

## POST SOCIALIST LAND USE CHANGES IN THE DANUBE REGION

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**Abstract:** *After the Romanian Revolution, the national economy experienced a transition from a centralized socialist to a free market-based system. Agriculture was one of the first economic branches significantly influenced by this process. The main objective of this paper is to analyze changes in the land use – land use categories, type of landownership and type of farming - in Danube Region after 1989. The Danube region is considered, in this paper, an area consisted of eleven counties strongly influenced by the Danube River. The conclusion is that the post socialist period featured both positive and negative consequences on land use. The positive results referred to expansion of private property over agricultural and forestry lands, setting up new family farms, etc. The changes that had negative effects were mainly excessive fragmentation of the agricultural land and, the emergence of a huge number of semi and subsistence farms.*

**Key words:** *land use, land reform, land ownership, family farm, Danube Region*

### INTRODUCTION

In recent decades, many national and international institutions have included land use in their research priorities (UNDP, 2014; UN, 2012; FAO, 1997). Land use is a complex concept characterized by mutual interaction between environmental and social factors at different temporal and spatial scales (Valbuena et al., 2008; Rindfuss et al., 2004). Turner in 1995 thinks that land use involves both how biophysical attributes of the land are controlled and the intent behind this control - the purpose for which the land is used. Land use implies management and changes of the environment in a built environment such as settlements, semi-natural habitats (cropland, pastures, forests etc). Land use is also defined as the arrangements, activities and inputs, people undertake in a certain land cover type to produce, change or maintain it (FAO 1997; FAO and UNEP, 1999). Changes in land use are a result of the interaction between the factors and actors (Bakker and van Doorn 2009).

### MATERIALS AND METHODS

The main objective of this paper is to analyze changes in the land use in the Danube Region, which occurred after 1989. The analysis focuses on both the current situation and the evolution of relevant indicators: changes in land ownership regime, development of the new farms types, expansion of individual holdings, etc. Data provided by the National Institute of Statistics (NIS) - yearbooks, agricultural censuses, agricultural farm surveys and TempoOnline database - were processed with Excel and then analyzed using statistical methods. In this paper, the Danube Region is regarded as the area influenced by the Danube River. A rural footprint characterizes this area: it is composed of seven predominantly rural counties (Tulcea, Calarasi, Giurgiu, Ialomita, Virginia, and Gorj County) and four significant rural ones (Braila, Constanta, Galati and Dolj) (according to definition and methodology developed by PHARE, 1998). This region has important land and human resources: 25.80% of the total area of the country, 21.53% of the population and 23.36% of the total rural population.

Table 1. Main indicators of Danube Region

	Danube Region	Total Romania	Share of Danube Region in total
Total area (ha)	6150384	23839071	25.80
Total population (persons)	4577985	21258833	21.53
Rural population (persons)	2241737	9598515	23,36
GDP (2007-2011 average) (mil. EURO)	21105	127719	16,52
Population employed in agriculture	674700	2510000	26,88

Source: NIS, 2014, TempoOnline Database

The Danube region has a significant share in the Romanian economy, in that it produces 16.52% of the national GDP. Economic characteristics of the rural area of the region is reflected in the high percentage of the population employed in agriculture - over 40% of the employed population of the region and 26.88% of total employment in agriculture.

## RESULTS AND DISCUSSIONS

Since land use involves the transformation and management of natural elements in human benefit, environmental changes in the Danube region were less the result of natural conditions and more the result of human impact. The latter exerted a crucial influence both by building longitudinal dikes for flood protection, irrigation and drainage network channels and the agricultural use of natural large areas covered with water, forests, or reed. Thus, during the socialist period (during the sixties), the Romanian Danube Plain was almost completely dammed by making the 1200 km of dikes and 53 agricultural premises, totaling an area of 430,000 ha (Visinescu and Bularda, 2008).

In 2013, according to the NIS, the total area of 6.15 million hectares in the Danube Region was distributed as follows: 74.08% agricultural land, 10.07% forests and forest vegetation, 9.13% waters and ponds, 3.41% constructions, 1.78% communications and 1.54% degraded lands. Compared to national level, in this region, the categories "agricultural land" and "waters and ponds" were better represented.

The distribution of the main categories of land use is influenced both by the diversity and specificity of soil and climatic systems of the Danube Region and the general and regional particularities shaped by history and of specific social and economic situation. Thus, in the Danube Region, the 4.56 million hectares of agricultural land are distributed as follows: 87.07% arable land, 10.03% pastures and meadows, 2.03% vineyards and vine nurseries and 0.60% orchards and nurseries. The main factors that differentiate the main categories of land use in the area are altitude and relief. While the share of arable land is over 80%, the share of natural pastures and meadows, is low (around 10%), specific to plain area. An element less specific to plain region is the relatively large areas of vines and fruit trees (on sandy soils and high terraces of the Romanian Plain).

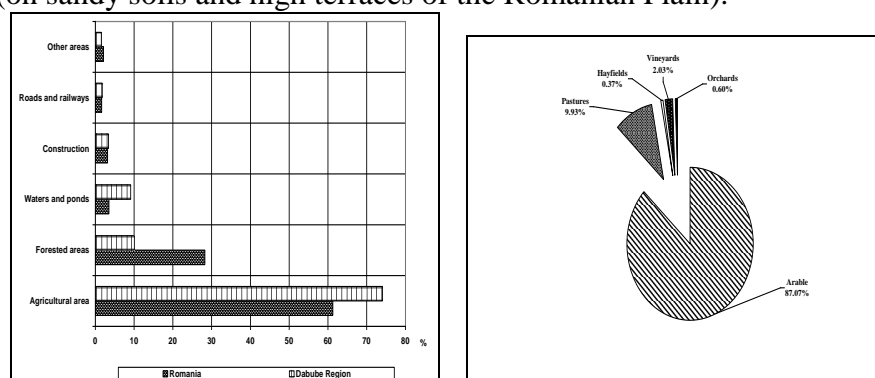


Fig. 1. Structure of land use (left) and agricultural land structure (right) in Danube Region, 2013

