

ARTICLES

**ECONOMIC STRUCTURE OF TUZLA BASIN**

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*ABSTRACT*

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*The purpose of this paper is to show, in a certain scope, geographic characteristic of the economic characteristic of development in the Tuzla basin, and in that way somewhat fill named gaps in the study. Surely, the theme is very broad and complex, and much more attention should be paid to it in the future. The paper analyses the economic structure of the Tuzla basin, as well as the business environment of economic development in Bosnia and Herzegovina. It also determines those activities within municipalities that have developed above-average and upon which municipality development is founded on. The location factors that accelerate such growth are seen primarily in development of modern technologies in economic activities. And all, considering the social and economic interest of the country in creation of development politics of economic activities in the Tuzla basin.*

*KEY WORDS*

*Tuzla basin, economic development, orientation, municipality, Bosnia and Herzegovina*

## 1. Introduction

The Tuzla basin is one of the most important industrial regions in Bosnia and Herzegovina that has gone through all phases of classic industrialization (Nurković R.,2001). All since the World War I and on, economic significance of industry in the Tuzla basin kept growing and it reached its peak towards the end of the eighties of the twentieth century. Industry, today, is the most important economic activity of the Tuzla basin, where numerous daily migrants from the broader region are employed. The importance of activities has change a lot in the post-war period, and today, trade, construction, education, finances, administration, and technical business services, scientific and cultural activities have become important as well. (Nuhn, H.,1987) The goal of this study was to determine the social-economic and activity orientation in municipalities of the Tuzla basin. We have determined those activities in municipalities that are developed above average, and upon which, development of municipalities is undoubtedly founded. (Alexandersson,G.,1967) With that intention in mind, we have conducted an analysis based on the following three indicators:

- Social-economic orientation of municipalities according to inter-sector relations and,
- Economic orientation of municipalities according to relations between parts of individual activities.

When choosing methods, we have used (Vrišer, I. 1980). “Mesta in urbano omrežje v Sloveniji” (Cities and urban networks in Slovenia). In the study, the author used several geographic methods during the analysis of the function of city orientation. Using those same methods has enabled results of our study in the period from 1981 to 1999. Most studies have been founded on a number of employees in individual sectors and activities. With the goal to learn all basic characteristics of the economic structure, we have relied on data about gross national product for the Tuzla basin by municipalities for the period until 1999. Time comparability of those data presents a special problem. We have use them only to determine the internal economic structure of the Tuzla basin and to compare them to other regions in Bosnia and Herzegovina in the same time period. (Nurković, R., 2004)

In the new economic-political conditions that determine development of the Tuzla basin, and considering tendencies of change in activities in our environment, deep structural and organizational changes within economic development are necessary in order for it to successfully blend into the international system of economic development. (Feletar,D.,1988)

This requires definition of goals within the national economic politics in the sense of starting a new cycle of development of activities in the Tuzla basin and Bosnia and Herzegovina in all domains, but especially in industry and infrastructure, and also most seriously consider alternatives in order to avoid mistakes that may mean losing significant possibilities and losing earlier gained positions and potentials, or, in the other extreme, adopting surreal project that would burden the national economy.

Due to political and social interest of the European Union, Turkey, Germany, Austria, Slovenia and Saudi Arabia have also financed maintenance of activities in Bosnia and Herzegovina. This paper relies on a thorough theoretical and practical knowledge of activities in the Tuzla basin and its development forms, here and in Europe as well. (Otrembé, E., 1953) For such complex development of development of activities in the Tuzla basin, elements considered were of social, economic, and physiognomic nature, special and significant for transformation, that is, changes of space with its orientation to area development of activities, as well as social and technical infrastructure.

## **2. Paper methods and data sources**

The Tuzla basin region, especially its economic growth, has its specifics and special characteristics, and dynamic as well. On the other hand, this study has included a proportionally limited (narrow) area, which requires a specific methodological approach. On the research sample of the limited area, only for four municipalities, it was necessary to apply general models and general methodology with the regional-geographic presentation of thorough research. A greater part of currently researched methodology of industrial geography, presented in expert papers of foreign and domestic geographers, we have used a doctorate dissertation in this research. Modern studies in the domain of economic geography have a wide range, by methodology, but also by real scientific ranges. Considering that economic geography's task is to research and explain economy as an occurrence and a factor in one geographical area, it should consist of a series of specialized fields of science in order to complete those complex tasks, and, at the same time, it is an integral part of studying of some area of other scientific fields (Nurković R., 2001).

