

ECONOMIC DEVELOPMENT OF THE EUROPEAN MOUNTAIN AREA BETWEEN 2014-2018: A STATISTICAL APPROACH

Brîndușa COVACI¹, Radu BREJEA²

Abstract. *European mountains protection represents one of the most important holdings of the European desideratum. As known, mountains offer higher quality in all living, namely biodiversity of air – water – soil. The ecosystem of mountain area is designed to sustain a better life for human being and its adjacent environment. Mountain area is important because the ecosystem and the determinants of this area affect its food system. High altitude areas (mountains) are less polluted than low altitude areas (plains). The paper synthesized data regarding relevant indices, especially regarding business demography statistics and high growth enterprise.*

Keywords: European development, European mountain area, Eurostat indexes

1. Introduction

The mountain area is important for the mountain products quality, but especially because it provides about 60-80% of the planet's fresh water. FAO (Food and Agriculture Organization of the United Nations, 2015) [8] classifies the mountain area according to the following scheme: • class 1: level $\geq 4,500$ m, • class 2: level 3,500–4,500 m • class 3: level 2,500– 3,500 m, • class 4: level 1,500–2,500 m and slope $\geq 2^\circ$, • class 5: level 1,000–1,500 m and slope $\geq 5^\circ$ or LER (local elevation range) > 300 m, • class 6: level 300–1,000 m and LER > 300 m. A seventh class, identified in 2002, includes isolated indoor basins and plateaus measuring less than 25 km² which are surrounded by mountains, but do not independently meet the criteria of the other classes [13].

Mountain area cover more than 40.6% of the European territory (Fig.1), representing 1,900,000 km² (19.1% of total population, approximately 94.3 million of people) [5].

The main reason of studying the mountain area is that it offers a healthier environment, with healthy fodder and animals contributing to the production of high quality food [17]. Mountain farming can only be achieved on a small scale, using sustainable local resources and thus conserving biodiversity [18].

¹Assoc. Prof. PhD., Senior Researcher, Centre for Mountain Economy Vatra Dornei, National Institute of Economic Research "Costin C. Kiritescu", Romanian Academy, Bucharest, Romania, (e-mail: covacibrindusa@gmail.com)

²Assoc. Prof. PhD. Hab., University of Oradea, Oradea, Romania, (e-mail:rbrejea@yahoo.com)

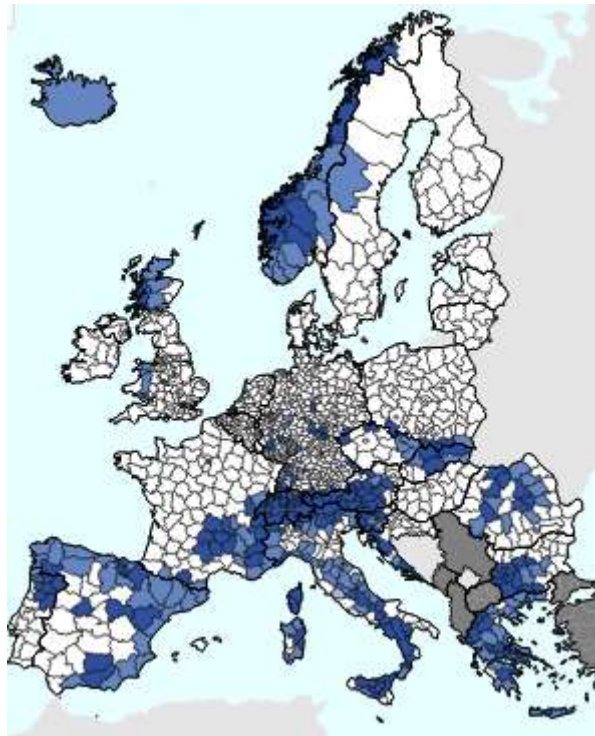


Fig. 1. Mountain surface in Europe

Source: European Commission, Mountain typology, <https://ec.europa.eu/eurostat/cache/RCI/#?vis=mountain.typology&lang=en>, [5].

