Conference Proceedings „Innovative development of agricultural business and rural areas“, 28 – 29.09.2023, Sofia
DOI: https://doi.org/10.37075/idara.2023.03

# RURAL SUSTAINABILITY IN BULGARIA: MULTI-CRITERIA ANALYSIS

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**Abstract**
Sustainable development is essential for long-term evolution of the society as a whole, considering the future generation as well. It is a key concept of the 21st century reflecting the present and the future of humanity. Within the European Union, it is of primary interest and a fundamental goal. Currently, the European Green Deal serves as a strategic framework for the transition and policy development to accomplish this goal. It recognizes rural areas as important to contribute in terms of land use, biodiversity conservation, economic activity, and prosperity of society. Rural areas are important as a main source of supplies and resources for the society and as a space for living and working. The current challenges, such as economic crises, depopulation, and climate change, may limit their sustainable development. The active rural development policy and its growing role within the European policies supports the processes of adaptation and transformation towards the sustainability goals. Addressing these challenges requires a comprehensive approach as achieving sustainability requires considering the economic, social, and environmental dimensions of rural development. It means to consider a range of social, economic, and environmental factors and their interrelationships in order to identify and prioritize sustainable development options for rural areas. Therefore, the multiple criteria analysis of the various aspects of rural development, taking into account different sustainability indicators is a required precondition. This paper assesses rural areas sustainability in Bulgaria based on the multi-criteria analysis exploring the time-related changes of the available Sustainable Development Indicators and comparing them to the observed indicators at the European level. The findings indicate progress in some aspects (ecological based on the analysis of greenhouse gas and ammonia emissions from agriculture). The study also identified serious barriers in economic and social dimensions analysing the performance of rural economy, the developments in business structures, employment and unemployment rates, and the rural demography (population, migrations and at-risk-of-poverty rate). The paper concludes with recommendations for promoting sustainable development that enhance economic opportunities and improve social demography..
**Keywords**: sustainable development, environmental sustainability, social sustainability, economic sustainability, sustainable development indicators
**JEL code:** *Q01, R51, O18*

This research was conducted within the framework of Project NI-17-2023 „Development of a Model for Evaluating the Competitiveness of Rural Regions in Bulgaria“ funded by the „Scientific Research“ Fund of University of National and World Economy.

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## Introduction

The European Union (EU) has been actively promoting sustainable development as a fundamental goal, and it recognises the need to consider the impact of different factors on the ability of the member states to develop sustainably (Adelle et al., 2006; Häbel & Hakala, 2021). Currently, the European Green Deal guides the EU's transition to sustainability (Fernández et al., 2021), serving as a strategic framework for policy development to achieve the aims of the Paris Agreement and the UN 2030 Agenda for Sustainable Development.

The Green Deal also recognizes the importance of rural areas in achieving these goals and emphasizes the need for rural development that is balanced, fair, green, and innovative (Sekulić et al., 2023). Rural areas play a crucial role because they are not only important for agricultural production but also for the preservation of biodiversity and the provision of ecosystem services (Prandecki et al., 2021). However, the specific challenges they face require different measures to support their transition to a climate-neutral economy (Sikora, 2020). The current discussion considers the most challenging the economic issues, depopulation, and climate change, which also limit rural sustainable development. Addressing these challenges requires a comprehensive approach because achieving sustainability involves the three dimensions: economic, social, and environmental.

Rural areas have always been acknowledged as important as a main source of supplies and resources for the society and as a space for living and working. Moreover, rural development is a complex and multifaceted process that requires careful consideration and analysis, recognizing the capacity of EU rural policy to facilitate sustainability transition (Wieliczko et al., 2021). Other studies have examined the different aspects of sustainable rural development (Zinchuk et al., 2018; Popović et al., 2019). Sustainable rural development is a crucial aspect of promoting the well-being and prosperity of rural communities. It involves implementing strategies and initiatives that address the economic, social, and environmental needs of these communities (Cvijanovic et al., 2017). Many studies have explored different approaches and factors that contribute to sustainable rural development and its governance in Bulgaria as well (Doitchinova et al., 2019; Nikolova et al., 2022; Lazarova et al., 2023).

