

THE EVOLUTION OF RURAL CLUSTERS WITHIN THE CLUJ METROPOLITAN AREA

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ABSTRACT. The identification of the metropolitan area was limited to the surrounding localities in a radius of about 30 km around Cluj-Napoca. This distance is considered in EU the best practice for the development of the peri-urban space. The Cluj Metropolitan Area (CMA) is located in Cluj County, the north-western development region of Romania. The Cluj Metropolitan Area is composed from voluntary association of communes plus the city of Cluj-Napoca, forming an urban network composed of two metropolitan rings. The first metropolitan ring is the purpose of our study. The transformation of communes into residential and complex clusters is also analyzed. The seven localities inside the first ring had significant changes in population and land use between 2002 and 2020. The increase of the population and decrease of the agricultural land area are premises in achieving urban homogeneity in the metropolitan area.

Key words: *Cluj Metropolitan Area, metropolitan rings, urban space, rural clusters.*

INTRODUCTION

The conceptual framework for spatial planning, especially from the point of view of decision-makers at local level, which plans its strategy for absorbing European funds, is territorial cohesion, economic cohesion and social cohesion at EU level. They determine European development policies, which lead to EU-funded development programs.

In the project Cluj Metropolitan Area (CMA), 19 municipalities joined at the beginning of 2000, creating an area of over 1600 sq. km, separated into two metropolitan rings. *The first metropolitan ring* includes seven communes: Apahida, Baci, Chinteni, Ciurila, Feleacu, Florești and Gilău, which are best integrated in residential development and urban transport policies, and where activities associated with the city take place. Thus, the Cluj Metropolitan Area became ten times larger than the administrative structure of Cluj-Napoca city (Baci et al., 2018).

From the beginning, CMA had three major targets (according to the Cluj County Council):

1. Accelerated infrastructure development to European standards:
- access infrastructure, as express roads and highway, airport development, railway modernization, introduction of high-speed trains; - essential utilities in rural clusters (water, sewerage / purification, sanitation, natural gas); - energetic efficiency.

2. Increasing economic competitiveness by attracting strategic investors, increasing entrepreneurial capacity, stimulating the concentration of brand and tradition enterprises, superior capitalization of the tourist potential, stimulating the innovative and competitive potential of the economic sector.

3. Human resource development and education, such training programs, continuing education and research.

Initially, the big city contributes with human resources, know-how and educational experience, and communes offered the rural-agricultural land for investments. Thus, a big and *complex administrative cluster* (Cluj-Napoca) and 19 communes as *rural and agricultural clusters* were crystallized (figure 1).

The core of Cluj Metropolitan Area represents the first metropolitan ring, including Cluj-Napoca city and seven communes: Apahida, Baci, Chinteni, Ciurila, Feleacu, Florești and Gilău.

Starting with the year 2000, the idea of the metropolitan area developed, but the profile of the communes around Cluj-Napoca was an agricultural one, with an obvious tendency to decrease the population. This situation did not encourage investment and partnerships in large-scale projects between administrative entities (Baci, 2013). The big city gradually imposed economic and social policies and created a favorable framework for large real estate investments in the surrounding communes, attracting young people from all counties of the country.