The defining characteristics of mountain areas are determined by long distances or difficult access to certain points of interest, socio-economic and political marginalization, restrictions on access to infrastructure and urban areas, limited agricultural potential, limited possibilities for material or financial benefits. Numerous studies on mountain areas have been carried out over time. Some emphasize the adverse effects of climate change on mountain communities [2, 4, 10], others highlight the problems created by the natural handicap of these areas due to natural hazards and declining agricultural yields [14]. Mountain areas are subject of rapid socio-economic changes affecting agricultural systems as well as dietary patterns [3], [12], [14]. The importance of mountain areas on a global scale is reflected in the international agendas, most recently in the Sustainable Development Goals adopted by the United Nations. [3, 4], [9], [16].

2. Methodology

The paper present representative indexes for the European mountain regions, like *Area of the regions by other typologies*; *Gross domestic product (GDP) at current market prices by other typologies*; *GDP from agriculture*; *GDP mountain region*;

National annual road freight transport by regions of loading, group of goods and other typologies; Community design (CD) applications per billion GDP by other typologies; Unemployment rates by sex, age and other typologies; Employment rates by sex, age and other typologies; Business demography and high growth enterprise by NACE Rev. 2 activity and other typologies; High-tech patent applications to the European patent office (EPO) by priority year and other typologies; Patent applications to the EPO by priority year, international patent classification (IPC) sections, classes and other typologies; European Union trade mark (EUTM) applications per billion GDP by other typologies. Data has been taken from Eurostat [7] and Trading Economics [15], and processed by the authors.

3. Results and discussions

The data of the paper show that indexes for mountain regions present important fluctuation between 2014-2018. Some data are extended to 2010-2018 period. For the index *Area of the regions by other typologies* (square kilometer – sq km) mountain regions of the Europe present surfaces as Belgium 1,164 km², Bulgaria 51,985 km², Czechia 15,708 km², Germany 40,849 km², Greece 119,779 km², Spain 279,865 km², France 134,694 km², Croatia 18,246 km², Italy 199,262 km², Austria 63,707 km², Poland 18,227 km², Portugal 31,913 km², Romania 92,297 km², Slovenia 16,766 km², Slovakia 36,492 km², United Kingdom 55,295 km², Iceland 102,679 km², Liechtenstein 160 km², Norway 263,461 km², Switzerland 40,260 km², Turkey 620,717 km². In 2010-2016 period the surface of some countries increased as follows: in Belgium by 0.08%, Italy 0.22%, Austria 5.56%, Portugal 0.008%, Romania 0.02%, Switzerland 0.008% and France 2.46% (2013-2016), while others decreased like: Bulgaria by -0.0001%, Czechia -25.67%, Greece -0.23%, Spain -0.003%, Slovakia -0.005%, United Kingdom -1.17%, Iceland -0.31%, Liechtenstein -0.31%, Norway -0.14% and Sweden -0.64% (2010-2012). As seen, the surface of European mountains has not remained the same during analyzed period. One of the causes was the erroneous measurement, but other reasons were geographical movements, environment disturbances, and so on. The surface of the European mountains is important in establishing an adequate agenda for a higher qualitative lifestyle. Mountains offer a higher qualitative air – water – soil system and are important factors for human health and food safety and security.

