



Review article

UDC: 911.3:312(497.5)

DOI: <https://doi.org/10.2298/IJGI1802265M>

CONCEPT AND IMPORTANCE OF STATISTICAL REGIONS ON THE EXAMPLE OF BOSNIA AND HERZEGOVINA

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Received: December 25, 2017; Reviewed: March 28, 2018; Accepted: August 6, 2018

Abstract: Bosnia and Herzegovina is the first country in Europe for unemployment and percentage of inhabitants who do not live in the country where they were born. These data require a very serious approach with a wide range of reasons for these phenomena especially from geographical point of view. Thus, it is necessary to critically investigate its regional structure. The reason for this is knowledge of the real economic and geographical differences that exist between individual regions. In order to achieve this, it is necessary to abandon the concept of the existing physiognomic or economic-geographic regions, since they do not reflect the real dynamics of major social changes and do not allow for the perspective of the future economic and geographical development of Bosnia and Herzegovina. The starting hypothesis of this paper is based on the creation of statistical regions, which will be separated based on the NUTS methodology for the level of political-administrative units, reflecting its constitutional structure. Implementation of statistical regions will soon be set up as an imperative for BiH on the road to EU accession, as already done by other countries.

Keywords: statistical region, NUTS units, Bosnia and Herzegovina (BiH), Republic of Srpska (RS), Federation of Bosnia and Herzegovina (FBiH)

Introduction

Statistical regions represent one aspect of homogeneous regions, which have the function of monitoring, analyzing and planning flows of general social and economic processes, as well as comparing the level of achieved economic and socio-economic development of the territory of the same taxonomic rank. In general, they are more subordinate to satisfying needs in the domain of administrative organization and “the integration of geography and economics, achieved through regional integration, brings numerous advantages by increasing interdependence among the lesser regions and by reducing their tendencies towards autarchy” (Tihi, 2008, p. 18).

The practical importance of allocating statistical regions is seen on the example of efficient regional policy, as well as the tasks of economic and overall social

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development planning. “The boundaries of statistical regions, as an element of the administrative organization of each state, are generally an expression of a compromise between the interests of economic and political subjects that direct the economic, social and spatial development of each region” (Tošić, 2012, p. 81).

Within the European¹ framework, there is a significant harmonization of statistical and functional regionalization through the programs “Urban Audit I” and “Urban Audit II”. The introduction of the notion of statistical regions in the regional geographic research of BiH aims at realizing the real indicators of economic and geographical development and great regional differences since exist. Until now, these indicators were in the “gray zone”, as there were no official statistical indicators. From a realistic scientific knowledge of the negative economic and geographical trends, a positive approach must be developed that will aim to direct these processes in a positive direction. To begin with, defining clear frames, i.e. the boundary of statistical regions separated on the basis of scientific criteria is a good sign.

In methodological terms, the basic principle for the delimitation of statistical regions is the NUTS methodology², which allows the creation of regions with approximately equal population. Eurostat has developed a methodology for establishing a flexible, multifunctional and multistage “Nomenclature of Statistical Territorial Units”, so-called NUTS. These units have played the role of normative and analytical regions, which have enabled a simple and unambiguous division of territory to form regional EU statistics, and the starting principles are:

- Institutional division recognizes normative and analytical regions; normative reflections of political will, the boundaries are determined by their historical heritage, and analytical or functional regions are based on geographical criteria (natural, social, economic ...);
- The application of general geographical units and specific geographical units for areas of activity (urban areas, mining basins, agricultural areas, etc.) may be limited and excluded from NUTS for the benefit of general geographical units;

¹ According to ESPON, some of the criteria for delimiting the regions are: economic strength, achieved level of economic development, degree of globalization, territorial foundation, level of modernization, competitiveness, asset acceptance, absorption rate, administrative ability of accepting funds, demographic criteria, desirable territorial size, homogeneity, geographical diversity, historical tradition, geopolitical position, regional identity, structure of economic development, balance, equity, harmonization of development, social sensitivity and acceptability for the local population ...