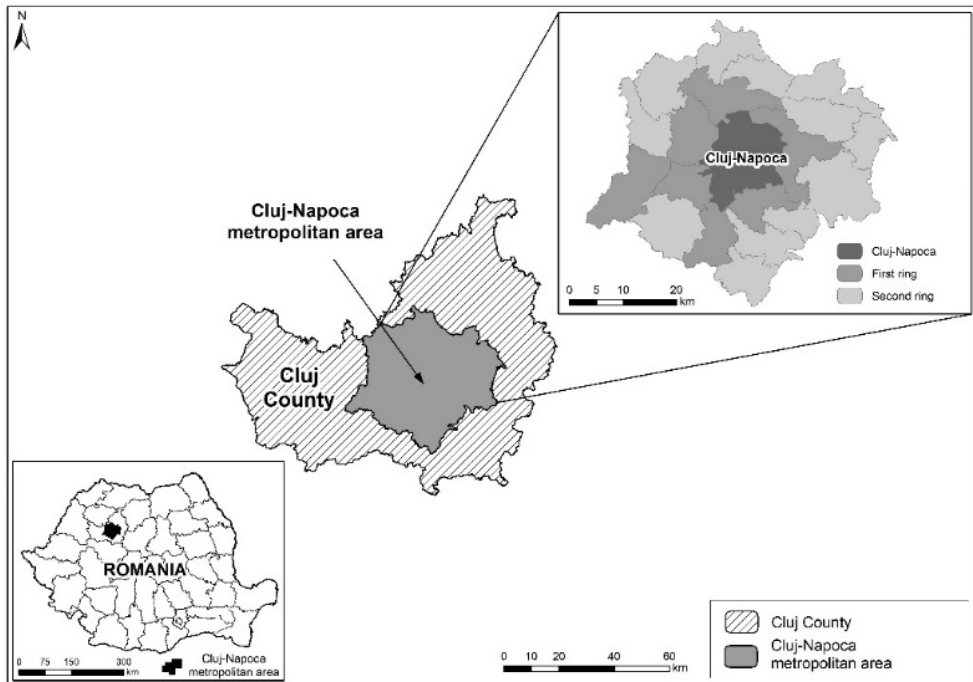


Fig. 1. Cluj Metropolitan Area (CMA) and the two metropolitan rings

Initial typology of rural clusters

The area of first metropolitan ring looked extremely heterogeneous. We had well-developed communes with incipient urban profile, such as Florești, Baci, Gilău or Apahida, but also communes with a deep rural aspect – Chinteni, Ciurila, Feleacu. This strong agricultural profile was highlighted by the structure and occupation of the population or the structure of land use (Baciu et al., 2012, 2015; Roșian, 2017). The first 4 communes registered over 7-8000 inhabitants in 2002, having 40-50% of the active population employed in the industry and services of the big city. However, the frequency of agricultural land is important in those administrative units. In Apahida the arable lands represent almost 40% of the commune's surface, in Baci and Florești 20-30%, in Gilău – due to the mountain morphology – less than 20%.

Frequency of meadows from the total surface of communes represents almost 30% in Apahida, Florești and Baciú, and just fewer than 20% in Gilău. The surfaces covered of hay fields was 10 to 20% of the total area (Pop, 2007).

Anticipating the inevitable peri-urban development, local decision-makers have allocated more and more space to the built-up area, creating the premises for real estate development. This approach was facilitated by the inhabitants of the communes, who saw in the change of land use from *outside of built-up area* to *built-up area*, the possibility of selling agricultural properties at a higher price.

The three communes with a deep rural profile during 2002 – Chinteni, Ciurila, Feleacu – have maintained this status for the most part even today, but the trends of peri-urbanization are becoming more and more evident, especially in Chinteni (Chinteni City Hall intends to allocate in the new General Urban Plan over 3600 ha for built-up area - compared to 582 ha in 1990). The agricultural profile was highlighted by the structure of land use. The frequency of arable lands represents almost 40% of the commune's surface in Chinteni and Ciurila, and over 20% in Feleacu commune. Frequency of meadows from the total surface of communes represents between 20-30% in Chinteni, Ciurila and Feleacu. The surfaces covered by hay fields were 10 to 20% of these three communes. The population of communes with agricultural profile was in 2002 between 1500 inhabitants (Ciurila) and 3810 inhabitants (Feleacu), as shown in table 1.

