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THE ROLE OF INDUSTRY FOR ECONOMIC DEVELOPMENT OF SETTLEMENTS IN SOUTH BANAT'S DANUBE MUNICIPALITIES

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Abstract

After the World War II and the restoration of the country, the rapid industrialization process started. In many settlements, predominantly urban, employment increased due to the new factories that were opened. During the political and economic system in Yugoslavia in that time, all enterprises were state-owned, while the private sector consisted of only smaller, mainly craft shops. Until the end of the eighties of the 20th century the industry was the dominant economic activity in Serbia. However, in the 1990's due to the unfavorable political situation the process of balkanization, disintegration of the SFRY, followed by wars and sanctions of the United Nations towards the FRY, the industry began to stagnate, some of the leading companies were operating increasingly difficult due to the impossibility of exporting finished products and importing raw materials. After the end of sanctions and changes in the political system, Serbia is entering the transition process, which is still running today. All these processes did not go beyond the South Banat's Danube municipalities (Pancevo, Kovin, Bela Crkva). The industry of South Banat is characterized by major changes in 21st century. Some companies are bankrupt while other are newly opened. The number of employees in industry has declined, and small and medium-sized enterprises have become dominant in relation to large ones. The aim of this paper is to analyse the development of industry in South Banat settlements in Danube municipalities in the 21st century. The analysis will show polarization on the territory, which led to forming several poles of development and concentration of industry in urban areas.

Key words: industry, development, economy, South Banat, Danube

Introduction

Industry as a secondary economic activity is one of the most important factors in the development of a country's economy. The rapid development of industry in Serbia begins after World War II, with the opening of many gigantic industrial plants. However, it should be noted that in the time of socialism and SFR Yugoslavia, the main axis of development was the Adriatic. Roads and railway lines were constructed connecting the Adriatic coast with the rest of the territory of the former Yugoslavia. After the disintegration of Yugoslavia and the separation of Montenegro, Serbia loses access to the sea. As a consequence the Danube River becomes the main strategic axis for development of Serbian economy and a factor of integration with other European countries.

Material and methods

The biggest cities in Serbia are located on the Danube banks, representing the poles of economic development. Among all of them, three municipalities from the territory of the South Banat are located on the left side of Danube river, covering an area of 1842 km². These are municipality of Pančevo, Kovin and Bela Crkva together with 33 settlements (5 of them are urban, and 28 are rural) with 174,503 inhabitants in 2011 (SORS, 2011). Pančevo is the seat of South Banat area and had a great industrial importance through history. Even today, some of the largest manufacturing industries are located here. Special emphasis will be on the poles of development, that is, urban centers. On the other hand, settlements with registered industrial units (facilities) will be objects of observation as well. The time span of the survey represents the period from the end of the World War II and the beginning of the process of industrialization, through the process of transition, until today.

Theories of the economy location were first introduced into science by economists, who drew up localization schemes for businesses in accordance with the German spatial economy in the late 19th and early and mid-20th century. Important scholars of that time were Launhardt (1882), Weber (1909) and Losch (1940). In addition, the locations of some economy branches were also studied by Von Thunen (1826) and Christaller (1933). Launhardt and Weber, in their research, dealt with finding the most optimal location for a new business. They are the creators of the so-called a location triangle whose two peaks correspond to the sources of raw materials and the third to the market. At the optimum localization point, with minimal transportation costs the maximum profit could be achieved. Later, Launhardt proposes a more complex solution in the form of a „field principle“ where he presents the market zone as a hexagon. Weber, on the other hand, used the isodapane method - lines connecting places with equal transport costs on the map. According to Grčić (1990), geographic research related to the concentration of industry went in two directions:

1. research on the enterprise as such
2. research of economic gatherings - regional or spatial

Several approaches have been used in such studies (Fouet, 1975; Mikus, 1978; Grzeszczak, 1983):

1. morphological: describes the enterprise, its main spatial parameters and functional characteristics;
2. ecological: deals with the interdependence of the enterprise and its physical, social and regional environment;
3. diachronic: studies company history and development processes.

The specificity of the industry concentration problem requires the use of a wide variety of methods and techniques. Considering that the subject of research is the concentration of manufacturing industry, it is necessary to conduct research and observation of its spatial distribution and development over a period of time.

