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# Revitalization of Rural Areas of the Carpathian Region in the Context of EU Macro-Regional Strategy

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**ABSTRACT**

Rural areas of the Ukrainian part of the Carpathian Euroregion face several challenges in their development such as declining natural growth, migration, unemployment, low level of gross domestic product per capita, small rural households, having low quality land used for cultivation of a limited number of crops. The introduction of the state strategy for the region could be the instrument to revitalize the rural areas. However, there are unresolved scientific debates about the most effective tools for the strategy that would focus on specific challenges of the mountain rural areas. The aim of the article is to answer the questions: what are the dynamics of the main socio-economic indicators of the mountain rural territories in comparison with the Ukraine and EU? What are the main disadvantages of the region and how they could be solved using the EU experience? The calculation of statistical indicators showed a divergence - differences with the average indicators across the country and the EU in 2011-2019. The method of SWOT analysis reveals the factors of internal and external environment that have a positive and negative impact on the development of rural areas. Based on the European experience of implementation of the Common Agricultural Policy, new elements were proposed to be considered in the Ukrainian strategy: introduction of a systematic approach to the creation of the rural strategy, greening agricultural production and the implementation of the concept of smart villages in Carpathian region. The inclusion of these elements could improve the investment climate in rural areas, which is one of the priorities of rural development of the Ukrainian Carpathian Region.

## 1. INTRODUCTION

Rural areas of the Carpathian region are characterized by challenging natural conditions, and low level of transport accessibility. In addition, non-diversified production and the low level of entrepreneurial initiative have a negative impact on employment in mountain settlements (Verkhovna Rada of Ukraine, 2019). However, this situation is not unique. After all, most European Union countries face

the problem of rural population decrease. In rural areas, income per capita is usually lower than in urban areas, and rural areas are affected by social and demographic problems, such as lack of attractive employment opportunities, skills shortage and a significant outflow of young people (European Parliament, 2021). Therefore, the issues of revitalization of rural areas, intensification of their economic activities remain relevant for both the Ukrainian Carpathians and for the rural settlements in the European Union (EU).

Considering the urgency of the problem, the aim of the article is to answer the questions: *what are the dynamics of the main socio-economic indicators of the mountain rural territories in comparison with the Ukraine and EU?* and *what are the main disadvantages of the region and how they could be solved using the EU experience?*

For example, about 28.0% of the EU population live in rural areas, while another 31.6% live in small towns and suburbs (intermediate areas), and 40.4% live in cities (Raugze et al., 2017). There is a seemingly inevitable worldwide trend towards urbanization, as by 2050 the EU's urban population is expected to grow by 24.1 million, while the rural population is expected to decline by 7.9 million. Nevertheless, these global trends hide significant differences between different parts of Europe and types of rural areas. Overall, almost two thirds of rural areas in the EU-13 (those countries that joined the EU in 2004 or later) record a decreasing population, while in the EU-15 (those countries that joined the EU in 2004) there is an opposite tendency, these regions retaining their population, or showing positive dynamics (Raugze et al., 2017).

The importance and challenges of rural areas have led to the development of EU rural development policy to address structural disadvantages, promote the creation of rural jobs and preserve the ecology of these regions (European Parliament, 2016; European Parliament, 2021). And, the tools of the Common Agricultural Policy (CAP) 2014-2020 should be implemented in Ukraine for the revitalization of rural areas, particularly in the Carpathian region. At the same time, the issues of revitalization of rural areas, intensification of their activities remain relevant for both the Ukrainian Carpathians and the rural mountain settlements in the EU.

## 2. THEORY AND METHODOLOGY

Rural development is the 'second pillar' of the Common Agricultural Policy (CAP), reinforcing the 'first pillar' of income support and market measures by strengthening the social, environmental and economic sustainability of rural areas. It means that rural development is in the focus of EU programs and funding (Teräs et al., 2015; European Parliament, 2016; European Commission, 2021). Sustainable development of rural areas could be reached through fostering the competitiveness of agriculture (Oliveira et al., 2019); stimulating the development of ecological tourism (Melnyk and Chyr, 2019); implementation of technological innovations (Adamczyk et al., 2019); ensuring the sustainable management of natural resources and climate action (Bansard and Schroder, 2021); achieving a balanced territorial development of rural economies and communities including the creation and maintenance of employment (Simões et al., 2021).

Dax (2017) describes the best-practice and transfer activities including local action networking. The effectiveness of EU programmes for the rural areas such as LEADER is shown in the EU reports (European Commission, 2021). Researchers indicate the necessity of integration of agriculture and tourism. The key success factors to overcome potential obstacles in rural tourism development are leadership, inter-sectoral networks, a common orientation towards quality, as well as effective communication (Lun et al., 2016).