(Source: NIS, 2014, TempoOnline Database)

The fall of the socialist regime has led to a series of radical changes in all economic and social activities. The economy has undergone the transition from a centralized socialist system to a market economy system. One of the branches of the economy that was significantly affected by the restructuring process was agriculture, due to changes in the land ownership and land operation. Key factors involved in these changes are primarily political interacting with the economic, technological, demographic and natural ones. In the Danube region, significant changes of land use in post-socialist period were recorded for vineyards and orchards, with decrease of more than 30% (Table 2).

However, the most important changes were primarily related to the change of ownership of agricultural and forestry land. The socialist period (1945-1989) was dominated by collective and state ownership of all land use categories, except pastures. The post-socialist period was characterized by steady expansion of private property, as a result of privatization and de-collectivization (which began in the nineties). The direct result of this new legislation framework was the expansion of private land property, which has come to represent more than 90% of total farmland and forests in 2013. Between 1996 and 2013, the private land ownership of Danube region was consolidated for all use categories as shown in Table 2.

Table 2. Land fund by categories of use and property in Danube Region

Land fund categories	1996		2013		Evolution 1996-2013 (%)
	Area (hectare)	Share of private property (%)	Area (hectare)	Share of private property (%)	
Total area	6150384	100.00	6150384	100.00	100.00
private property	3448066	56.06	4616110	75.05	133.88
Agricultural	4567684	100.00	4556094	100.00	99.75
private property	3235860	70.84	4240238	93.07	131.04
Arable	3924287	100.00	3966769	100.00	101.08
private property	2953587	75.26	3702028	93.33	125.34
Pastures	449289	100.00	452468	100.00	100.71
private property	152168	33.87	410485	90.72	269.76
Hayfields	16315	100.00	16549	100.00	101.43
private property	13544	83.02	15554	93.99	114.84
Vineyards	133475	100.00	92583	100.00	69.36
private property	100857	75.56	89192	96.34	88.43
Orchards	44318	100.00	27554	100.00	62.17
private property	15704	35.43	22979	83.40	146.33
Forests	604018	100.00	619102	100.00	102.50
private property	47815	7.92	122224	90.68	255.62
Waters and ponds	595425	100.00	561419	100.00	94.29
private property	11973	2.01	37188	6.62	310.60

Source: NIS, 2014, TempoOnline Database

At the beginning of post socialist period, the main forms of land operation were agricultural production cooperatives, which exploited 53.94% of total agricultural area, followed by state farms with 27.25% and individual households with 18.81% (Table 3). Compared to the values recorded at national level, in the Danube region can be observed predominance of state and cooperative property, which together represented 81.19% of the total agricultural area (about 10% higher than the national level). These large farms of thousands of hectares operated consolidated land parcels.

Table 3. Farms types in Danube Region, in 1990

	Total	Agricultural Production Enterprises		Agricultural Production Cooperatives		Agricultural households	
	ha	ha	%	ha	%	ha	%
Danube Region	3928726	1070736	27.25	2119125	53.94	738865	18.81
Total Romania	9402113	1914459	20.37	4820760	51.27	2666894	28.36

Source: NIS, 1991, *Romanian Yearbook 1990*

Land reform implemented in the early nineties generated new types of farming operation. The most important aspect was that individual households have become prevalent. In 2013, in Danube region, 862 000 farms operated a utilized agricultural area of 3.91 million hectares. The average area per farm was 4.53 ha, higher than that at the national level (3.60) (Table 4).

Table 4. Evolution of farms by number and utilized agricultural area in Danube Region, 2002-2013

	2002			2013			Evolution (2002-2013) (%)	
	Number	UAA	Average area	Number	UAA	Average area	Number	UAA
Danube Region	1079274	4189522	3.88	861922	3905032	4.53	79.86	93.20
Total Romania	4277315	13930710	3.26	3629656	13055850	3.60	84.85	93.71

Source: NIS, *Agricultural Census 2002 and Agricultural Farm Survey 2013*

Since 1989, large farms from the communist period were sprayed by the constitution and reconstitution of land property rights: thus, more than 4 million farms nationwide, of which over 1 million in the Danube Region appeared. Agriculture in the Danube Region is characterized by a significant share of individual farms (99.23%) operating less than half of the utilized agricultural area (46.10%). The average size of these farms (2.11%) is close to the national average (2.02 ha).

Table 5. Share of individual households in total farms in 2013

	Share of number	Share of UAA	Average area
	%	%	ha
Danube Region	99.23	46.10	2.11
Total Romania	99.23	55.69	2.02

Source: *author' processing on Structural Farming Survey 2013*

Elderly farmers deprived of agricultural training run most of these small and very small farms. In this case, the application of modern production technologies and efficient management practices are an elusive goal. Most individual farms practice subsistence agriculture, the products designed to meet their households' needs. However, between 2002 and 2013 in the Danube Region and nationwide we can observe a process of farms consolidation, revealed by increasing the average size of farms.

## CONCLUSIONS

After the fall of the socialist regime, the economy has undergone the transition from a centralized socialist to a market economy system. One of the economic sectors

significantly affected by the restructuring process was agriculture. The post socialist period featured both positive and negative consequences on land use. The positive results referred to expansion of private property over agricultural and forestry lands, setting up new individual farms, etc. The changes that had negative effects were mainly excessive fragmentation of the agricultural land and, the emergence of a huge number of semi and subsistence farms.

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