

RESEARCH ON THE SUSTAINABLE DEVELOPMENT OF BARU MARE, HUNEDOARA COUNTY

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Abstract: *Rural development has as its main objective to increase the economic and social well-being of the inhabitants of the area. This growth refers to the expansion of economic activities, which can generate more jobs and thus help generate new income for the whole population. Rural development is closely linked to the Common Agricultural Policy, whose main objectives are to facilitate the population's access to better quality services, to expand and modernise farms and to stop the depopulation of rural areas. This work aims to discover the strengths of Baru Mare so that they can be exploited and lead to the sustainable development of the locality. Therefore, the development strategy outlines the main actions, which will help to change Baru Mare on a positive note. To achieve this, an innovative approach is needed to find solutions to the existing problems, and the inhabitants and local authorities must form a team to implement this strategy.*

Key words: *sustainable development, strategy, analysis*

INTRODUCTION

In the literature, over time, many authors have defined the rural space as opposed to the urban one, so it is defined as: "The authentic rural space is distinguished in all respects (economic structure, population, occupations, culture, social life, etc.) from urban, industrial, mining, port areas" [6].

However, there is a definitive version of the notion of rural in Recommendation No. 1296/1996 of the Parliamentary Assembly of the Council of Europe. This expression emphasises that "rural areas comprise an inland or coastal area containing villages and small towns, where the majority of the land is used for:

- Agriculture, forestry, aquaculture and fisheries;
- Economic and cultural activities of the inhabitants of these areas (crafts, industry, services, etc.)
- Development of non-urban areas for leisure and recreation
- Other uses. [9]

Also, when we refer to the countryside, or the countryside itself, we have to analyse several important factors, such as the morphological factor, which refers to density, number of inhabitants and type of environment, the structural and functional factor which highlights the type of activities and relationships [4].

As far as the development of rural areas is concerned, we can say that it is not a relatively new concept, as it has been in the attention of specialists since the beginning of modern history. Rural development is justified by the desire for balance between urban and rural areas.

Rural development is the best way of reducing disparities between the social and economic environment. It can be defined as an evolutionary approach to this territory, including economic, social, political, etc. Rural development emphasises the ability of a group of people to adapt to the local reality. Generally speaking, development projects start from the involvement of a large group of citizens and partners who have a common interest in taking control of the situation.

MATERIALS AND METHODS

In this work, to carry out the analysis and diagnosis of the rural space of Baru commune, the authors of the work use the most common methods for studying the locality: an analysis based on statistical indicators or multi-criteria analysis and S.W.O.T. analysis.

The method of analysis based on the system of statistical indicators usually consists in the use of seven analysis criteria (physical-geographical, demographic, economic, housing, technical equipment, social, and ecological)[5].

S.W.O.T analysis is used primarily to identify the current situation, which is also the first step in evaluating strategic programmes. The name of this analysis comes from the English abbreviation of the following words: strengths; weaknesses; opportunities; threats. The analysis first assesses the internal specifics of the region under study, i.e. strengths and weaknesses, and then focuses on external influences. External effects that have a positive character are considered opportunities, and negative ones are considered threats. [5]

RESEARCH RESULTS

Location and administrative aspects of Baru. The commune of Baru is located in the southern, south-western part of the Hațeg depression, in the southern part of Hunedoara County. The commune is located on the upper course of the Strei river.

The village of Baru is 23 kilometres from the town of Petroșani and 70 kilometres from the municipality of Deva.

The commune of Baru includes four villages with an average distance from the commune's residence of:

Table 1.

Average distance between settlements and their population

Villages	Average distance between settlements	Population
Petros	1 km	734 residents
Livadia	3 km	217 residents
Valea Lupului	4 km	609 residents

Source: Urban Planning Service of Baru commune,

The town of Baru resulted from the merger of Baru Mare and Baru Mic or Bărișor, and Livadea resulted from the villages of Livadea de Câmp and Livadea de Coastă. [3]

As far as the boundaries of the Baru commune are concerned, the locality is delimited in the western part by the commune of Pui by the Tulișa vârful Baru interfluve. In the eastern part of the commune, the border is represented by the locality of Bănița, through the Crivadei gorges. In the north, the commune follows the crest of the Șureanu mountains, and in the south Baru is bordered by the Retezat massif. . [7,8]

