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ANALYSIS AND ASSESSMENT OF INFRASTRUCTURAL POTENTIAL IN RURAL TERRITORIES

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Introduction. Since the mid-twentieth century, research has focused on agriculture as an important and structurally determining economic sector, constructing a significant part of the production infrastructure that serves an important function in generating economic growth in society. The asymmetry in the development of the territories and the general problems in the lagging areas are the subject of regional policy at the national and community level, to which a serious financial resource is directed, seeking a synergistic effect of the various support instruments on the entire territory. Over half of Bulgaria's territory is used for agriculture, and in rural areas it is also the main economic sector and source of livelihood. It is of crucial importance for the overall economic development of rural areas. In-depth research is needed to assess the infrastructure potential and analyze its impact on the generation of gross value added (GVA) and cohesion between regions.

Aim and tasks. The aim of this paper is to analyze and evaluate the infrastructural potential of rural territories and its impact on the GVA generated by the agricultural sector.

Results. The analysis compares the infrastructural potential of the districts with the production of the agricultural sector, the leading sector of the Bulgarian economy, and seeks ways to optimize it. Within the framework of the present research, the social, transport, tourist, and production infrastructure at the regional level is analyzed, and their relation to the GVA generated by the agricultural sector is examined. The social, transport, tourist, and production infrastructure by regions in Bulgaria and their impact on agribusiness were analyzed, and the results were summarized and mapped. As a result of the research, the territories were systematized depending on the ratio between the GVA from the agricultural sector and their infrastructural potential, and the trends in their development were outlined.

Conclusions. The well-developed infrastructure in rural territories is a driving force for diversifying the functional use of the territory and the optimal utilization of available resources, ensuring not only economic progress but also sustainability in the development of rural territories. Improving infrastructure has a positive effect on the GVA of the agricultural sector, encourages diversification and the use of available resources, and helps make rural territories more sustainable.

Keywords: agricultural sector, infrastructure potential, rural territories, infrastructure.

1. Introduction.

In the innovative economy and the EU policies in the field of the agricultural sector, the green transition, a lot of businesses are looking for ways to improve efficiency and maintain competitive advantage in the agribusiness sector (Filipishyna et al., 2018; Ramazanov & Petrova, 2020). Without appropriate and well-built infrastructure, it is impossible to achieve economic growth in rural areas. (Odinokova & Akhmedyarov, 2022). As rightly noted by Mileva and Georgieva (2022), the negative impact on innovation processes may be due to deficiencies in the institutional and infrastructural environment, but also the lack of capacity of stakeholders. Adequate infrastructure increases productivity and lowers production costs, but it must expand quickly enough to accommodate growth. (Seitzhanov et al., 2020; Uteubayev et al., 2018; Nikolova-Alexieva et al., 2022).

Well-developed infrastructure in rural areas is a driving force for diversifying the functional use of the territory and the optimal utilization of available resources, ensuring not only economic progress but also sustainability in the development of rural areas (Káposzta et al., 2020; Koval et al., 2021). In this regard, the object of the current research is the administrative regions in Bulgaria, and the subject is the ratio between the infrastructure potential and the gross value added (GVA) from the agricultural sector in them. The scientific research objective is to analyze the infrastructural potential of rural areas and assess its impact on the GVA generated by the agricultural sector.

The thesis is that improving infrastructure has a positive effect on the GVA of the agricultural sector, encourages diversification and the use of available resources, and helps make rural territories more sustainable. Based on the conducted research, the following results were achieved (Liquete et al., 2015): 1) research of scientific publications on the scope and impact of infrastructure potential for the sustainable development of rural areas; 2) selection of approach and methodology of scientific research; 3) summarizing and mapping the obtained results; 4) delineating trends in the development of infrastructure potential in rural areas.

2. Literature review.

Infrastructure is critical to agriculture and the overall economic development of rural areas. Infrastructure is a collective term for many activities, including public services, ports, water supply, and electricity (González-González, Nogués, 2019). Hirschman outlines four conditions that characterize infrastructure, namely: services provided to facilitate or are essential to economic activity; services are generally public goods due to economic externalities; these services cannot be imported; and these investments are usually indivisible or "in pieces" (Hirschman, 1958). In the sixties, in addition to the above, emphasis was placed on agricultural research as an important element of infrastructure due to the growing recognition of the role of agriculture in economic development and the vital role that infrastructure plays in generating agricultural growth (Vries, 1960; Ishikawa, 1967). The World Development Report (World Bank, 1994) included the following in its definition of infrastructure:

– Utilities: electricity, telecommunications, water supply, sewage, solid waste collection and disposal, and gas.

– Development includes roads, major dams, and canals for irrigation and drainage.

– Other transportation sectors include urban and intercity railways, urban transport, ports, waterways, and airports.

Other authors consider that the concept has evolved to a more comprehensive definition that includes a wider range of public services that facilitate production and trade (Ahmed, 1996). In terms of infrastructure in rural territories, it has been found that it has an increasingly important role in economic development.

Adhering to the broader definition, a team of researchers “distinguish up to 11 components of agricultural infrastructure: irrigation and public access to water; means of transportation; storage services; commercial infrastructure; processing infrastructure; public services; agricultural research and extension services; communication and information services; land conservation services; credit and financial institutions; and, finally, health and education services” (Fosu et al., 1995).

A similar classification of infrastructure in rural territories was developed by Wharton. He identifies three categories: one that is capital intensive (roads, bridges, and levees); one that is capital extensive (mainly extension services or sanitary services for vegetables and animals); and the institutional infrastructure (formal and informal institutions) (Wharton, 1967).

Adequate infrastructure increases productivity and lowers production costs, but it must expand quickly enough to accommodate growth. The International Fund for Agricultural Development (1995) came to the conclusion that without appropriate and well-built infrastructure, it is impossible to achieve economic growth in rural areas. Given the variety of scientific views on infrastructure, the following classification characteristics are most important for its analysis and management (Hristoskov, 2014):

– The infrastructure is divided into economic (also called production) and social components based on its function as a general condition for the development of the economy.

– Infrastructure elements are divided into four groups according to their importance in a territorial plan: international, national, regional, and local importance.

– A significant portion of the infrastructure's physical elements, units, offices, and objects are specialized to serve a specific industry, group of productions, type of settlement, or population group, and are referred to as industrial, agrarian, tourist, and other infrastructure.

The socio-economic development of rural areas requires the provision of jobs, poverty reduction, and a better quality of life. In Bulgaria, rural territories occupy about 85% of the country's territory, and 1/3 of the population lives there (Velikov, 2011). The issue related to the diversification of the rural economy stands out as important for a significant part of the territory of Bulgaria (Nikolova & Linkova, 2010).