For the purposes of this research, in addition to general qualitative and quantitative scientific methods (analysis, synthesis, induction, deduction, etc.), a geographical method is required that allows the study of spatial differences and the separation of homogeneous territories, that is, industrial-geographical regions, based on certain indicators. The geographical meth-

od will make the spatial differentiation of the economic-geographical space according to the dominant industrial areas whose development and distribution depends directly on the socio-geographical conditions prevailing in the South Banat Danube Region. In addition to the spatial differentiation of industry branches, the geographical method will also define the conditions under which the spatial structure of economic activities was formed.

In direct correlation with the geographical method is the historical-genetic method, for researching the genesis of phenomena and processes (such as demographic changes, processes of industrialization and urbanization, the structural transformation of the economy).

The statistical-mathematical method, which is based on published statistical material of the Agency for Business Registers of the Republic of Serbia, was used for the purpose of obtaining exact quantitative models of industrial seating.

In the multilevel ranking system, it is possible to calculate the rank value for each administrative unit. In this way, the administrative units are ranked and evaluated according to the level of development in relation to the given parameters. The same multilevel ranking model can be used when analyzing a company's business income. Rank value measures (R) are obtained according to the form (Ballestream, 1974 according to Grčić, 1990):

$$R = \sum r * Pr / 100$$

Pr is the percentage of units as well as business income values in individual rankings in a municipality/settlement and r is a rank in a six-point ranking.

The rank value ranges from 1 to 6. The value 1 has those administrative units in which all industrial units are in the first rank, and the value 6 has those where all units are of the sixth category of size (Grčić, 1990).

Industry development of settlements in south Banat's Danube municipalities

After the World War II the structure of activities was poorly diversified, with a significant share in the agriculture. With industry developing changes in the structure of activities has slowly taken place, mainly through attracting the population from agricultural households. Carriers of industrial development in this area were the city centers - Pančevo, at the first place, Kovin and Bela Crkva (Ćurčić, 2004). Concentration of population and functions in these cities leads to expansion and functional transformation to the surrounding area. These transformations tended to reduce the participation of the primary sector and equalize the relationship between secondary and tertiary-quaternary activities.

Due to its traffic position along the Danube and Tamiš and the function of Banat's mediators with Belgrade and Serbia, made Pančevo become a major transport, trade and industrial center. The first brewery in the Balkans was erected in Pančevo in 1722 and the first silkworm in 1899, a flat glass factory and a bulb factory "Tesla". But for the industrial and economic development of the region, the opening of the petroleum and chemical industry in Pančevo ("Refinerija", "Azotara" and "Petrohemija") had the biggest importance. After the 1980s, were opened the cotton weaving room ("Trudbenik"), the footwear factory ("Krzrnara"), the

textile produces ("Panteks"), and the furniture industry ("Gaj") (Bugarski, Carić, Kicošev et al., 1996).

The development of industry and other manufacturing made it possible to hire a population from the rural settlements. That caused migration flows directed primarily towards city centers, and later to suburban settlements. In the meantime, in suburban settlements of Pančevo - Jabuka and Kačarevo, the starch industry "Jabuka" and the metal industry "Utva MP", the leader in the production of equipment for rubber industry were opening.

Contrary the number of manufacturing units in other municipalities were much smaller - in Kovin the alcohol factories and the metal industry "Utva Silosi" and in Bela Crkva the factory of cold-pressed oil "Agroprodukt" and a pebble factory are the most important (Tomić & Romelić, 2003).

It should be noted that Banat had, on the bases of agriculture development, very important agro-industrial complexes (PIK "Tamiš" in Pančevo, fruit and beverage processing and preserving factory "Eco Belfruit" in Bela Crkva, sugar factory in Kovin etc.) (Bukurov, 1978). The post-social transition can be characterized as slow and accompanied by numerous problems, such as economic stagnation, declining the number of employees in industry, domination of small and medium-sized enterprises in relation to large ones. Many leading factories were closed („Trudbenik“, „Tesla“, „Krznara“, „Gaj“ etc.). Since the 1990s the emigration process led to depopulation, particularly in rural area (Đurkin, 2018).