The access roads are represented by the National Road (DN66), which connects Deva, Hațeg, Baru and Petroșani. At the same time, the commune has 4 communal roads connecting the villages: DC 70 A Baru-Petros, DC 70 B Baru-Valea Muncelului, DC 70 F Baru-Valea Lupului, DC 70 G Baru-Livadea. Another access route is the local railway station, which is still in operation today. [3]

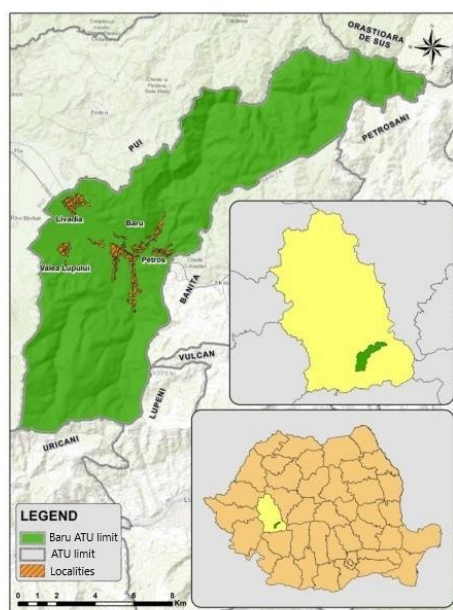


Figure 1. Location of Baru commune within Hunedoara county.

Source: own GIS processing

The demographic potential of Baru commune. As far as the population of Baru is concerned, we can say that it is in a slight regression compared to the past years, so from the graph below we can see that in the year 2000, the population of the commune was 2888, and in the year 2022 it is about 2739 workers. This decrease is caused by the very low birth rate and the presence of a very low number of working people, which has led to an increase in external migration over time.

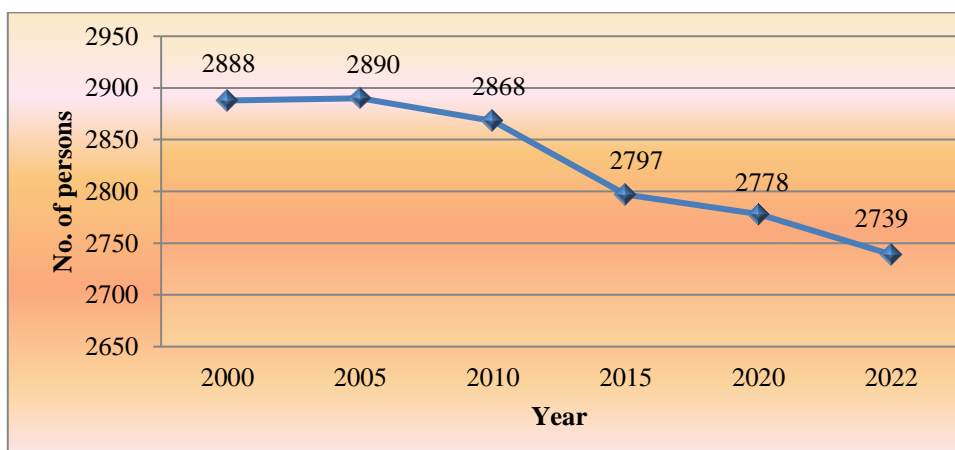


Figure 2. Numerical evolution of the Baru commune population from 2000 to 2022

Source: Own processing according to the National Institute of Statistics, Tempo online, 2022 [10].

The birth rate of the population of Baru commune shows a fluctuation in the number of live births. Thus, we can see with the help of the graph below, that in 2000 there were 29 live births and in 2020 there were 25. The most pronounced difference is observed in 2010 when the number of newborns reached 15. Thus, in the year 2000, we have a rate of 10.04‰, in 2005 7.96‰, 2010 5.23‰, in 2015 the highest rate is recorded, it is 11.08, and in 2020 the rate drops to 9 ‰.