In this context, tourism and, more specifically, its alternative forms, represent an opportunity to diversify the economic activities dominated by agriculture in rural regions. Well-developed infrastructure and superstructure (Figure 1) in rural areas is a driving force for diversifying the functional use of the territory and optimal utilization of available resources, ensuring not only economic progress but also sustainability in the development of rural territories.

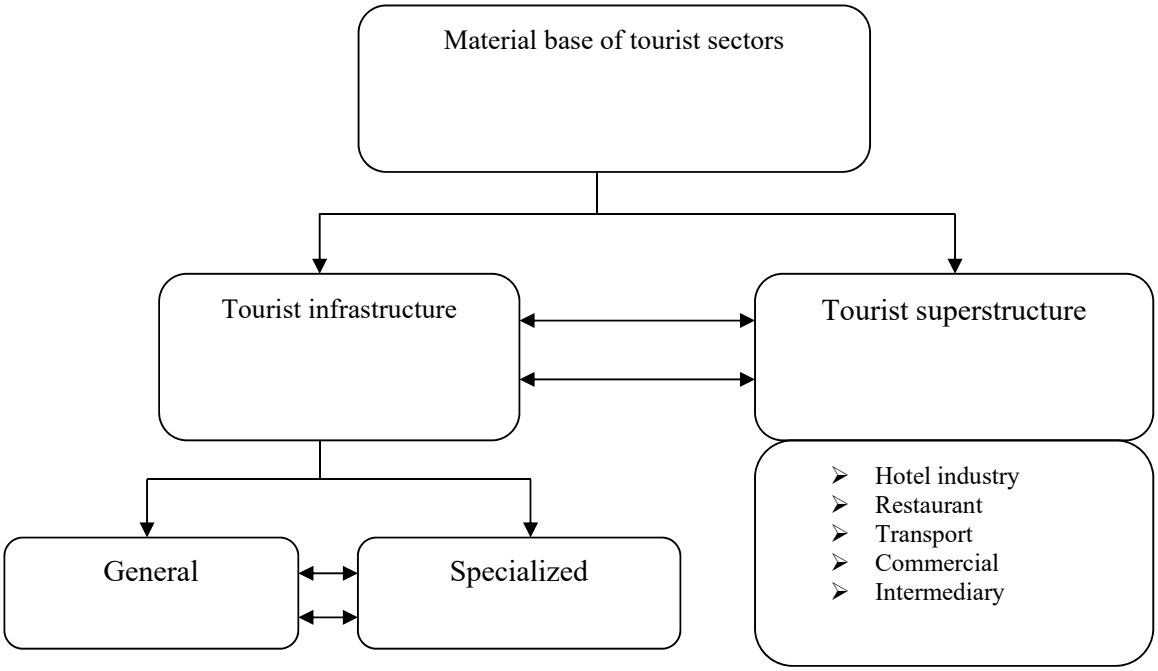

Fig. 1. Structure of the material base in tourism.

Source: based on Vasileva and Sabrieva (2018).

Rural territories have numerous characteristics that determine the possibilities and ways of their development (Doitchinova, 2019). Among the main prospects for development, given the variety of tourism resources in Bulgaria, is precisely the tourism business. The maintenance and expansion of the tourist infrastructure, especially the specialized one, is of utmost importance for the development of tourism (Dapkus, & Dapkute, 2015; Popova et al., 2020).

3. Methodology.

Various scientific research methods were used in the research, including content analysis, critical analysis of documents, induction, and deduction. For the visualization of the research results, ArcGIS Online was applied, allowing the collection and processing of geodata. To study the infrastructural potential in the rural territories, mapping of the results was used, and the individual types of infrastructure were compared with the indicator "Gross Value Added" from the agricultural sector", as this indicator makes it possible to assess the value of agricultural production within the framework of one year.

To characterize the different types of infrastructure, information from the National Statistical Institute by administrative areas was used. In the analysis of the social infrastructure, the following indicators were studied: the number of hospitals, the number of schools, and the number of residential buildings. To characterize the transport infrastructure, the following indicators were studied: length of motorways in km (2021), length of first-class roads in km (2021), length of second-class roads in km (2021), length of third-class roads in km (2021), and length of railway lines in km (2021). To characterize the tourist infrastructure, the indicator "accommodation places in 2021" was studied, and to characterize the production infrastructure, "costs for the acquisition of long-term assets (LTA) (thousands of BGN)".

As a result of the research, the districts were systematized depending on the ratio between the GVA from the agricultural sector and their infrastructural potential.

4. Results.

Agricultural production occupies a significant part of the territories, not only in the favorable natural and climatic plains but also in the mountainous and semi-mountainous regions. Over half of Bulgaria's territory in the period 2012–2021 is used for agriculture, and in rural territories it is also the main economic sector. In order to assess the infrastructure potential in rural territories, it is necessary to compare the available infrastructure with the production that generates the agricultural sector in Bulgaria and to look for opportunities for its optimization.

In 2021, the GDP in Bulgaria increased by 7.6%; at current prices, it amounts to BGN 139012 million, and per capita, it reaches BGN 20212 (National Statistical Institute 2022). Agriculture also saw an increase, even during the COVID-19 pandemic. The development uses the indicator of gross value added from the agricultural sector (GVA) as an indicator of the influence of infrastructure on one of the main economic sectors in rural territories (Moralli, 2022).

Moreover, in 2021, GVA in the agricultural sector will be 5% of all industries, while in 2019, it reached only 3.8% (the lowest value of the indicator for the last 5 years) (Ministry of Agriculture, 2023).

Within the framework of the present study, the social, transport, tourism, and production infrastructure at the regional level is analyzed, and their relationship to the gross value added generated by the agricultural sector is investigated.

In Figure 2, the distribution of GVA from the agricultural sector by region is visualized. In darker and solid green are the districts that generated the most GVA, and in lightest and most transparent green are the districts that generated the least GVA from agricultural products in a year. It is noteworthy that among the leading districts are traditional plain districts, such as Dobrich, Plovdiv, and Shumen, and among the laggards are traditional mountainous ones, such as Pernik, Gabrovo, and Smolyan.

