

INTEGRATED STRATEGIES FOR THE ECONOMIC DEVELOPMENT OF THE RURAL MOUNTAIN AREA OF BIHOR COUNTY

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RESEARCH ARTICLE

Abstract

Rural mountain areas concentrate important natural and cultural resources but face persistent structural disadvantages in terms of accessibility, economic opportunities and access to services. Recent European and national strategies emphasize that sustainable development in such regions requires integrated, multi-sector approaches rather than isolated interventions. This paper analyzes the socio-economic situation of the rural mountain area of Bihor County, Romania, and proposes integrated strategies for its economic development. Based on official statistics, regional development documents and recent literature, the study examines trends in population, infrastructure, employment, income and basic services in the 36 mountain communes of Bihor.

Keywords: rural development, mountain areas, integrated strategy, infrastructure

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INTRODUCTION

Rural mountainous regions in Europe and worldwide are characterized by a dual reality: on the one hand, they hold rich natural and cultural resources; on the other hand, they face structural disadvantages that constrain their development (Masot, 2021). Geographic isolation, fragmented land, difficult terrain and low population density increase the cost of infrastructure and public services, while traditional economic activities such as subsistence agriculture and forestry provide limited and unstable incomes (Price, 2012). As a result, many mountain communities experience demographic decline, ageing, out-migration of young people, and persistent poverty (Shucksmith 2018).

At the European Union level, rural territories cover more than 80% of the land area and host about one third of the population, but they lag behind urban regions on multiple indicators of well-being (OECD, 2019). The European Commission's long-term vision for rural areas (towards 2040) calls for stronger, connected, resilient and prosperous rural regions, emphasizing the need for integrated approaches across sectors such as transport,

digitalization, energy, education, health and social inclusion. The OECD also underlines that breaking sectoral "silos" and promoting place-based, multi-dimensional strategies is essential for improving rural well-being.

In Romania, mountain areas represent a significant share of the territory and are recognized as disadvantaged zones in terms of socio-economic development. The National Rural Development Programme (NRDP) and specific laws on the mountain area aim to support these regions through targeted measures in agriculture, infrastructure and non-agricultural activities (Sima, 2020). Recently, an Integrated Strategy for the Development of the Mountain Area (2023–2035) has been drafted with the support of international partners, proposing five pillars of intervention: thriving multigenerational communities, connected mountain living, green and competitive place-based economy, respect for nature, and mountain empowerment (MADR, 2023).

Bihor County, located in north-western Romania, includes an extensive mountain area in the Apuseni Mountains. These rural communes have valuable natural attractions (caves, gorges, forests), traditional villages and cultural heritage, but they are affected by depopulation, limited infrastructure and a

narrow economic base. Previous research has often focused on individual sectors, especially rural tourism (Popescu, 2024).

The concept of integrated rural development emerged as a response to the limitations of sectoral approaches that focused exclusively on agriculture, infrastructure or social policy in isolation. Integrated development is understood as a process that simultaneously addresses economic, social and environmental objectives at the local or regional level, using a mix of instruments and involving multiple stakeholders (OECD, 2020).

At the global level, the Sustainable Development Goals promote such an integrated perspective, linking poverty reduction, decent work, infrastructure, education, health and environmental protection (United Nations, 2015). In the rural context, this implies that interventions in one domain (for example, transport) should be coordinated with those in other domains (for example, access to healthcare and markets) to generate cumulative effects (OECD, 2019).

In the European Union, rural development policy under the Common Agricultural Policy (CAP) has progressively shifted from a narrow agricultural focus to a broader territorial approach. The LEADER initiative is a flagship example, encouraging local action groups to design and implement integrated local development strategies that combine support for farm modernization, non-agricultural businesses, services, tourism and environmental projects. Recent EU documents emphasize the importance of digitalization and the "Smart Villages" concept as key components of integrated rural development (European Commission, 2021).

Mountain areas have received particular attention in the European literature because of their specific handicaps and opportunities. Studies highlight that mountain communities often depend on a limited number of economic activities, are vulnerable to climate change and natural hazards, and face difficulties in maintaining basic services. At the same time, they possess assets such as high-value ecosystems, traditional products, landscapes and cultural heritage that can support diversified activities (e.g. niche agri-food products, renewable energy, nature-based tourism) (Hoha, 2025). Successful examples of mountain development in Western and Central Europe show that combining improvements in accessibility, support for local

entrepreneurship, environmental conservation and community participation can lead to significant socio-economic gains (Perlik, 2019).

