

MODEL OF ADMINISTRATIVE-TERRITORIAL ORGANISATION USING THE CONCEPT OF GEOGRAPHICAL AXIS. CASE STUDY: HYDROGRAPHIC AXIS BISTRIȚA ARDELEANĂ-ȘIEU

Alexandru Marius TĂȚAR  *

Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Doctoral School of Geography,
e-mail: alexandrumarius232@gmail.com

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Abstract: The socio-economic need for reorganisation of Romania's territory serves as the main objective in developing a model of administrative-territorial organisation based on a geographical axis, which can be highly useful in understanding and managing resources and regional development more efficiently. In the case of the hydrographical axis Bistrița Ardeleană -Șieu, the development and interaction located along this axis are investigated. At the level of Bistrița-Năsăud County, the design of the UAT (administrative-territorial unit) Bistrița Ardeleană-Șieu, which includes the following UATs, is analysed: Tiha Bârgăului - spring area and Colibița Lake, Bistrița Bârgăului, Prundu Bârgăului, Josenii Bârgăului, Livezile, Municipality of Bistrița, Unirea, Șieu-Măgheruș - Sigmir area, Viișoara, Sărata, Șieu - Sărățel area, where the river flows into the Șieu. Șieuț - spring area Șieu Mărișelu, Șieu-Măgheruș, Șintereag, Cociu area, where it flows into the Someșul Mare. Fusion of 16 UATs into a single UAT called Bistrița Ardeleană-Șieu, with Bistrița at its centre. Due to its economic expansion and geographical location, the city was chosen as the central hub and focal point of the new administrative unit within the county. The study represents the continuation of the Someșul Mare UAT organisation model. Along their course, the hydrographic axis is intersected by roads DJ173A, DJ154, DJ151, DN17, DN15A, and railroad CFR 400/406, which contribute to connectivity by facilitating access between localities and enhancing regional connectivity.

Key words: Geographical axis, UAT Bistrița Ardeleană-Șieu, Model of administrative-territorial organisation, UAT Someșul Mare, Romania

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* Corresponding Author

INTRODUCTION

The study is part of a larger research aiming to develop a model of territorial administrative organisation based on the concept of hydrographic axis applied to the county of Bistrița-Năsăud.

It analyses the organisation of the county in 4 major hydrographic axis:

- Bistrița Ardeleană-Șieu Axis ;
- Someșul Mare Axis (Tătar, 2024);
- Sălăuța Axis ;
- Bârgău Axis (Tiha).

The terms “rural” and “urban” refer to spatial realities that have often been interpreted as opposed, or even antagonistic and divergent (Champion al., 2004; Molinero, 2021), from a dichotomous binary perspective based on alterity to the urban environment. This approach not only represents a simplification in various respects but also expresses a non-existent homogeneity of rural and urban spaces as if there were only one model of each category.

The spatial reality is much more complex than the above notion. Moreover, this complexity is increasing, and a complete understanding of the question would require multiple interdisciplinary analyses. This is particularly so today, when hybrid spatial environments (Sáez, 2021) and numerous multifunctional rural landscapes are taking shape (Banzo, 2005).

The urban area and the rural zone are organic components of the regional system. They are interdependent, integrated, and complementary (Liu et al., 2023). The complex urban-rural relationship refers to the symbiotic interaction between urban and rural areas that affects each system. It is the most basic economic and social relationship in the development of human society, and it is also an important relation that must be dealt with in regional development and political organisation (Liu et al., 2023).

Urban-rural interaction is manifested in the flow of material, capital, personnel, information, and technology resources between urban and rural areas (Liu et al., 2023). The geographical axis model shows urban-rural interaction efficiently.

The development of a model of territorial reorganisation based on the concept of geographical axis is being investigated. Proposed model: U.A.T. Bistrița Ardeleană-Șieu. The geographical axis is defined as a “line of spatio-temporal shape, a line that allows, in a temporo-spatial way, the diagnosis and geographical forecasting of a territory, a territory that can take different geometric conformations, and dimensions according to the capacity of component polarisation” (Pop, 2003).

Grafting the territorial planning activity in practice, for example, within the axis, must respond to the elaboration of the main indicators in the development and geographical harmonisation of the territory by Pop (2004): the study of natural, social and economic conditions. The geographical and social axis are concentrated and spread to and from the poles of development, the flows of population, goods, capital and information, thus playing an important role in their development and dynamics (Pop, 2016).