Regarding the index *Gross domestic product (GDP) at current market prices by other typologies* (million euro) it should be reminded that between 2013–2017 period, that in some countries the general value of the GDP increased as follows: in Belgium by 8.52%, Bulgaria 25.27%, Slovenia 19.45%, Slovakia 15.31% and United Kingdom 7.95%. Between 2013-2016, the GDP value increased in

Belgium by 5.19%, Bulgaria 16.70%, Czechia 10.64%, Germany 11.70%, Spain 8.97%, Croatia 5.79%, Italy 4.19%, Austria 10.39%, Portugal 10.09%, Romania 20.48%, Slovenia 11.79%, Slovakia 9.95% and United Kingdom 12.76%, while in Greece it decreased by -1.22%. Regarding the GDP value (million euro) in the mountain regions, in 2016 it registered the following values: Belgium 5,169.16, Bulgaria 33,467.91, Czechia 25,564.36, Germany 229,306, Greece 109,092, Spain 702,130, France 404,324, Croatia 10,459.57, Italy 753,531.63, Austria 183,577.46, Poland 22,217.82, Portugal 40,247.01, Romania 48,736.9, Slovenia 33,669.35, Slovakia 40,364.81, United Kingdom 58,795.14. The GDP value for the mountain regions increased/decreased in the European countries, namely in Belgium by 21.62%, Bulgaria 6.41%, Czechia -14.36%, Germany -0.04%, Spain 22.78%, Croatia 15.43%, Italy -2.06%, Austria 22.20%, Romania -5.04%, Slovakia 24.14%, United Kingdom 4.99%, Norway -6.86% and Switzerland -271%. The main reason for the fluctuations has been the higher/lower advertising of the mountain products. The GDP from non-mountain regions (million euro) had the following values in 2016: Belgium 419,310.09, Bulgaria 14,660.73, Czechia 150,805.78, Denmark 278,734.86, Germany 2,930,448, Estonia 21,682.76, Greece 67,396, Spain 415,833, France 1,823,177, Croatia 36,179.86, Italy 934,893.84, Cyprus 18,490.2, Latvia 25,003.02, Lithuania 38,849.44, Luxembourg 53,303.03, Hungary 113,903.77, Malta 10,326.84, Netherlands 706,167, Austria 172,527.78, Poland 404,330.47, Portugal 146,084.92, Romania 121,538.55, Slovenia 6,687.86, Slovakia 40,861.26, Finland 216,053.57, Sweden 463,043.16, United Kingdom 2,325,107.81, Norway 57,270.37, Montenegro 3,954.2, North Macedonia 9,656.5, Albania 10,739.99, Serbia 36,698.52.

National annual road freight transport by regions of loading, group of goods and other typologies (thousand tones) is another important index for the mountain regions. The transportation in the mountain regions is realizing with difficulty, sometimes being almost impossible to access some important economical points. Between 2014-2018, total transported goods had the following fluctuations: Belgium 21.62%, Bulgaria 6.41%, Czechia -14.36%, Germany -0.03%, Spain 22.77%, Croatia 15.43%, Italy -2.05%, Austria 22.20%, Romania -5.04%, Slovakia 24.13%, United Kingdom 4.99%, Norway -6.85%, Switzerland -2.70%. In the same period, products of agriculture, hunting, and forestry; fish and other fishing products oscillates as follow: Belgium 248.38%, Bulgaria 22.80%, Czechia -27.57%, Spain 22.11%, Croatia -45.56%, Austria 25.63%, Romania -16.79%, Slovakia 33.59%, Norway 26.15%, Switzerland 5.99%.

Community design represents a set of rules created for the uniformization and protection of the industrial designs and creations across the [1], [6]. This is another important European mountain regions index. Between 2014-2018, Community design (CD) applications per billion GDP by other typologies (euro

per billion GDP), fluctuated for the mountain regions as follows: Belgium 94.20%, Czechia -9.21%. Between 2009-2013, this index decreased in Austria by -1,78%, between 2015-2007 in Poland it increased by 23.89%, in Sweden it decreased by -61.19%. Between 2013-2014, in Slovenia it increased by 2.17% and between 2008-2015 in Slovakia it also increased by 200%. At European level Belgium, Poland and Slovakia sustain mountain community design more than other countries, the effects being found in the exports volume of mountain products.