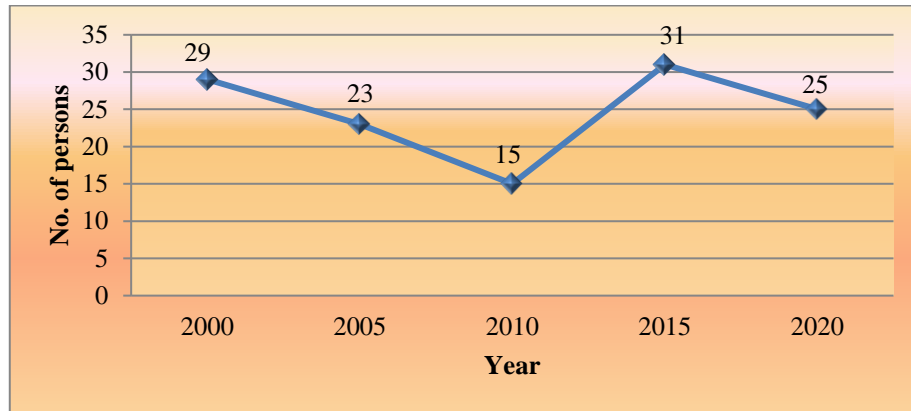


Figure 3. Evolution of the birth rate of Baru commune.

Source: Own processing according to the National Institute of Statistics, Tempo online, 2022

Mortality shows a constant oscillation from the year 2000 to the year 2020, with 46 deaths in 2000 and 38 deaths in 2020. As far as the mortality rate is concerned, we can observe a considerable decrease, in 2000 the rate was 15.9‰, and in 2020 13.7‰.

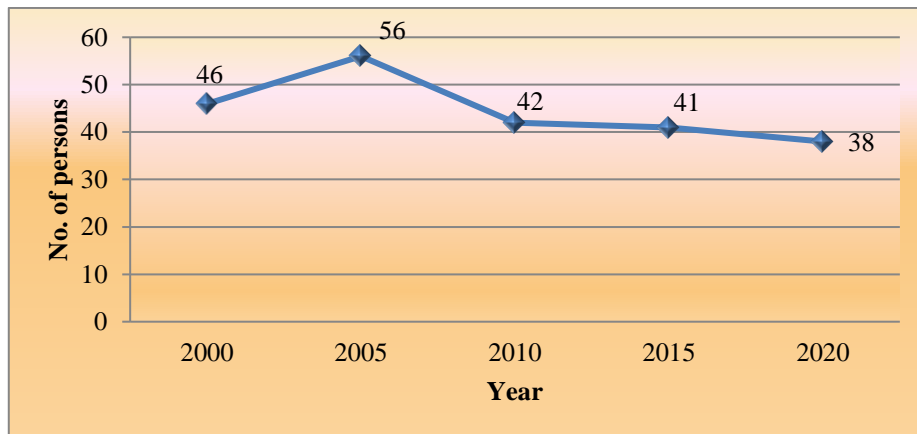


Figure 4. Mortality trends in Baru commune.

Source: Own processing according to the National Institute of Statistics, Tempo online, 2022

The natural demographic balance of Baru is negative because the number of births is lower than the number of deaths. This can be explained by the presence of an ageing population in the commune. As we can see from the table below, in 2000 the balance was -5.88‰, and in 2020 it is -4.67‰. The highest value is recorded in 2005 when we can notice a value of -11.41‰.

Table 2.

Natural population balance of Baru commune

Year	2000	2005	2010	2015	2020
N‰	10,04	7,96	5,23	11,08	9
M‰	15,92	19,37	14,64	14,65	13,67
Bdn‰	-5,88	-11,41	-9,41	-3,57	-4,67

Source: Own processing according to the National Statistical Institute, 2022. [10,12]

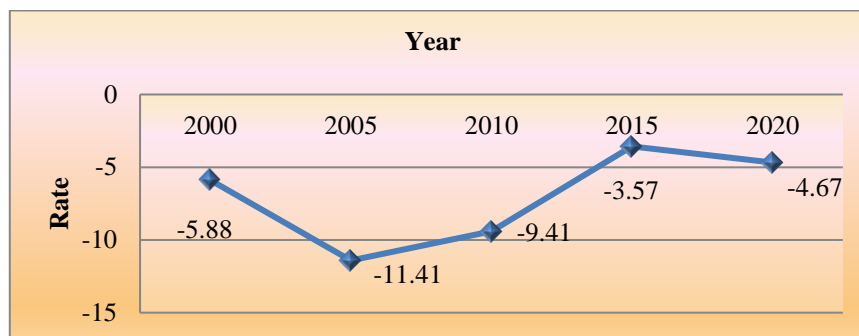


Figure 5. Natural population balance of Baru commune.