Thus, the hydrographical axis Bistrița-Ardeleană-Șieu is characterised as a geographical axis that meets the mentioned conditions and presents geographical continuity in the studied territorial area. Rivers are commonly used

to define political boundaries, and rivers can be used as a structure in territorial delimitation at the sub-national scale (Popelka and Smith, 2020).

The importance of the territorial organisation along the contours of the river Bistrița Ardeleană and Șieu is given by the relationship between the hydrological unit and the communities. Rivers connect people, places and other forms of life, inspiring and sustaining diverse cultural beliefs, values and ways of life. Although the views emerging from socio-hydrology and the hydro-social cycle are based on different paradigms of knowledge, they are rooted in the basic idea that water systems-like rivers, and society co-evolve and emerge through continuous engagement in space and time (Anderson et al., 2019).

Ethnographic studies of common water systems and their communal water management institutions have also contributed to such understanding (Anderson et al., 2019).

The territorial reforms are based on the performance, administrative and organisational power of localities (Ebinger et al., 2019). It is important to note that this results from their organisational and resource capacity and their room for manoeuvre in terms of finance, policy, organisation, staffing, etc. On the other hand, they can solve local problems and influence social developments in the territory in the long term.

This includes the ability to perform public tasks by improving quality, accessibility, legitimacy and efficiency (administrative strength) as well as to act as a strong carrier of public institutions (organisational strength) (Ebinger et al., 2019). By outlining administrative-territorial units (UAT), the administrative performance and capacity of Someșul Mare (Tătar, 2024) and Bistrița Ardeleană-Șieu increase.

METHODOLOGY

In the realisation of the article, the geographical axis method is used, which fulfils material, energetic, informational and relational functions (Figure 1). The geographical axis method is used to investigate territorial tasks: settlements, administration, population and demography.

It outlines the model of a territorial administrative unit based on the hydrodiversity of the Bistrița Ardeleană and Șieu River, which is characterised by human activities (forestry, agriculture, hydrographic planning, water supply, energy industry, fishing, recreation, etc.) carried out between settlements.

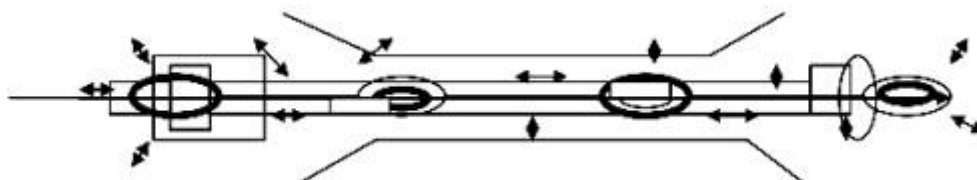


Figure 1. The composite model for spatial structures in the form of a geographic axis is used in the structural realisation of the U.A.T. Bistrița Ardeleană-Șieu (Pop, 2016, pp. 286-287)

The geographical element where the geographical axis is built is the rivers Bistrița Ardeleană and Șieu.

- Urban center: Bistrița;
- Towns and villages under the influence of urban poles;

- connecting road and railway: DJ173A, DJ154, DJ151, DN17, DN15A.

The railroad crossing near the hydrographic axis Bistrița Ardeleană-Șieu is the Dej-Bistrița Railway, part of the CFR 400/406. It crosses the northern part of the Transylvanian plateau and follows the courses of the rivers Someș, Șieu and Bistrița Ardeleană. Proximity:

- In the Arcalia-Sărățel area, the railway line crosses or is less than 500 m from the river Șieu.
 - In the Bistrița Nord area, the railway comes within less than 1 km of the Bistrița Ardeleană river.
 - In the Beclean pe Someș area, the railway runs parallel to the Someșul Mare river, at a distance of about 300-800 meters.
 - Route details: Important points on the route: Dej, Beclean pe Someș, Șintereag, Măgheruș Șieu, Arcalia, Sărățel, Viișoara, Bistrița Nord.
 - Rivers crossed: Someșul Mare, Șieu, Bistrița Ardeleană.
 - Importance: It is an essential rail route for freight and passenger traffic between northern Transylvania and the centre of the country. The Dej-Beclean section is electrified and double-track, while the Sărățel-Bistrița.
- Social and economic activities between rural localities and urban centres, Bistrița centre pole of UAT Bistrița Ardeleană-Șieu and Bistrița-Năsăud county.

Geographical space - administrative units – social and economic trades - communication routes (road, road transportation, railway).