Overall, sustainable rural development requires a comprehensive and integrated approach that considers the unique characteristics and needs of rural communities. It means considering a range of social, economic, and environmental aspects and their interrelationships to identify and prioritize sustainable development options for rural areas.

This paper presents a research study that assesses the sustainable development of rural areas in Bulgaria by exploring the time-related changes of the available Sustainable Development Indicators and comparing them to the observed indicators at the EU level. The findings of the study indicate progress in some aspects, but the research also identified serious barriers to rural sustainability in Bulgaria. The paper

is structured as follows. Section one of the paper is the Introduction. Section 2 presents the materials and methods used in this study. Section 3 presents the data processing results and the discussion. The Section 4 concludes.

**Materials and Methods**

Currently, sustainable development has been actively promoted as a fundamental goal, which is a development, which encompasses economic, social, and environmental objectives. Therefore, multiple criteria analysis of the various aspects of rural development is essential for measuring sustainability indicators, taking into account the differences and considering a range of social, economic, and environmental factors. In this regard, the Indicators of Sustainable Development play a crucial role and many studies have focused on developing and evaluating them for rural development. These indicators provide a quantitative and qualitative assessment of all aspects of sustainable development, including its three complementary dimensions, and facilitating an understanding of the interrelations among different sectors (Mabhaudhi et al., 2021; Rahma et al., 2019). Several studies have highlighted the importance of selecting appropriate indicators that are sensitive, composite, and responsive to changes over time (Mabhaudhi et al., 2021). It is important to note that sustainable development indicators are not limited to environmental aspects. They also encompass social and economic dimensions. Doherty et al. (2021) stated that indicators of sustainable development can address issues such as poverty alleviation, food security, and biodiversity conservation (Doherty et al., 2021).

One of the challenges in developing indicators for sustainable development is the complexity of measuring various dimensions of sustainability and the difficulties in assessing its multifaceted nature. Indicators play also a crucial role in translating the concept of sustainable development into practical terms, guiding the decision-making processes and providing a framework for setting concrete development goals and evaluating the progress (Mally, 2012). In this regard, the United Nations (UN) has established a set of indicators to measure progress towards achieving this goal. The UN's indicators of sustainable development are outlined in the 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals (SDGs) and their respective targets (Gain et al., 2016). In the context of the EU, Ledoux et al. (2005) explained that sustainable development indicators have been adopted to monitor and assess the EU-wide sustainable development strategy. These indicators provide a critical assessment of the current status of sustainability and help identify policy trends in different areas (Ledoux et al., 2005).

The second crucial issue in sustainability measurement is the challenges associated with mapping and monitoring these indicators. The availability and quality of data vary across countries and regions, making it difficult to compare progress (Kraak et al., 2018). Therefore, the assumed set of indicators used in current analysis reflects the commonly accepted selections for such analyses (Barska et al., 2020) and

the official data availability. The proposed indicators set is also in agreement with the indicator selection by the EU policy as well (SDGs – Overview). The values of the indicators used in this study were obtained from the EU database Eurostat (link in references). Table 1 summarizes all of the studied indicators in the paper.
The analysis of the chosen indicators includes measuring the time-related changes during the study period accompanied by the relevant descriptive statistics.

*Table 1. Sustainable development indicators for analysis.*

| **Economic** | **Social** | **Environmental** |
|---|---|---|
| Economic performance, GDP, GVA | Rural population age distribution | Greenhouse gas emissions from agriculture |
| Employment | Migrations | Ammonia emissions from agriculture |
| Business structures | At-risk-of-poverty rate<br>Unemployment rate | |

## Results and Discussion

The issue of economic sustainability of rural regions may be assessed in different ways, by measuring economic growth through assessing incomes and expenditures in rural households, sectorial (agriculture) productivity, or selected economic indicators determined for the region, locally, and for the individuals. In this study the Gross domestic product (GDP) has been used as the measure of rural well-being, The Figure 1 presents the total GDP of rural economy in Bulgaria, combined with their comparison to the average for the EU. It is visible that both increased over the time, but are still clearly lower than the EU average, reaching one-fifth in 2021.