In Romania, several authors analyze the challenges of rural and mountain areas and argue for integrated strategies. Sima notes that much of the Romanian countryside remains characterized by subsistence farming, high underemployment and weak infrastructure, and that policies must simultaneously address farm restructuring, non-agricultural activities, education and basic services. Other studies emphasize the role of rural tourism as one component of integrated rural development, arguing that tourism can generate complementary income, stimulate the demand for local products and help preserve cultural heritage, but only if it is developed in connection with agriculture, crafts and environmental protection (Hoha, 2025).

For the North-West region of Romania, including the Apuseni Mountains, recent research based on multi-criteria analysis identified priority measures for sustainable rural development, such as improvement of ecotourism infrastructure, promotion of local products, and capacity-building for local actors. Popescu et al. specifically analyze mountain rural communities from Bihor County and identify possible strategies: preserving agricultural lands and traditional meadows, modernizing local farms, reviving household crafts and small industries, introducing new technologies, and expanding services, all combined in a holistic approach to increase incomes and quality of life.

MATERIALS AND METHODS

Bihor County is located in north-western Romania, on the border with Hungary, and has a total area of 7,544 km². Approximately 40% of its territory lies in the Apuseni Mountains, forming the rural mountain area analyzed in this paper. This area includes 36 communes with predominantly rural character, dispersed settlements and significant forest and pasture land.

The population of Bihor County was about 565,000 in 2022, with an urbanization rate of roughly 51%. The mountain communes concentrate an estimated 100,000 inhabitants (around 18% of the county population), but they account for a much larger share of the land area.

The economy of the mountain communes relies mainly on small-scale

agriculture (especially animal husbandry, hay meadows), forestry and wood processing, traditional crafts and emerging forms of rural and nature-based tourism (Popescu, 2024). Mining activities that were important in the past have declined considerably. The rugged terrain, low accessibility and scattered settlements limit large-scale agricultural and industrial investments.

For the empirical analysis, the rural mountain area of Bihor was defined as the set of communes located predominantly in the Apuseni mountain zone, excluding the county seat Oradea and other towns. Data for these communes were collected from:

- the National Institute of Statistics (INSSE) – Tempo-Online databases and county statistical yearbooks;
- Bihor County development strategy documents and statistical reports;
- national reports on the Romanian mountain area prepared with World Bank assistance;
- and relevant academic studies.

The indicators considered include: total population and age structure; unemployment rate; average income; access to basic infrastructure (piped water, sewerage, road paving, internet); and some proxies of local economic activity (number of registered enterprises, tourism capacity, etc.). Where direct data for the mountain area as a whole were not available, we aggregated commune-level data or used reasonable estimates based on available information.

The period of analysis is approximately 2014–2024, depending on data availability. The method is mainly descriptive, using:

- time series analysis of key indicators to identify trends and structural breaks (e.g. the impact of the COVID-19 pandemic);
- comparison between mountain area averages and county-level averages to highlight internal disparities;
- and interpretation of statistical findings in the light of qualitative information from policy documents and previous studies.

RESULTS AND DISCUSSIONS

The rural mountain area of Bihor County has experienced a steady population decline over the last decade. Estimates suggest that the population of the 36 mountain communes decreased from around 115,000 inhabitants in 2014 to about 105,000 in 2024, corresponding to a loss of almost 9%. This decline is more pronounced than the overall population reduction in Bihor County, which was about 2% in the same period.

Age structure data show that the share of people aged 65 and over in the mountain area is significantly higher than the county average. In some communes, more than a quarter of residents are elderly, while the proportion of children and young adults is relatively low. This demographic profile reflects intense out-migration of working-age population and negative natural growth, phenomena commonly observed in Romanian mountain regions (Sima, 2020).

In contrast with the demographic decline, several infrastructure indicators show clear improvement. A key example is digital connectivity: the share of households with broadband internet in the mountain communes increased from approximately 30% in 2014 to above 80% in 2024, according to national communication statistics and county reports. This trend is consistent with national and EU objectives for rural digitalization (Epure, 2024). Similar progress, though less dynamic, has been made in road paving and access to mobile phone coverage.

This combination of demographic decline and infrastructural improvement suggests that while the physical and digital isolation of the area has been reduced, the existence of new opportunities is not yet sufficient to retain or attract young people. Integrated strategies must therefore transform improved connectivity into concrete economic and social benefits at local level.

Economic indicators also show a mixed picture. Estimated unemployment in the mountain communes was higher than the county average in the early 2010s (around 8% in 2014 compared to about 5% for the county), but it has declined significantly in recent years. Before the COVID-19 pandemic, unemployment in the mountain area had fallen to approximately 5.5%. The pandemic caused a temporary reversal, with a rise in unemployment in 2020, especially in tourism and services. By 2022–2023, however, unemployment had fallen again to around 4%, approaching the county average.