Source: Own processing according to the National Institute of Statistics, 2022.

The highest value in terms of the structure by major age groups was recorded in the 15-64 age group, this remains constant in both 2000 and 2022. In 2000, the value was 65%, and in 2022 it increased to 67%. For the over 65s category, we see that the value has increased in 2022 compared to 2000. In 2022 the average is 21% and in 2000 18%. At the same time, the 0-14 age category is decreasing compared to 2000 when the figure was 17%. This decrease is primarily due to a reduced birth rate.

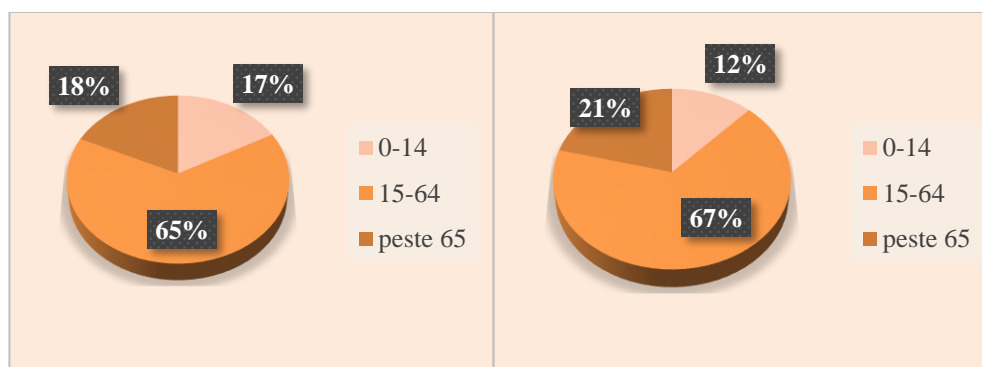


Figure 6. Population structure by age groups in 2000 and 2022 respectively

Source: Own processing according to the National Institute of Statistics, 2022.

As far as the gender structure of the population is concerned, we can see that in both 2000 and 2022 the values are approximately equal. In the year 2000, there were 1482 women and 1410 men in the commune of Baru, and in the year 2022, 1375 women and 1380 men. So, a small decrease can be observed in this period, both for females and males.

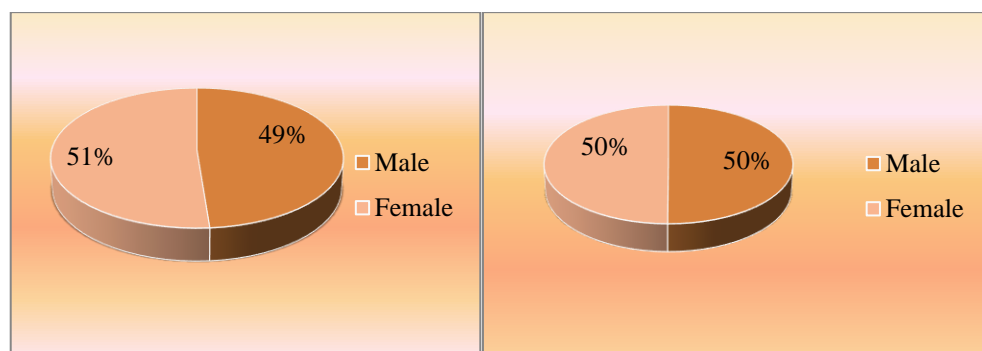


Figure 7. Gender structure, 2000 and 2022 respectively

Source: Own processing according to the National Institute of Statistics, 2022.

The ethnic structure is 98% Romanian and 2% Roma. Also in the commune, there are 6 persons of ethnic Masks, 2 persons of German ethnicity and 7 unidentified persons.

The largest part of the population in terms of religion belongs to the Orthodox religion, 91% to be precise. Another religion that can be noted in the commune is that of the Pentecostals, in a proportion of 2%.

The economic potential of Baru commune. The primary source of the commune's economic development is the land fund. Thus, the total area of the commune is 14,571 ha, of which 41% is agricultural land and 59% is non-agricultural land.