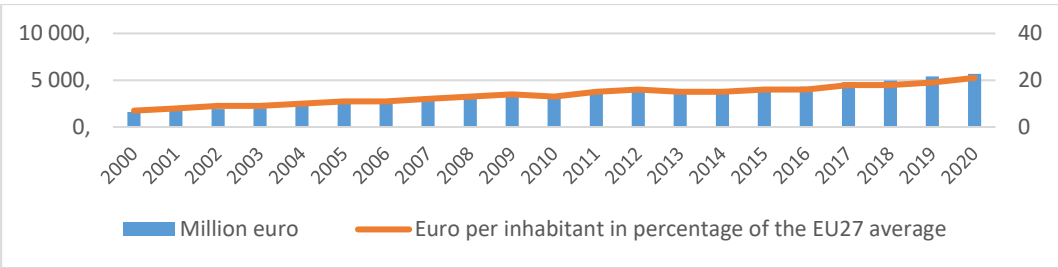


*Figure 1. Gross domestic product at current market prices in rural areas of Bulgaria*
*Source: Eurostat; own calculations*

Next, Figure 2 presents the number of small and medium-sized enterprises related to the total number of enterprises in rural areas during the study time duration. The reported share is unfavourable and suggests less supportive for small businesses and

entrepreneurship environment. Undoubtedly, the economic development encompass the increase of new rural businesses as well. Encouraging them through favourable conditions attracts young generation to rural areas, additionally enhancing their growth potential. In this context small and medium-sized enterprises proved to be successful not only to adapt to the local conditions but also to generate higher degree of job creation and income provision.

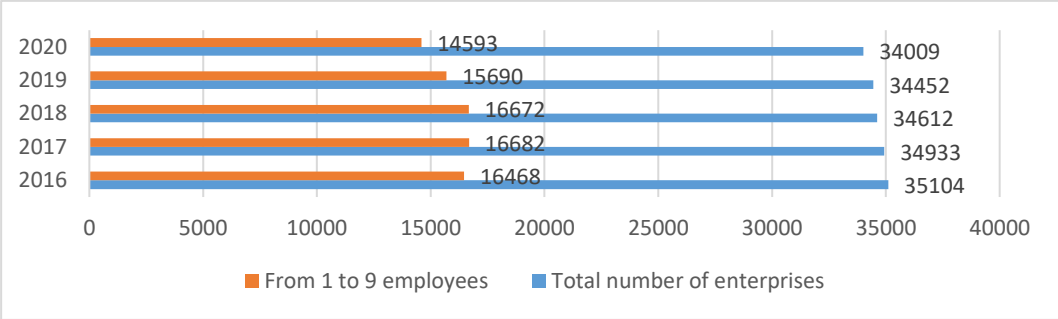


*Figure 2. Business demography in rural areas in Bulgaria*
*Source: Eurostat; own calculations*

The data about employment shows a clear downward trend in total numbers as well as in the employment in the agricultural sector as the last decreased with several times higher speed (Figure 3). In this regard, youth unemployment rates continue to be at high levels and required specific attention (Figure 4).