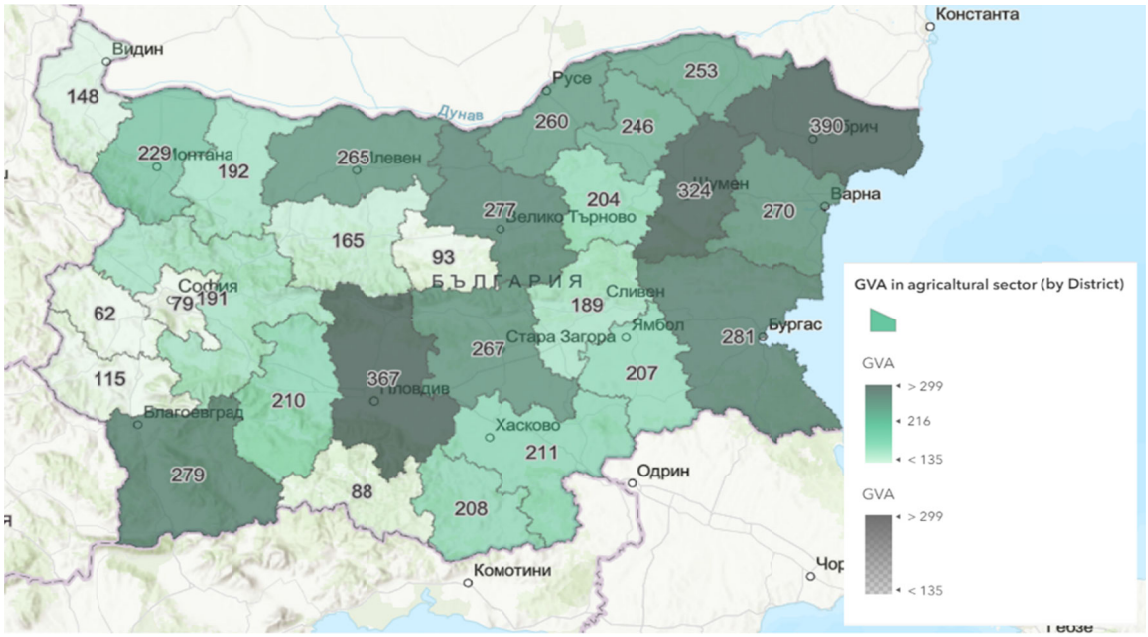

Fig. 2. Gross value added (GVA) in the agricultural sector by region.
Source: based on ArcGIS Online (2022).

4.1. Analysis of the social infrastructure.

Three indicators are used as the basis of the social infrastructure analysis: the number of hospitals, the number of schools (primary, junior high, and high school), and the number of residential buildings by region as of December 31, 2020. In Figure 3, we see the ratio between hospitals as of December 31, 2020, and the number of schools.

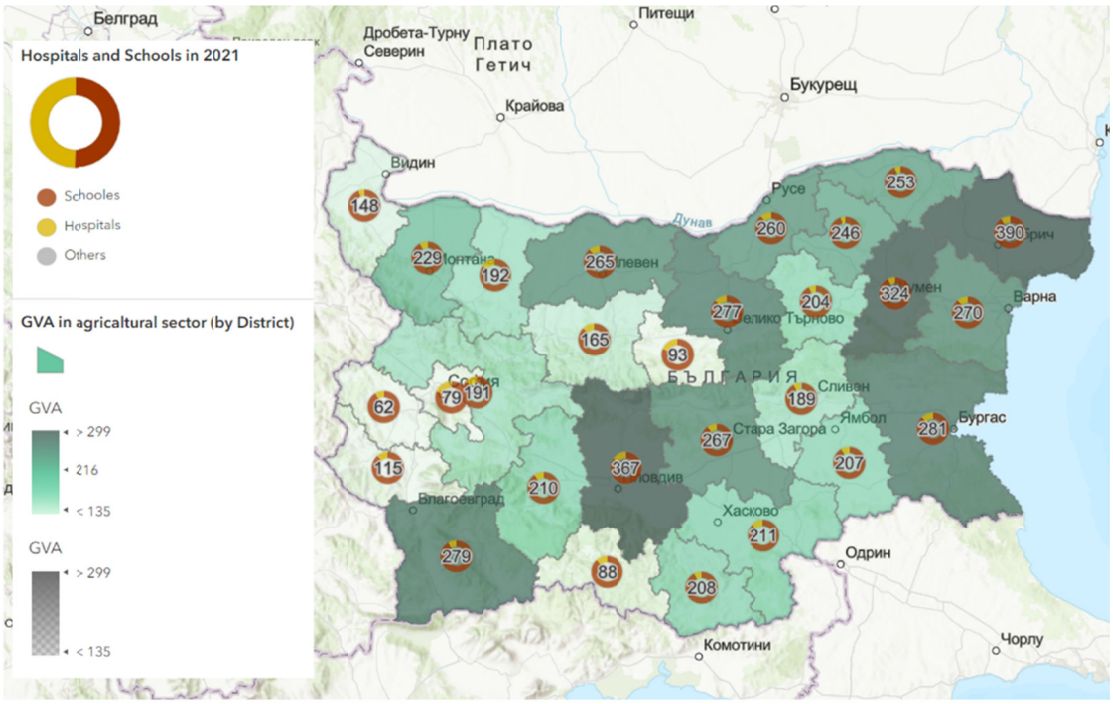

Fig. 3. Ratio between the number of hospitals and schools visualized on the GVA generated by the agricultural sector for 2021.
Source: based on ArcGIS Online (2022).

It is evident from the figure that the increase in the number of hospitals in the district leads to a decrease in the gross added value generated by the agricultural sector. Shumen and Dobrich are leaders in the establishment of GVA, and their hospital infrastructure is among the lowest in the research (respectively 5 and 7). In Figure 4, the ratio between the housing stock by region and the GVA generated by the agricultural sector is visualized. It is noteworthy that the best ratio is in the districts of Dobrich, Silistra, Shumen, Targovishte, Razgrad, and Yambol. There, the housing infrastructure is smaller due to the developed agricultural activity. Despite the conclusion, there are also districts that have a highly developed social infrastructure (number of residential buildings) and generate high GVA in the agricultural sector: Burgas, Plovdiv, Blagoevgrad, and Veliko Tarnovo. This means that access to social infrastructure is important for the production of agricultural products. The reason for this can be found in the need to maintain a balance between the social and professional lives of producers, which makes attractive areas where there is access to a school network. Health infrastructure has a negative impact on these processes due to its urban nature, which hinders agricultural production. A highly developed social infrastructure is not a decisive factor for the development of rural areas, but it is related to ensuring a certain social minimum for the implementation of agricultural production in a given territory.