Eventually, the development of services is increasing. However, industry continues to play a significant role in the development of this area and according to 2017 data, 253 manufacturing units were registered with 5806 employees. However, the location and concentration of the factories is uneven, creating differences between the settlements, leading to polarization on this area.

The biggest number of industrial plants are registered in the municipality of Pančevo (85% of total number). The majority of companies are engaged in the production of metal (except machines and appliances) and food products. The city Pančevo represents the administrative center of South Banat and the primary developmental pole of the entire region. There are 215 industrial units with 4894 employees registered. It also houses the largest industrial plant in the South Banat Danube region "Hip-Petrohemija" with 1441 employees. Other major facilities are "Utva" – aviation industry with 202 employees, bakery industry with 192 employees, the starch industry "Jabuka" with 181 employees, etc. Kovin represents the secondary pole of economic development in South Banat. On the territory of this municipality are 24 industrial units with 828 employees. The largest number of the employees have "West Pharmaceutical Services" (311) and "Utva Silosi" (145). Municipality of Bela Crkva is the most industrially undeveloped municipality of the South Banat Danube Region with only 12 registered industrial units employing 70 persons. The largest industrial unit in Bela Crkva employs 40 people and deals with the processing of fruits and vegetables ("Eco Belfruit").

Results and discussion

Industry is one of the main economic activities of the South Banat Danube Region. It employs a large number of people and has some dispersion in space. The drivers of industrial

Tab. 1. Manufacturing industrial units by districts and municipalities

Manufacturing industry	Bela Crkva	Kovin	Pančevo	Total
Manufacture of food products	4	6	43	53
Manufacture of beverages	-	1	2	3
Manufacture of tobacco products	-	-	-	-
Manufacture of textiles	-	-	4	4
Manufacture of wearing apparel	-	-	6	6
Production of leather and leather goods	1	-	1	2
Manufacture of wood and of products of wood, cork, straw and rods, except furniture	-	4	16	20
Manufacture of paper and paper products	-	-	2	2
Print and duplicate audio and video	-	-	13	13
Manufacture of coke and refined petroleum products	1	-	-	1
Manufacture of chemicals and chemical products	2	-	8	10
Manufacture of basic pharmaceutical products and preparations	-	-	-	-
Manufacture of rubber and plastic articles	1	2	11	14
Manufacture of products of other non-metallic minerals	2	-	17	19
Manufacture of basic metals	-	-	4	4
Manufacture of fabricated metal products, except machinery and equipment	1	7	52	60
Manufacture of computer, electronic and optical products	-	-	8	8
Manufacture of electrical equipment	1	3	2	6
Manufacture of machinery and equipment nec	-	-	6	6
Manufacture of motor vehicles, trailers and semi-trailers	-	-	4	4
Manufacture of other transport equipment	-	-	1	1
Furniture production	-	-	7	7
Other manufacturing	-	-	2	2
Repair and installation of machinery and equipment	-	2	6	8
Total	13	25	215	253

Source: Cube team (according to data from the Agency for Business Registers of the Republic of Serbia)

development are urban settlements, while some industrial objects are also located in other, rural, settlements.