We therefore underline several approaches to policy formation. One of the approaches involves focusing on certain sectors and their issues, for example, housing, agriculture, rural tourism, the specifics of the labour force in rural areas. Another approach is to focus on the spatial or territorial context and adjust policies to spatial issues. The latter one is a comprehensive approach to rural development that tries to combine social, environmental, cultural, economic, and other perspectives. A less common example is the approach to the elaboration of rural development policy, which integrates rural policy with other sectors of the national economy and elements of socio-economic development, thereby blurring the line between rural and urban areas (Douglas, 2006).

One of the most noticeable problems identified by experts is the problem of depopulation of rural areas (Raugze et al. 2017). Two policy levers are possible to combat this trend: "focus on growth" - reducing the negative trend and stimulating population growth; or "fight against decline" - accepting population decline as a "fait accompli" and adapting to its economic and social consequences. Although the idea of accepting decline is often politically unpleasant, it is also unrealistic to expect effective rural strategies to counter growing global trends toward urbanization. Indeed, long-term depopulation in Europe will become the new norm for many regions, especially peripheral rural areas, over the coming decades. The challenge in such conditions will be to ensure a managed transition to a new economic situation that corresponds to the realities of reducing natural population growth. Accepting reduction as a "fait accompli" can help refocus rural development policies on investment solutions to restore

environment, reduce natural resource consumption, discover new opportunities for innovation, and modernize governance and public services through more holistic approaches that meet the realities of the 21st century.

EU member states or those states that establish cooperation with the EU face another problem in rural areas - the need to rethink and restructure their agricultural development strategy in order to find their place in the community and compete in a globalized market (Otiman, 2008).

The EU demonstrates the lessons that other countries, especially developing ones, can learn from the European Union's experience in successful implementing rural development policies for many years. For example, for the period 2014-2020, the EU has allocated almost 100 billion EUR (112 billion US dollars) from its own budget to support rural development policy.

In addition, Member States are involved in policy implementation at the national level. States (or, in some cases, subnational regions) prepare multi-annual rural development programs that determine how these funds are spent. EU regulatory framework identifies several priorities, and Member States and regions decide which priorities are most relevant to them and choose the measures that best suit their own needs. During 2014-2020, more than half of the total budget of this policy was allocated to two priorities, namely preserving ecosystems and promoting resource efficiency. There is complementarity between the EU regulatory framework, its rural development policy and other policies, including agricultural and environmental ones.

Matthews (2019) identifies four areas where the EU experience would be useful for developing countries. Firstly, the EU has developed a comprehensive package of programs, aimed at protecting and improving the environment by integrating agricultural objectives with environmental and climate objectives. Secondly, the EU has promoted endogenous rural development through a bottom-up approach (community-led local development), that directs the enthusiasm, skills, and local knowledge of rural communities towards developing projects that address the problems they face at the local level. Thirdly, rural areas in the EU are overcoming the lack of access to high-speed internet connections. And fourthly, one specific element of the EU agricultural development policy is the emphasis on the importance of monitoring and evaluation of spending to ensure timely impact on project costs. This will increase the transparency of the projects and improve the targeted use of funding.

Recognizing the undeniable scientific and practical significance of the research works presented above, we believe that the issue of revitalization of rural areas remains insufficiently addressed, both theoretically and methodologically, and requires independent research.

Sytnyk et al. (2020) brings out some problematic issues of regional development on which the EU Macro-Regional Strategy should be focused. The analysis showed the urgent need to revitalize rural areas, which would help solve social and economic problems (demographic crisis, unemployment, low level of development of productive forces and entrepreneurial activity) (Borshchevskyjy, 2013). Next in turn is the need for transnational cooperation to solve the problems of Euroregions with common natural, historical, and economic features (Bruckmeier and Tovey, 2009). One of the tools is the creation of a single Development Strategy of the Carpathian Euroregion. Such a strategy, in combination with regional strategies, would be the basis for coordination and synchronization of development and investment policies elaborated by the national and regional authorities.

To assess the socio-economic condition of the area under study, indicators of unemployment and GDP per capita were selected and analysed during the 9-year period (2011-2019). Convergence and correlation of indicators were calculated. For a more accurate and detailed analysis of regional imbalances, we used the concept of sigma convergence, which is one of the most common methods of statistical analysis of economic growth.

Sigma convergence shows how differences between different groups change over time in relation to the chosen economic criterion (GDP per capita, unemployment rate, etc.). In other words, sigma convergence is defined as a decrease in time variation (inequality, differentiation) levels of economic development of regions.

