

Co-creating Value and the Socio-Economic Impact of a UNESCO Global Geopark: Case Study of the Buzău Land UNESCO Global Geopark (Romania)

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Abstract. *The paper examines Buzău Land UNESCO Global Geopark from the perspective of the relationship between community involvement in the geopark and local socio-economic dynamics over the period 2006 - 2024. The analysis combines statistical indicators (CAEN codes, number of employees, tourist arrivals, accommodation structures) with a set of data on the geopark's activities in eleven of its component municipalities, in order to observe possible correlations between the intensity of interventions and economic or tourist developments in the territory. The results show that the communities where the geopark has been constantly active—such as Bozioru, Scorțoasa, Colți, Mânzălești, and Berca—have registered a moderate increase in tourism indicators, including the number of overnight stays and the emergence of new accommodations after 2021, when the territory received UNESCO recognition as a geopark. This evolution illustrates a process of responsible and organic growth that doesn't generate mass tourism and doesn't affect community cohesion, authenticity, or cultural heritage—the elements that constituted the region's initial attractiveness. These trends suggest an indirect link between geopark's activities and local economic activation, but not yet a proportional increase in turnover or employment. The conclusions highlight that the main impact of the geopark is the co-creation of value, social mobilization, development of partnerships, and strengthening of local identity, rather than direct economic performance. The study discusses both the transformative potential and the structural limitations of social innovation in rural areas, contributing to*

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the knowledge on how heritage-based territorial models can generate socio-economic engagement and offer the foundation for future sustainable development.

Keywords: UNESCO Global Geoparks, social innovation, territorial management, community, involvement, local identity.

Introduction

UNESCO Global Geoparks are territories that manage the geological heritage by integrating it with natural and cultural values through education, and local development. The model is based on a bottom-up approach, involving communities and other relevant local stakeholders—public authorities, tourism service providers, and NGOs—in the planning and operation of the geopark (UNESCO, 2025a). UNESCO emphasizes that geological heritage is used "in connection with all other aspects of natural and cultural heritage" to support the understanding of major societal challenges, such as sustainable resource use, climate change, and natural hazards (UNESCO, 2025a).

The geoparks model has expanded significantly over the last 26 years, reaching 229 UNESCO Global Geoparks in 50 countries (UNESCO, 2025b), reflecting the growing interest in this integrated form of territorial management. European literature has explicitly associated geoparks with sustainable local development strategies, through cooperation with local economic stakeholders and geotourism activities (Zouros, 2004). The link between the involvement of the geopark and measurable socio-economic results still remains difficult to capture empirically, especially in rural areas, where the impact is often uneven and more visible through tourism indicators than through structural economic indicators.

This discrepancy raises a key analytical question: if the immediate economic effects are limited, what types of value does the geopark produce and how can these types of value could be captured by empirical data?

This challenge is also reflected by the academic literature. A systematic review by Stoffelen (2020) shows that research on geoparks is based in geosciences and expert interpretations and identifies a gap in the literature regarding the role of communities and the local cultural landscape in geoparks, emphasizing the need for greater attention to communities in assessing sustainable regional development in these territories (Stoffelen, 2020). This finding supports the need for community-centered and evidence-based approaches that connect geopark engagement initiatives with observable territorial dynamics, without assuming direct economic gains.

In this direction, this paper analyzes the Buzău Land UNESCO Global Geopark (Romania) by integrating two complementary data sets: (I) multi-annual tourism and economic indicators per locality (2006–2024) — arrivals, overnight stays, accommodation structures, and economic indicators based on CAEN codes, where available — and (II) a structured record of geopark activities carried out in eleven of its component municipalities. The analysis revolves around the year 2021, when the UNESCO status was obtained and uses a descriptive-comparative strategy to identify whether there are differences in evolution between localities with sustained geopark involvement and those with reduced involvement, avoiding making firm causal statements.

The paper answers the following research question: do localities with more intense and diverse geopark activity show stronger signs of tourism development—reflected in the emergence of accommodation structures, the evolution of arrivals and overnight stays—compared to localities with reduced geopark involvement, especially after obtaining UNESCO recognition in 2021?

The analysis also aims to clarify the extent to which these developments can be interpreted as the result of value co-creation processes, generated through the involvement of local communities in educational, interpretative, and promotional activities carried out within the geopark.