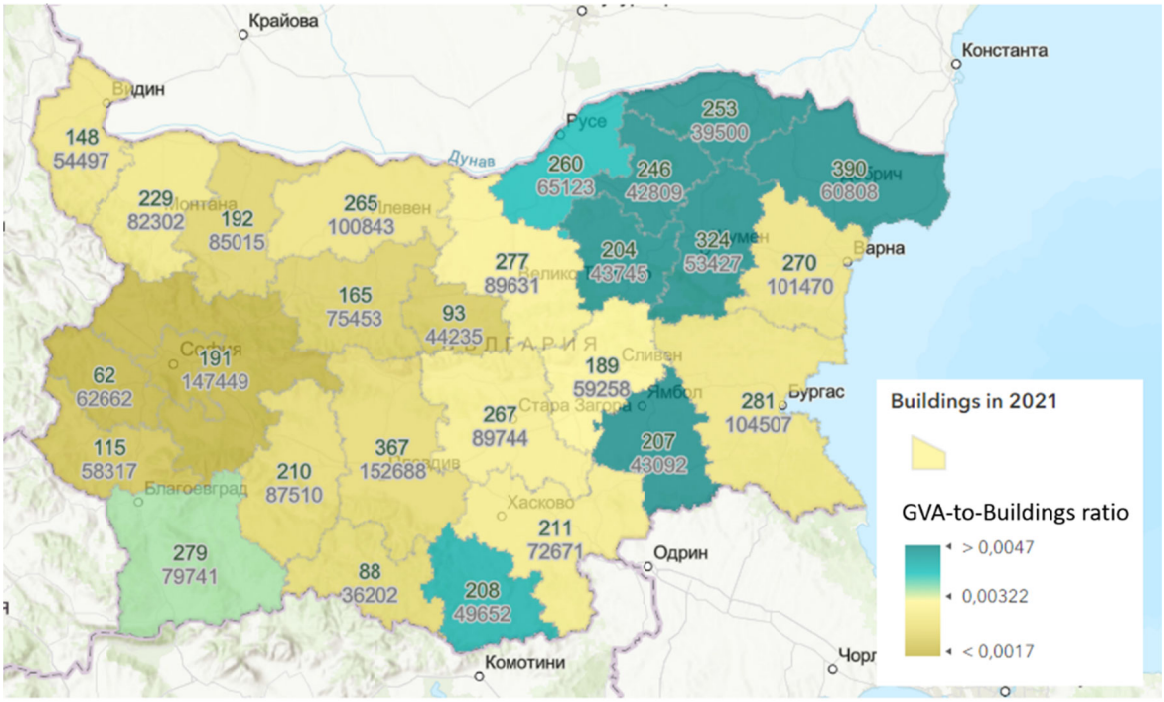

Fig. 4. Ratio between the building fund by district and the generated GVA from the agricultural sector.

Source: based on ArcGIS Online (2022).

4.2. Analysis of the transport infrastructure.

The following five main indicators were used in the analysis of the transport infrastructure: length of motorways in km (2021), length of first-class roads in km (2021), length of second-class roads in km (2021), length of third-class roads in km (2021), and length of railways in km (2021).

Figure 5 visualizes the distribution of the investigated individual types of transport infrastructure as they are compared to the GVA generated by the agricultural sector for 2021. In addition to type, the data are also presented according to the size of the studied totality. It is noteworthy that the districts with the lowest GVA for the period (Smolyan, Pernik, and Sevlievo districts) also have a relatively poorly developed infrastructure, while the leading

GVA-generating districts (Dobrich, Vidin, and Plovdiv) have an averagely developed transport infrastructure. In Dobrich and Plovdiv districts, B and C roads predominate, while only in Shumen districts of the leading regions can a predominance of A and C roads be noticed.

The presence of motorways in the regions of Sofia (154 km), Haskovo (91 km), Stara Zagora (93 km), Burgas (51 km), and Pazardjik (51 km) shows a low level of GVA from the agricultural sector, which is an indicator that the dependence of agriculture on this kind of transport infrastructure is still weak and negative. However, it should be noted that the districts of Varna (58 km) and Plovdiv (50 km) have motorways and generate a relatively high level of GVA from the agricultural sector.

This may be the result of the utilization of regional infrastructure potential, which may lead to the acceleration of logistics processes in agribusiness, but at this stage it is not a mandatory requirement for the implementation of agricultural activity. First-class roads in Bulgaria by 2021 are not predominant, and from Figure 5, it is evident that South Bulgaria, with its well-developed road infrastructure, generates less GVA from the agricultural sector, while Northern Bulgaria is the leader in generating GVA from the agricultural sector, regardless of the poorly developed first-class road network. As with motorways, the relationship between the GVA generated in agribusiness and the availability of first-class roads is weak but positive.

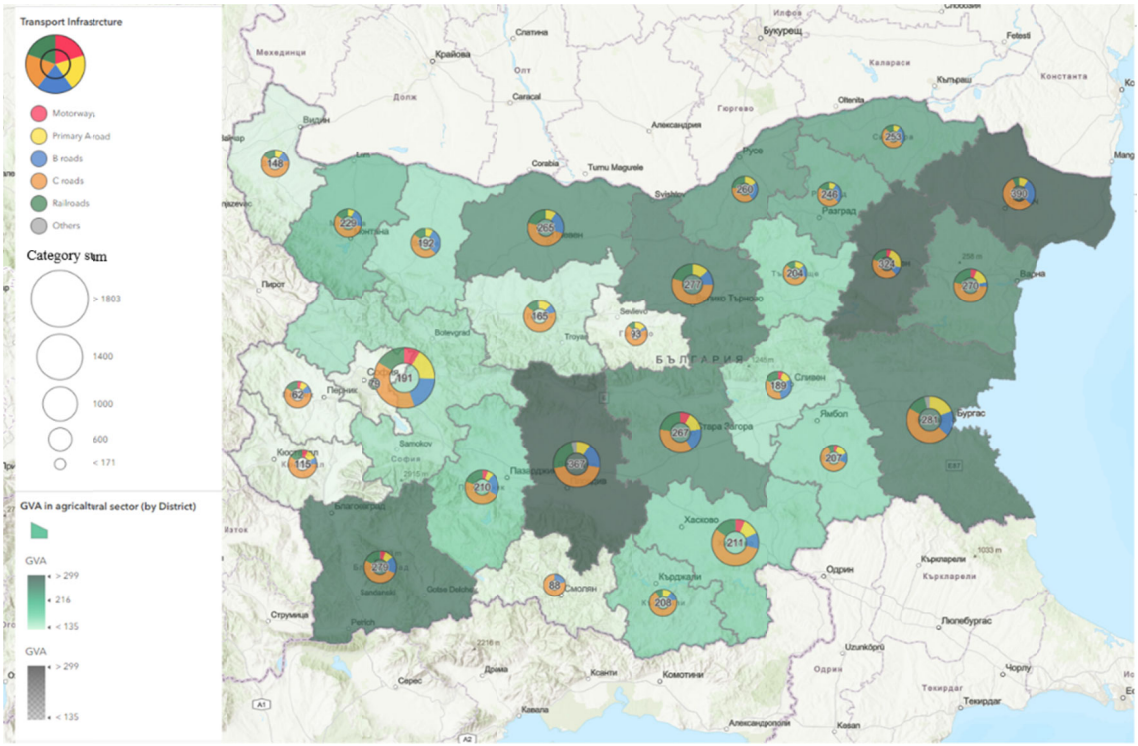

Fig. 5. Distribution of transport infrastructure by district and in relation to the generated GVA from the agricultural sector for 2021.

Source: based on ArcGIS Online (2022).