RESULTS

To provide a good organisation, the research results are structured as follows: I. Descriptive analysis of the Bistrița Ardeleană, Șieu Rivers and the territorial units crossed by the hydrological unit; II. UAT Bistrița Ardeleană-Șieu.

I. A-Bistrița Ardeleană

The Bistrita River is a right tributary of the Sieu water course, both of which are part of the Somesul Mare river basin. The hydrographic basin of the Bistrita Ardeleana watercourse has an area of 650 km². It springs from the central group of the Eastern Carpathians, and subsequently, its riverbed crosses the hills of Bistrita, continuing through the Bistrita depression. The Bistrita hydrographic basin incorporates the Tanase, Bargau, and Bistrita hydrographic sub-basins. The weir that is the main objective of this article is located at 10,866 km per watercourse, upstream of the confluence of the Bistrita River with the Șieu River (Moldovan et al., 2022) (Figure 2). The Bistrița River has its source in the Bistricior massif from the Călimani Mountains, drains the eastern part of the Colibița Depression (Mița basin) and flows into the reservoir, from where, under the dam, it crosses over a length of 7 km the gorge sector, after which it continues its course to the confluence with the Șieu river, at Sărățel (Băca et al., 2013) (Figure 3).

Lake Colibița is of anthropogenic origin and occupies the western compartment of the Colibița Basin, being formed by the accumulation of the Bistrița Ardeleană river behind a rock (andezite), built between Dealu Pușcă (1081 m) and Capu Dealului (1051 m). The hydrometric parameters of the lake are significant and show its potential to support tourism and water sports activities (Băca et al., 2013).

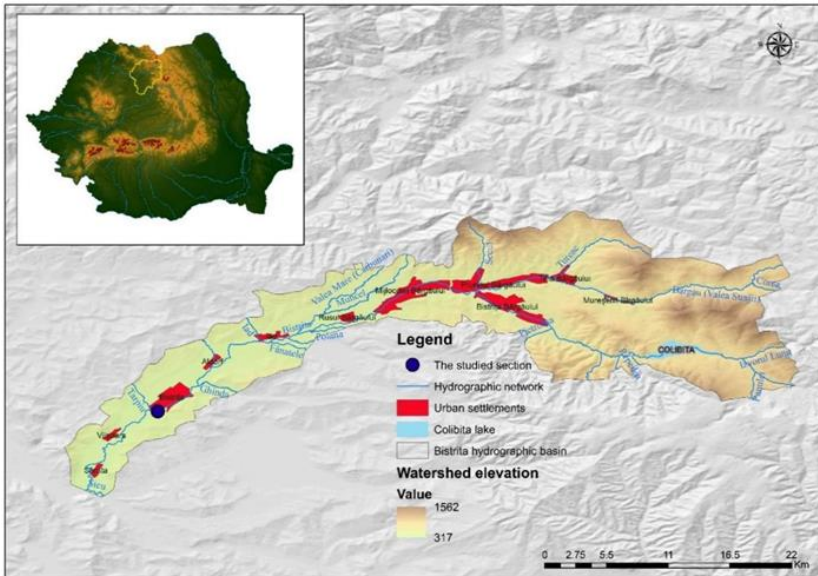


Figure 2. The Bistrița Ardeleană River Basin: location, limits, hypsometry, hydrographic networks (Moldovan et al., 2022)

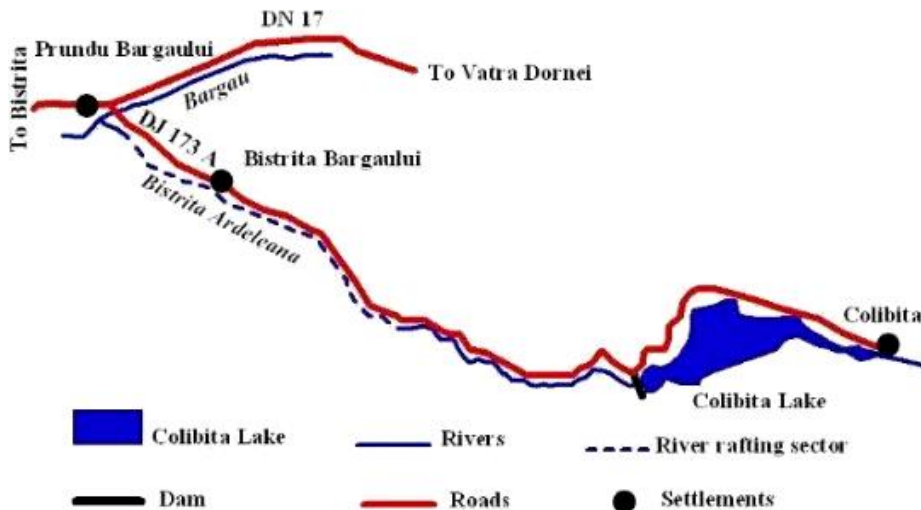


Figure 3. The river-basin system Colibița Lake - Bistrița Ardeleană River (Băca, et al., 2013, p.112)