Taking into consideration tourism and accommodation indicators, and a few broader economic indicators, the study contributes to the debate on socio-economic involvement and value co-creation in heritage-based territorial models, highlighting both the areas where observable changes are taking place and their limitations at this stage. The paper builds upon previous research presented at ICBE 2025 (Toma et al, 2025) which discussed geoproduct development, international branding and patterns of digital public interest according to geodiversity elements. This study extends this perspective by investigating, at the community level, the relationship between geopark involvement and tourism-related socio-economic dynamics in time.

Literature review

Geoparks as integrated models of territorial management

UNESCO Global Geoparks (UGGs) are defined as territories that connect geological heritage with natural and cultural heritage and use this integration to support sustainable development. UNESCO emphasizes that geoparks use geological heritage "in connection with all other aspects of the natural and cultural heritage of the territory" to raise awareness of major challenges facing contemporary society, such as the sustainable use of resources, climate change, and natural hazard risk reduction (UNESCO, 2025a). The model has expanded significantly over the past two decades, reaching 229 UNESCO Global Geoparks in 50 countries (UNESCO, 2025b).

In scientific literature, the concept of geoparks is defined as an instrument of territorial governance that combines the protection of geological heritage with local development objectives, through cooperation with local authorities and economic stakeholders and scientific institutions (Zouros, 2004; Andrașanu, 2017). Zouros (2004) emphasizes the role of geotourism and collaboration with local businesses, while more recent literature presents geoparks as multi-objective territorial systems based on integrated approaches, institutional cooperation, and networking, rather than as isolated projects (Martini et al., 2022).

Romanian literature on geoparks provide an applied perspective adapted to local realities on how these territorial models can be constructed. Andrașanu (2010) documents the steps involved in the development of the Buzău Land UNESCO Global Geopark initiative, including the evaluation of heritage, identification of local stakeholders, and institutional structuring. This work demonstrates that geoparks emerge through complex social and institutional processes that subsequently enable local community participation in decision-making, value co-creation, and the generation of socio-economic effects. Andrașanu (2017) conceptualizes the UNESCO geopark as a model for community development and territorial branding, emphasizing the role of identity, communication coherence, and local community involvement. These contributions support the idea of geoparks as platforms for engagement that structure cooperation and mobilize community action before the economic impact becomes visible through specific indicators. Thus, geoparks go beyond the role of simple frameworks for promoting and protecting heritage and function as platforms for community involvement, in which the processes of participation, cooperation, and local identity enhancement are results in themselves, even in the absence of immediate economic gains (Zouros, 2004; Andrașanu, 2017).

Social innovation and co-creation of value in development adapted to the local context

In contemporary approaches to development adapted to the local context, social innovation and co-creation of value are linked with the capacity of territorial initiatives to generate socio-economic development by involving local communities and reconfiguring governance relationships (Pralhad & Ramaswamy, 2004; Vargo et al., 2008). These perspectives are particularly relevant for rural territories, where development manifests itself less through rapid economic growth and more through the activation of local resources, the consolidation of social capital, building trust and the creation of conditions which lead to long-term development.

UNESCO Global Geoparks can be understood as territorial platforms for social innovation, where value is co-created through interactions and partnerships between communities, local authorities, educational institutions, researchers, and economic actors. Activities such as educational programs, interpretive infrastructure, and community partnerships act as engagement mechanisms that foster cooperation, reinforce territorial identity, build trust and enhance the visibility of the region (Zouros, 2004; Martini et al., 2022). These processes are linked to knowledge management and participatory conservation, in which geological heritage becomes a shared resource for learning, geoconservation, and local development (Farsani et al., 2014).

In this context, social innovation in geoparks is defined as a process specific to heritage-based territories. Thus, co-creation of value does not refer to the rapid generation of commercial products or direct economic boost, but to collective processes through which local actors participate in defining, managing, and enhancing heritage. The value created is primarily social and institutional expressed through learning, trust, cooperation, and local capacity. The economic effects may follow, depending on the territorial context and their absorption capacity (Farsani et al., 2014; Lee & Karimova, 2021). This refers to new configurations of relationships, practices, and forms of governance through which elements of geological heritage are co-owned, co-managed, and enhanced by local stakeholders. Resulting in generating social and economic benefits and maintaining or strengthening conservation objectives. Social innovation in geoparks manifests through collaborative mechanisms that connect geological heritage with communities' livelihoods, education, and identity-building processes, rather than through isolated individual products (Farsani et al., 2014; Lee & Karimova, 2021).