There are districts such as Shumen (188 km) and Plovdiv (129 km), which have access to first-class road infrastructure and utilize their potential for agricultural activity, as well as districts with a poorly developed first-class road network, such as Vidin (69 km), Vratsa (65 km), and Montana (56 km), where GVA from the agricultural sector is behind.

Figure 6 visualizes the ratio between the GVA generated by the agricultural sector and the length of second-class roads in kilometers. The quality of second-class roads in Bulgaria is at a relatively good level (2059.7 km out of 4022.6) (Ministry of Regional Development and Public Works, 2016).

The figure clearly shows that the GVA in the agricultural sector reaches three times higher values compared to the second-class infrastructure built in the districts of Shumen (77 km) and Varna (43 km). At the same time, it is observed that this type of infrastructure exceeds the GVA generated in the districts lagging behind in the production of agricultural products.

From this, it can be concluded that the presence of B roads has a negative impact on agribusiness at this time. However, it is the second-class roads that contribute to the construction of the agricultural logistics network and have important transport significance. Failure to utilize this infrastructural potential complicates logistics processes in agribusiness.

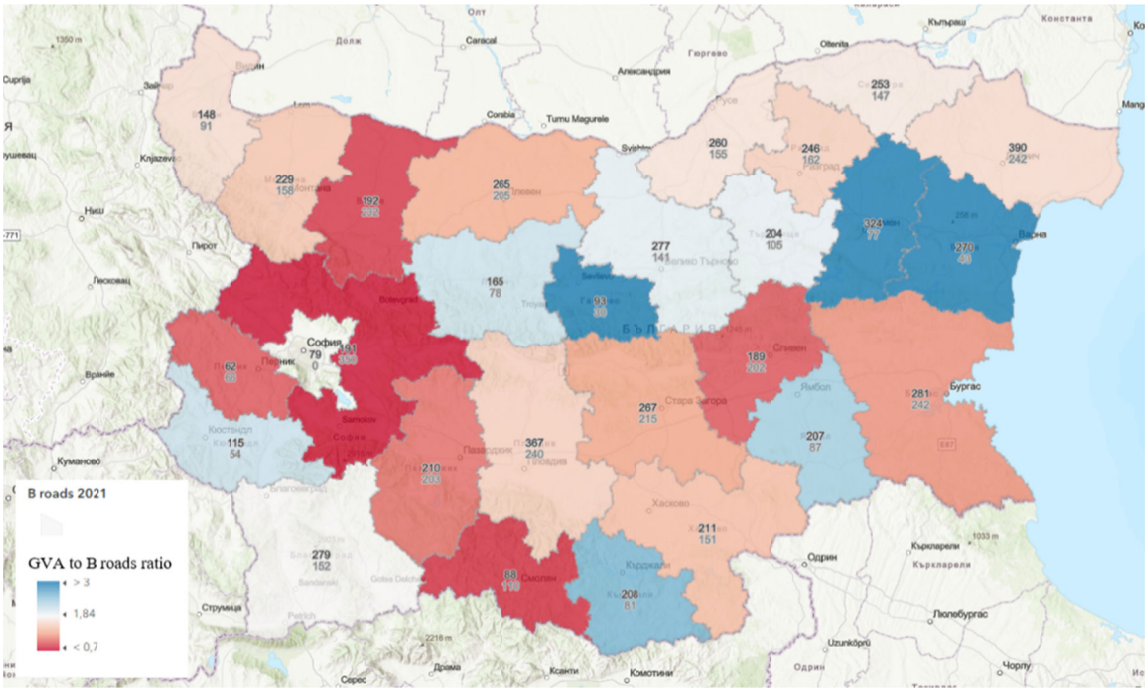

Fig. 6. GVA to B roads ratio.

Source: based on ArcGIS Online (2022).

Third-class road infrastructure (12,217 km) is predominant in Bulgaria. The districts with high BDS in the agricultural sector, Plovdiv (601), Dobrich (498), have a relatively well-developed third-class road infrastructure, while Shumen (316) is less developed in this respect. It is important to note that the presence of a third-class road network is a necessary condition for effective agricultural activity because it is these roads that connect the production of agricultural products with populated districts. The third-class road infrastructure is the longest in Bulgaria, but out of 11,558.5 km, only 3,576.5 km are in good condition. Very large, long-term investments are needed to reach the required quality; therefore, we believe that the benefits of exploiting this potential will not bring significant changes to the GVA of agribusiness in the near future (Ministry of Regional Development and Public Works, 2016).

The railway network in Bulgaria is 4031 km long, but it is in poor technical condition. Again, Plovdiv district (324) and Shumen district (155) have the longest railway lines and generate high GVA from the agricultural sector (Ministry of Regional Development and Public Works, 2016).

At the same time, Dobrich (60 km), which generates the highest GVA from agricultural production, also has the least developed railway infrastructure. From what has been said so far, it can be concluded that the road infrastructure provides potential for the development of GVA in the agricultural sector, but it is dependent on the quality of the transport network as well as on the well-developed logistics network in the district (Ministry of Regional Development and Public Works, 2016).

4.3. Analysis of tourism infrastructure.

When studying the tourist infrastructure, the indicator "Accommodation places in 2021" was used. In Figure 7, the tourist accommodation facilities by district are visualized. It can be summarized that the best developed tourist infrastructure is in the regions of Varna, Burgas, Smolyan. It is clear from the figure that Northern Bulgaria has a poorly developed tourist infrastructure.