Changes in the typology of clusters in the first metropolitan ring

After 2002, there were dramatic changes in the territory superimposed over the first metropolitan ring. The changes in the demographics of the communes, the architecture of the new residential complexes, the level of investments, have definitively changed the profile of the *rural clusters*. They have undergone an adaptation to the requirements of the Cluj-Napoca attraction pole, so that the agricultural clusters have been transformed by 2020 into *residential and service clusters (tertiary clusters)*. A type of organic connection was installed between the big city and the surrounding communes, based on the idea of a center-periphery mutual benefit policy. The need for investment

space in the metropolis has slightly exceeded administrative boundaries and agricultural land (especially arable land and pastures – table 2) have been targets of real estate, logistics, industrial or commercial facilities projects.

The need to modernize the rural space, to adhere to urban projects: transport infrastructure, water and sewerage network, environment and waste management; have acquired immediate and mandatory value for local decision makers. City halls also took advantage of this business opportunity to attract the labor force required by the big city to their administrative territory, creating an unexpected increase in the volume of taxes and duties to the local budget.

The explosive population growth of the first metropolitan ring is the first and most important feature of the definitive change of agricultural clusters (Baciu et al., 2018). The population growth is allogeneic, external, attributed to immigration from all counties of the country. The best example is provided by Florești, which in the period 2002-2021 evolved from 7470 inhabitants to 46535 inhabitants, resulting in an increase of over 523% (table 1, figure 2.a, 2.b).

Table 1. *The evolution of population between 2002 and 2021*

Nr. Crt.	Communes	Inh. 2002	Inh. 2011	Inh. 2021
1	Apahida	8785	10685	15391
2	Baciu	8139	10317	12983
3	Chinteni	2786	3065	3717
4	Ciurila	1509	1594	1794
5	Feleacu	3810	3923	4409
6	Florești	7470	22813	46535
7	Gilau	7861	8300	9112

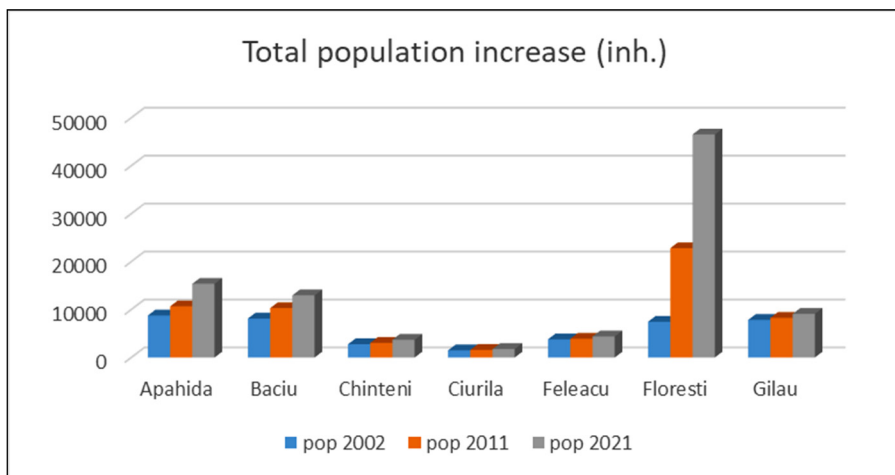


Fig. 2.a. The evolution of population between 2002 and 2021

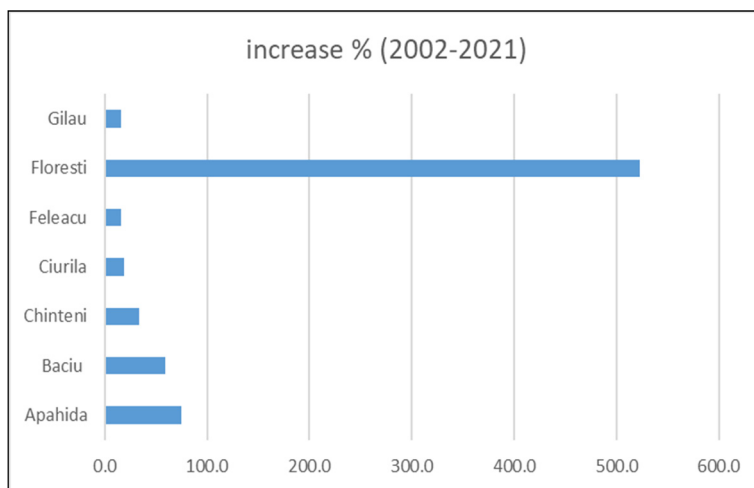


Fig. 2.b. Population growth (%) inside the first metropolitan ring

Another spectacular change in the area of the first metropolitan ring was the change of land use between 2002 and 2020. Here we refer in particular to the increase of *non-agricultural land* in most administrative units.