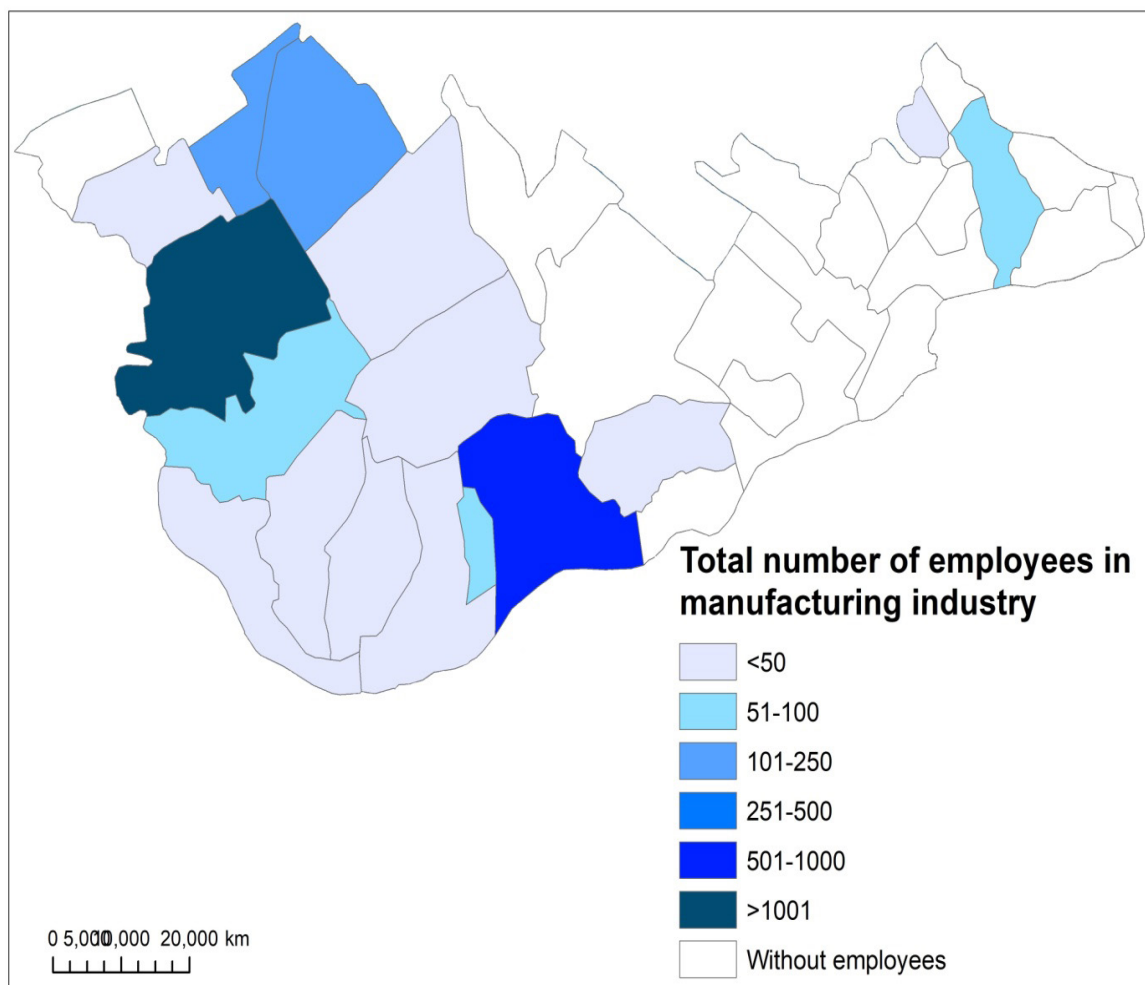


Fig. 1. Total number of employees in manufacturing industry by settlements

Pančevo, as the largest urban settlement in this area and the bearer of economic development, is the settlement with the highest concentration of employees in the manufacturing industry (4499). The largest of 178 and at the same time the most profitable is factory for production of plastics “Hip-Petrohemija“. However, it should be emphasized that in Pančevo also exist large companies such as “Azotara“ and “Rafinerija nafte Pančevo“ but they are not registered here, so in the official data of the Agency for Business Registers of the Republic of Serbia does not exist in this territory. The second area of concentration of employees (501-1000 employees) is the urban settlement Kovin. The most significant units are “West Pharmaceutical Services“ - rubber products, “Utva Silosi“ - production of metal structures, “Statik“ - for construction works, “Alpis“ - processing and canning of fish etc. According to the given classification, the third zone consists of settlements with 251 to 500 employees in manufacturing industry, however, there are none in this area. In the fourth zone (101-250 employees) are urban settlement Kačarevo, due to the expansion of the metal industry “Utva MP”, as well as the manufacture of other carpentry and joinery builders, and rural settlement