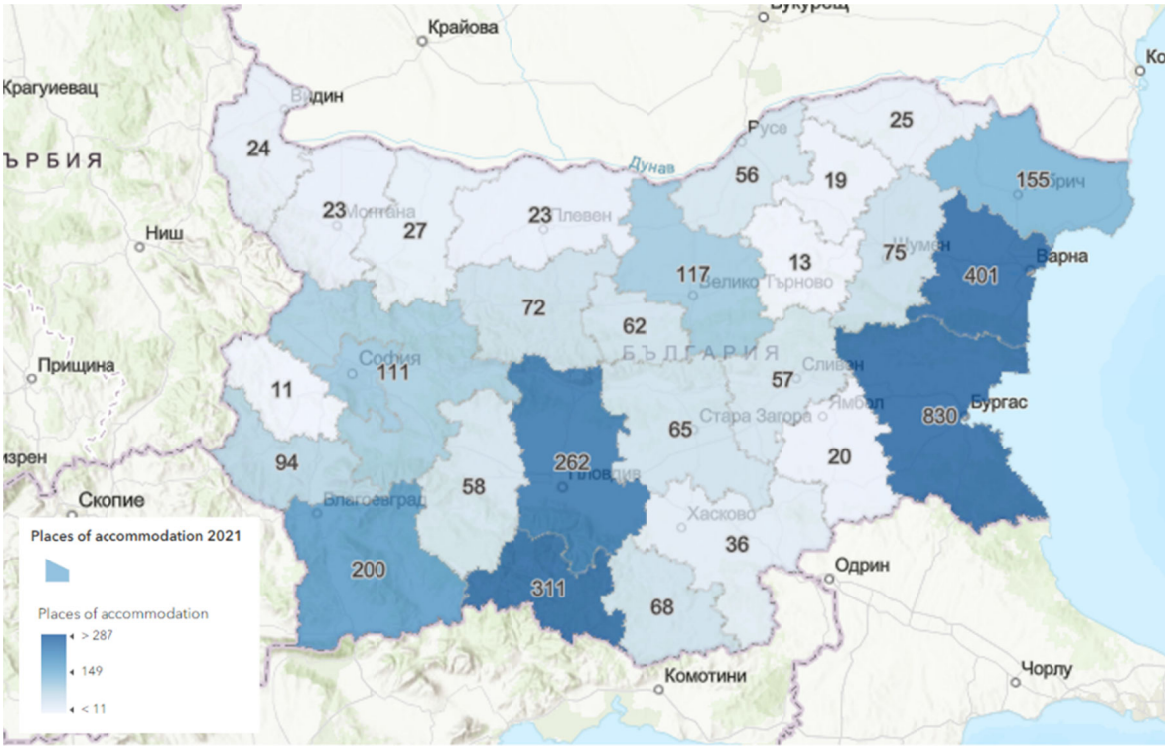

Fig. 7. Accommodation places by district for 2021.

Source: based on ArcGIS Online (2022).

There is a decrease in 11 districts in the number of places offered for accommodation in 2021, with the largest decrease in the amount of 28 places for the Blagoevgrad district. At the same time, an increase in the number of accommodation places was reported in 9 districts, with the most serious increase in the Burgas district with 57 new places. It can be summarized that as a result of these fluctuations, the places in the Republic of Bulgaria have increased by 18 for the period 2020-2021.

Figure 8 visualizes the relationship between the GVA generated by the agricultural sector and accommodation places. There are areas where the ratio between the indicators reaches up to 9 times in favor of GVA, which means that in these districts there is a very poorly developed tourist infrastructure but much more active agricultural activity. However, these districts are not leading in the generation of BDS. The districts of Dobrich, Shumen, and Plovdiv, as leaders in the research, also have a well-developed tourist infrastructure.

It is important to note that tourism infrastructure is a market niche that has the potential for development in rural areas and is an opportunity for alternative and complementary agribusiness (World Travel & Tourism Council, 2021).

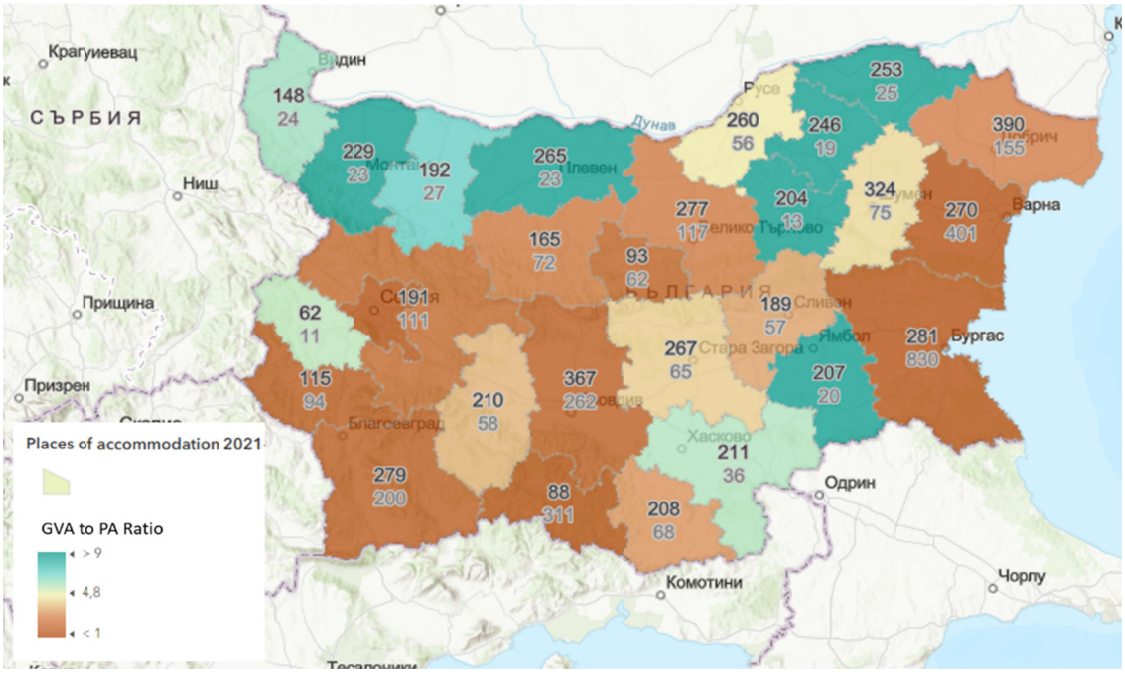

Fig. 8. Ratio of GVA to accommodation places in 2021.
Source: based on ArcGIS Online (2022).

4.4. Analysis of production infrastructure.

To research the production infrastructure, the factor "Costs for the Acquisition of Long-Term Assets (LTA) (thousand BGN)" was used, which is visualized by area in Figure 9.

The largest number of investments in TFA were made on the territory of Plovdiv district and Sofia district (the capital), followed by Burgas district and Varna district. Investments in production infrastructure in the remaining districts in 2021 are at a very low level.