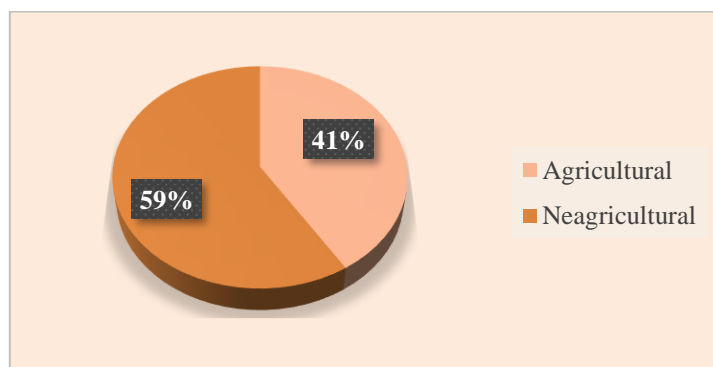


Figure 8. The surface area of Baru commune.

Source: Own processing according to the National Institute of Statistics, 2022.

Thus, in most of the commune, the main crops are rye, wheat, corn and potatoes. These crops are grown in a higher proportion because both fertility and lower temperatures allow these varieties to grow better, and there are also apple and walnut orchards in the commune.

For a more detailed analysis, we have made a land use map of the Baru commune. On the territory of the commune, there are 63.97% mixed forests, which are currently exploited and processed at the sawmill in Baru.

At the same time, as we can see in the map graph, the highest areas are coniferous forests. These forests are present in the Sureanu Mountains and the Tulișa Massif, where seasonal shepherding is mostly practised.

As regards the agricultural area by type of use, the commune is dominated by grassland, followed by meadows. The small proportion of arable land is explained by the unfavourable landforms in terms of plant cultivation, as well as the low temperatures.

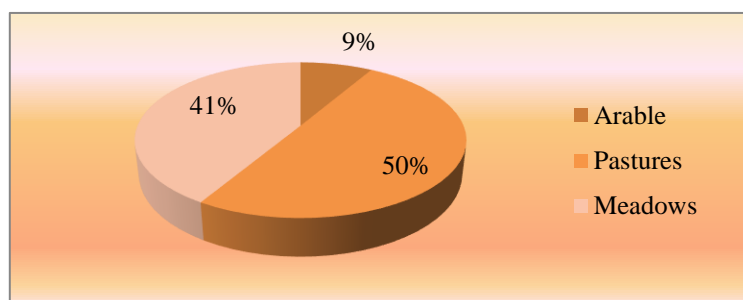


Figure 9. Land area by land use, 2014.

Source: Own processing according to the National Institute of Statistics.

Industry. Since 1898 Baru has been economically distinguished by the presence of the Refractara S.A. brick factory, which in 1980 employed more than 300 people from all the neighbouring areas. In 1982 this factory reached the peak of its development, and a new factory was built, which focused only on the production of bricks and shingles. However, its heyday came to an abrupt end in 2000 when it was privatised. Today, instead of the brick factory, a wood processing industry has been set up in one of the former sections, but the former factory building is in ruins.

Another important economic source for the inhabitants of the village is Lactofood, whose main purpose is to process milk taken from local households. This enterprise currently employs more than 50 people.

Also, thanks to the presence of the river Strei, a ballast factory has been operating in the commune since 2000.

In addition to the large factories in the commune, there are also smaller businesses such as grocery stores, bars, a bakery, two doctors' surgeries, a pharmacy, a post office, etc.

Services. The main activity in the primary sector is both food and non-food trade. We can say that the service branch is the most underrepresented in Baru. Most people in the village are employed at the milk factory or the village gater. As far as the number of unemployed people is concerned, there has been a decrease since 2010. However, with the advent of the pandemic, the number of unemployed in the commune has increased. If in 2019, there were 65 people without a job in the commune, now there are around 80, this can be seen in the graph below.

The infrastructure of Baru commune. As far as the access infrastructure of the commune is concerned, we can say that 80% of the roads in the commune are renovated. The traffic between the villages of Baru is on the National Road (DN 66). There is also a railway line between Petroșani and Simeria in Baru.

