RURAL SPACE. LAND USE AND LAND STRUCTURE. CASE STUDY: CLUJ COUNTY, ROMANIA

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ABSTRACT. – Rural Space. Land Use and Land Structure. Case Study: Cluj County, Romania. The purpose of this paper is to assess the rural area of Cluj County, by highlighting certain aspects conclusive in demonstrating the rurality of this territory. Consequently, the rural area is being described in terms of number of inhabitants, population density, the degree of comfort and equipment of households by the existence or the access to various services and in terms of land use, resulting values which reflect the current situation of rurality in Cluj. To explain rurality of a territory involves the appeal to different fields of geographical investigations correlated with a wide range of topics (sociology, politics, anthropology, ecology, history).

Keywords: rural space, population, rural household, land use, Cluj County, Romania

1. INTRODUCTION

Defining the rural has been a topic in scientific literature for decades, but there is still no clear definition, an exhaustive statement, one widely adopted worldwide or recognised as a common pattern. It comprises several fields of geographical investigation connected to different branches or sub-disciplines with references to society, economy, politics and culture. Nevertheless, the most frequently encountered approaches were in terms of non-urban status, the city acting as "the basic element of a settlements system, the place where they are issued to the surrounding areas in the form of energy and information pulses" (Benedek J., 2004).

Wibberley J. and Turner M. (2005) have described rural areas as "those parts of a country which show unmistakable signs of being dominated by extensive use of land, either at the present time or in the immediate past". Scoutt *et al* (2007) identified five dimensions of rural: negative (non-urban), low population density, extensive land-use, the primary sector providing the main economic activity and labor, cohesion and government community.

Ianoş I. (2004) assigns rural space to "territory with a diversity of physical phenomena, economic activities and structures of variables functions and relationships". Surd V. (2002) perceives the rural through some circumstances: space, phenomena, conditions and lifestyle. It consists of "structured subspaces of various utilities: economic,

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ecological and habitat. It associates and integrates at higher levels of organization, with urban space, resulting a mixture, a complex and enhanced functionality space". Bold I. (2003), quoting Mathieu N., shows the rural as a whole, which is differentiated from urban and also, conventionally defined by statistical and administrative units. Urban or rural character is analysed based on three criteria: economic (agricultural production as essential function of the rural area), sociological (specific lifestyle and behavior in rural areas) and geographic (specific land-use and building areas layout). For Benedek J. (2004) rural areas are a "social-empirical creation, based on a number of features that refer to forms of habitat, to land-use, to production types, and to specific life-styles of certain communities in certain areas, however the creation of human activity, therefore all there are products of society".

2. MATERIALS AND METHOD

In recent years, there have been more intense attempts to identify the degree of rurality of an area. In this respect, the most comprehensive analysis was the study conducted by Cloke, often used as the basis for further investigation of various rural areas. According to Cloke (1985) "rurality has proved very difficult to define in all-embracing manner for three important reasons involving functions, dynamics and variation". To recognize some of the differences between degrees of rurality, he creates an index of rurality for local government districts in England and Wales using a range of statistics from 1971 and 1981 censuses. The variables used (population density, population change, population over age 65, population of men aged 15-45, population of women aged 15-45, occupancy rate, household amenities, occupational structure, commuting-out pattern, in-migration, out-migration, in/out migration balance and the distance from nearest urban center) led to a formula that placed districts into one of five categories: extreme rural, intermediate rural, intermediate non-rural, extreme non-rural and urban.

For Woods M. (2010) "rurality is performed by rural residents and immigrants, farmers, landowners, workers, tourists and tourist attractions, recreational visitors, policy-makers, the media and academic researchers".

The European Union recommends the use of OECD (Organisation for Economic Co-operation Development) methodology to identify rurality of a territory, based on population density. To calculate these indices, NUTS classification is used, a hierarchical system for dividing up the economic territory of the EU, in order to facilitate the collection, development and harmonisation of EU regional statistics. NUTS level is determined based on population thresholds, so nationwide there are: NUTS1 (3-7millions), NUTS2 (800,000-3 million), NUTS 3 (150,000-800,000) and local units: LAU1, LAU2. In Romania NUTS2 corresponds to the 8 development regions, NUTS3 to the 41 counties and Bucharest, LAU2 to the cities and communes. NUTS1 (macro-regions) and LAU1 are not yet organized.

Usually, the distinction between urban and rural areas is in accordance with Law 351/2001 regarding the approval of the national masterplan. In its terms, the administrative-territorial units are the communes, cities and counties. The commune includes "rural population united by community of interests and traditions, consisting of one or more villages, in relation to economic, social, cultural, geographic and demographic expression".