² EC (2003). The establishment of a common classification of territorial units for statistics (NUTS)

- Hierarchical classification according to which each EU member is divided into three levels, and the criteria for their division are demographic and socio-economic. The demographic criterion includes the minimum number of inhabitants for different hierarchical levels: NUTS 1 (3–7 mil.), NUTS 2 (0.8–3 mil.) and NUTS 3 (0.15–0.8 mil.);
- Socio-economic criterion includes two categories. For administrative unit (e.g. the Republic of Srpska), there is a need for a democratically elected authority for NUTS 2 (executive, legislative, judicial) and its own budgetary framework. For non-administrative units (e.g. NUTS 2 of Croatia), no preconditions are required, since these units without legal subjectivity were formed by grouping lower-level administrative units (counties — NUTS 3) and used only for statistical purposes;
- The starting basis for establishing internal boundaries between statistical regions can be asymmetrical. The guiding principle for the Republic of Srpska should be nodal-functional, and due to the specific nature of the FBiH, the principle of administrative boundaries (cantons) can be implemented.

From these statements, it is clear that all countries in the region, regardless of the achieved level of European integration, accept the geo-model model of the territorial organization of public administration that is mandatory for all EU Member States, but applied by other countries (e.g. Norway, Switzerland). These principles of territorial organization deeply appreciate the economic criteria of sustainability of development, with a minimum number of 150,000 inhabitants (consumers) who guarantee elements of the “economy of volumes” and prevent the growth of bureaucracy (state apparatus). This results in a rational number of public sector institutions, which is directly linked to the number of residents (education institutions, health care, etc.). The economic logic of this division lies in the fact that a greater number of users lead to the creation of competition. The existence of competition leads to an increase in the quality of services, as well as lowering their prices. On the other hand, fewer consumers lead to the establishment of monopolies of service providers on the market, which is the way to lowering the quality of services and raising their prices.

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Figure 1. A clip from the Western Balkans (Source: ESPON, 2006)

The map (Figure 1) offers a possible territorial organization of BiH as NUTS 1 and lower rank units. Neighbouring countries have previously implemented and partially modified this division, with NUTS 2 non-administrative units. Serbia has 29 statistical regions of the NUTS 3 and 5 NUTS 2 levels: Vojvodina, Belgrade, Western and Central Serbia, Eastern and Southern Serbia and Kosovo and Metohija. Croatia is divided into 2 NUTS 2 (Primorska and Kontinetalna) and 21 NUTS 3 are assigned to counties (Mutabdžija, 2016a).

Statistical and territorial units of the Republic of Srpska

The complexity of the natural geographic base of the Republic of Srpska leaves a significant mark on the overall socio-geographical processes, which today

become the most visible in the domain of unfavourable demographic trends and inadequate functional links in the system of settlements and cities (Table 1). With a percentage of urbanization of 40.4%, the oldest population in the region (median age 41.37) and the unfavourable structure of settlements and their regional schedule (especially Herzegovina), a strong depopulation process is also evident. As a result, there is absolute domination of the smallest settlements with old-age households (80% of all settlements have < 500 inhabitants), with some 90% of the population living in the municipal center (Trebinje) in some municipalities. Due to such negative demographic-settlement processes, it is necessary to better understand spatial connections and create a more successful regional policy. The beginning of this process is to look at our geographic reality and to create an optimal internal organization.

Table 1. General geographic data on the Republic of Srpska mesoregions

No.	Region	km ²	No. of inhabitants	Density	No. of municipalities	No. of settlements	NUTS level
A	RS	24,617 ³	1,437,477	58.4	62	2,622	2
1	Banja Luka	8,977	655,783	73.1	21	1,164	3
2	Doboj	3,120	255,878	82.0	8	550	3
3	Bijeljina	3,349	287,840	85.9	12	513	3
4	E. Sarajevo	3,082	118,800	38.5	9	150	–
5	Foča	2,335	39,946	17.1	5	90	–
6	Trebinje	3,754	79,230	21.1	7	155	–

Sources: Institute for urbanism of the Republic of Srpska (1996); Strategic Plan for Rural Development of the Republic of Srpska 2009–2015.