Banatsko Novo Selo, thanks to the large poultry meat processing and canning factory “Laki i Komerc“ and a factory with a long tradition in producing other food product “Novoseljanka“, which together hire more than 150 people. In the fifth zone (51-100 employees) are Bela Crkva, Starčevo and Skorenovac. Although it is a municipal center, Bela Crkva never represented significant industrial center of this area. Today, the most important is factory for processing and canning of fruits and vegetables “Eco Belfriut“, and besides it operates smaller ones in the field of footwear, chemical products. Starčevo is one of the largest settlements in the municipality of Pančevo (7473 inhabitants) (SORS, 2011). However, the largest number of working population is employed in the company “Hip-Petrohemija“, which is located in Pančevo, only a few kilometers away, while 12 enterprises which are registered here employ a smaller number of employees (69). Skorenovac has developed industry in the field of construction of residential and non-residential buildings and meat products. In the sixth zone (up to 50 employees) are nine settlements. The largest number (5) is in the municipality of Pančevo (Jabuka, Dolovo, Omoljica, Ivanovo, Banatski Brestovac), where development of industry is a consequence of expanding and transferring individual plants from urban to surrounding rural settlements. Jabuka and Omoljica represent the suburban settlements of Pančevo and have three registered units, while the other settlements have one each. In the municipality of Kovin there are three settlements - Bavanište, with two units and Pločica and Gaj with one each. While Banatska Subotica is the only settlement with registered capacity in the municipality of Bela Crkva, next to the municipal center itself. The greater the distance from other settlements to urban settlements, the fewer is the number of employees. Settlements that are farther from the municipal or city center are more agricultural oriented, so a larger number of residents of these settlements are engaged in agriculture. Also these are traditional agricultural settlements. However, it should be emphasized that the settlements mentioned above are not just industry oriented, but most of them combine manufacturing industry with other sectors of activity.

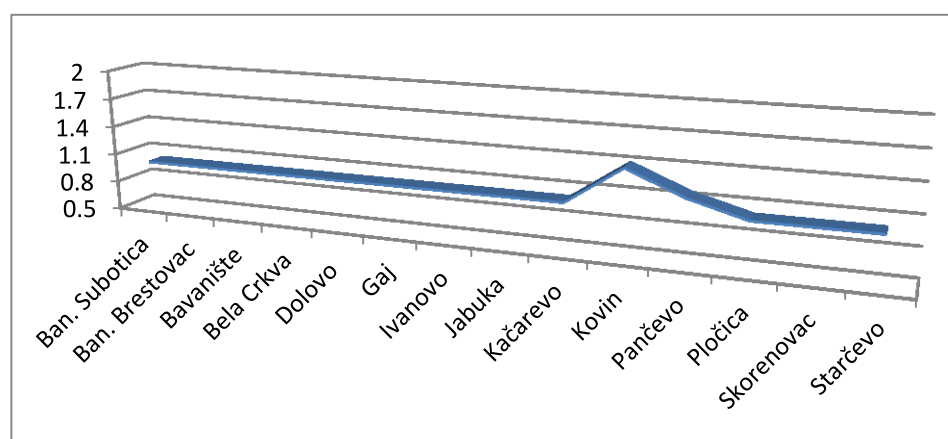


Fig. 3. Rang of settlements by employee size categories

The largest number of companies have up to 50 employees. After the transition process, the strategy of opening large enterprises was abandoned. From the socialist economic system, Serbia has switched to a capitalist economic system dominated by small and medium-sized enterprises.

The category of small units dominates all municipalities of the South Banat Danube region. These are small, often family-owned businesses, employing up to 50 employees. Such units are the most widespread, both in rural, but also in some urban settlements (i.e. Jabuka, Kačarevo, Starčevo), even in municipality center Bela Crkva. Medium industrial units (51-100, 101-250 employees) are located in Pančevo, Kovin, Skorenovac and Banatsko Novo Selo. Large industrial units (over 250 employees) are rare and are generally located on the outskirts of urban settlements in industrial zones. Pančevo, as the primary pole of development, has the largest number of medium and large enterprises of all municipalities in this region.

According to multilevel ranking system the highest ranking are settlements with the largest share of large units. The settlements of South Banat Danube region have low rank values precisely because the largest number of industrial units is in the first size category (up to 50 employees). The largest number of industrial units belongs to the light industry, while the heavy industry units are rare but, as a rule, employ more people (labor-intensive industries) (fig. 3).