Actually, as Rupert interprets, "regional science" presents and interdisciplinary approach of interpreting areal aspects of economic, political and social behavior (Rupert, 1961). In economically advanced countries of the Western Europe and North America, some monographic and similar studies about some industrial complexes or fields are still occurring on the turn-over of the century, and the industry is getting its certain space in monographies and similar books about certain countries, provinces or cities (Otrembé, E., 1953).

A somewhat different opinion, in his book "Geography of Manufacturing" from 1967, was held by Alexandersson. He states that there are two sciences tied to the industry, "descriptive or empirical" economics and economic geography. Descriptive or empirical economics describes and analyzes economic characteristic of industrial manufacturing. Economic geography analyzes its geographic distribution. (Lorber L.,1999) This is why a geographer must know industrial-economical laws, and an economist must know how to use geographic knowledge about industry distribution. Both sciences could be separated only by different aspects of research. Alexandersson has suggested a definition: "Industrial geography does analysis of current layout of industry on the global-continental level, as well as, on the regional or urban level. Its interest is oriented on current or planned changes, because local tendencies may be extracted from it" (Alexandersson, 1967).

Vrišer also offered a definition of industrial geography: "Industrial geography is a field of social geography that researches and explains industry as an occurrence or a factor in space." (Vrišer, 1973). In 1987, a paper "Industrial Change in the UK" (edit. Lever) was published. In it, changes in location of industry of Great Britain and major theories of industries are researched, as well as location factors, types of enterprises, government policies, and also, factors that are significant in understanding modern trends of industrial development and changes in some countries. Nuhn has determined that more than half of all researched topics in articles were spent in researching industrial fields, industrial areas and location of industry. Almost 10% of articles have dealt with the process of industrialization, ranges of industrialization and problems when planning industries. Other articles research methodological questions, especially in industrial geography, and lately, organization of enterprises and inter-industrial overlap (Nuhn, 1987).

### **3. Social-economic orientation of municipalities in Tuzla basin**

Social-economic orientation of municipalities of the Tuzla basin is presented through the analysis of employment by sectors. In 1981, in the Tuzla basin, the greatest share of active population was in the secondary sector (45 068 or 72.8%) (Table 1, Figure 1). These were followed by the tertiary (17 256 or 27.8%), and the primary sector (720 or 1.2%). The greatest share of active population in the primary sector was in Kalesija with 25.9% due to weak development of industry and orientation of population towards agriculture. In other municipalities, share of active population in the primary sector was very low, Banovići 2.1%, Živinice 1.8%, Lukavac 0.7%, and Tuzla 0.5%. Share of active population in the secondary sector was high in all municipalities, in Živinice 80.5%, Lukavac 79.3%, Tuzla 71.1%, Banovići 70.8% and Kalesija 34.7%.

In the tertiary sector, the greatest share of active population was in Kalesija 39.3% due to weak development of industry and orientation of population on employment in craftsmanship activities, primarily in service and trade shops. Those were followed by municipalities of Lukavac 31.5%, Tuzla 28.3% and Banovići 26.9% due to an increased number of active population in railroad and road transportation. In the beginning of the nineties, there is a noticeable and quality shift in social-economic development of the Tuzla basin. Share of active population in the tertiary sector in Tuzla has increased to 34.3% and in Živinice to 18.5%. Share of the tertiary sector in the Tuzla basin in 1991 has increased to 29.3%.

Table 1: Share of active population (in %) in primary, secondary and tertiary activities according to census of 1964-1999 in municipalities of the Tuzla basin.

Year	Tuzla	Banovići	Živinice	Lukavac	Kalesija	Tuzla basin
<b>P R I M A R Y S E C T O R</b>						
1964	1,9	8,8	29,3	4,7	7,0	6,5
1970	0,9	3,9	6,8	2,8	44,5	2,7
1981	0,6	2,2	1,9	0,8	25,9	1,2
1991	0,8	1,9	1,5	0,6	14,5	1,3
1999	0,7	4,1	1,6	1,2	8,8	1,3
<b>S E C O N D A R Y S E C T O R</b>						
1964	66,6	78,7	58,7	80,5	3,1	69,1
1970	59,5	77,8	67,6	73,9	2,9	63,3
1981	71,1	70,8	80,5	79,3	34,7	72,8
1991	64,9	71,6	79,9	77,1	62,1	69,4
1999	61,6	50	72,8	61,2	64,7	62,1
<b>T E R T I A R Y S E C T O R</b>						
1964	31,5	12,5	12	14,8	26,9	24,5
1970	39,5	18	25,1	23	51,4	33,8
1981	28,3	26,9	17,5	31,5	39,3	27,8
1991	34,3	26,4	18,5	22,1	23,5	29,3
1999	37,6	45,7	25,5	37,5	26,3	36,4

Source: Agency for Statistics of Bosnia and Herzegovina, 1964-1999.