The variance reflects the degree to which the data scatter around the mean (Hayes, 2021).

The variance was calculated by the following equation (1):

$$\sigma^2 = \frac{\sum(x - \bar{x})}{n}$$

where:

$\sigma^2$ - *the value of the variance of the sample;*
$x$ - *a separate value;*
$\bar{x}$ - *arithmetic mean of all indicators;*
$n$ - *the number of indicators in the sample.*

It should be noted that the variance is rarely used independently and it is usually an intermediate indicator for other types of analysis, such as the convergence analysis.

The standard deviation is the root of the variance. This value is also sometimes called the

standard deviation or sigma. To calculate the deviation the following equation is used (2):

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

where:

$\Sigma$ - *the standard deviation;*
$x$ - *a separate value;*
$\bar{x}$ - *arithmetic mean of all indicators;*
$n$ - *the number of indicators in the sample.*

The coefficient of variation was chosen for the analysis because it is measured in relative values, and different indicators can be compared, regardless of their units and scale. The dynamics of indicators show convergence if the coefficient of variation does not exceed 33% and decreases during the analysed period. If the coefficient of variation increases annually, it means that there is a divergence between the indicators, and they do not go in line with each other.

The coefficient of variation is measured by equation (3):

$$V = \frac{\sigma}{\bar{x}}$$

where:

$\sigma$ - *the standard deviation,*
$\bar{x}$ - *the arithmetic mean of all indicators.*

The SWOT analysis matrix was used to create a conceptual model of revitalization of rural areas of the Carpathian region. It makes possible to determine the key factors of the internal and external environment of rural areas that describe the current state and prospects for future territorial development. Those having a positive impact include land resources, labour with experience in homesteading, unique natural environment, historical and cultural heritage, decentralization in governance and financing, modernization of management and public services, while those with a negative impact on the development of rural areas are low business activity, high costs of infrastructure, low quality roads and irregular transport connections, depopulation, financial insolvency, irrational use of nature, excessive deforestation.

## 3. RESULTS AND DISCUSSION

The Carpathian region of Ukraine is one of the most attractive geographical regions of Central and Eastern Europe, characterized by high natural resource potential and important geopolitical location. On the map of Europe, it is represented by four regions: Ivano-Frankivsk, Lviv, Chernivtsi and Zakarpattia regions (56.607 thousand km²). During the period of administrative-territorial reform of 2015-2020, some 254 territorial communities were created in the Carpathian region (Fig. 1).

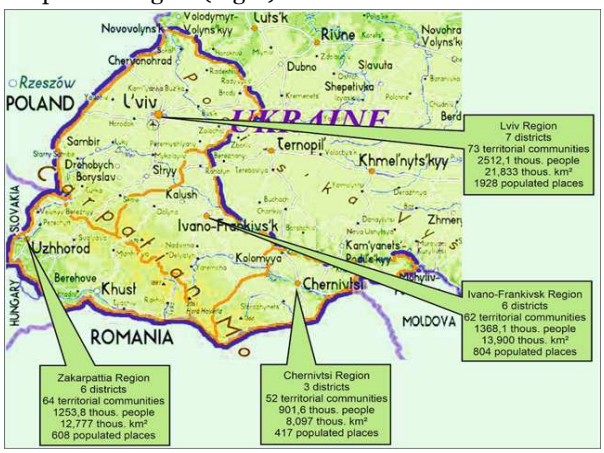


Fig. 1. Map of the Carpathian Region of Ukraine and its Geographical Structure *(source: constructed by the authors based on the data from "Atlas of Administrative-Territorial System of Ukraine. New District Division and Territorial Communities" (Ministry of Communities and Territories Development of Ukraine, 2020).*

On January 1, 2020, the population of the Carpathian Euroregion within Ukraine was of 6,035.6 thousand people and 50.3% of them were located in rural areas (3,038.3 thousand people). The resource potential of rural areas in the Carpathian region of Ukraine is rather poorly enhanced, and their level of socio-economic development is much lower than in neighbouring regions of Poland, Romania, Slovakia (Wieliczko et al., 2021). It has resulted in low quality of life, increasing disparities in human capital development, deterioration in investment attractiveness of rural areas, and increasing differentiation of key socio-economic indicators. Also, it has caused the deterioration of their ecological status, loss of potential for recovery and hinders balanced development of the entire Carpathian Euroregion.

Based on the previous research (Sytnyk et al., 2020; Humeniuk et al., 2021) and the data from the State Statistics Service of Ukraine, we can create an analytical matrix that provides details on the main socio-economic indicators of rural development in the Ukrainian Carpathian mountains in 2020 (Table 1).