Empirical community-oriented studies support this interpretation. The analysis conducted by Lee and Karimova (2021) highlights the importance of long-term community involvement and local governance in generating gradual development trajectories adapted to the local context. These results suggest that the impact of geoparks is mediated by social and institutional processes, and that economic effects occur in time.

Impactful engagement, measurement options, and effects over time in heritage-based rural tourism

A central challenge in social innovation research is the polyvalent nature of impact and the difficulty of capturing it through single indicators. The OECD guidelines on measuring social impact emphasize the need for careful selection of indicators and calibration of assessment efforts according to context and resources, which are essential in rural areas with limited data availability (OECD, 2023).

In rural areas where development is based on heritage, tourism indicators are often the first areas where changes can be systematically observed, through data series on arrivals, overnight stays, and accommodation structures. However, tourism growth is not automatically synonymous with positive development. Research shows that increased tourism can lead to trade-offs in terms

of resident well-being and local authenticity, even in contexts with relatively stable levels of overall satisfaction (Sever, 2023).

In social innovation initiatives adapted to the local context, economic effects tend to appear gradually, in time, as interventions initially aim to strengthen social relations, institutional capacity, and territorial visibility, rather than directly increasing economic performance. The literature shows that, in such contexts, tourism indicators are more visible than structural economic indicators, as tourism functions as an intermediate domain between community involvement and economic activity itself (OECD, 2023; Stoffelen, 2020). Engagement-oriented actions can initially strengthen enabling conditions—such as visibility, legitimacy, trust and stakeholder networks—while structural economic indicators respond more slowly or selectively (OECD, 2023). This logic justifies the use of long-term comparative analyses at the municipal level, aimed at identifying patterns of association, without drawing firm causal conclusions at this point. (Stoffelen, 2020).

Methodology

The paper uses a descriptive-comparative approach, integrating two complementary data sets, with the aim of exploring the link between the involvement of the geopark and the socio-economic developments observable at the local level. The analysis does not seek to measure direct economic impact or identify causal relationships, but rather investigates territorial patterns and differences in development between localities, according to the recommendations in the literature on the evaluation of social innovation and development initiatives adapted to the local context, before and after 2021.

The analysis is carried out at the administrative-territorial unit level (ATU = commune) and uses multi-annual indicators to describe the dynamics and trends over time, rather than specific variations.

The first set of data consists of quantitative tourism and economic indicators collected at the ATU level for the period 2006–2024. These include: tourist arrivals, overnight stays, average length of stay, number and type of accommodation structures, as well as economic indicators available based on CAEN codes: turnover, profit, and number of employees, where such data were available. The quantitative indicators were processed in Microsoft Excel and have been harmonized at the ATU level. Descriptive statistics and growth rates were calculated comparing the area before and after 2021 (UNESCO status) to allow comparisons between localities and over time are. They illustrate tourism and economic dynamics, not exhaustive measures of local development.

The second set of data is composed of a structured record of the geopark's activities covering the period 2018–2024, corresponding to the communication and consolidation phase of the geopark. The activities were selected from the geopark's social media and website, classified into thematic categories that included educational activities, scientific activities, interpretive infrastructure, events, protection and conservation activities, promotion activities, and the development of geopproducts. For each ATU, a quantitative analysis was conducted, calculating the diversity of geopark activities, expressed by the number of distinct categories of activities recorded. This number was used as an indicator of the intensity and complexity of the geopark's involvement at the local level, without assessing the individual quality or effectiveness of those activities.

The analysis strategy included mapping the geopark's activities at the ATU level, analyzing the temporal evolution of tourism and economic indicators for each locality, with a focus on comparing the pre-UNESCO period with the post-UNESCO period (after 2021), intra-territorial comparison between ATUs with sustained geopark involvement and those with reduced involvement, as well as interpretation of the results in a cautious analytical framework. The

influence of additional contextual factors such as accessibility, regional dynamics, or independent private initiatives was taken into account. Growth indicators were calculated to express relative variations and trends, with the analysis focusing on areas where changes are most likely to become observable in the short and medium term, particularly tourism.