Between 2014-2018, the index *Unemployment rates by sex, age and other typologies*, for 15 to 24 years' segment of population, varied for the mountain regions as follows: Belgium -45.81%, Bulgaria -64.10%, Czechia -57.32%, Greece -23.80%, Spain -36.20%, France 1.36%, Italy -25.65%, Austria -20%, Poland -51.27%, Portugal -38.67%, Romania -23.50%, Slovenia -60.55%, Slovakia -43.03% and between 2016-2018, in Germany it decreased by -4.76%. The scenario for 2021 shows that unemployment will increase considerably, respectively in Belgium 6.5%, Bulgaria 8%, Czechia 5.5%, Greece 17.4%, Spain 17.2%, France 9.8%, Italy 11.1%, Austria 13.5%, Poland 7.6%, Portugal 8%, Romania 6.9%, Slovenia 9.5%, Slovakia 6.8%, Germany 3.8% [15]. The low rate of unemployment in the mountain area shows that mountain products are desired on the global market. The increasing unemployment shown by the forecasting represents an alarm signal for the decedents in order to invest more in mountain area of the Europe.

Economically active population by sex, age and other typologies (thousand persons) index, for 15 to 24 years' segment of population, fluctuated for the mountain regions between 2014-2018 as follows: Belgium -11.62%, Bulgaria -23.85%, Czechia -24.24%, Greece -15.67%, Spain -5.02%, Italy -7.83%, Austria -6.56%, Poland -8.25%, Portugal -6.41%, Romania -10.44%, Slovenia 11.11%, Slovakia -9.72%, United Kingdom -10.85%, while between 2016-2018 in Germany it increased by 1.42% and between 2017-2018 in France by 4.65%. The actual data show that entrepreneurship policies for the mountain area are not well sustained at the European level. More direct or indirect investments will better promote mountain products.

The index *Employment rates by sex, age and other typologies* (for 15 to 64 years) increased for the mountain regions between 2014-2018 as follows: Belgium 0.71%, Bulgaria 11.72%, Czechia 10.44%, Greece 11.49%, Spain 11.70%, Croatia 6.43%, Italy 5.26%, Austria 2.88%, Poland 9.84%, Portugal 10.83%, Romania 7.17%, Slovenia 11.31%, Slovakia 12.30%, United Kingdom 3.84% and between 2016-2018 in Germany by 1.29%. The increased employment rate for the European mountains area demonstrated that the high altitude environment becomes more friendly for people and entrepreneurs.

Business demography and high growth enterprise by NACE Rev. 2 activity and other typologies is one of the most important European index, presenting in the paper two important indicators, namely *Population of active enterprises in t – number* and *Persons employed in the population of active enterprises in t – number* for the sectors Industry, construction and services except insurance activities of holding companies; Industry (except construction); Construction; Wholesale and retail trade, repair of motor vehicles and motorcycles; Transportation and storage; Accommodation and food service activities; Information and communication; Financial and insurance activities, real estate activities except activities of holding companies; Professional, scientific and technical activities, administrative and support service activities; Education, human health and social work activities; Arts, entertainment and recreation, other service activities.