The largest business income was recorded in Pančevo (57.8 billion RSD), of which “Hip-Petrohemija“ alone had revenues of over 37 billion RSD. This is followed by the Kovin with 9.4 billion RSD in revenue, with “Utva Silosi“ and “West Pharmaceuticals Services“ with 4 and 3 billion RSD, respectively. Of the rural settlements, Banatsko Novo Selo had the largest business income from the manufacturing industry with 1.5 billion RSD in revenue, where the company Laki Komerc stands out with revenue of 1.4 billion RSD.

Tab. 2. Spatial structure of elementary organizational units by income (millions)

Settlement	<50	51-100	101-250	251-500	501-1000	>1001	Total
Banatska Subotica	1	0	0	0	0	0	1
Banatski Brestovac	0	1	0	0	0	0	1
Banatsko Novo Selo	2	1	0	0	0	1	3
Bavanište	2	0	0	0	0	0	2
Bela Crkva	11	0	1	0	0	0	12
Dolovo	1	0	0	0	0	0	1
Gaj	1	0	0	0	0	0	1
Ivanovo	2	0	0	0	0	0	2
Jabuka	2	0	0	1	0	0	3
Kačarevo	9	0	2	0	0	0	11
Kovin	7	2	2	4	1	2	18
Omoljica	3	0	0	0	0	0	3
Pančevo	123	21	13	13	4	4	178
Pločica	0	1	0	0	0	0	1
Skorenovac	2	0	1	0	0	0	3
Starčevo	10	1	1	0	0	0	12

Source: Cube team (according to data from the Agency for Business Registers of the Republic of Serbia)

In South Banat Danube Region, the settlements of Banatska Subotica, Bavanište, Dolovo, Gaj, Ivanovo and Omoljica are ranked 1. These are settlements with a small number of registered companies that generate business revenues of up to 50 million RSD a year. These are

generally small family-owned enterprises (involved in the production of chemical products, wood cutting, macaroni and pasta production, canning of fruits and vegetables etc.) with small numbers of employees, whose production is directed to the surrounding urban markets.

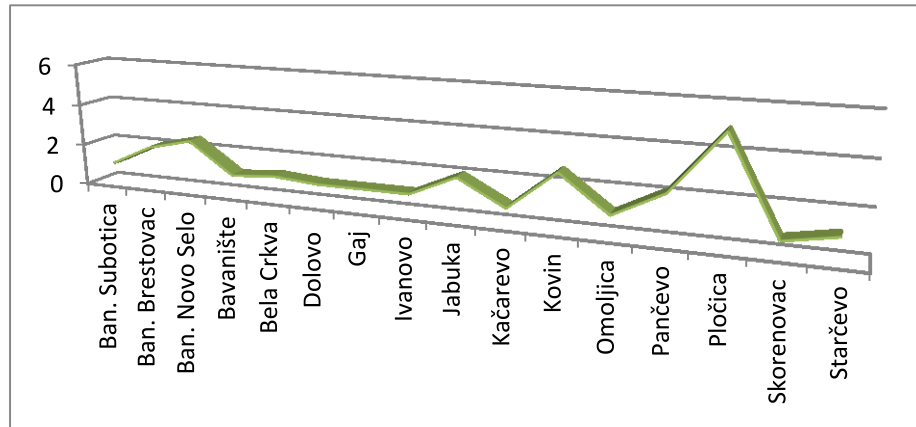


Fig. 3. Rang of settlements by manufacturing unit income

Bela Crkva, Kačarevo, Pančevo, Skorenovac and Starčevo settlements have a value between 1 and 2. These are mostly urban settlements dominated by businesses with business revenues of up to 50 million RSD, but there are also industrial units with slightly higher operating revenues, even over one billion dinars. The industrial units in these settlements are engaged in fruit and vegetable processing (“Eco Belfrut”), footwear production (“Bridge Srb”), joinery and other building elements (“Šumarica windows”), machine production (“Utva-Milan Premasunac”) etc. These businesses have slightly higher operating revenues and require a larger and skilled workforce.