The commune's infrastructure is represented by water supply and sewerage, public lighting and sanitation, all of which were refurbished in 2005. The villages of the commune have also been supplied with gas since 1998. Other public services of the commune are the police unit, the emergency service, telecommunications and the commune post office.

The water supply is provided by the spring of Sipot in the village of Petros. The only village without this facility is Valea Lupului.

Electricity supply is carried out through LES and LEA 20kv.

Methane gas supply is made since 1998 since this year every village of Baru has had this facility. The methane gas flow rate is 800 cubic meters/h.

The Town Hall of Baru together with its citizens also attaches great importance to environmental infrastructure, the main objective of which is to improve the infrastructure and the quality of the environment. The main goal is highlighted by the development of rivers, afforestation of deforested areas, and maintenance of green areas.

Analysis of socio-cultural resources of Baru commune - Education and education. In Baru commune, there was a primary school in each village, but due to the low number of pupils, they were abolished, creating a single school for all the children of the village. In addition to the Petros Secondary School, there is also an extended day nursery in Baru.

This school consists of classes I-IV, and V-VIII and each room in the school is equipped with a video projector, marker boards, laptops, and audio systems. Petros Secondary School has 430 pupils. Also, in autumn 2022, the commune of Baru will put into operation the High School "Prof. Bora Tit Liviu" which will have a profile of tourism and food, within this high school there will be a class of 24 students.

Health. In the commune, there is a dispensary, a dentist's office and a pharmacy. As far as the health infrastructure is concerned, the buildings, as can be seen in the pictures, need to be renovated and the equipment inside the dispensary should be changed. In the past, there

was a special building for the sick, where there were 7 beds and a delivery room. In terms of medical staff, the commune has only one family doctor, two nurses and a dentist.

Cultural heritage. Cultural heritage is very important for the inhabitants of the commune, who even today try to preserve the traditions they have inherited.

The main traditions are:

Pițărăi - the tradition consists of carolling in every house on 24.12.

Arminden- is a tradition through which the inhabitants of the commune express their faith.

Maundy Thursday- takes place on the Thursday before Easter.

Nedeile- are local festivities.

Strategic proposals for the development of Baru. Following the previous multi-criteria analysis, the authors of the paper prepare a SWOT analysis of Baru.

Table 3.

S.W.O.T ANALYSIS OF BARU COMMUNE	
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ➤ Geographical location near the main road artery (DN66) ➤ Natural resources present in the commune ➤ Road infrastructure ➤ Drinking water supply, methane gas ➤ Presence of sewerage ➤ The exploitation of ballast products ➤ School facilities. ➤ Presence of a high school. ➤ Existence of jobs thanks to the milk factory. ➤ The attraction of investors thanks to the infrastructure. 	<ul style="list-style-type: none"> ➤ The infrastructure of medical practices. ➤ Uncontrolled deforestation. ➤ Poor promotion of tourism in the area. ➤ Declining school population ➤ Decreasing cultivated agricultural land. ➤ Ageing population. ➤ The number of unemployed people has increased since the beginning of the pandemic. ➤ Failure to promote cultural, and historical heritage ➤ Lack of tourist routes ➤ Lack of a market for local producers
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ➤ The possibility of developing modern transport ➤ Easy development of tourism and agritourism. ➤ Creation of a ski slope on the Tulișa Massif ➤ Possibility of affirmation through modern education ➤ The organisation of various sports competitions 	<ul style="list-style-type: none"> ➤ Pollution of watercourses ➤ Ageing population ➤ Landslides ➤ Competitiveness with neighbouring localities with tourism potential ➤ Poorly developed industry in some areas ➤ Youth migration

Identification of the main strategic directions for the development of Baru. With the help of the S.W.O.T. analysis carried out previously, the authors of the paper identify the main strategic development directions of Baru commune.

The main objectives in terms of the development strategy of the studied commune are aimed at stopping the migration of the population of the locality and implicitly increasing its quality of life. To achieve these objectives, the following measures are necessary:

- The economy to be efficient and diversified;
- The local authorities should be open to attracting European funds;
- To create new jobs;
- Rehabilitate the infrastructure (doctors' surgeries, etc.) [11].

Another important issue to be taken into account regarding Baru is the lack of promotion of local tourism. In the commune, there is a multitude of natural attractions that can be used for tourism (rural tourism, ecotourism, agrotourism).