Population of active enterprises in t – number, the main indicator of the entrepreneurship environment, presented an increased governance preoccupation for the European mountain area. For the sectors Industry, construction and services except insurance activities of holding companies it registered variations for Bulgaria 8.32%, Czechia 3.32%, Spain 3.96%, Croatia 3.30%, Italy -0.80%, Austria -3.38%, Portugal 3.95%, Romania 5.48%, and Slovakia 12.94%; Industry (except construction) for Bulgaria 4.09%, Czechia 7.04%, Spain -0.65%, Croatia -5.60%, Italy -4.01%, Austria -4.33%, Portugal 5.53%, Romania 2.66%, and Slovakia 9.14%; Construction for Bulgaria 5.80%, Czechia 8.26%, Spain -2.28%, Croatia -5.77%, Italy -8.33%, Austria -2.68%, Portugal -3.61%, Romania 7.38%, and Slovakia 12.23%; Wholesale and retail trade, repair of motor vehicles and motorcycles for Bulgaria 1.84%, Czechia 7.28%, Spain 0.16%, Croatia -2.34%, Italy -4.72%, Austria -1.78%, Portugal -2.76%, Romania -1.13%, and Slovakia -1.76%; Transportation and storage for Bulgaria 19.35%, Czechia -0.58%, Spain -4.96%, Croatia -2.77%, Italy -6.09%, Austria -4.21%, Portugal -5.22%, Romania 15.68%, and Slovakia 11.55%; Accommodation and food service activities for Bulgaria 4.65%, Czechia -6.83%, Spain 0.53%, Croatia 15.86%, Italy 1.64%, Austria -13.69%, Portugal 7.32%, Romania 7.59%, Slovakia 6.01%; Information and communication for Bulgaria 26.71%, Czechia 39.01%, Spain 14.79%, Croatia 7.24%, Italy 5.52%, Austria 1.15%, Portugal 12.45%, Romania 3.79%, Slovakia 28.29%; Financial and insurance activities, real estate activities except activities of holding companies for Bulgaria 13.36%, Czechia -26.04%, Spain 19.10%, Croatia 7.20%, Italy 1.60%, Austria -19.58%, Portugal 2.87%, Romania 20.28%, and Slovakia 53.36%; Professional, scientific and technical activities, administrative and support service activities for Bulgaria 15.93%, Czechia 9.45%, Spain 6.47%, Croatia 10.11%, Italy 4.83%, Austria -4.64%, Portugal 13.31%, Romania 3.12% and Slovakia 30.99%; Education; human health and social work activities for Bulgaria 5.77%, Czechia 1.36%, Spain 14.89%, Croatia 31.70%,

Italy 11.97%, Austria 10.92%, Portugal 3.27%, Romania 29.31%, and Slovakia 17.25%; Arts, entertainment and recreation, other service activities for Bulgaria 14.31%, Czechia -6.54%, Spain 14.33%, Croatia -7.30%, Italy 3.78%, Austria -2.22%, Portugal 11.57%, Romania 19.27% and Slovakia 37.07%.

Persons employed in the population of active enterprises in t – number, one of the most important socio-economic indicator, show for the European mountain area an increasing concern from the community space governments. The analyzed sector presented lower variations, but the general business environment was favorable to the mountain area, respectively for: Industry, construction and services, except insurance activities of holding companies showed fluctuations for Bulgaria 3.37%, Czechia -2.30%, Spain 7.56%, Croatia -0.35%, Italy 0.29%, Austria 2.37%, Romania 8.54%, and Slovakia 5.07%; Industry (except construction) for Bulgaria 4.35%, Czechia 4.42%, Spain 6.84%, Croatia -8.87%, Italy -1.18%, Austria 2.38%, Romania 5.68%, and Slovakia 8.17%; Construction for Bulgaria 0.14%, Czechia 3.60%, Spain -0.76%, Croatia -3.56%, Italy -9.96%, Austria 0.49%, Portugal 1.11%, Romania 1.89%, and Slovakia 4.18; Wholesale and retail trade, repair of motor vehicles and motorcycles for Bulgaria 2.33%, Czechia 2.64%, Spain 6.51%, Croatia -3.42%, Italy -2.34%, Austria 1.33%, Portugal 3.83%, Romania 6.89%, and Slovakia 0.29%; Transportation and storage for Bulgaria 8.88%, Czechia 6.75%, Spain 6.56%, Croatia 2.47%, Italy 8.82%, Austria 6.74%, Romania 22.25%, and Slovakia 5.84%; Accommodation and food service activities for Bulgaria 3.42%, Czechia -3.47%, Spain 13.67%, Croatia 6.33%, Italy 3.75%, Austria 2.38%, Portugal 11.59%, Romania 14.06, and Slovakia 8.78%; Information and communication for Bulgaria 16.86%, Czechia -7.33%, Spain 18.87%, Croatia 9.60%, Italy 6.69, Austria 11.67, Portugal 27.53, Romania 21.71%, and Slovakia 32.36%; Financial and insurance activities, real estate activities except activities of holding companies for Bulgaria -5.69%, Czechia -29.48%, Spain -0.70%, Croatia -0.35%, Italy -2.53%, Austria -10.32%, Portugal -8.81%, Romania 10.84%, and Slovakia 25.13%; Professional, scientific and technical activities, administrative and support service activities for Bulgaria 7.70%, Czechia -12.21%, Spain 8.14%, Croatia 2.99%, Italy 4.95%, Austria 3.51%, Portugal 14.42%, Romania 9.38%, and Slovakia 20.49%; Education, human health and social work activities for Bulgaria -2.03%, Czechia -29.49%, Spain 11.19%, Croatia 30.06%, Italy 10.49%, Austria 8.68%, Romania 25.48%, and Slovakia -38.60%; Arts, entertainment and recreation, other service activities for Bulgaria -1.75%, Czechia -12.97%, Spain 17.10%, Croatia 10.44%, Italy 3.69%, Austria 1.37%, Portugal 11.60%, Romania 20.53%, and Slovakia 30.87%.