Indicators show that rural households are mostly small and medium-sized (less than 1 ha), lack land of adequate quality, of which the most common are arable land and hayland (column 1-4).

Agriculture in the Carpathian region focuses mainly on the cultivation of a limited number of crops, among which vegetables predominate, particularly potatoes, grains, and sugar beets. The yield of these crops is not high, due to the quality of land resources and insufficient fertilizer application. In addition, there is a constant reduction of sown areas and deterioration of agricultural land. In the case of animal husbandry, which has traditionally been considered an area of agricultural specialization in the region, there is a

steady decline in cattle breeding, as well as livestock production. The situation remains relatively stable only in the case of poultry and pig breeding. A specific feature of the region's agriculture is the predominance of individual households, both in land ownership and in terms of agricultural production. On the one hand, this has positive consequences as it allows maintaining the appropriate level of production efficiency. But, on the other hand, it carries a number of risks and threats associated with insufficient marketability of the agricultural sector, lack of financial resources to implement modern innovative technologies, as well as the inability of farms to count on the appropriate level of state support, which, in Ukraine, is directed primarily to large agricultural holdings (U-LEAD with Europe, 2017). Much more, migration balance is negative, and unemployment remains high in the rural regions (Table 1).

Table 1.Socio-economic indicators of rural development in the Ukrainian Carpathian Mountains in 2020.

| **Region** | **Distribution of rural households by land area** *less than 0,5 ha –0,5-1ha – more than 1 ha (%)* | **Share of rural households by land quality** *good-medium-bad (%)* | **Agricultural land's structure of rural households by their actual usage** *arable land-plantation-hayfield (%)* |
|---|---|---|---|
| Ivano-Frankivsk | 37.3 – 40.2 – 22.5 | 19.8 – 76 – 4.2 | 80.6 – 0.6 – 18.8 |
| Lviv | 35.9 – 37.9 – 26.2 | 16.3 – 79.3 –4.4 | 77.7 – 1.5 – 10.5 |
| Chernivtsi | 43.2 – 30.1 – 26.7 | 18.8 – 79.4 –1.8 | 63.6 – 9.4 – 26.6 |
| Zakarpattia | 55 – 25 – 20 | 9.9 – 82.5 – 7.6 | 57.7 – 2.4 – 39.9 |
| Ukraine | 52 – 27 – 21 | 25.9 –71.8 –2.3 | 88.3 – 1.4 – 9.2 |

| **Region** | **Share of households breeeding animals** *cows-pigs-poultry (%)* | **Migration balance,** *people* 2020/2019 | **Unemployment rate** (%) | **GDP per capita, UAH (2019)** |
|---|---|---|---|---|
| Ivano-Frankivsk | 31.5 – 36.7 – 90.6 | -667/-810 | 9 | 63237 |
| Lviv | 35.2 – 37.4 –99 | +85/-483 | 7.7 | 85177 |
| Chernivtsi | 30.4 – 34 –96.3 | -115/-781 | 10.1 | 46135 |
| Zakarpattia | 43.1 – 72.3 – 97.9 | -1109/-1340 | 11 | 48853 |
| Ukraine | 28.5 – 27.7 – 96.7 | -11423/-21161 | 9.9 | 94632 |

*Source: constructed by the authors based on the data from the State Statistics Service of Ukraine (2020).*

GDP per capita is much lower than the average indicator in Ukraine as a whole. To explore the tendencies for these indicators we analyzed data for the last 9 years. The calculation of the standard deviation and the coefficient of variation of the unemployment rate in the Carpathian region in comparison with Ukraine and the EU is presented in Table 2.

Table 2. Standard deviation, coefficient of variation of the unemployment rate within the Ukrainian part of the Carpathian Euroregion (%).

| **Year** | **EU 27** | **Ukraine** | **Zakarpattia** | **Ivano-Frankivsk** | **Lviv** | **Chernivtsi** | **Standard deviation** | **Average value** | **Coefficient of variation** |
|---|---|---|---|---|---|---|---|---|---|
| 2011 | 9,9 | 8.6 | 10.2 | 9.3 | 8.3 | 9.6 | 0.74 | 9.32 | 8 |
| 2012 | 10.8 | 8.1 | 9.2 | 8.4 | 8 | 9.3 | 1.05 | 8.97 | 12 |
| 2013 | 11.4 | 7.7 | 8.2 | 7.8 | 8.5 | 8.6 | 1.37 | 8.7 | 16 |
| 2013 | 10.8 | 9.7 | 9.6 | 8.6 | 8.8 | 10.2 | 0.83 | 9.62 | 9 |
| 2015 | 10 | 9.5 | 9.5 | 8.9 | 8.3 | 10.5 | 0.78 | 9.45 | 8 |
| 2016 | 9.1 | 9.7 | 10.3 | 9.2 | 7.9 | 9.7 | 0.82 | 9.32 | 9 |
| 2017 | 8.1 | 9.9 | 10.8 | 9 | 7.7 | 9.5 | 1.15 | 9.16 | 13 |
| 2018 | 7.2 | 9.1 | 10.3 | 8.3 | 7 | 8.9 | 1.24 | 8.47 | 15 |
| 2019 | 6.7 | 8.6 | 9.4 | 7.6 | 6.7 | 7.8 | 1.06 | 7.8 | 14 |