The economic crisis that started after 1981 has mostly affected industry, and despite of that, it still had a primate amongst all activities. At the end of 1991, it came to closing industrial enterprises and laying off workers in mines and the chemical industry of Tuzla, Lukavac and Živinice. In 1999, in the secondary sector of the Tuzla basin, there was 38 275 or 62.1% of all active population. Also, the secondary sector has represented the most developed activity in all municipalities of the Tuzla basin, even though, share of employed has decreased by 7,3% in comparison to 1991.

The number of active population in the secondary sector has lowered in Lukavac by 5 056, Banovići by 3 655, Živinice for 1 257, and in Tuzla for 78 workers. In 1999, the tertiary sector had an increase of share of active population in the Tuzla basin by 7.1%, the most in the municipality of Banovići by 19.3%, then Lukavac 15.4%, Živinice 7%, Tuzla 3.3% and Kalesija by 2.8%.%

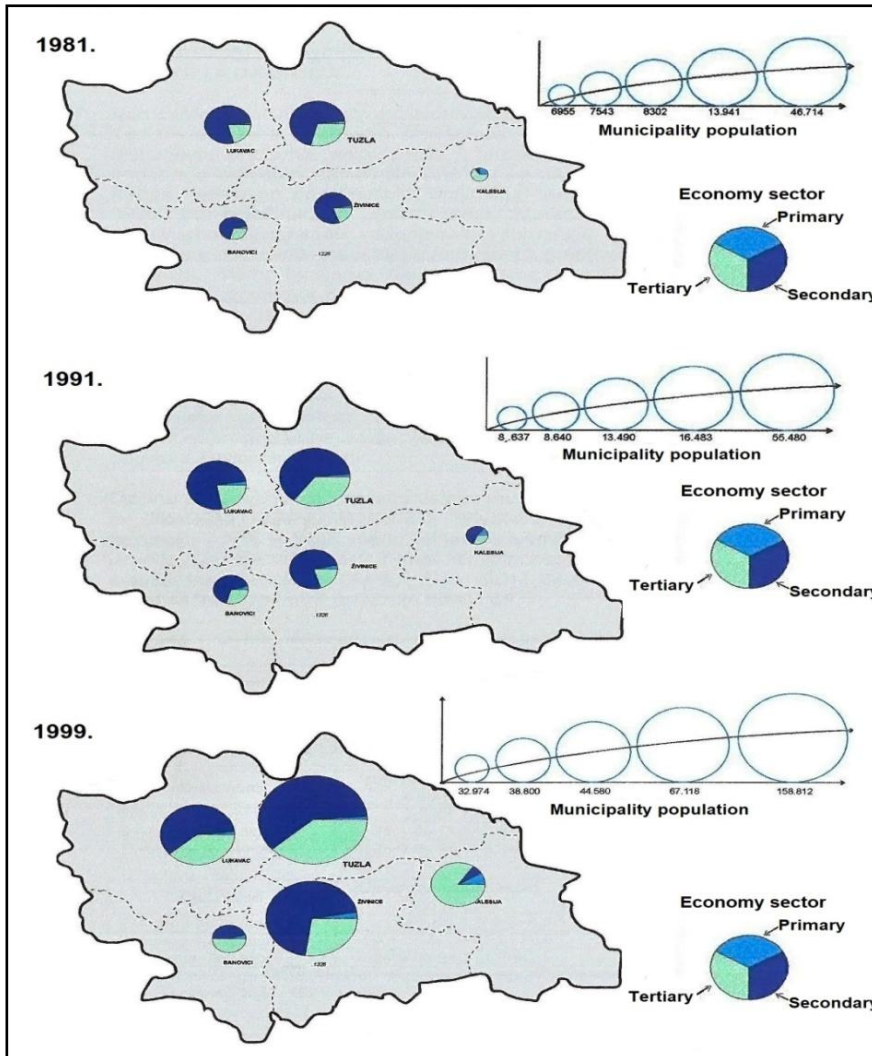


Figure 1: Share of active population (in %) in primary, secondary and tertiary activities according to census of 1964-1999 in municipalities of the Tuzla basin.