Specific for Romania, it must be reminded that the mountain area covers 90.24 thousands km² (37.9% of the total area of the country), the population being 5,535,706 people (24.9% of the total population). "Romania - with the largest

mountain range in Europe located inside a country - did not support collectivization in the mountains, but remained with a very low level of technology in peasant households. Post-1990 economic phenomena, including excessive liberalism, with ridiculous prices for mountain products, milk and meat, raw materials, the collapse of the price of wool, outside the protective control of the state and intensely polarized economic interests, other conjunctural elements (focus exclusively on large agricultural restrictions, unrestricted and uncompensated restrictive measures for livestock farmers, industrial and job dissolution, or objectives (lack of knowledge, lack of expertise in the field, lack of specialists, research, the lack of models, as well as the size of the mountainous territory and the financial austerity of the moment, the lack of awareness and insufficient political will, etc.), opening the borders for lib it was a movement of people - there was a phenomenon of violent rural exodus, accentuated after Romania's accession to the European Union" [11].

Conclusions

- (1) Analyzed data, the statics of the paper, show that European countries have extensively invested in the mountain area in the last years. *Business demography and high growth enterprise* present a strong asset for the entrepreneurship of the European mountain regions. Due to a coherent policy, unemployment has been decreased and employment grew up. Forecasting show that if the investment policies will not continue, then the analyzed indices will have lower and lower values.
- (2) The surface of the European mountains is important in establishing an adequate agenda for higher qualitative lifestyle. Mountains offer higher qualitative air – water – soil system and are important factors for human health and food safety and security.
- (3) Mountain living and entrepreneurship is strongly influenced by the infrastructure and geographical realities. Governments should take into consideration higher investments in these sectors. The defining characteristics of mountain areas are determined by long distances or difficult access to certain points of interest, socio-economic and political marginalization, restrictions on access to infrastructure and urban areas, limited agricultural potential, limited possibilities for material or financial benefits.
- (4) Mountain area is important because the ecosystem and the environment of this area affect its food system. High altitude areas (mountains) are less polluted than low altitude areas (plains). In mountainous areas agriculture is intensively practiced. Farmers are poorly integrated in commodity markets and it is difficult to compete on a large scale with producers in large-scale plains. The only solution

for mountain producers is to produce high quality food. The mountain products market has the features of an emerging market, ensuring products with superior nutritional values, healthier and high organic character. This emerging market, the mountain area, offers opportunities for the development of sustainable value chains, ensuring opportunities for acquisition by all the people.

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