*Source: calculated by the authors based on equations (1) - (3) according to the State Statistics Service of Ukraine (2020) and Eurostat (2020).*

The dynamics of unemployment rate in the Ukrainian part of the Carpathian Euroregion relative to the indicator for the whole country and the EU is illustrated in Figure 2. Although the level of variation is much lower than 33% (for 9 years, it does not exceed 16%), the values do not confirm the convergence, because during this period there was no decrease in the level of variation, only on short-term in 2013-2015, and since 2015 the coefficient of variation has been increasing.

Figure 3 indicates differences in trends and divergence of indicators of the Carpathian region relative to Ukraine as a whole and compared to the EU average level. The indicator of GDP per capita

demonstrates more pronounced unevenness and variance for several reasons (Table 3).

Table 3. GDP per capita (Ukrainian hryvnia (UAH)) within the Ukrainian part of the Carpathian Euroregion and statistical indicators.

| Year | Ukraine | Zakarpattia | Ivano-Frankivsk | Lviv | Chernivtsi | Standard deviation | Average value | Coefficient of variation (%) |
|---|---|---|---|---|---|---|---|---|
| 2011 | 28488 | 14455 | 19386 | 20490 | 13228 | 3583.736 | 16889.75 | 21 |
| 2012 | 32002 | 17088 | 23379 | 24387 | 14529 | 4795.130 | 19845.75 | 24 |
| 2013 | 33473 | 17044 | 24022 | 24937 | 15154 | 4913.839 | 20289.25 | 24 |
| 2014 | 36904 | 19170 | 27232 | 28731 | 16552 | 5971.459 | 22921.25 | 26 |
| 2015 | 46413 | 22989 | 33170 | 37338 | 20338 | 8101.475 | 28458.75 | 28 |
| 2016 | 55899 | 25727 | 37220 | 45319 | 23365 | 10251.210 | 32907.75 | 31 |
| 2017 | 70233 | 34202 | 46312 | 58221 | 31509 | 12265.470 | 42561.00 | 29 |
| 2018 | 84235 | 41706 | 57033 | 70173 | 37441 | 14976.000 | 51588.25 | 29 |

*Source: calculated by the authors on the basis of equations (1) - (3) according to the State Statistics Service of Ukraine (2020).*

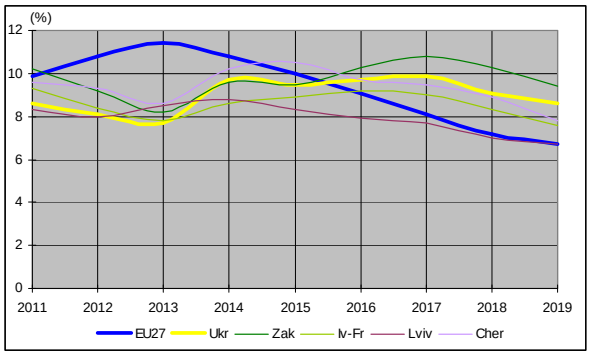


Fig. 2. Dynamics of the unemployment rate within the Ukrainian part of the Carpathian Euroregion relative to Ukraine and the EU.

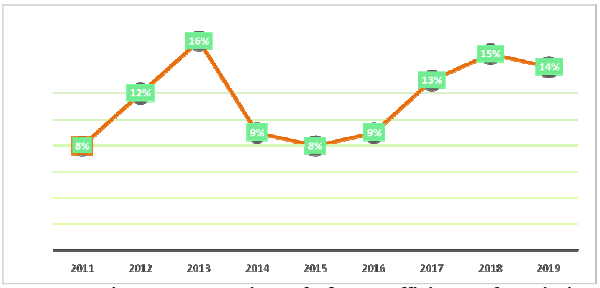


Fig. 3. Dynamics of the coefficient of variation (sigma-convergence) of the unemployment rate within the Ukrainian part of the Carpathian Euroregion.