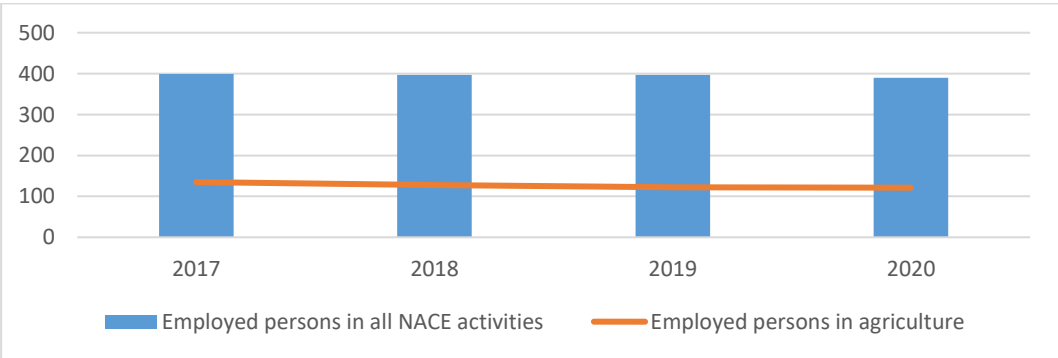


*Figure 3. Employment in rural areas in Bulgaria*
*Source: Eurostat; own calculations*

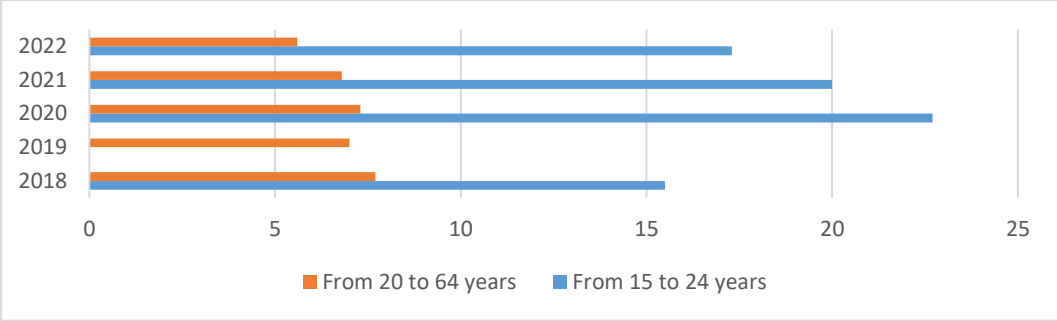


*Figure 4. Unemployment rates in rural areas in Bulgaria, %*
*Source: Eurostat; own calculations*

According to the available data (Figure 5), the number of rural residents was not constant and increased last years. The increase may be related to the pandemia and it seems to be for two years only. These changes are also led by the changes in rural residents' age distribution (Figure 5). It is visible that the number of children and teenagers is clearly lower in contrast to the different situation in the case of adults and seniors. Thus, the rural population in Bulgaria continues to be an ageing society, with a significant share of people over retirement age.

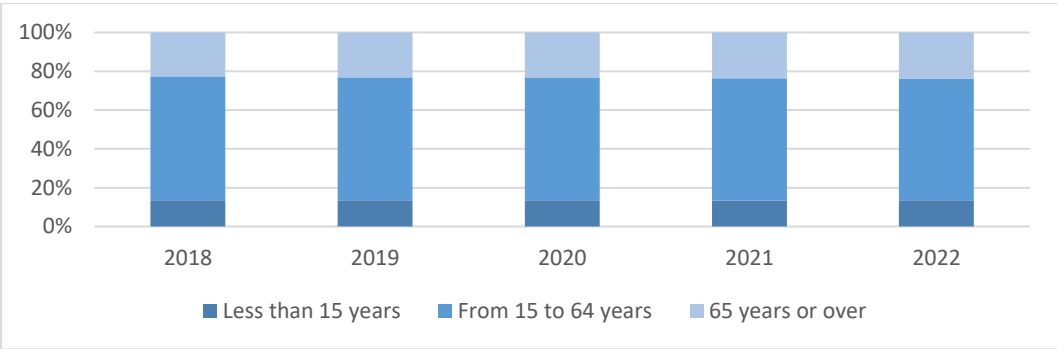


*Figure 5. Population in rural areas in Bulgaria*
*Source: Eurostat; own calculations*

Figure 6 presents the registered migration balance to and from rural settlements in Bulgaria during the studied period, and it is visible that over the studied period, the number of new registered rural residents is higher than the number of the population leaving rural settlements in exactly this two years.
Together with the unfavourable level of education (Figure 7), this decreases the work capacity of rural regions. As seen in the Figure 7, the population of Bulgarian rural areas with higher education is more than half of the average for EU, respectively 9% and 22%.