So far, three spatial plans of the Republic of Srpska have been adopted, the first of which was a pillar plan until 2001 and envisaged regionalization with six interregional centres (Banja Luka, Doboj, Bijeljina, Istočno Sarajevo, Foča and Trebinje). Such a solution did not reflect the real situation in the domain of urban and functional relations. Disadvantages were evident in this proposal: Banja Luka became a disproportionately large interregional centre compared to other centres, because it accounted for 45.6% of the population and 36.4% of the territory of the Republic. There was no quality solution for a huge mountain area south of Zvornik, which is demographically significantly weakened and economically underdeveloped.

³ According to the Dayton Agreement, the surface of the Republic of Srpska was 25,053 km² but was subsequently diminished by the implementation of arbitration decisions for the Brčko District and Sarajevo settlements Dobrinja.

According to the forthcoming Spatial Plan of the Republic of Srpska until 2015 (2008), new regionalization is envisaged, which includes six interregional centres (Prijedor, Banja Luka, Doboј, Bijeljina, Istočno Sarajevo and Trebinje) and four sub regional centres (Gradiška, Zvornik, Mrkonjić Grad and Foča). This was an improved version in the domain of regionalization, but still two mesoregions centres did not have an adequate number of inhabitants (Istočno Sarajevo and Trebinje). The Third Spatial Plan of the Republic of Srpska was adopted for the period up to 2025 (2015) and proposed a modified regionalization. It starts from the assumption that “regionalization, i.e. the introduction of NUTS 3 level regions with legal personality, for the same reasons, is not suitable as this long and interrupted set of local self-government units grouped into administrative regions will lead to autarchy and separation from the centre. Instead, the principle of functional or economic connection (networking) of local self-government units around major urban centres, without administrative determination and legal subjectivity, would contribute more to the spatial development of the Republic. Flexible and planned grouped municipalities could provide a specific planning-statistical picture required by European statistics” (Institute for urbanism of the Republic of Srpska, 2015, p. 67).

Apparently, the Authors’ spatial plan of the Republic of Srpska until 2015 is based on the assumption that BiH will not be part of the EU by 2025 and that therefore there is no need to insist on solutions that may be unpopular. Nevertheless, we believe that “regionalization” at the NUTS level 3 should affirm a new trend, which is to end the disparate demographic growth of Banja Luka and Bijeljina to the detriment of the rural hinterland. This segment should be seen in two steps: the first is at the level of stronger affirmation of secondary mesoregional centres (Mrkonjić Grad, Gradiška, Zvornik), which have the role of pole, and the other refers to the region of Herzegovina, within which the rural-urban relations and the hierarchy of towns and settlements are more complicated.

In this latest regionalization, previous remarks have not been remedied, therefore we continue to persist in earlier proposals (Mutabdžija, 2011; 2013; 2016c), which, as a complex regionalization (Figure 2, Table 2), starts from the following principles:

1. The entity is a normative criterion for the regionalization of the NUTS level 2;
2. The number of inhabitants of the mesoregions should satisfy the NUTS 3 criterion;
3. The development of statistical regions NUTS 3 needs to be modelled on the principles of a nodal-functional organization, especially with a view to economic

and social development, which should create the preconditions for meeting the principals:

- a. Breaking the negative trend of demographic development,
- b. Stimulating migration in the desired direction,
- c. Development of traffic infrastructure according to the desired model.