#### 4. Relations between primary, secondary and tertiary activities

As a basic way of presenting social-economic orientation of municipalities of the Tuzla basin, we have used a relation between three basic groups of activities: primary, secondary and tertiary. We have relied on data about active population by municipalities where they were employed (workplaces by individual municipalities) for years of 1981, 1991, and 1999, by individual activities. Amongst the primary activities, we have included agriculture, water management, and forestry. Amongst the secondary activities, besides industry, mining and construction, we have included craftsmanship as well.

Amongst the tertiary activities, we have included transportation and connections, trade, catering, tourism, waste management, housing services, health, culture and administration. Data edited in such way were used to calculate social-economics orientation of municipalities. We have primarily calculated medians and standard deviations for all three groups of activities in five municipalities of the Tuzla basin. (Nurković, R. 2014)

We have included a municipality as an outstandingly oriented towards a certain activity, if it was over the median, increased by one standard deviation ( $> X + SD$ ), and we have included it into moderately oriented, if it was placed between a median and median increased by one standard deviation ( $X$  do  $X + SD$ ). Marginal values for individual activities are presented in (Table 2 and Figure 2)

Table 2. Marginal values for individual activities (in %), 1981, 1991, and 1999.

Activities	Moderate orientation $X$ do $X + SD$	Extreme focus $> X + SD$
Primary activities	6,2 do 6,2+9,9 = 16,1	$> 16,1$
Secondary activities	68,9 do 68,9+16,9 =85,8	$> 85,8$
Tertiary activities	28,7 do 28,7+7,0=35,7	$>35,7$

Activities	Moderate orientation $X$ do $X + SD$	Extreme focus $> X + SD$
Primary activities	3,9 do 3,9+5,2=9,1	$> 9,1$
Secondary activities	71,1 do 71,1+6,8=77,9	$> 77,9$
Tertiary activities	25,0 do 25,0+5,2=30,2	$>30,2$

Activities	Moderate orientation $X$ do $X + SD$	Extreme focus $> X + SD$
Primary activities	3,3 do 3,3+2,8=6,1	$> 6,1$
Secondary activities	50,4 do 50,4+23,2=73,6	$>73,6$
Tertiary activities	34,5 do 34,5+7,7=42,2	$> 42,2$