Due to its touristic and energetic potential, Lake Colibița represents a strategic element in the development of the Administrative-Territorial Unit Bistrița Ardeleană-Șieu, contributing to the consolidation of the ecological and economic identity of the region.

I. B-Șieu

The Șieu River's spring is located in the northwestern Călimani Mountains, below the Poiana Tomii Peak. The course is on a northeast-southwest direction for about 15 km, and then, in the perimeter of the village, it suddenly changes flow direction Șieu of to the northwest. Șieul drains the depression and Depression Budacu Șieu, depression bounded to the North by Small Hills. Culmea Șieului and Lechinței Hills are the southwestern limit of the Șieu River basin. The River drains an area of 1817 km². Șieul is one of the tributaries of the River Someșul Mare (Cristea, 2012).

The Șieu River, a tributary of the Someș Mare, has several secondary tributaries, excluding the Bistrița Ardeleană River. These are:

- Left tributaries: Șieuț, Lechința, Bretea, Agriș
- Right tributaries (excluding Bistrița Ardeleană): Recele, Ardan, Măgura Budac, Măgheruș, Rosua.

These tributaries contribute to the hydrographical network of the river Șieu and play an important role in shaping the relief and in the organisation of the urban and rural space in Bistrița-Năsăud County.

II. Bistrița Ardeleană-Șieu Territorial Administrative Unit (U.A.T. Bistrița Ardeleană-Șieu)

The administrative borders of the new territorial formations are based on the boundaries of the local territorial units that are located within the hydrographic axis Bistrița Ardeleană-Șieu (Figure 4).

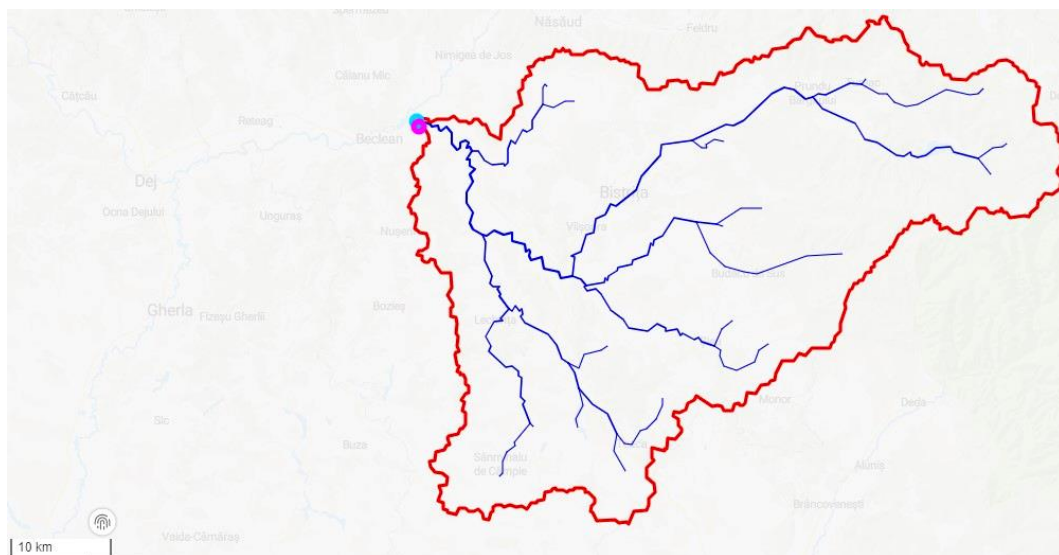


Figure 4. Delimitation of the administrative-territorial unit Bistrița Ardeleană-Șieu with the Cociu trading point (Alexandru Marius Tătar realised in <https://mghydro.com/>).

The administrative reorganisation model is carried out at the level of Bistrița-Năsăud county; the political-administrative structure does not aim at the abolition of the county but at the economic efficiency of the administrative apparatus. The new structure respects the law NO. 290 of 29 November 2018 for the modification and completion of Law no. 2/1968 on the administrative Model of Administrative-Territorial Organisation Using the Concept of Geographical Axis. Case Study: Bistrița Ardeleană -Șieu Hydrographical Axis organisation of the territory of Romania, published in Official Monitor number 1052 of December 12, 2018.