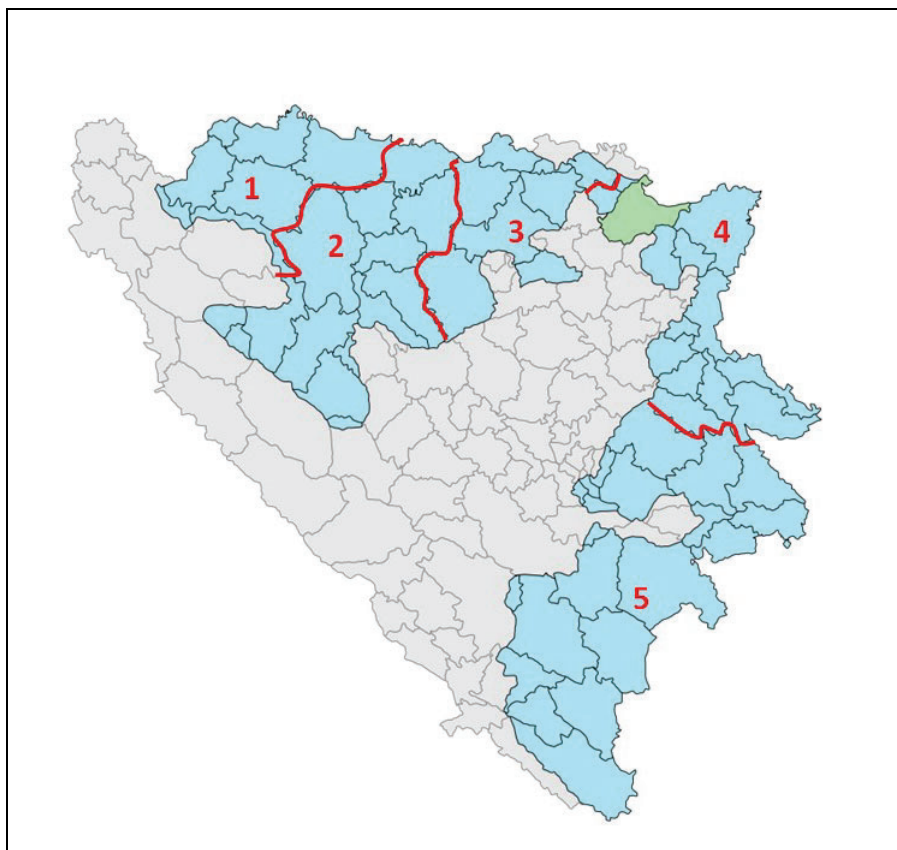


Figure 2. Possible statistical mesoregions of the Republic of Srpska (Source: Mutabdžija, 2017)

It is clear that these high demands cannot be achieved in conditions where “the level of economic development of the Republic of Srpska in some segments is as dramatic as its demographic perspective. Based on the Development Strategy of the Republic of Srpska, the data relating to Bosnia and Herzegovina, specifically on the Republic of Srpska, are very negative: the number of the poor in 2010 increased by almost 20% compared to 2009, GDP decreased by 2.9%, export by 17.6%, the level of investment has decreased by 23.5%, 40,000 jobs less, etc.” (Institute for urbanism of the Republic of Srpska, 2015, p. 65).

Table 2. Possible statistical regions of the Republic of Srpska

No.	Statistical region	km ²	%	No. of inhabitants	%	Density	NUTS level
A	Republic of Srpska	24,617	100	1,170,342	100	47.5	2
1	Potkozarska	2,942	12.0	185,943	15.9	63.2	3
2	Banjalučka	6,035	24.5	341,897	29.2	56.7	3
3	Dobojska	3,120	12.7	198,870	17.0	63.7	3
4	Bijeljinska	3,349	13.6	254,853	21.8	76.1	3
5	Hercegovačka	9,171	37.3	188,779	15.4	19.7	3

Source: Mutabdzija, 2016b, Institute of Statistics of the Republic of Srpska, Census 2013

Proposed regionalization (Table 3) creates basic preconditions for the implementation of the Eurostat methodology and implies more serious changes in the regionalization envisaged by the Spatial Plan of the Republic of Srpska until 2025. The basic principle for such a grouping is based on the number of inhabitants of the regions, while the criteria for moving the internal borders is related to the traffic, geographic infrastructure, traditional connections within the former inter-communal communities, modern functional links and migratory flows. Based on the defined statistical regions, it can be noted that this regionalization:

1. Creates a more uniform spatial-demographic relationship between mesoregions,
2. The separation of the Potkozarska region as separate mesoregions strengthens functional relations in the border zone and prevents the unnecessary growth of Banja Luka over the possibility of a balanced development of the entire region. Due to the insufficient number of inhabitants of the Potkozarska region (<150,000), the neighbouring municipality of Gradiška is added to the region due to functional connections along the Sava corridor (Gradiška – Dubica – Kostajnica – Novi Grad),
3. Han Pijesak is added to Bijeljinska region due to stronger functional connections with Vlasenica than Sokolac and due to traditional migrations of inhabitants towards the middle Podrinje,
4. Also, the border between Dobojska and Bijeljinska regions cannot be Brčko, but the border should be west, including Pelagićevo and Donji Žabar. This strengthens the cohesion forces in the lowest impact zone (Brčko),

5. Former mesoregions, Istočno Sarajevo and Trebinje should be merged (Hercegovačka region) in order to provide minimal demographic criteria and the structural form of this mesoregion along the secondary (transversal) axis of development (Trebinje – Bijeljina). There remains serious work to be done in the area of sustainable development of such a large, stretched, poorly populated and unconnected region.