The approach has some limitations. Economic data based on CAEN (Classification of Activities in the National Economy) codes are not uniformly available for all ATUs of the geopark, the record of geopark activities reflects only formally documented activities and not all informal or indirect initiatives. The analysis identifies associations and patterns, not causal relationships, as the effects of the geopark may involve results that appear over time, not immediately. Despite these limitations, the combination of multi-annual indicators and intra-territorial comparative analysis provides a fundament for exploring how the involvement of the geopark is reflected in observable socio-economic dynamics in a rural context adapted to local specificities.

Local context of the study area

The Buzău Land UNESCO Global Geopark is located in Southeastern Romania, in Buzău County, in the bend area of the Carpathians. The geopark covers approximately 1,100 km² of rural territory and comprises 18 municipalities. The territory is characterized by a high diversity of geodiversity elements, including mud volcanoes, salt massifs, eternal flames phenomena, Miocene fossil deposits, and karst formations, which constitute the core of the geological heritage. The area is characterized by small settlements and low population density. The economy is dominated by subsistence agriculture and animal husbandry, with no industrial activities. Tourism is an emerging sustainable activity, promoted and structured through the geopark framework, which makes the territory relevant for the analysis of the incipient dynamics of development adapted to the local context and focused on the community.



Figure 1. Buzău Land UNESCO Global Geopark on the world map in 229 UGGs from 50 countries

Source: VISIT Global Geoparks Network | Map of UNESCO Geoparks.

Results and discussions

The analysis of socio-economic dynamics within the Buzău Land UNESCO Global Geopark consists of the correlation of the spatial and temporal distribution of geopark activities across the eleven administrative-territorial units with local tourism and economic indicators, including accommodation structures, tourist arrivals, overnight stays, and selected economic indicators based on CAEN codes. The results indicate differentiated territorial responses rather than a uniform pattern of development.

Spatial distribution of geopark activities

Geopark activities are unevenly distributed across the territory. Localities such as Bozioru, Scorțoasa, Colți, Mânzălești, and Berca have the highest diversity and continuity of interventions, including educational programs, interpretive infrastructure, scientific initiatives, community events, and promotional activities. In other localities, the geopark's involvement is sporadic or limited, concentrated around isolated events or specific actions. This differentiation creates a relevant comparative framework for analyzing the relationship between the geopark's involvement and local socio-economic trajectories.

Table 1. Localities with high levels of involvement and observable tourist and economic signals (multi-year municipal indicators)

Municipality	Geopark engagement (number of thematic categories)	Examples of recorded geopark activities (2018–2024)	Observable post-2021 dynamics in tourism/economic indicators (Economic Base dataset)	Accommodation dynamics
Scorțoasa	6 (educational, scientific, infrastructure, events, protection, promotion)	Festivals; interpretive panels; educational activities	Clear increase in arrivals and overnight stays after 2021; average overnight-stays growth rate 0.3176 after 2021 vs. 0.015 before; average length of stay increases from 1.5 to 1.58 days	New accommodation units; in 2024 guesthouses and one hostel (20 rooms, 66 beds)
Bozioru	7 (highest diversity)	Trails; infrastructure; geo-products; educational projects; films; protection actions	Not present in CAEN-based economic indicators; arrivals increase steadily after 2021 (consistent with broader territorial dynamics)	Accommodation emerges after 2020: 2 rental rooms (official national statistics)
Berca	4 (education, infrastructure, events, scientific)	Interpretive panels; festivals; infrastructure around the Mud Volcanoes area	Strongest tourism performer in the territory: CAEN 5520 shows consistent profitability; highest tourism turnover and tourism share (up to 7.5%); average length of stay remains moderate and stable (~ 1.6 days)	Accommodation structures increase from 1 (2006) to 5 (2021)
Mânzălești	5 (infrastructure, scientific, educational, promotion)	Scientific and educational activities; infrastructure and promotion	Increase in employees after 2019; positive post-2021 growth in arrivals and overnight stays (~ 0.15–0.19)	Stable accommodation infrastructure: 1 tourist guesthouse

Municipality	Geopark engagement (number of thematic categories)	Examples of recorded geopark activities (2018–2024)	Observable post-2021 dynamics in tourism/economic indicators (Economic Base dataset)	Accommodation dynamics
Colți	4 (geoproductions, infrastructure, education, promotion)	Geoproductions; exhibitions; infrastructure; education/promotion activities	Tourism profitability (CAEN 5520) becomes visible only after 2021; overnight-stays growth rate 0.68 after 2021; average length of stay reaches 1.73 days after 2021	Tourism-related activation post-2021

Source: Research by authors from databases such as INSSE, Ministry of Tourism, geopark communications on their websites and social media

Tourism indicators and accommodation dynamics

Localities with geopark's involvement show moderate but consistent changes in tourism indicators, especially after obtaining UNESCO status in 2021. In Scorțoasa and Colți has been an increase in the number of overnight stays and the emergence of new small-capacity accommodation structures, while in Bozioru, accommodation structures have officially appeared after 2020. In Berca, already established as a local tourist hub, the geopark's activities are consolidating existing dynamics, contributing to a gradual increase in accommodation capacity. Mânzălești shows relatively stable indicators, with modest growth after 2021, suggesting a maintenance effect (Figure 2, 3, 4).