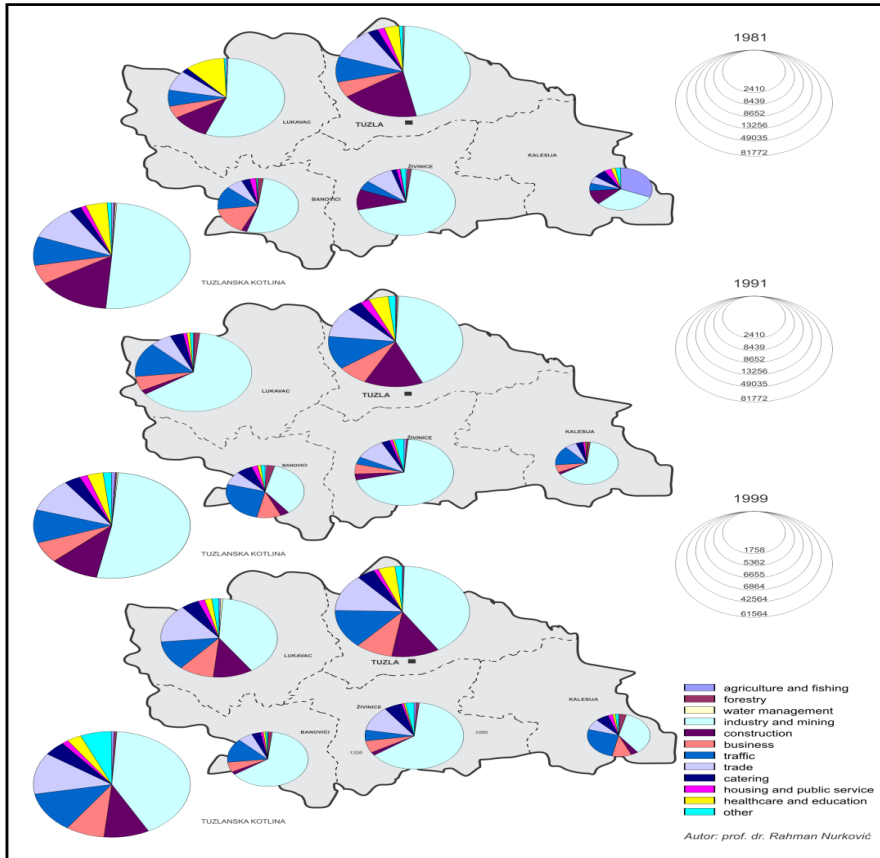


Figure 2: Marginal values for individual activities (in %), 1981, 1991, and 1999.

In 1981, municipalities of the Tuzla basin were classified into following groups:

- Outstanding primary and tertiary orientation: Kalesija
- Moderate secondary orientation: Lukavac, Banovići and Živinice
- Moderate tertiary orientation: Tuzla and Lukavac

In 1991, municipalities of the Tuzla basin were classified into the following groups:

- Outstanding primary orientation: Kalesija
- Outstanding secondary orientation: Živinice
- Outstanding tertiary orientation: Tuzla
- Moderate secondary and tertiary orientation: Banovići
- Moderate secondary orientation: Lukavac.



In 1999, municipalities of the Tuzla basin are classified into the following groups:

- Outstanding secondary orientation: Banovići
- Outstanding primary orientation: Kalesija
- Moderate primary orientation: Banovići, Tuzla, Lukavac and Živinice
- Moderate tertiary orientation: Lukavac and Tuzla.

Therefore, most municipalities had moderate secondary orientation. Even though, Tuzla had the most industry, it was still classified into moderate secondary orientation in 1999.

## 5. Gross national product by activity sectors

The described relations in the economic structure of the Tuzla basin are even better seen when we analyze the structure of our gross national product by sectors in the Tuzla basin in comparison to Bosnia and Herzegovina, in the period from 1970 to 1990, as well as the values of gross national products per capita in municipalities of the Tuzla basin in comparison to Bosnia and Herzegovina in the period from 1985 and 1990. Data are not completely comparable, because the gross national product was represented in thousands and millions of Dinars, and in some periods, in German Marks.

In 1970, employed in industry have realized 57.5% of gross national product of the Tuzla basin. In the same year, share of industry in gross national product of Bosnia and Herzegovina was 35.9%. A high share of the secondary in gross national product of the Tuzla basin is a consequence of an accelerated development of industry that has started in 1970. In the period until 1980, the secondary sector still had a leading role with 55.4% share in gross national product in the Tuzla basin. In gross national product of Bosnia and Herzegovina, share of the secondary sector has increased to 44.3% or by 10.8%. Share of the primary sector in gross national product of the Tuzla basin has decreased from 16.3% to 8.4%, and it has decreased from 33.5% to 24.1% in Bosnia and Herzegovina. The tertiary sector in the Tuzla basin had an increase in share in gross national product to 36.2%, and to 31.6% in Bosnia and Herzegovina. (Table 3 and Figure 3)

Even after 1980, the secondary sector still realized the greatest share in gross national product of the Tuzla basin and Bosnia and Herzegovina. In the Tuzla basin, that share in gross national product has increased by only 1.1%, which shows that the economic crisis has increasingly taken in the chemical industry in mining, which was more and more excluded from investment funds. In Bosnia and Herzegovina, share of the secondary sector in gross national product has increased to 50.1%.

Table 3: Shares of sectors in gross national product of the Tuzla basin and Bosnia and Herzegovina, 1970-1999

Year	Sector	Tuzla basin	Bosnia and Herzegovina
1970	Primary	16,3	33,5
	Secondary	57,5	35,9
	Tertiary	26,2	30,6
	Total	100	100
1980	Primary	8,4	24,1
	Secondary	55,4	44,3
	Tertiary	36,2	31,6
	Total	100	100
1990	Primary	7,6	22,7
	Secondary	56,5	50,4
	Tertiary	35,9	27,5
	Total	100	100
1999	Primary	7,5	-
	Secondary	58,8	-
	Tertiary	33,7	-
	Total	100	-

Source: Agency for Statistics of Bosnia and Herzegovina, 1970-1999.