Another way of highlighting the commune is through the promotion of traditional products through craft and handicraft fairs, festivals, etc. In the Baru commune, some families still use traditional techniques to make certain products.

Another resource that could be easily exploited is the fishery, in the waters of the river Strei there are sufficient resources for fixing certain points of this kind.

At the same time, for the benefit of the local people, a recreational hall could be built to attract investment, where the citizens of the commune could sell their products.

Other measures for the sustainable development of the commune are the rehabilitation of central areas, the development of green spaces, the development of intelligent infrastructure for tourism, and financial support for the development of young farmers.

CONCLUSIONS

Following the analysis, the authors find that the locality has a lot of strengths due to the existing resources in the area:

- Following the analysis of the natural environment, it is found that, although the relief is not the most suitable for agricultural activities in the plant sector, it offers a multitude of other benefits, such as the possibility of developing active tourism, the possibility of developing the livestock sector, etc. The water network is very rich, offering the possibility of developing the fish farming sector, as well as the possibility of using irrigation during periods of drought.
- Another important resource for the commune is the forestry fund, and due to the diversified fauna, the hunting fund is very developed. Currently, in Baru, there is a gater where the wood of the commune is exploited.
- An important factor in the development of the commune is its location near the main artery, namely the National Road (DN 66).
- As far as demography is concerned, the birth rate is currently declining and the population of the commune is ageing. Another disadvantage in terms of demographic resources is the migration of young people.
- The infrastructure is quite good. Currently, in Baru, the roads in the surrounding villages have been rehabilitated and households have been supplied with running water, sewerage, etc.
- In terms of socio-cultural resources, the commune's population benefits from very good services in terms of the education system, with pupils having classrooms equipped with laptops, video projectors, and audio systems. There is also a dispensary, a dentist's office and a pharmacy.
- The most underdeveloped branch in the commune is tourism, which is not sufficiently promoted.

REFERENCES

- [1]. **BLEAHU, M. ȘI COLAB.**, 1976, Peșteri din Romania, Ed. Științifică și Enciclopedică, București, pp. 415;
- [2]. **BLEAHU, M.**, 1982, Relieful carstic, Edit. Albatros, București, 294;
- [3]. **IOACHIM, L., TĂMAȘ, P.**, 2003, Monografia Comunei Baru, Edit.Emia, PP 443;
- [4]. **KAYSER, B, BRUN, A, CAVAILHES, J, LACOMBE, P**, 1994, Pour une ruralite choisie, Editura de L Aube, Paris, ISBN 978-2876781733.
- [5]. **MATEOC-SÎRB, N, MĂNESCU, C**, 2012, Dezvoltarea rurală și organizarea teritoriului, Editura Mirton, Timișoara, ISBN 978-973-52-1244-5.
- [6]. **P.I. OTIMAN, MATEOC-SÎRB, N, ȘI COLAB.**, 2006, Dezvoltarea rurală durabilă în România. Editura Academiei Române, București, 359-372,
- [7]. **TRUFAȘ, V.**, 1986, Țureanu (colecția Munții Nostri), Edit. Sport Turism, pp.175;
- [8]. **URDEA, P., CHESLEREAN, C.**, 1998, Munții Tulișa - considerații geomorfologice (II), Analele Universității de Vest din Timișoara, seria Geografie, VIII, pp. 25-35;
- [9]. *** Recomandarea nr 1296/1996 a Adunării parlamentare a Consiliului Europei cu privire la Carta europeană a spațiului rural.
- [10]. *** <http://statistici.insse.ro:8077/tempo-online/>, Accesat în 13.05.2022.
- [11]. *** <https://www.primariabaru.ro/anunturi/strategiabaru2014-2020.pdf>, Accesat în 20.05.2022.
- [12]. *** <https://www.recensamantromania.ro/>, Accesat în 12.06.2022.
- [13]. *** <http://comuna.info/harta-baru-hd/>
- [14]. *** <https://glasul-hd.ro/biserica-de-patrimoniul-national-din-baru-mare-salvata-de-ambulanta-pentru-monumente/>
- [15]. ***<https://magazines.ulbsibiu.ro/arheologie/publicatii/bibliotheca/chunedoara/cadru%20geografic.htm>