These developments can be interpreted as intermediate effects of the geopark's involvement, reflected in the activation and diversification of the tourist offer and in incremental improvements in visitor retention, evidenced by limited but positive changes in the average length of stay. They do not indicate an accelerated growth in tourist flows, but rather an organic and responsible opening of the territory to small-scale forms of tourism.

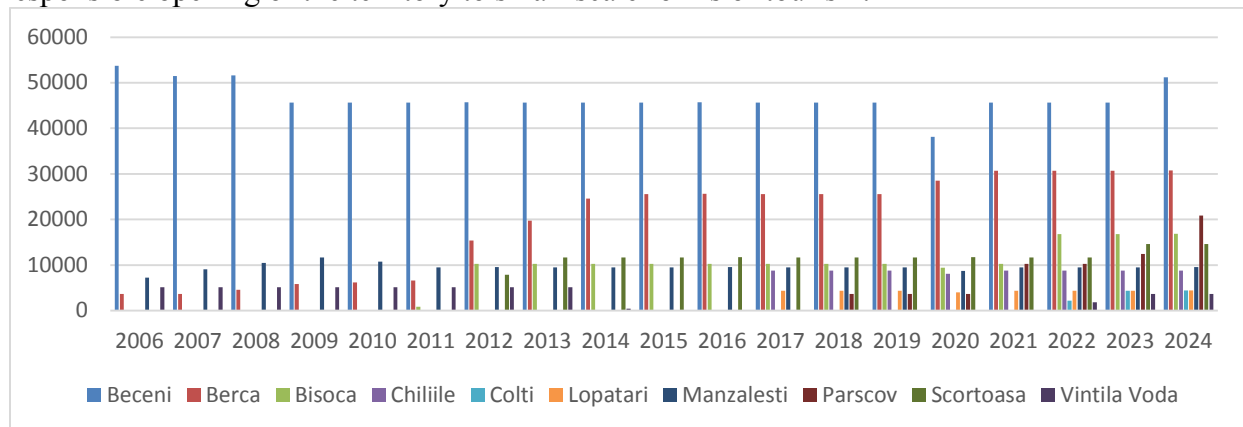


Figure 2. Evolution of Accommodation Capacity in Buzău Land UGGp

Source: Research by authors from databases such as INSSE, Ministry of Tourism.