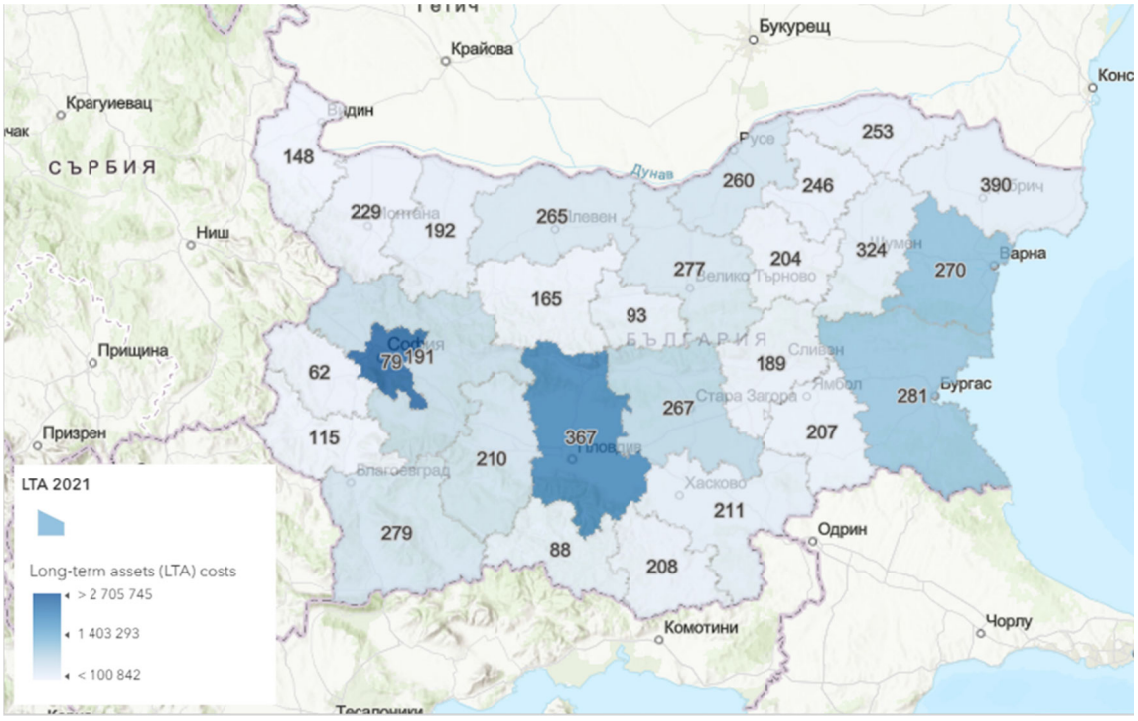

Fig. 9. Research of the costs of acquisition of LTA in thousand BGN in 2021.
Source: based on ArcGIS Online (2022).

Figure 10 relates the GVA generated by the agricultural sector to the costs of acquiring TFA in thousands of BGN.

It is noteworthy that the leaders in GVA in agriculture such as Varna and Shumen districts in 2021 are not investing in production infrastructure.

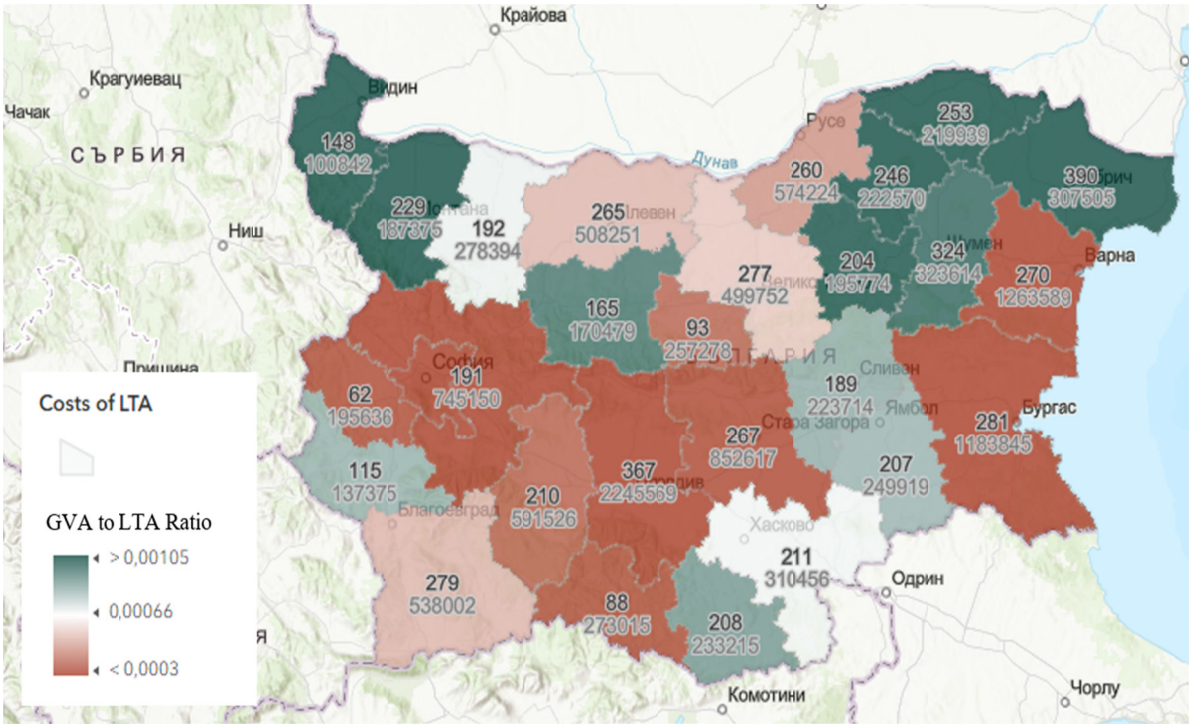

Fig. 10. Ratio between GVA generated by the agricultural sector and the costs of acquiring TFA in thousands of BGN distributed by district.

Source: based on ArcGIS Online (2022).

At the same time, lagging districts in agricultural activities stand out, such as Smolyan and Pernik, which during the research period made investments in production facilities. Based on this, it can be summarized that the level of production infrastructure does not automatically lead to an increase in GVA from the agricultural sector, and probably the investments made are rare, chaotic, and not at the necessary level to bring about qualitative changes in the sector.

5. Conclusions.

From the analysis of the key social, production, road, and tourist infrastructure for rural areas and their comparison with the GVA indicator from the agricultural sector, the following generalizations and conclusions can be drawn regarding the impact of infrastructure potential on the sustainable development of rural areas in Bulgaria:

First, the areas with the highest GVA from the agricultural sector are the traditional plains, and among the laggards are the mountainous and semi-mountainous ones. The comparison with the regional infrastructure (social, production, road, and tourism) shows that there are unused infrastructure potentials in the regions related to the production and tourism activities.

Second, social infrastructure has both a positive (number of schools, number of residential buildings) and a negative (number of hospitals) impact on the development of agricultural activities in the studied districts. Highly developed social infrastructure is not a decisive factor for the development of rural areas, but it is related to ensuring a certain social minimum for the implementation of agricultural production in them. The reason for this is the need to balance producers' social and professional lives, which makes attractive districts with a residential and network attractive.

Third, transport infrastructure is important for the generation of GVA in the agricultural sector, especially the presence of a renewed and functioning second-class road network. In Bulgaria, the prevailing third-class road infrastructure is of poor quality, and it connects the production of agricultural products with settlements and is a necessary condition for effective agricultural activity.

The rest of the indicators have a weak impact, which can be taken as an indicator of underutilization of the infrastructure potential (motorways, first- and third-class roads, railway transport), complicating logistics processes in agribusiness. Very large, long-term investments are needed to reach the required quality, so we believe that the benefits of exploiting this potential will not bring significant changes to the GVA of agribusiness in the near future.