This is the result of continued pressure on local decision-makers by investors to make built-up area land available. The most affected were the communes: *Florești* – increase of 70% between 2002 and 2020, which had a constant strong urbanization trend; *Feleacu* – increase of 20% due to new infrastructural projects and real estate trend in the vicinity of commune's center; *Chinteni* is experiencing an investment boom in terms of residential areas, starting with the years 2011-2012. Local decision makers have an extremely favorable and friendly policy towards real estate investors. The new General Urban Plan of the commune, still unapproved, proposes a very generous surface of 3685 ha for the built-up area. This would be the most spectacular urban growth in the metropolitan communes since 1990 (from 582 ha to 3685 ha). For the time being, between 2002 and 2020, non-agricultural growth is 16.7% (figure 4 and 5).

The decrease of the non-agricultural land from *Apahida* (-3.5%) is explained by the loss of some forest areas and the transformation of some floodable lands from the Someș corridor into agricultural lands. Also, the new General Urban Plan did not allocate new places to the built-up area, because the last one - seven years ago - had allocated sufficient areas, which are still being in built (figure 3 and figure 4).

Baciu commune continues the growth trend of the built-up area, but at a slower pace than in *Florești* (3.8%). This commune has two distinct categories of investment destinations: one is for real estate projects in the central and northern part, and the other for investments in industry and trade, in the southern part.

The small commune of *Ciurila*, located in the southern part of the first metropolitan ring is the newest attraction for individual real estate investments and group residential areas, in the so-called oasis of peace in Făget Forest and Feleacului Hill. With a slight increase in population from 1509 inhabitants (2002) to 1794 inhabitants (2021), in the coming years the General Urban Plan will generate new areas for built-up area (table 2, figure 3, figure 5).

Table 2. The evolution of land use between 2002 and 2020

Nr. Crt.	Communes	S. total (Ha)	Agric. 2002 (Ha)	Agric. 2020 (Ha)	Non Agric. 2002 (Ha)	Non Agric. 2020 (Ha)	difference 2002-2020 Nonagr (Ha)	difference 2002-2020 Nonagr (%)
1	Apahida	10602	9102	9396	1250	1206	-44	-3.5
2	Baciu	8751	5890	5559	2724	2827	103	3.8
3	Chinteni	9651	7455	7242	2064	2409	345	16.7
4	Ciurila	7222	5655	5689	1536	1533	-3	-0.2
5	Feleacu	6196	4094	3724	2059	2472	413	20.1
6	Florești	6074	4397	4129	1141	1945	804	70.5
7	Gilău	11682	3898	3740	7756	7840	84	1.1