Table 3. Possible regionalization of the Federation of BiH

No.	Canton	km ²	%	No. of inhabitants	%	Density	Average old	NUTS level
B	FBiH	26,109	100	2,219,220	100	85	38.4	NUTS 2
1	Sarajevo	1,276	4.9	413,593	18.6	324	39.4	NUTS 3
	Bosansko-podrinjski	505	1.9	23,734	1.1	47	41.2	
2	Zeničko-dobojski	3,343	12.8	364,433	16.4	109	37.7	NUTS 3
3	Tuzlanski	2,649	10.1	445,028	20.1	168	38.3	NUTS 3
	Posavski	325	1.2	43,453	2.0	134	40.3	
4	Srednjobosanski	4,401	16.9	222,007	10.0	50	39.8	NUTS 3
5	Herceg.-neretvanski	3,189	12.2	254,686	11.5	80	37.4	NUTS 3
6	Livanjski	4,934	1.9	84,127	3.8	17	41.3	NUTS 3
	Zapadnohercegovački	1,362	5.2	94,898	4.3	70	38.5	
7	Unsko-sanski	4,125	15.8	273,261	12.3	66	36.5	NUTS 3

Source: Agency for Statistics of BiH, Census 2013, The Sarajevo Canton Planning Office

Statistical and territorial units of the Federation of Bosnia and Herzegovina

The FBiH has a much more complex internal organization, since it is composed of cantons and municipalities, and the harmonization and coordination of all levels of government go through national harmonization (Bosniaks and Croats).

This is probably the reason that in this period, the documents of strategic significance for the territory of the FBiH have been adopted, and such status has the “Policy of action and the basis of the strategy of the Government of the FBiH in the mandate period 2007–2010” (Government of the FBiH, 2010).

Such a status also has the “Spatial Plan of the FBiH for the period 2008–2028”, which results from the general goals of spatial development, which: “The FBiH treats as part of the unique territory of BiH; respects the entity boundaries in the way of mutually harmonized spatial planning solutions between the entities; creates sustainable development according to actual spatial and economic possibilities, without restrictions arising from the administrative structure of FBiH Entities; appreciates the importance and role of the seashore within the FBiH area; defines areas of specific characteristics of importance in protected areas of natural values” (Government of the FBiH, 2008, p. 15).

It is clear from these goals to insist on the “maximum fluidity” of the inter-entity line of demarcation and that the FBiH space has complex natural geographic characteristics. This is reflected in the inadequate spatial distribution of economic geographic structures and the uneven development of all regions. Therefore, there is a tendency among scientific workers in the FBiH to regionalize the territory of entire BiH on the basis of “indicators and criteria of regional competitiveness and criteria of European statistics” on the principles of analytical regions. Such proposals were offered by Osmanković and Pejanović (2009), Spahić and Jahić (2011) and Sadiković (2014), which propose the division of BiH into four NUTS 2 regions (Banja Luka – Bihac, Tuzla – Doboj, Sarajevo – Zenica and Mostar – Trebinje) and 8 NUTS 3 regions Banja Luka, Bihac, Tuzla, Doboj, Sarajevo, Zenica, Mostar and Trebinje). There are several variations of this model from the geographical, economic and political aspects.

On the other hand, on the principles of physiognomic regionalization, it is possible to define two macro regions, characterized by different levels of transformation of the natural environment and dynamics of functional connections between urban centres of different degrees of nodalities.