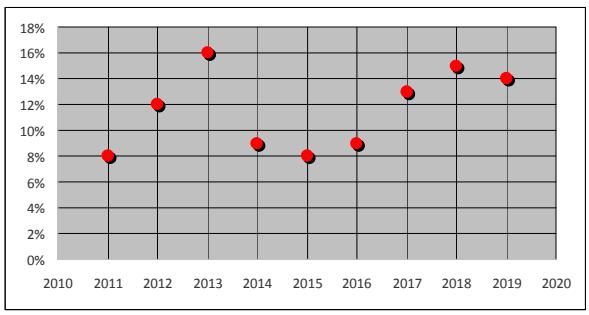


Fig. 4. Dynamics of the coefficient of variation (sigma-convergence) of GDP per capita within the Ukrainian part of the Carpathian Euroregion.

Firstly, the coefficient of variation is approaching 33%, which indicates a low homogeneity of the dataset. Secondly, for the analyzed period - from 2011 to 2018 - the coefficient of variation increases.This means that the smoothing of indicators does not occur, and there is a phenomenon of divergence - differences between incomes by region (Fig. 4).

The analysis of socio-economic indicators revealed several problems in the region - demographic crisis (declining natural growth, population aging, migration, gender disparities, increasing demographic burden), unemployment, low level of development of productive forces and entrepreneurial activity (Libanova, 2006; Melnyk and Chyr, 2019).

The calculation of statistical indicators showed a divergence - differences with the indicators on average across the country and the EU for the analyzed period. This shows that mountain regions need more attention, as their socio-economic indicators lag behind or deteriorate against the background of general trends in the Euroregion and the whole country. The risks for agriculture development in the Carpathian region are:

- the deterioration of the environment and land resources;
- decline in human capital and exacerbation of social problems;
- increasing the negative effects of human economic activity;
- political instability and financial insolvency of rural communities.

In addition, there is a threat of maintaining a predominantly monofunctional rural development in the region, which will further reduce the efficiency of its resource potential, especially in the field of tourism and recreation. When forecasting the prospects for the development of rural areas in the Carpathian region, the first priority should be given to the lack of sufficient preconditions for expecting significant changes in the trends established in the previous years. Therefore, the most probable is the scenario, according to which the rural population in the region will further decrease, the sown areas of most crops will be reduced, and the landholdings will be concentrated in the hands of a limited number of users.

At the same time, the SWOT analysis allows us to identify the key growth points of agricultural enterprises, strategic development areas, which will meet the challenges of changing environment. These points are: land management, increasing the operational efficiency of farms and agricultural enterprises, value chain management and investment management. Table 4 summarizes the strengths and weaknesses of rural areas in the region, as well as opportunities and threats, which portrait the external environment of the territory.

Table 4. SWOT analysis matrix of the rural areas in the Carpathian region of Ukraine.

| **Strengths** | **Weaknesses** |
|---|---|
| Land resources for the creation of new enterprises<br>Labour with experience in homesteading<br>unique natural environment<br>Favourable geographical location compared to other Ukrainian regions<br>Historical and cultural heritage and ethnographic diversity | Low business activity of the population<br>High costs of infrastructure<br>Low quality roads<br>Irregular transport connections with remote villages<br>Decrease of natural population growth<br>Migration<br>Financial insolvency of rural territorial communities<br>Divergence of regional development indicators |
| **Opportunities** | **Threats** |
| Decentralization in governance and financing<br>Modernization of management and public services<br>Strategy for the development of the Carpathian Euroregion<br>European integration processes<br>Sustainable development of rural areas<br>Intensification of rural green tourism | Financial and price instability, inflation risks<br>Deterioration of the investment climate (decrease in investment attractiveness)<br>Outflow of qualified personnel<br>Imperfect administrative and legal regulation<br>Low quality of regional management<br>Unfavourable financial environment for business in rural areas<br>Irrational use of nature, excessive deforestation |

It means that building a viable strategy for agricultural areas should start with the strategy of agricultural enterprises as a cornerstone of their development. However, the EU's experience in this sector emphasizes the importance of a systematic approach to rural revitalization (European Commission, 2021) and the focus on sustainable development in the elaboration and implementation of strategies. The best practices of the EU in the field of rural development are considered below (European Parliament, 2021).

The European experience gives us examples of successful strategies under CAP 2014-2020, which, if considered, will allow rural areas of the Carpathian region of Ukraine to benefit from a revitalization strategy. The cornerstone of the strategy should be to increase the competitiveness of agricultural products. The EU's approach to rural revitalization is based on agricultural policy and continues to focus on farms and it is linked to EU agricultural programs. The rural development programs and the Common Agricultural Policy 2014-2020 have three common strategic goals: increasing the competitiveness of agriculture; ensuring sustainable use of natural resources and climate change management; achieving balanced territorial development of rural economies and communities, including job creation and increased employment (European Parliament, 2021).