Fourth, at this stage of the development of the regions, there are untapped infrastructural potentials related to production and tourism activities, but with a tendency to increase specialization and diversification in them. The developed infrastructure is a driving force for diversifying the functional use of the territory and the optimal utilization of available resources, ensuring not only economic progress but also sustainability in the development of rural territories.

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REFERENCES

Ahmed, R. (1996). A Critique of the World Development Report, 1994: Infrastructure for Development. International monetary and financial issues for the 1990s, 7, 51-61.

ArcGIS Online (2022). GIS Mapping. https://www.arcgis.com/home/webmap/viewer.html

Dapkus, R., & Dapkute, K. (2015). Evaluation of the regional tourism attractiveness. Research for rural development, 2, 293-300.

Doitchinova, J. (2019). Structural changes and regional models of agriculture. Trakia Journal of Sciences, 17, 154-159. https://doi.org/10.15547/tjs.2019.s.01.025

Filipishyna, L., Bessonova, S., & Venckevičiūtė, G. (2018). Integral assessment of developmental stability: cases of Lithuania and Ukraine. Entrepreneurship and Sustainability Issues, 6, 87-99. https://doi.org/10.9770/jesi.2018.6.1(7)

Fosu, K., Heerink, N., Jhoudo, K., Kuiper, M., & Kuyvenhoven, A. (1995). Public Goods and Services and Food Security: Theory and Modelling Approaches with special reference to Ghana and Burkina Faso. Paper Réseau SADAOC, Public Goods and Services (PGS) project.

González-González, E., & Nogués, S. (2019). Long-term differential effects of transport infrastructure investment in rural areas. Transportation Research. Part A, Policy and Practice, 125, 234–247. https://doi.org/10.1016/j.tra.2018.01.026

Hirschman, A. O. (1958). The Strategy of Economic Development. Yale University Press.

Hristoskov, Yo. (2014). Nature, classification and statistical analysis of the territory's infrastructure. Statistika, 1-24.

International Fund for Agricultural Development. (1995). The State of World Rural Poverty: A Profile of Asia

Ishikawa, S. (1967). Economic Development in Asian Perspective. Tokyo: Kinokuniya Bookstore Co.

Káposzta, J., Ritter, K., & Nagy, H. (2020). Local Economic Development in Transition Economies: A Tool for Sustainable Development of Rural Areas. Foreign Direct Investments: Concepts, Methodologies, Tools, and Applications (pp. 522-539). IGI Global. https://doi.org/10.4018/978-1-7998-2448-0.ch022

Koval, V., Petrashevska, A., Popova, O., Mikhno, I., & Gaska, K. (2019). Methodology of ecodiagnostics on the example of rural areas. Architecture Civil Engineering Environment, 12(1), 139-144. https://doi.org/10.21307/ACEE-2019-013

Liquete, C., Kleeschulte, S., Dige, G., Maes, J., Grizzetti, B., Olah, B., & Zulian, G. (2015). Mapping green infrastructure based on ecosystem services and ecological networks: A Pan-European case study. Environmental Science & Policy, 54, 268–280. https://doi.org/10.1016/j.envsci.2015.07.009

Mileva, S., Georgieva, T. (2022). Sectoral innovation system of agribusiness in Bulgaria – main challenges and perspectives. Access to science, business, innovation in digital economy, ACCESS Press, 3(3): 307-338. https://doi.org/10.46656/access.2022.3.3(9)

Ministry of Agriculture. (2022). Annual report on the state and development of agriculture - Agrarian report 2022. https://www.mzh.government.bg/bg/politiki-i-programi/otcheti-i-dokladi/agraren-doklad/

Ministry of Regional Development and Public Works. (2016). Strategy for the development of the road infrastructure in the Republic of Bulgaria 2016-2022. Retrieved from https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1005

Moralli, M. (2022). Back to the Margins: Socio-environmental Justice And Social Innovation for the Sustainable Development of Rural Territories. Journal of Rural and Community Development, 17(2), 81-101.

National Statistical Institute. (2022). Gross Domestic Product (GDP). https://www.nsi.bg/en/content/2108/gross-domestic-product-gdp

Nikolova, M., & Linkova, M. (2010). Diversification of the agro-tourism product as a tool for the revitalization of the rural economy. Agricultural Economics and Management, 55-62.

Nikolova-Alexieva, V.; Alexieva, I.; Valeva, K.; Petrova, M. (2022). Model of the Factors Affecting the Eco-Innovation Activity of Bulgarian Industrial Enterprises. *Risks* 2022, *10*, 178. https://doi.org/10.3390/risks10090178

Odinokova, T., Akhmedyarov, Ye. (2022). Development of innovation activity research model and its implementation. Access to science, business, innovation in digital economy, ACCESS Press, 3(1), 29-42. https://doi.org/10.46656/access.2022.3.1(3)

Popova, O., Koval, V., Mikhno, I., Tarasov, I., Asaulenko, N., & Filipishyna, L. (2020). Assessments of national tourism development in terms of sustainability and inclusiveness. Journal of Geology, Geography and Geoecology, 29 (2), 377-386. https://doi.org/10.15421/112033

Ramazanov, S. Petrova, M. (2020). Development management and forecasting in a green innovative economy based on the integral dynamics model in the conditions of «Industry - 4.0». Access to science, business, innovation in digital economy. ACCESS Press, 1(1), 9-30. https://doi.org/10.46656/access.2020.1.1(1)

Seitzhanov, S., Kurmanov, N., Petrova, M., Aliyev, U., & Aidargaliyeva, N. (2020). Stimulation of entrepreneurs' innovative activity: evidence from Kazakhstan. Entrepreneurship and Sustainability Issues, 7(4), 2615-2629. https://doi.org/10.9770/jesi.2020.7.4(4)

Uteubayev, T., Petrova M.M., & Lyubenova, I. (2018). Training of qualified specialists in the process of their education at the university: the role of the public-private partnership. CBU International Conference Proceedings, 6, 491–495. https://doi.org/10.12955/cbup.v6.1203

Vasileva, V., & Sabrieva, S. (2018). Modern Specifications of the Specialized Tourist Infrastructure in the South Central Planning Region in Bulgaria. Regional Economy and Sustainable Development, 1, 550-563.

Velikov, V. (2011). Opportunities for the development of rural tourism in the municipality of Avren. Vazmozhnosti i problemi za razvitieto na alternativnite formi na turizam v malkite selishta, (pp. 219-229). Plovdiv.

Vries, E. D. (1960). Finance for Development. Proceedings of the International Conference of Agricultural (pp. 284-308). London: Oxford University Press.

Wharton, C. R. (1967). The Infrastructure for Agricultural Growth. Agricultural Development and Economic Growth. Cornell University Press, Ithaca, NY.

World Bank. (1994). World Development Report: Infrastructure for Development. New York: Oxford University Press.

World Travel & Tourism Council. (2021). Research & Insights. https://wttc.org/research/insights-publications