This paper aims to establish and analyze the value of rurality coefficient expressed by graphic language, maps or charts, able to highlight the dynamics of the following indicators: total population, agricultural index, the average number of persons per household, household amenities, all these calculated for each commune of Cluj County. Statistics provided by Cluj Department of Statistics (localities records) and preliminary statistics of 2011 Population and Housing Census, published by the National Institute of Statistics were used to represent these variables.

3. ANALYSIS

To identify the rural degree of a local unit, the OECD methodology classifies LAU2 with a population density below 150 inhabitants per km^2 as rural. The OECD approach classifies regions as predominantly rural, intermediate or predominantly urban based on the percentage of the population living in local rural units: predominantly rural regions (rural population is 50% or more of total population), intermediate regions (rural population between 20 and 50% of total population), predominantly urban regions (rural population less than 20% of total population).



Fig. 1. Urban-rural typology for NUTS3 regions using the new OECD methodology

According to the new OECD classification (fig. 1), based on the demographic statistics data from 2010, only Bucharest and Ilfov County are predominantly urban regions, 17 counties are intermediate regions (35.7% of total) and about 60% of Romania is predominantly rural (25 counties).

Cluj County is located in the north-western part of the country, at the confluence of three representative natural units: Apuseni Mountains, Someș Plateau and Transylvania Plain and is bordered to the North-East by Maramureş and Bistriţa-Năsăud counties, Mureş County to the East, Alba County to the South and Bihor and Sălaj counties to the West.

Cluj County has an area of 6,674 km², representing 2.8% of the Romanian territory.

It consists of 429 settlements, organised in 5 cities (Cluj-Napoca, Turda, Dej, Câmpia Turzii and Gherla), one town (Huedin) and 75 communes.

From a demographic perspective, at the county level, the population in 2009 was 695.447 inhabitants, representing an increase of 10.43% compared to the 1966 population. Significant changes have occurred at the level of urban and rural. Thus in 1966, the rural population of the county represented 53% and the urban areas 47%.

Social and economic events that characterized the 20th century (the collectivization and modernization of agriculture, the development of labor-intensive industry which required more workforce, the 1989 events) have led to a heavy migration of the rural population to county urban centers, causing an increase of the urban population by 55.23% in 2009 compared to 1966, while the rural population fell by 29.36%. Thus, in 2009, Cluj County has a high degree of urbanization, 66.1% of the population living in urban areas and only 33.9% in rural areas. But the highest level of urbanization has been reached (table 1) in 1992, with a share of 67.4% of the total county population.

Table 1.

Year	1966	1977	1992	2002	2009
Total Population	629,746	715,507	736,301	702,755	695,447
- urban	296,247	398,883	496,563	472,622	459,865
- rural	333,499	316,624	239,738	230,133	235,582
Urban (%)	47.0	55.7	67.4	67.3	66.1
Rural (%)	53.0	44.3	32.6	32.7	33.9
Population Density	94.4	107.2	110.3	105.3	104.2

Evolution of rural and urban population in Cluj County: 1966-2009

The rural population density (fig. 2) is characterized by a domination of the level between 20.01 and 40.00 inhabitants/km2 in 39 communes (51.4% of all the communes). The next value level (40.01 to 80.00 inhabitants/km2) is reached in 16 communes (16.2%), and densities in the range between 80.01 and 120 inhabitants/km2 and over 120.01 inhabitants/km2 are characteristic, generally, for the communes neighboring urban centers.

According to the preliminary statistics of the 2011 Population and Housing Census, the rural population is 225.169 inhabitants (table 2), representing 34.15% of the total county population. Regionally, Cluj County has the highest urbanization rate, approaching 70%.

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This statement is due to Cluj-Napoca, which is a center of polarization both at county and regional level but also due to other cities and towns: Turda, Dej, Câmpia Turzii, Gherla and Huedin.



Fig. 2. Rural population density in Cluj County (2009)

Table 2.

Inhabitants	Communes (no.)	% of all communes	Total rural inh.	% of all rural inh.
677 - 1.500	19	25,33	24,211	10.75
1,501 - 3,000	31	41,33	63,318	28.12
3,001 - 5,000	18	24,00	70,264	31.21
5001 - 10000	4	5,33	25,407	11.28
10,000 - 20,000	2	2,67	20,137	8.94
≥20,001	1	1,33	21,832	9.70
Total	75	100,00	225,169	100.00

In relation to the rural population of the 75 communes, there is an average of 3,002 inhabitants for a commune. But this value is not found in reality, the population is not distributed consistently, but on a sliding scale from about 677 to 21,832 inhabitants (fig. 3). Ploşcoş commune has the lowest number of inhabitants, namely 677, representing 0.3% of the rural population of Cluj County. There are between 800-1,500 people in 18 communes (10.45%), between 1,501-3,000 people in 31 communes (28.12%) and between 3,001-5,000 inhabitants in 18 communes (31.21%). The communes with the largest population (10,000-30,000 residents), namely Apahida, Baciu and Floreşti, has each a number of people even higher than some urban centers in Romania and even in Cluj County (Câmpia Turzii, Gherla, Huedin). Floreşti has twice the population of Huedin and also subsumes the rural population of Apahida and Baciu.