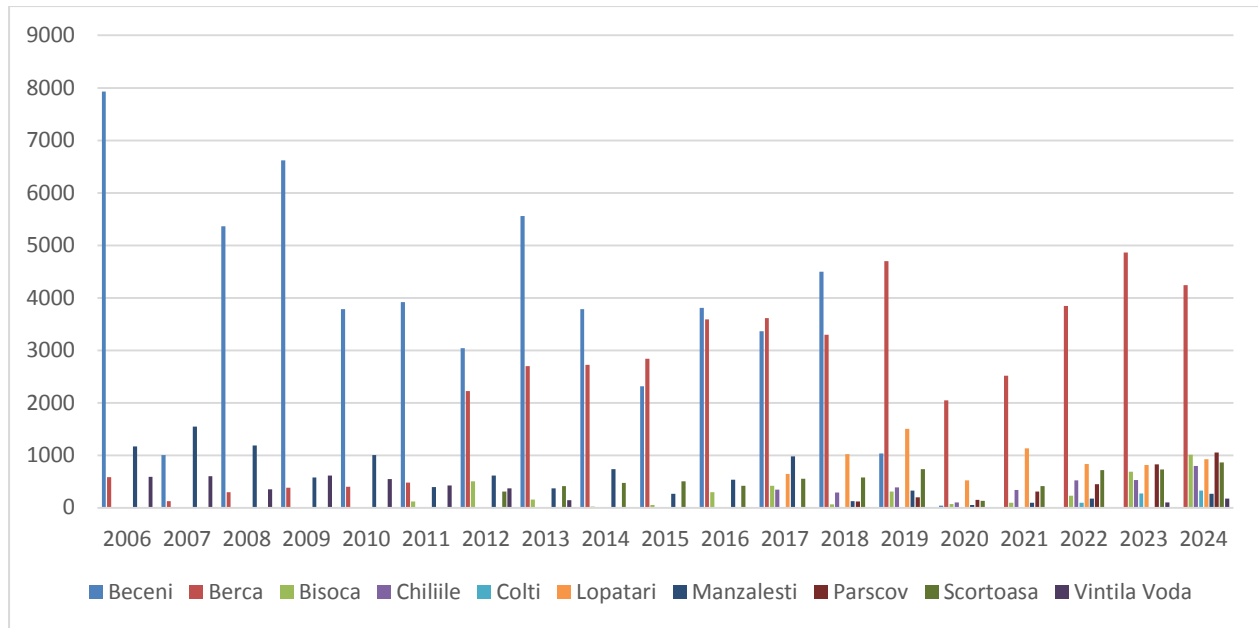


Figure 3. Evolution of overnight stay in Buzău Land UGGp

Source: Research by authors from databases such as INSSE, Ministry of Tourism.

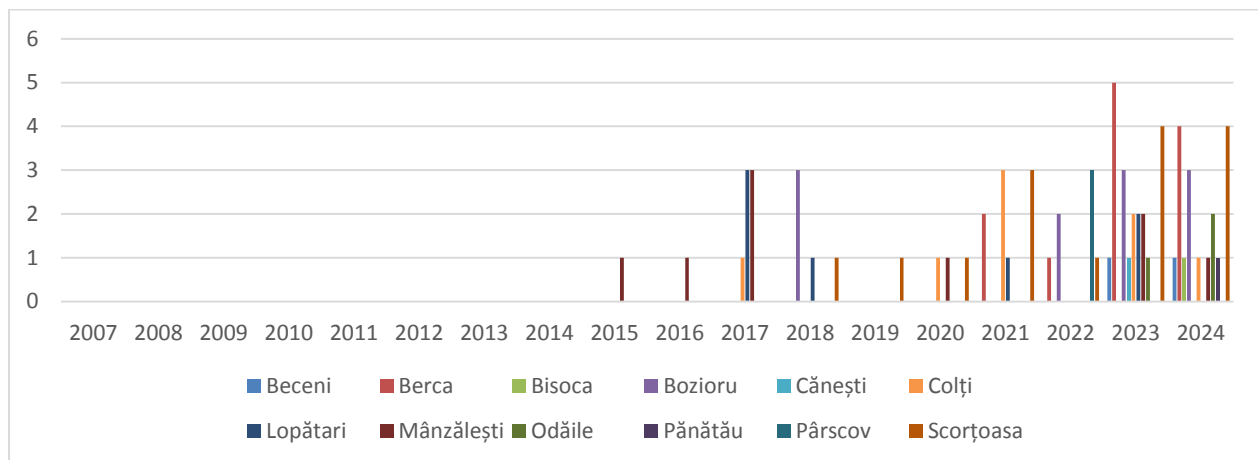


Figure 4. Geopark activities/year/municipality

Source: Research by authors from geopark communications on websites and social media.

Economic indicators and employment: a theoretical result

Analysis of economic indicators based on CAEN codes and employment data does not show proportional increases in total turnover or number of employees that can be directly correlated with the geopark activities. Apart from some localized signs in the tourism sector, broader economic indicators remain relatively stable, especially in non-tourism sectors. This absence of structural economic growth is not a negative result, but is consistent with the literature on social innovation and locally adapted development, which suggests that economic effects often occur with a delay, after the consolidation of social and institutional processes.

Co-creation of value and impactful engagement mechanisms

The contribution of the geopark to the territorial development can be interpreted mainly through mechanisms of value co-creation and engagement, rather than through direct economic growth on a market scale. The dataset on activities shows ongoing interventions that mobilize local actors through education, events, interpretive infrastructure, and promotion. These activities function as mechanisms for building social capital and trust, strengthening local identity, and increasing the visibility of the territory.