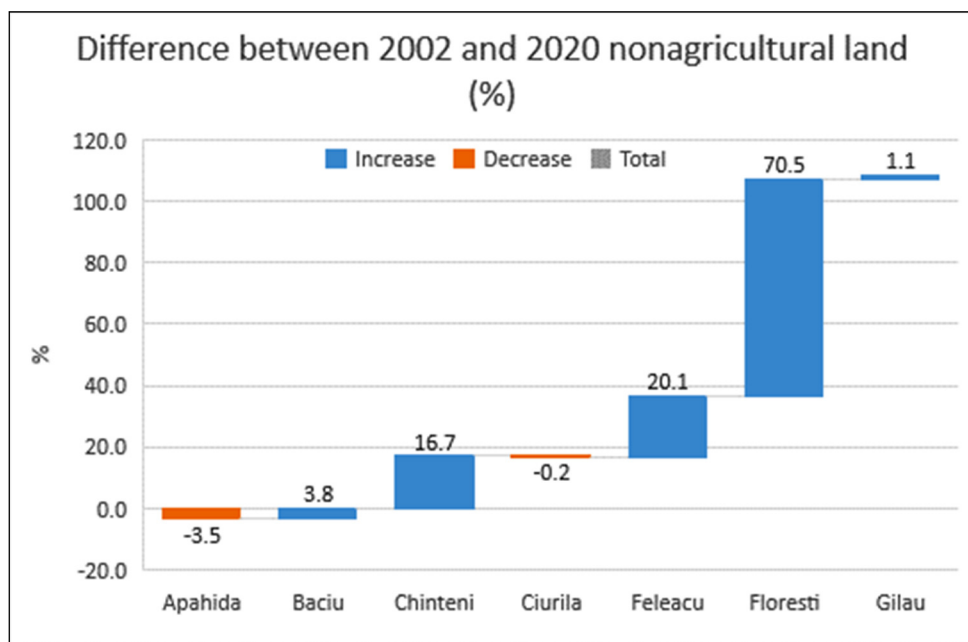


Fig. 3. Nonagricultural land use change (%) between 2002 and 2020

CONCLUSIONS

(related to tertiary clusters in the first metropolitan ring)

The evolution of communes in the first metropolitan ring of the CMA from deep agricultural clusters to dynamic tertiary clusters, so well anchored in urban complexity, is a development model for regional and national planning programs.

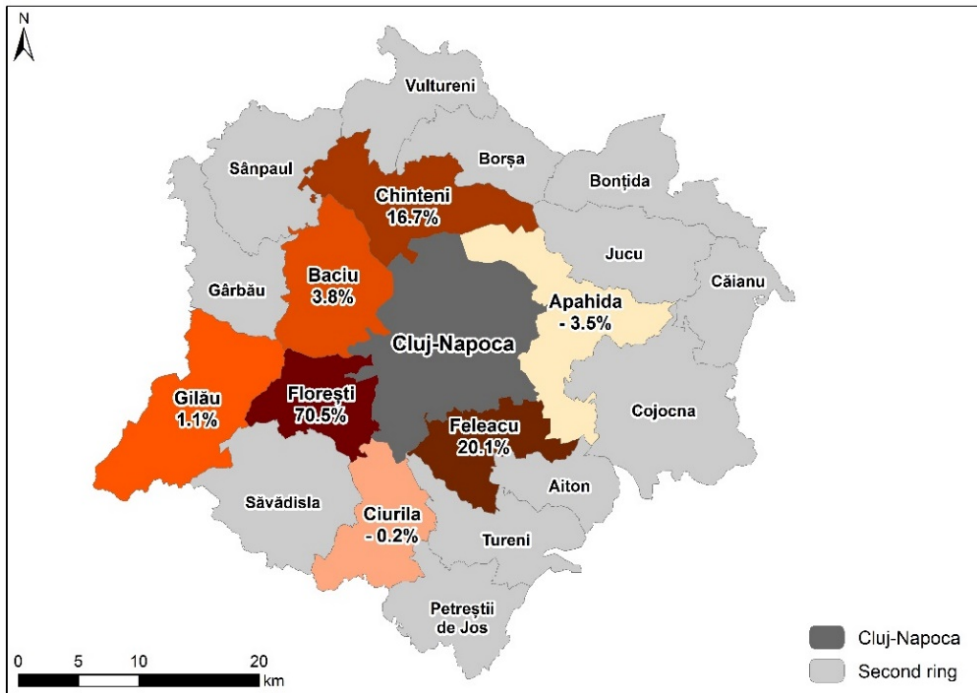


Fig. 4. Tertiary clusters inside the first metropolitan ring – change in nonagricultural land use (2002-2020)