An interesting phenomenon occurred in recent years - the relocation of Cluj-Napoca residents to neighboring localities (due to the high prices in the housing market of the city). Florești is the best example in this regard; this phenomenon has increased three times the local population in the last 10 years.



Fig. 3. The rural administrative units of Cluj County by number of inhabitants (2011)

"The household is the first organized form of systemic administration of the rural area" (V. Surd, 2002). Extended household includes, besides the family home and outbuildings (barn, grain barn, shed, stable, garage etc.), a small plot for flowers, vegetables, orchard, arable land, located near the main building by custom of different regions. Traditional Romanian households are organized and developed differently depending on the financial status and traditions of the inhabitants. In this respect, there is a typology of rural households based on multiple criteria such as the householder's social class, gender and age, the size, economic power, equipment and comfort level of the household etc. (V. Surd, 2002).

In the analysis of Cluj County rural households, only two criteria have been taken into account: the demographic size and the extent of equipment and comfort.

In terms of demographic size of rural households, three categories are outlined: small rural households (1-2 persons), medium (3-6 people) and large (more than 7 persons). According to the preliminary results of the 2011 Housing and Population Census, at commune level, small farms predominate in Cluj County (fig. 4). The average household has 2.54 people, a number that indicates a poor level of active labour force in agriculture. Higher values are in the following communes: Mărişel (3.12) Gilău (3.04) Cuzdrioara (3.02) and Iclod (3.01).



Fig. 4. The frequency of people/household at county level

The comfort of a household is reflected in the number and nature of existing facilities. The standard equipment of rural households is becoming better from year to year, from furniture, washing machine, television, mobile phone, to the kitchen and bathroom inside the house, as well as other utilities: water supply, sewage installation in home connected to a public network or individual system, electricity, heating (public heating or private heating system).

Classifying the facilities according to needs and their characteristics, three types have been distinguished (V. Surd, 2002): indispensable (furniture, heating and cooking appliances); affordable (radio, TV, bathroom) and occasional (car, phone).

Based on the above considerations, five types of rural households are defined: households with low minimum level of equipment and comfort (lack of essential facilities); households with mediocre equipment and low comfort level; households with an acceptable level of comfort and satisfactory equipment; households with a good level of equipment and considerable comfort (have facilities and comfort similar to the urban standards).

The existence of adequate utility infrastructure and of public access to different amenities, such as water supply system, sewage system, electricity, heating is prerequisite to any sustained economic development, reflecting the social and economic situation of the settlements, whether rural or urban.

Utility infrastructure gaps can be observed both between different regions of the country due to geographical differences (between mountains and plains, depending on the proximity of rivers, etc.), between different levels of development of an area (e.g. industrial areas have a higher economic power) and between types of urban and rural settlements.

In Cluj County (table 3), of the total rural households, only 25.7% have central heating (either public or private). We conclude from that the predominance of rural households with mediocre comfort and facilities, opposite to urban areas where a good percentage of households are equipped (84.40%). Almost half of all rural households have water supply system (55.35%), sewage (52.91%) and indoor bathroom (49.34%). As for cuisine, 74.56% of them have inside the house. In terms of connection to electricity, almost all rural households have electricity in their homes; only 3.96% do not have it. These values are quite different in urban areas, where about all households enjoy these facilities, except for some of them at the outskirts of cities.

Utilities	Туре	Urban	Rural	Total
	No.	180673	64831	245504
Home water supply system	%	96.83	55.35	80.83
Homo courage gratem	No.	179803	61974	241777
Home sewage system	%	96.36	52.91	79.61
Electricity connection	No.	183803	112489	296292
Electricity connection	%	98.51	96.04	97.56
Control booting	No.	157481	30100	187581
Central heating	%	84.40	25.70	61.76
Indoorlitchon	No.	179346	87330	266676
Indoor Ritchen	%	96.12	74.56	87.80
Indoorbathroom	No.	177268	57794	235062
muoor baunroom	%	95.01	49.34	77.40

Utility infrastructure in Cluj County

Table 3.

Cluj County is located in the Transylvanian Plateau, an area that offers the possibility of developing a complex and modern agriculture, insufficiently capitalized due to the lack of investments in this sector and the endowment with inadequate and outdated equipments. Land use in the past 10 years has not changed significantly in structure. The total area of the county according to the land use is presented in the following table.

