILIES	FARM SIZE CATE-GORIES (ha)	NO. OF FARM HOLDINGS	TOTAL LAND IN CATE-GORY (ha)	MEAN FARM HOLDING SIZE (ha)	% FARM HOLDINGS IN CATE-GORY
Kuturman							0–0.5	-	-	-	-
							0.51–1	7	5.07	0.72	46.7
							1.01–2	8	11.36	1.42	53.3
	16.4	67	4.5	0.24	4.9	90	-	15	16.43	1.09	100
Funars							0–0.5	1	0.47	0.47	6.7
							0.51–1	12	9.21	0.76	80.0
							1.01–2	2	2.88	1.44	13.3
	12.6	32	2.1	0.39	1.2	86	-	15	12.56	0.83	100
Zdrajc							0–0.5	7	2.91	0.41	46.7
							0.51–1	8	5.67	0.71	53.3
	8.6	50	3.3	0.17	3.6	77		15	8.58	0.57	100
Komuna							0–0.5	8	3.39	0.42	17.8
Level							0.51–1	27	19.95	0.74	60.0
							1.01–2	10	14.24	1.42	22.2
Totals	35.6	149	3.3	0.25	3.2	253	-	45	37.58	0.83	100