It is necessary to stimulate the development of the most traditional and promising types of agricultural production for the region. This applies to the implementation of programs to support individual farms with the possibility of expanding them to large farms. It is important to promote the development of market infrastructure - the creation of an extensive network of wholesale and retail markets, increasing the export potential of producers in the region.

In order to fundamentally change the current situation and reorient the development trends of rural areas of the Carpathian region to a more optimistic scenario, it is necessary to introduce a number of significant changes in state and regional rural development policy.

Firstly, it concerns the introduction of a *systematic approach* to the management of rural development. The main objects of government regulation should be the whole economic complexity of rural areas - not only individual industries or sectors of the rural economy. The multifunctional development of the rural area should be recognized as an integral part of this approach. This approach should be based on a significant empowerment of the local authorities and ensuring the financial independence of the rural communities. At the same time, financial support for the rural economy should be provided by investing in the development of rural infrastructure and improving the quality of its human capital. To reach this aim, it is necessary to introduce the practice of stimulating the employment of young people in rural settlements in medicine, education, and the socio-cultural sphere. The next step is to intensify the creation and functioning of

civil society institutions (non-governmental organizations, associations, volunteer initiatives) in rural areas. The improvement of the investment climate in rural areas should be among the priorities of rural development. This applies to all its components, from the simplification of registration procedures for starting a business and fiscal liberalization to the formation of comprehensive programs of information and organizational support for investors, including risk insurance and the provision of the necessary guarantees for business. Additionally, in the Carpathian region it is advisable to promote the tourist and recreational potential of rural areas in order to increase the attraction of foreign investments in the development of hospitality industry overall, and green tourism, in particular.

Secondly, it regards the *greening of agricultural production*. For example, farmers that participate in EU programs receive financial compensations in exchange for implementing mandatory measures that support biodiversity, improve water quality, reduce soil erosion, thus contributing to climate change mitigation benefits, quantified as decrease in CO2-e emissions (European Commission, 2019). Based on these programs, in 2013, around 26% of the EU agricultural area was considered by the agri-environmental funding mechanisms. The introduction of eco-practices in Ukraine becomes possible thanks to the active cooperation with European financial institutions based on preferential lending and grant financing of such projects (European External Action, 2021). It is time to develop large-scale agricultural greening programs at the state level, which can be joined by rural communities.

And, the last practice of the EU is the introduction of *the concept of "smart village*" for the economic, spatial, socio-cultural transformation of rural areas, turning them into a comfortable place to live and work for future generations. In April 2017, the European Commission launched its "EU Action for Smart Villages Initiative", defining *smart village as a concept that refers to people, who take the initiative in finding practical solutions, both in response to the complex challenges they face, and to create new opportunities for the transformation of rural areas* (European Network of Rural Development, 2018). Smart villages use digital technologies, encourage people to find other available tools to revitalize their villages, including different forms of cooperation and alliances.

For the Ukrainian villages in the Carpathian region it is necessary to intensify work with human capital, create active communities and encourage residents to be involved in solving local problems. Overcoming the shortage of access to high-quality internet is a precondition for rural areas to reach their potential. Improving communication is important for the provision of e-services and innovation in rural businesses. In the EU, funding is allocated to provide the necessary telecommunications infrastructure, although most of the necessary investments are made by the European countries - not from the EU budget. In the context of the COVID-19 pandemic, the need for quality communication with rural areas is particularly important.

In Table 5 five major drivers for smart villages are discussed regarding the possibility to be considered in the elaboration of measures for the development of rural settlements in the Ukrainian Carpathian region; they were extracted from the report released by the European Network of Rural Development (2018).

Table 5. Smart village concept and its implementation in the Ukrainian practice.