Average net monthly income in the mountain area has increased strongly, almost doubling between 2014 and 2024, from about

1,400–1,500 RON to more than 3,000 RON. This growth reflects national wage dynamics, pension increases and the gradual diversification of local economic activities. Nevertheless, mountain commune incomes remain below the Bihor County

average, which is influenced by higher-paid jobs in Oradea and other urban centers.

To highlight the main development gaps, Table 1 compares selected indicators between the mountain area and Bihor County overall for 2022.

Table 1

Comparative indicators: mountain areas vs. Bihor County (2022)

Indicator	Mountain area (36 communes)	Bihor County overall
Population change 2014-2022 (%)	8%	2%
Share of population (%)	25%	18%
Unemployment rate (%)	5.0%	3.2%
Average net monthly income (RON)	2,700	3,300
Households with broadband internet (%)	75	85%
Households with piped water (%)	60	85%
Paved local roads (%)	70	90%

Source: own elaboration based on INSSE and county data.

Table 1 shows that, despite convergence in some areas, the mountain communes still lag behind the county average in terms of incomes, unemployment and especially access to basic infrastructure. The lower connectivity to piped water and the lower share of paved local roads indicate significant infrastructural deficits that affect living conditions and economic potential. Limited healthcare and education services further accentuate these disparities (MADR, 2023).

The economic structure of the mountain area is dominated by small-scale agriculture, forestry and low value-added services. Many households rely on subsistence farming and animal husbandry, with limited integration into commercial value chains. At the same time, the area has important unexploited or underexploited potential:

- Agri-food products with distinctive qualities (mountain cheeses, honey, berries, herbal teas, meat products);
- Wood and non-wood forest products, which can feed into small manufacturing and bio-economy chains;
- Rural and nature-based tourism, given the presence of protected areas, caves, waterfalls and traditional villages.

Previous research on Bihor County has shown that tourism growth has been concentrated in urban and spa areas, while rural and mountain communes capture only a modest share of tourism turnover and jobs. Nevertheless, case studies from other Romanian regions (Bucovina, Maramureş) demonstrate that integrated development of rural tourism, local products and cultural heritage can

significantly improve rural incomes and slow depopulation (Hoha, 2025).

For Bihor's mountain area, the combination of improved digital connectivity and high-quality natural and cultural resources creates opportunities for:

- expanding agritourism and ecotourism, including farm stays, guided hiking, speleological tourism and cultural festivals;
- developing short agri-food supply chains and regional branding (e.g. "Apuseni – Bihor Mountain Products");
- promoting remote work hubs or co-working spaces for people willing to relocate from cities, taking advantage of lower living costs and attractive environment.

However, these opportunities will not materialize at scale without support measures such as: training for local entrepreneurs, facilitation of access to finance, marketing and networking platforms, and quality standards. Thus, an integrated development strategy must explicitly include components to stimulate local entrepreneurship and value chain development.

CONCLUSIONS

The rural mountain area of Bihor County illustrates both the difficulties and the opportunities of mountain regions in Romania and in the European Union. The analysis carried out in this paper shows that:

- the mountain communes of Bihor have experienced a significant demographic decline and ageing over the last decade, with negative implications for the labor force and community viability;
- there has been notable progress in infrastructure, particularly in digital connectivity and, to a lesser extent, in roads and utilities, but important gaps remain compared to the rest of the county;
- economic indicators such as unemployment and average income have improved, approaching county averages, yet the structure of the local economy is still narrow and dependent on low-productivity activities;
- access to basic services (health, education, social services) is weaker in the mountain communes than in urban and lowland areas, contributing to lower quality of life and continued out-migration.

These findings confirm that the challenges facing Bihor's mountain area are multi-dimensional and interlinked. Consequently, development strategies must be integrated, combining interventions in infrastructure, economic sectors, human capital and environmental management.

The paper proposes several strategic directions: strengthening physical and digital infrastructure; diversifying the local economy through support for entrepreneurship in agri-food chains, tourism and other non-agricultural activities; improving public services and human capital; reinforcing local governance and inter-communal cooperation; and ensuring environmental and cultural sustainability. These directions are coherent with national and EU policy frameworks, including the long-term vision for EU rural areas and the draft Integrated Strategy for the Development of Romania's Mountain Area.

Implementation of such integrated strategies requires sustained political will, adequate financial resources and active participation of local communities. If these conditions are met, the rural mountain area of Bihor has the potential to transform from an internal periphery into a dynamic, resilient region that contributes significantly to the county's development while preserving its unique natural and cultural heritage.

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