The results are consistent with the early-stage impacts expected in the case of social innovation in rural contexts, especially given the recent achievement of UNESCO status (2021). They facilitate cooperation, strengthen local narratives, and inspire micro-entrepreneurial experimentation, for example through the emergence of small accommodation units and new geoproducts without immediately translating into strong economic indicators at the local level.

Territorial patterns and multi-level interpretation

Communities with limited geopark involvement, such as Beceni, Odăile, Pănătău, and Cănești, show minimal changes in both tourism and economic indicators, reinforcing the association between geopark involvement and the territorial outcomes. At the same time, the case of Bisoca, where there has been a notable increase in tourism despite a low number of documented geopark activities, suggests that local trajectories can also be influenced by external or regional factors, which may be attracted because of the UNESCO context.

The geopark can function as a framework that enhances the visibility and credibility of the territory as a whole, acting as a pole of attraction for visitors, potential investors, and partners. In this sense, tourism or economic developments in certain localities may reflect broader territorial effects associated with the branding and institutional legitimacy conferred by the geopark, and not exclusively as a result of the number activities organized by the geopark.

The results support the interpretation of UNESCO Global Geoparks as models of territorial management that generate socio-economic involvement through co-created value, with tourism being one of the first areas where these effects become observable. In Buzău area the involvement of the geopark is sustained and diversified and tourism indicators respond, while broader economic gains remain limited at this stage, highlighting the role of the geopark in building the social and institutional foundations for long-term development.

This dynamic is consistent with studies on creative economies and destination development in Romania, which show that the distribution of activities, local economic complexity, and information infrastructure shape regional development trajectories (Pintilii et al., 2017; Gruia et al., 2019; Herman et al., 2020).

Conclusion

The paper analyzed whether localities with more intense and diversified involvement from the geopark show higher signs of development compared to localities with limited involvement, with a particular focus on developments since obtaining the UNESCO status in 2021. By correlating multi-annual tourism and economic indicators at the administrative-territorial unit level (2006–2024) with the distribution and diversity of geopark activities in eleven municipalities, the study provides an intra-territorial comparative screening of how geopark involvement is reflected in socio-economic dynamics.

The results indicate that the geopark has a clearly differentiated impact, but one that is limited in scope. In localities with sustained involvement (especially Bozioru, Scorțoasa, Colți,

Mânzălești, and Berca), there are consistent signs of tourism activation after 2021, expressed through moderate increases in the number of overnight stays and arrivals, and the emergence or diversification of small capacity accommodation structures (guesthouses, rental rooms, agropensions) in localities where there was no previous accommodation unit. However, at this stage, the geopark does not generate structural economic growth, measurable in terms of aggregate turnover or employment. The absence of such developments does not represent a failure of the model, but a relevant result, confirming the multilevel nature of impact in social innovation and development initiatives adapted to the local context.

The main contribution of the geopark in the territory can be interpreted as the engagement with impact and co-creation of value, rather than direct economic growth on a market scale. Value co-creation is translated through the identification and activation of local partners: producers, restaurants, accommodation providers, artisans, and other economic actors, around geological and cultural heritage, as well as through the development of geoproducts, local gastronomic initiatives, and Slow food chains. These processes create emerging local economic ecosystems, but their aggregate effects are gradual.

At the same time, co-creation of value in the geopark has a profound social and relational dimension. Non-formal educational activities carried out together with local schools, interpretation programs and infrastructure developed with community decisions making, as well as local festivals and cultural events, function as mechanisms for building trust and normalizing collaboration between actors who traditionally act separately. Through repetition and continuity, these interventions consolidate social capital, strengthen the sense of belonging, and increase the willingness of local actors to collaborate in joint initiatives, which is a prerequisite for more visible economic effects.

The transition from these intermediate effects to broader economic impact depends on a series of conditions that develop over time and go beyond the scope of the geopark's direct interventions: the maturation of local partnerships, the stabilization of production and consumption chains, access to investment and markets, the accessibility of the territory, and the continuity of the institutional framework. In this sense, the geopark acts as a catalyst that creates the conditions for development, not as a mechanism that automatically produces rapid economic results.

The study shows that Buzău Land UNESCO Global Geopark primarily generates an emerging socio-economic impact, visible in the activation of tourism, the diversification of local initiatives, and the strengthening of collaboration networks, while the structural economic effects remain limited at this stage. This distinction is essential for public policies and management strategies, suggesting that geoparks should be approached as platforms for social innovation and co-creation of value, requiring complementary measures to transform these gradual results into measurable long-term economic performance.

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