Bistrița becomes the administrative centre of the Bistrița Ardeleană-Șieu UAT, thus creating a dual role: centre of the county and the centre of the new UAT. This dynamic presents economic potential that allows the county to develop.



Figure 5. Analysis of the territorial structure of UAT Bistrița Ardeleană-Șieu (<https://mghydro.com/>)

The analysis of the map of the Bistrița Ardeleană-Șieu UAT shows a territorial structure dominated by rural human settlements and mixed areas with agricultural and forestry functions. In this context, Bistrița emerges as the only urban nucleus, concentrating administrative functions and regional polarisation. This distribution reflects a spatial organisation in which the rural and productive areas are predominant, while the urban areas play a central role in the territorial network (Figure 5).

The analysis of the maps shows the connection between the territorial units and the big urban centres: Cluj-Napoca, Gherla, Dej, through Beclean and Reghin, through the national road 15 A (DN 15 A)

The relationship between the demographic evolution of the localities and their level of development is a simple one, in which the developed municipalities in peri-urban areas register significant increases in the number of inhabitants

as a result of their transformation into residential centres attracting important internal migration flows, especially of urban-rural form (Mihalache et al., 2014).

A second favourable situation for the increase in the number of rural settlements is represented by the regional demographic context, in other words, the demographic development of the area. In this way, the greater the likelihood of population growth in a municipality, the greater the demographic growth in the area as a whole (Mihalache et al., 2014).

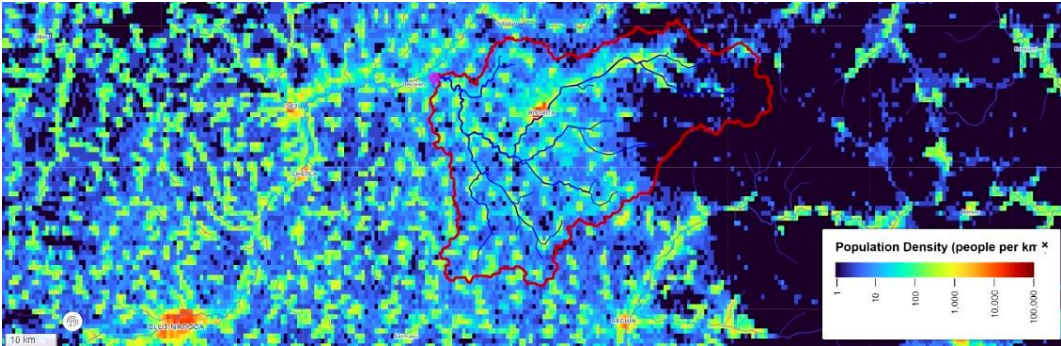


Figure 6. Population density at the UAT level (<https://mghydro.com/>)

Figure 6 shows the population density at the UAT level. It can be observed at the level of territorial formations that the density level is below the urban-rural relationship, where the urban density is higher. Bistrita is the most sparsely populated area in the UAT. Structural analysis conducted at the level of UAT Bistrița Ardeleană-Șieu (Figure 7, Figure 8).

From the analysis of the UAT Bistrița Ardeleană-Șieu (Table 1) and UAT Someșul Mare (Tătar, 2024), in figures represent 46.6 % of the county surface, 80 % of the county population.