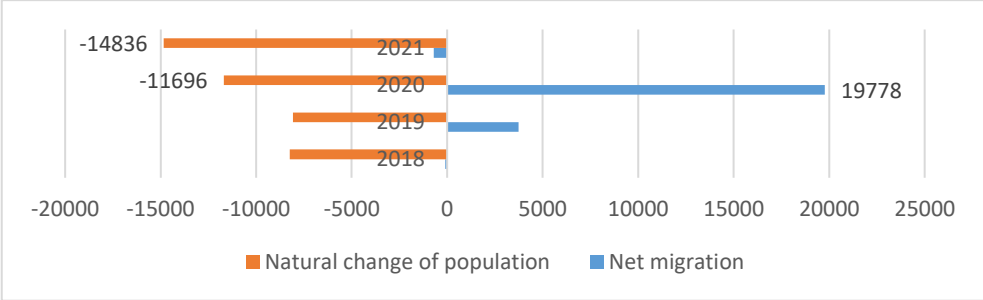


*Figure 6. Demographic balance in rural areas of Bulgaria*
*Source: Eurostat; own calculations*

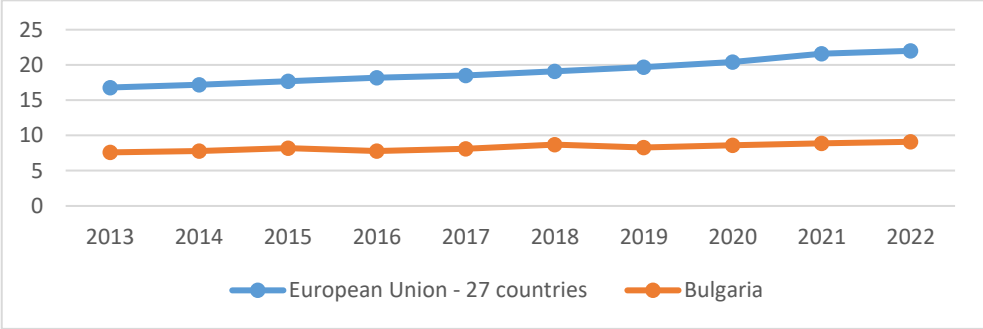


*Figure 7. Population by educational attainment level in rural areas in Bulgaria and the EU, %*
*Source: Eurostat; own calculations*

One of the important indicators of sustainable development is the population at risk of poverty. According to Eurostat data, presented in the last Figure 8, 31% of the population in rural areas of Bulgaria was in danger of poverty. This value is higher and not comparable with the EU average (22.5%) and is one of the highest share among EU member states.

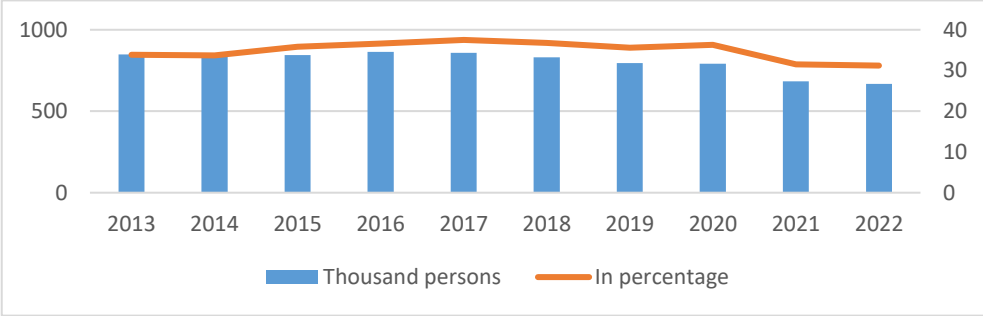


*Figure 8. At-risk-of-poverty rate in rural areas in Bulgaria*
*Source: Eurostat; own calculations*

The environmental quality in rural regions, directly affecting the quality of life of the rural population, is, in our opinion, highly related to the Greenhouse gas and Ammonia emissions from agriculture as the main production sector with regard to the use of natural resources, especially land. The Eurostat data presented in the Figures 9 and 10 shows the negative pressure exerted by Bulgarian agriculture on the natural environment.