Banatski Brestovac, Banatsko Novo Selo, Pločica, Jabuka and Kovin have a value of rank over 2, which means that the average value of the rank is dominated by enterprises with a business income between 50 and 100 million RSD. In reality, in these settlements there are most companies in the first category. These are larger enterprises engaged in processing of poultry meat, production of metal structures, production of rubber and plastic products, production of plastics, production of mill products, starch products, as well as production of wire springs etc. These are large enterprises with a large number of employees and whose products are export oriented.

Conclusions

The location and concentration of the factories is uneven, creating differences between the settlements, leading to polarization on this area. According to the results obtained by this research, the primary, secondary and tertiary poles of development can be distinguished. The primary pole of the whole region is Pančevo, which has the largest number of employees in the industry and whose companies have the highest business income, thus attracting the population, not only of South Banat, but of the rest of Serbia. Kovin, Starčevo, Kačarevo, as well as the Banatsko Novo Selo, can be distinguished as secondary poles of development. As such, they attract residents of the surrounding smaller rural settlements. Tertiary poles of development represent other rural settlements with small industrial units that employ a small number of people, mainly residents of their settlements. It is also important to note

that after the transition process, during which many companies went bankrupt, the industry is gradually recovering. New industrial units are opening up in both urban and rural settlements, employing a number of people, leading to transformation of economic orientation of settlements. The main problems of the South Banat Danube industry are poor infrastructure, utilities, a longer than necessary restructuring process, a high degree of polarization of the industry itself, and the depopulation process that is present in all settlements. Further development of the industry of this region depends on the speed of solving these problems.

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References

- Ballestrem, F.V., 1974, *Strandontwahl von Unternehmen und Industriesstandortpolitik, Ein empirischer Beitrag zur Beurteilung regionalpolitischer Instrumente*, Berlin (Finanzwiss, Forsch. arb., N. F., H. 44)
- Bugarski, D., Carić, N., Kicošev, S. et al., 1996, Pančevo Municipality, (Faculty of Sciences - Institute of Geography, Novi Sad)
- Bukurov, B., 1978, *Banat, Bačka, Srem*, (Milan Lelas, Matica Srpska, Department of Natural Sciences, Novi Sad, 91-95).
- Cube team, the Agency for Business Registers of the Republic of Serbia, 2017.
- Christaller, W., 1933, *Die Zentralen Orte in Suddeutscland*. Jena: Fischer
- Ćurčić, S., 2004, Settlements of Banat: geographical characteristics, (Dragiša Popović, Matica Srpska, Department of Natural Sciences, Novi Sad, 337-342).
- Đurkin, D., 2018, Types of changes of population development in South Banat. *Bulletin of the Serbian Geographical society*, 98, 1, 91-120.
- Fouet, R., 1975, Sur l'analyse géographique des établissements industriels, *Bulletin de l'association de Géographes Français*, 476.
- Greszczak, J., 1983, *Kierunki badawcze francuskiej geografii przemyslu na przelomie lat siedemdziesiątych i osiemdziesiątych*. Warszawa: Przegl. zagr. lit. geogr. 3.
- Grčić, M., 1990, Analysis of the spatial organization of the industry in the Belgrade region, (Petar Bjelica, Economics Institute, Belgrade, 47-48).
- Launhardt, W., 1885, Die Bestimmung des Zweckmässigsten Standortes einer Gewerblichen Anlage, Berlin: *Zeitschrift des Vereines Deutscher Ingenieure*, 26, 105-116.
- Losch, A., 1940, *Die Raeumliche Ordnung der Wirtschaft*. Jena: Fischer.
- Mikus, W., 1978, *Industriegeographie. Themen der allgemeinen industrieraumlehre*. Darmstadt: Wissenschaftliche suchgesellschaft.
- Statistical Office of the Republic of Serbia (2014). Comparative Population Survey 1948, 1953, 1961, 1971, 1981, 1991. 2002 and 2011, 2011 Census of Population, Households and Dwellings (Book 20). Belgrade: Statistical Office of the Republic of Serbia.
- Tomić, P., Romelić, J., 2003, The Industry of Banat, (Faculty of Sciences, Department of Geography, tourism and hotel management, Novi Sad)
- Von Thunen, H., 1826, *The isolated state*, (English edition by I.G. Basset).
- Weber, A., 1909, *Über den Standort der Industrien*, Tübingen.