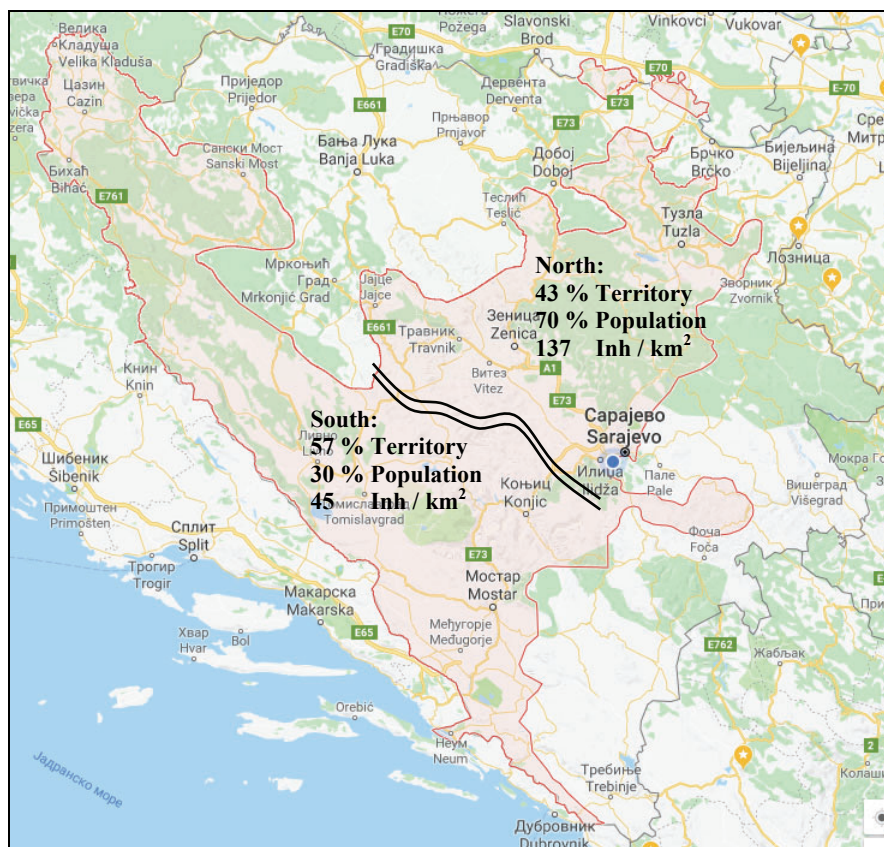


Figure 3. North and South mesoregions of the FBiH (Source: G. Mutabdžija, 2018)

Of the 2,219,220 inhabitants of the FBiH, 70.4% are Bosniaks, 22.4% are Croats, and the Serbs are 2.8%. In the macro region “North”, Bosniaks make 82.8% and Croats 9.1% while in the macro region “South”, Bosniaks account for 53.1% and Croats 40.8% of the total population. Observed at the level of mesoregions, the absolute majority of Bosniaks in five regions is noted and Croats are in two. Basic indications from the Spatial Plan of FBiH (2008) indicate:

1. There are 3,327 settlements in the territory of the FBiH, where 2,219,220 inhabitants lived in 2013. The analysis of the demographic and spatial coverage of administrative centres shows the continuity and connection of the eastern half of FBiH (Sarajevo, Tuzla and Zenica), while in the western half there is a discontinuity of the population spatial potential of the FBiH (Bihać).
2. The basic concept of the spatial development of the FBiH, macro-spatial development axes and development corridors, which generate and multiply

development processes, are established, and through central settlements that function as development and / or growth poles. The primary axis of the development of Mostar-Sarajevo-Zenica-Tuzla-Brčko and Corridor *Vc* will complete the planned highways Tuzla – Brčko – Orašje and Tuzla – Zavidovići – Žepče, to better connect Tuzla with the central part of the FBiH.

3. The corridor that flows from the west to the east through the Republic of Srpska (Novi Grad – Bijeljina) is of great importance for connecting Una – Sana with the Tuzla Canton. The development axis northwest-southeast includes the Sarajevo – Goražde highway section.

4. In the coverage of FBiH, urban centres (development and growth poles) with municipal centres constitute the conditional system of the FBiH settlements with the following structure: half of development “A” is Sarajevo. The development poles “B” are Tuzla, Zenica, Mostar and Bihać. Growth poles “C” (development transmissions) are 48 municipal centres, while the development transformation “D” is 23 other municipal centres. The poles of development retain the hierarchical position, since the matrix of spatial distribution and the developmental effects of these centres are vastly long-term affirmative.