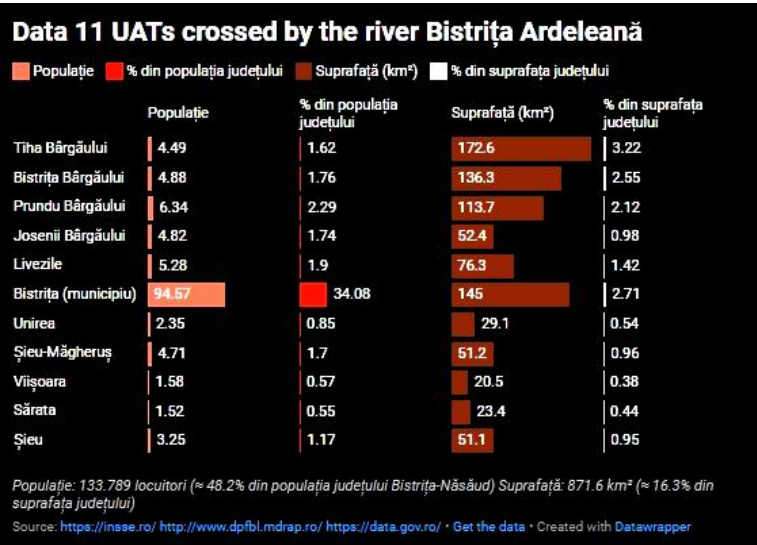


Figure 7. Analyse the territorial units crossed by Bistrița Ardeleană

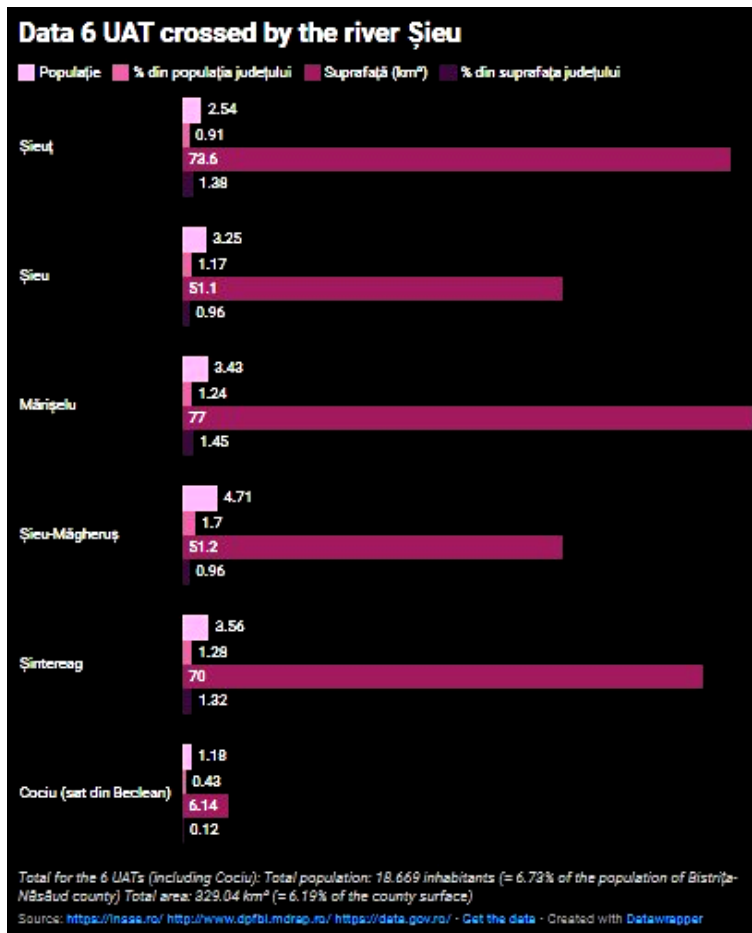


Figure 8. Analysis of the territorial units crossed by the Șieu River

Table 1. The characterisation of the new UAT

Name UAT	Area km ²	% of county surface	Population	% of the county population
Bistrița Ardeleană-Șieu	1.200,64	22,49-50	152.458	55

In these two UATs are located the main centres of higher education (UBB, UTCN, UMF-TG), cultural, communications, energy, economic and tourism (Colibița Lake, Figa Baths). Among the two territorial unit formations are the main employers in the county: Leoni, Teraplast, Rombat, Frasinul, Terasteel, Iproeb, Raal, MIS Grup, Comelf, Roxana, Far Foundation and others.

CONCLUSIONS

The creation of an administrative-territorial unit, such as Bistrița Ardeleană-Șieu, can bring multiple social and economic advantages for Bistrița-Năsăud County:

Regional economic development: strengthening resources and infrastructure can stimulate investment and economic development in the region. Job creation: Infrastructure and development projects can generate new jobs, reducing local unemployment.

Access to European funds: A larger administrative-territorial unit can have easier access to European funds for development projects. Improved infrastructure: Strengthening resources can lead to the modernisation of transport, energy and communications infrastructure, facilitating access to markets and attracting investment.

Improved public services: A strengthened administration can deliver better and more efficient public services such as education, health and transportation. Social cohesion: Administrative consolidation can lead to better social cohesion and reduce disparities between communities.

UAT Bistrița Ardeleană-Șieu - UAT Someșul Mare represents a model of sustainable development for Bistrița-Năsăud County, serving as an example of administrative reform that, according to research, fosters economic welfare and a social future for its citizens.

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