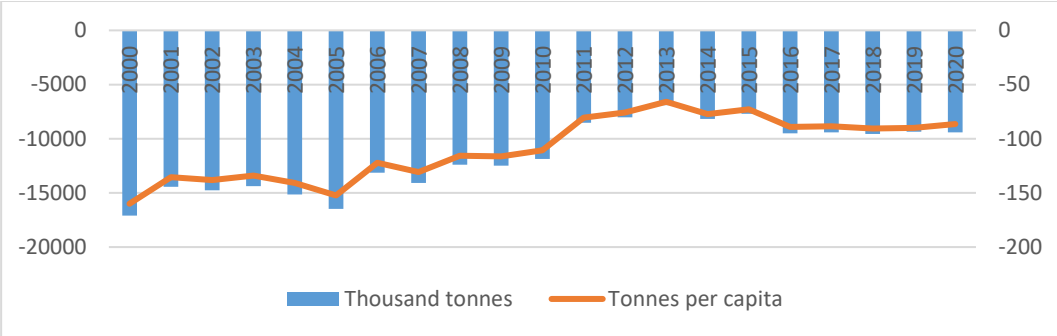


*Figure 9. Net greenhouse gas emissions of the Land use, Land use change and Forestry sector in Bulgaria*

*Source: Eurostat; own calculations*

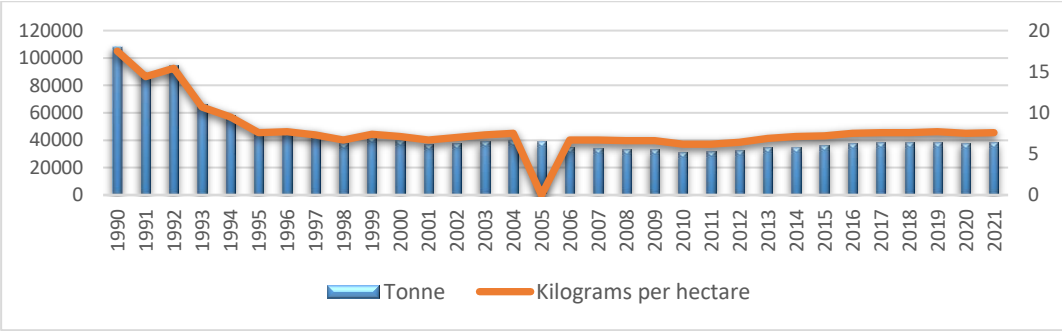


*Figure 10. Ammonia emissions from agriculture in Bulgaria*

*Source: Eurostat; own calculations*

However, these levels are still lower than the average measured at the EU level and in countries such as the Netherlands, Poland, Belgium, Germany, which have significantly developed agriculture. This pressure may be reduced in the future by an increase in area of organic farming and implementation of the nature friendly practices.

**Conclusions**

In conclusion, rural development is a complex issue that requires careful consideration and analysis. Although using Indicators of Sustainable Development has its

challenges and limitations, they are essential tools for measuring progress towards achieving sustainability goals. Moreover, they are used to establish a framework for concrete goals, evaluate progress, and make informed policy development decisions. The study revealed a progress towards SDGs but the status is worse in Bulgarian rural areas than the EU's. It emphasized the need for interventions and measures at any level to reduce depopulation and greater priority on human capital development to promote sustainable rural development. Economic growth, use of local resources, entrepreneurship, innovations, and infrastructure development are all-important aspects to consider in future strategies in Bulgaria.

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