| Drivers for smart villages | Explanation | Implementation in Ukrainian practice |
|---|---|---|
| 1. Responding to depopulation and demographic change. | Smart villages with better internet connection are more attractive for youth and give them an opportunity of remote work. | Youth is the driving force that sets the pace for infrastructure development and contributes to the economic, social and cultural development of both the village and the entire region. If young people leave the village, rural areas will face decline. Therefore, within the framework of the development strategy, it is important to allocate funding for measures aimed at the availability of high-speed internet in rural areas (by connecting social infrastructure institutions to the internet). |
| 2. Searching for local solutions to the problem of reducing funding and centralization of | Even when rural populations are stable or growing, lower population densities, coupled with complexity of logistics, lead to increasing costs for basic services, such as education, health care, trade, and public transport. The | This challenge has forced local governments to look for ways of saving costs by reducing service delivery and increasingly use privatization and outsourcing. The emergence of smart villages can attract active |

| | | |
|---|---|---|
| public services. | situation is especially difficult in mountainous areas. | residents together to seek practical solutions to these important social problems. |
| 3. Using connections with cities. | Rural areas have a symbiotic relationship with cities, which is sometimes entirely competitive. However, the Organization for Economic Cooperation and Development (OECD, 2013) has analysed the integrated links between urban and rural areas and has shown that prudent management has great potential for a win-win agreement between city and the nearest village. For smart villages this means not just overcoming the disparity between these areas but using everyone's unique potential for mutual benefit. | It is useful for Ukraine to consider the example of the French government, which supported several so-called "reciprocal" contracts between cities and surrounding rural areas (OECD, 2013). Such contracts could relate to the supply of renewable energy, common waste management or preservation of agricultural land. |
| 4. Maximizing the role of rural areas in the transition to a low-carbon economy. | The natural resources of rural areas are those values, which often represent the cornerstone of their competitiveness, identity and attractiveness as a place to live. At the same time, they are at risk of climate change and environmental degradation. | One impressive example is the Arctic Smart Community Cluster (Arctic Smart Rural Community, 2021). Working closely with rural entrepreneurs, the cluster includes various organizations, businesses, financial institutions and investors, researchers and intermediaries. The cluster strategy identified a huge potential for reducing capital outflows and for increasing added value in two key areas - energy and food. They have developed an integrated strategy to support local entrepreneurs, which includes schooling, participation in public procurement, and the establishment of local food and energy centres. |
| 5. Promoting the digital transformation of rural areas. | Digital technologies have the power to radically transform the difficulties that rural areas face in terms of distance and low population density through virtual communication and access to electronic services. | There should be appropriate digitalization tools to provide more opportunities and benefits from the digital transition - many people in rural areas do not have necessary digital skills and experience in using digital technologies. |

*Source: developed by authors based on the report of the European Network of Rural Development, 2018.*

The EU experience synthetically presented above shows its relevance for solving particular problems found in the Ukrainian mountain regions. The existing strategy has a number of gaps (Verkhovna Rada of Ukraine, 2019). In particular, a systematic approach in creating a development strategy will allow combining programs to stimulate the competitiveness of economy in accordance with the needs of rural areas. In addition, the emphasis on green transition will allow not only to develop the territories, but also to preserve their biodiversity. And finally, the elements of the smart village concept should be adopted to stimulate smart specialization and digitization of rural areas.

## 4. CONCLUSIONS

The conducted research led to the conclusion that rural areas of the Carpathian region of Ukraine lag behind in socio-economic development compared to other regions of the country and the indicators of the EU as a whole. This was confirmed by the results of the statistical analysis, which showed divergence - a deviation from the general trends in the dynamics of unemployment and GDP per capita. Such an analysis should be carried out regularly in order to monitor trends in the indicators and adapt solutions, accordingly.

The SWOT analysis singled out the main impact on the development of rural areas, either positive (land resources, labour with experience in homesteading, unique natural environment, historical and cultural heritage, decentralization in governance and financing, modernization of management and public services) or negative (low business activity, high costs of infrastructure, low quality roads and irregular transport connections, depopulation, financial insolvency, irrational use of nature, excessive deforestation).

Therefore, improving the investment climate in rural areas is one of the priorities of rural development. It is relevant to develop large-scale agricultural greening programs at the state level, which

can be joined by rural communities. Another important role in solving socio-economic problems belongs to the innovative development of rural areas of Ukraine. For this purpose, it is necessary to intensify work on improving the institutional support of the rural economy, create favourable conditions for the functioning of the advisory and consulting system in rural areas, focus on agri-environmental management, agribusiness development, and rural tourism. In addition, an effective tool to strengthen the innovative development of the rural economy of the Carpathian region is the intensification of cross-border cooperation with neighbouring EU countries to transfer modern agricultural technologies. Through the system of cross-border cooperation in rural areas of the region, it is also possible to effectively adapt new management and marketing mechanisms for the development of agribusiness in terms of diversification of the economic relations.

Based on the European experience of implementation of the Common Agricultural Policy, new elements to the Ukrainian strategy were proposed: introduction of a systematic approach to the creation of the rural strategy, greening the agricultural production and implementing the concept of smart villages in Carpathian region. The introduction of these elements could improve the investment climate in rural areas, which is one of the priorities of rural development of the Ukrainian Carpathian Region.

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