Land use	1995	2000	2005	2007	2008	2009
Total area	667450	667450	667450	667450	667450	667450
Agricultural area	424355	428984	424453	427943	427273	426213
Forest area	169319	170802	170588	170036	170197	167662
Other	73766	72654	72399	69461	69970	73565

Land use in Cluj County: 1995-2009

Until 2010, almost all agricultural land and more than one third of the forests have been privatized. Restitution and redistribution of agricultural land and forestry began in 1991 and took place in several successive stages. As a result, in 2005 95.6% of the agricultural area of the country and about 33% of the forest area were returned to former owners or their heirs. The land owned by the state has currently a share of only 0.5% of the total arable land (367,200 hectares), 0.7% of the total pastures (231,200 ha) and 0.2% of the total area of hayfields (32,400 ha).

In Cluj County, 7.15% of the total area of agricultural land is owned by the state: 2.88% of arable land, 14.98% of pastures, 1.83% of hayfields, 9.72% of orchards and 13.40% of vineyards (table 5).

Land use	Urban private area (ha)	% of total private agricultural land	Rural private area (ha)	% of total private agricultural land	Total private area (ha)	% of total area	Total area - public and private (ha)
Arable	15296	55.54	161612	43.89	176908	97.12	182154
Pastures	6860	24.91	123768	33.61	130628	85.02	153637
Hayfields	3680	13.36	80389	21.83	84069	98.17	85636
Vineyards	48	0.17	175	0.05	223	90.28	247
Orchards	1657	6.02	2274	0.62	3931	86.60	4539
Agricultural Land	27541	100	368218	100	395759	92.85	426213

Agricultural land use by type of property

More than 90% of the private land is in rural areas. Of these, about 43.89% are arable, 33.61% pastures, 21.83% hayfields, 0.05% vineyards and 0.62% orchards. The main products of agriculture are: cereals (wheat, rye, barley, maize), legumes (peas, beans), oil plants (sunflower, soybean), potatoes, industrial plants (sugar beet), vegetables (tomatoes, onions, cabbages and so on) and forage (alfalfa, clover, fodder roots and so on).

The Agriculture Index (agricultural land) represents the share of the total agricultural area, expressed in percentages. The higher its value, the more pronounced rural character the locality will have. However, specific natural conditions occur, as high levels of altitude and slope, climate, infertile land not suitable for cultivation, unfavorable condition of the land etc., limiting the agricultural activities.

Table 4.

Table 5

According to Council Regulation (EC) No. 1257/1999 (the Rural Development Regulation - RDR) on support for rural development, three types of Less Favored Areas (LFA) were defined: 1) Mountain areas; 2) LFAs in danger of depopulation and where conservation of the countryside is necessary; 3) Areas affected by specific handicaps. The Cluj communes included in the list of those located in mountain areas are: Băișoara, Beliş, Călățele, Căpuşu Mare, Chiuieşti, Ciucea, Ciurila, Feleacu, Gilău, Iara, Izvoru Crișului, Măguri-Răcătău, Mănăstireni, Mărgău, Mărişel, Negreni, Poieni, Rișca, Sâncraiu, Sânmărtin, Săcuieu, Săvădisla, Unguraș and Valea Ierii.



Fig. 5. The rural administrative units of Cluj County by weight of agricultural land

Of the 75 communes, three of them have an agricultural index below 45%, namely Măguri-Răcătău, Gilău, Valea Ierii and Băișoara, 12 communes have values between 45.01 and 60.00 and only 3 communes (Ploșcoș, Recea-Cristur and Borșa) have an index of over 90% (fig. 5).

4. CONCLUSIONS

This study is a brief analysis of the rural areas of Cluj County, conducted at commune level through the development of several indicators defining the concerned space. Therefore, the urban-rural distribution in time proves that Cluj County is in a continuous process of urbanization. In 2009, 66.1% of the total population lived in urban areas, a share largely influenced by Cluj-Napoca (county seat and capital of Transylvania), with a population of over 300,000 inhabitants, a number that grows from year to year due to the great interest it holds, in terms of economic and academic requirements. It is the second city of the country as polarization potential, it has one of the most dynamic economic sectors in Romania, it is the second largest financial center in the country (after Bucharest) and a major academic center. The city also provides jobs, training opportunities and entertainment for young people, at much higher levels than the rural areas.

On the level of equipment and comfort of rural households in Cluj County, one revealed a specific situation of the Romanian rural space, currently in process of development.

In terms of the land use, rural areas fit to existing patterns, thus 65% of the area is agricultural land (mainly arable), followed by forest vegetation, a fact which emphasizes the agricultural potential.

5. ACKNOWLEDGMENT

This work was possible with the financial support of the Sectoral Operational Programme for Human Resources Development 2007-2013, co-financed by the European Social Fund, under the project number POSDRU/107/1.5/S/76841 with the title "Modern Doctoral Studies: Internationalization and Interdisciplinarity".

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