5. The FBiH settlement system is a hierarchical addition from a group of existing administrative and administrative centres of cantons and municipalities, thus creating flexible bases for transformation, which is a spatial arrangement of the FBiH structured on the principle of 5 regions (Sarajevo, Zenica, Tuzla, Mostar and Bihać).

6. Urban centres with very strong interaction links, as a reflection of location, population and economic ties, result in the formation or indications of the formation of the city-region formation. These are complex spatial-economic formations with pronounced characteristics of several urbanized central settlements, which enable the formation of common functions of the centralities. Three specific formations have been identified: Sarajevo, Tuzla and Lašva city-regions.

Based on this, on the territory of the FBiH, ten cantons can be organised in seven statistical mesoregions (Table 3 and Figure 4): Southeast (1), Centre (2), Northeast (3), South (4), Southwest (5), Northwest (6) and West (7). The Figure 4 shows that the central position is occupied by the Zenica – Doboј Canton, and this mesoregion is therefore called the Centre.



Figure 4. Spatial distribution of the Federation of BiH mesoregions (Source: G. Mutabdžija, 2018)

The organization of statistical regions is a matter for the statistical institutes and their implementation does not automatically mean the change of the territorial organization of the state. Also, there is a need to harmonize statistical regions with an optimal territorial organization, applying the principles of decentralization and subsidiarity⁴.

Based on the Table 3, it is evident that four cantons do not meet the demographic criterion on the size of NUTS 3, so they will need to be consolidated where possible. Such are Canton 10 and West Herzegovina, which

⁴ The basic principle of the EU according to which public affairs, as a rule, is done primarily by those authorities that are closest to the citizens. When delegating responsibility to another authority, the scope and nature of the work should be taken into account, as well as the requirements of efficiency and economy.

together would have about 180,000 inhabitants, and Bosansko-podrinjski, which can only be connected to the Canton Sarajevo. The Posavina Canton remains the only open issue, which with such a small number of inhabitants and far from other cantons (Tuzla), has no possibility of direct merging and could have the status of a special area. As for the Herzegovina mesoregion, serious problems of sustainability of development are imposed on Goražde (distance from Sarajevo) and Canton of Western Bosnia, which have a large surface, low density of housing and poor communication connectivity. These cantons also have the oldest population, which further complicates the sustainability of development.

Conclusion

Statistical regions (e.g. NUTS level 3) have the form of administrative (Croatia) or non-administrative (Serbia) entities with European governance (planning and regional policy) and EU legislation (*EU's Acquis communautaire*). Due to the complexity of the internal structure of BiH, this issue has not yet been institutionalized in the domain of scientific considerations of BiH's regionalization.

At the BiH level, there are significantly different views of the number, type and form of statistical regions compared to the ones described. In the domain of allocation of these regions, two approaches have been crystallized: the first is represented by scientists from the Republic of Srpska who recognize the formation of these regions at the level of statistical limits for NUTS 3 and accordingly, within this entity define between four and six functional-urban regions (monocentric and polycentric) that developed around the largest urban centres (Prijedor, Banja Luka, Doboje, Bijeljina, Zvornik, Istočno Sarajevo and Trebinje).

Geographers from the FBiH have the other approach, which is based on the fact that BiH's internal structure should be viewed as a single economic space, which should primarily be divided according to analytical criteria (pre-war chambers of commerce, main traffic and infrastructural directions) rather than normative principles (Republic of Srpska – FBiH) who see the optimal nodal-functional organization in returning to pre-war functional relations and five such regions at the level of BiH. In this way, it is being tried to ignore the two-entity reality and the assumption for the implementation of this model is to change the constitution of BiH and create a “civil society” in which the existing regional structures will be lost and build a unitary state at the premises of the “one man, one vote”.

Due to the fundamental differences in the concept and methodology of BiH's regionalization, it is important to recognize its economic and geographic reality

and the major regional differences. It is precisely the statistical regions that provide an optimal framework for examining the gravity of the situation of Bosnia and Herzegovina.

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