We must emphasize the fact that the favorable evolution in a short time of the communes around the city of Cluj-Napoca is influenced by positive structural, historical and economic-social characteristics of the big city. The role of regional polarization center was crystallized 500 years ago, and then gradually this function was amplified. The regional leadership role of Cluj can no longer be questioned since the 18th century. The cultural

function completed the function of university center and completed the complex profile of this regional urban attractor. Therefore, the development of the communes around Cluj is not accidental. The rural and agricultural space provided exactly the type of land the city needed. The mutual benefits were visible immediately after the establishment of the metropolitan area, the nearby communes taking advantage of the development projects.

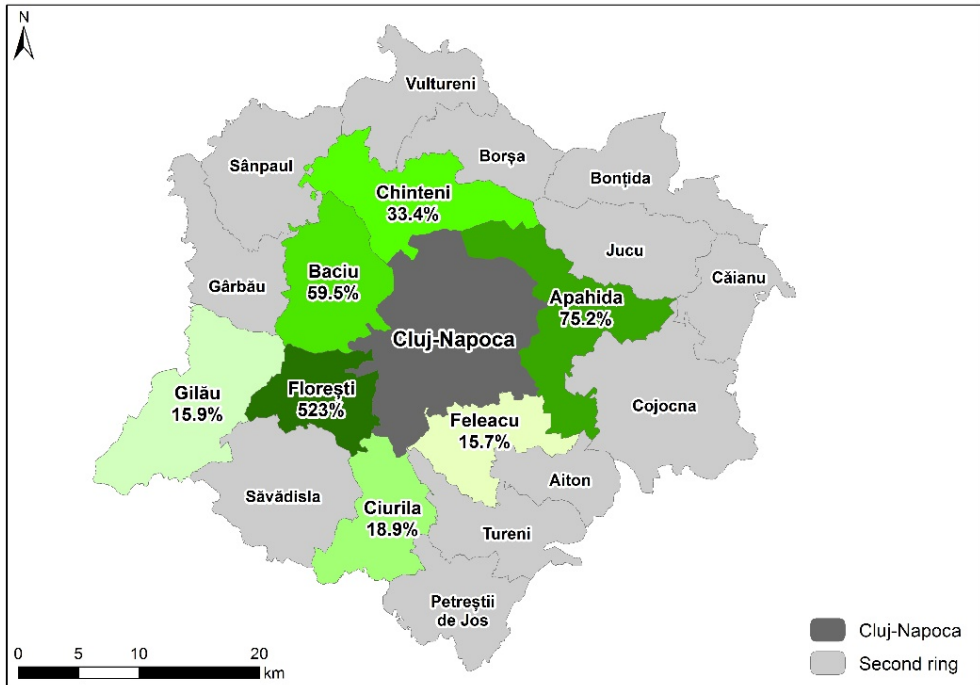


Fig. 5. Tertiary clusters inside the first metropolitan ring – population increase (2002-2021, in %)

As in any functional group, there are dysfunctions. Among the weaknesses of the metropolitan area we mention: large differences in budget allocations and projects between the center and the periphery; the majority of the stable population in communes represents labor for the big city only; connectivity and fluidization problems in transport; biodiversity loss and urban pollution sources (due to the increasing of motorized traffic); poor traditional practices in rural areas in the management of living space and

waste; increasing the anthropic pressure on the protected areas; reducing green spaces in favor of built-up areas (green space density: under 30 m²/inh.); delays in construction of metropolitan express road.

But strengths will always be the most important arguments for regional development: top universities, medical centers, research structures, high-tech facilities, the major cultural, sports, leisure, exhibition facilities. All these represent part of so-called *regional poles of excellence*. The presence of the big city that has adopted the modern phrases as *smart city* and *green city* are a guarantee of balanced development of the metropolitan area. Its development is based on the exploitation of intellectual capital towards education, innovation and economic development, including eco-friendly concepts.

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