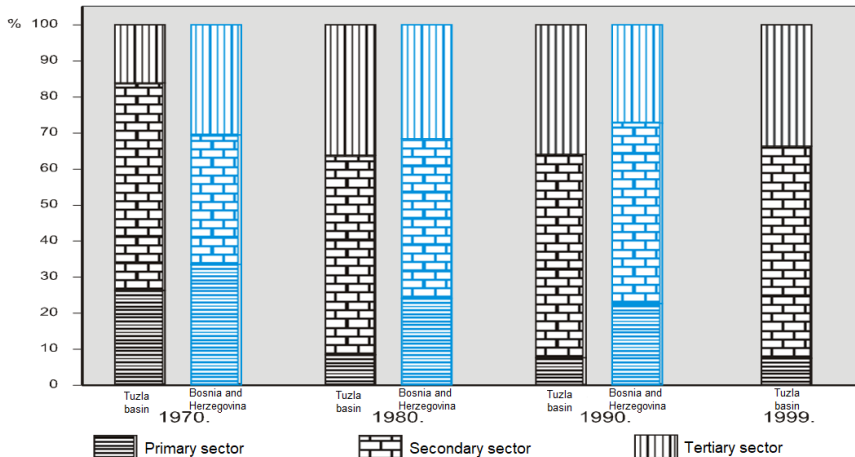


Figure 3: Share of sectors in gross national product of the Tuzla basin and Bosnia and Herzegovina, 1970-1999.

The primary sector, even after 1980, had the least share in gross national product of the Tuzla basin and Bosnia and Herzegovina; in 1990, there was only a 7.6%, and in Bosnia and Herzegovina, 22.1%. Share of the tertiary sector in gross national product of the Tuzla basin was 35.9%, and in Bosnia and Herzegovina 27.5%.

Share of the primary and tertiary sector in gross national product of the Tuzla basin in the period from 1991 to 1999 was still decreasing. In 1999, share of the primary sector was 7.5%, and the tertiary 33.7%. The secondary sector, with 58.8%, still had the greatest share in gross national product of the Tuzla basin. (Agency for Statistics of Bosnia and Herzegovina, 1999)

Development of industry is also seen in gross national product per capita in municipalities of the Tuzla basin. It shifted in 1985 from the lowest in Kalesija (0.785 thousand German Marks) to the highest in Tuzla (5.543 thousand German Marks). In Bosnia and Herzegovina, gross national product per capita was 3.553 German Marks. Growth of gross national product in the Tuzla basin until 1990 still conditioned the development of industry despite the development of other activities that were gradually strengthened (Table 4).

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*Table 4: Share of sectors in gross national product of the Tuzla basin and Bosnia and Herzegovina, 1985-1990.*

Municipality	1985	Municipality	1990
Banovići	5,291	Banovići	6,741
Kalesija	0,785	Kalesija	0,839
Lukavac	5,400	Lukavac	3,487
Tuzla	5,543	Tuzla	6,332
Živinice	3,346	Živinice	2,753
Tuzla basin	4,073	Tuzla basin	4,030
B i H	3,553	B i H	3,902

*Source: Agency for Statistics of Bosnia and Herzegovina, 1990.*

## **6. Conclusion**

The post-war period, especially the last four decades, has brought a sudden deagrarianization and deruraziation that were followed by a proportionally fast industrialization, and this all resulted in breaking the autarchic agrarian economic and demographic structure. These complex processes have intensified especially in municipalities of Sarajevo, Tuzla, Zenica, Banja Luka and Mostar. Through using available data, as well as experiences from practice (amongst others, a special questionnaire for management employees in Bosnian and Herzegovinian industry), we set basic conditions for starting and developing industry in Bosnia and Herzegovina, and by importance, they are put in order as follows: supply of raw materials, industrial politics, work force, market, transportation position, micro-location position, supply of fuel and energy, and other broader or local factors.

Development of economic structure in the Tuzla basin has also brought in numerous changes in development and structure of its population. The industrial level has been calculated and it showed the spread of the industrial wave, gradually from primary industrial centers of Tuzla, Zenica, Banja Luka, Sarajevo, and Mostar. Non-industrialized are only the Eastern marginal areas. In Tuzla and Zenica, industrialization has reached a level over 50%. There, industrialization has undoubtedly reached such concentration that we should think about its further orientation also toward the industrially weakly developed Eastern parts of Bosnia and Herzegovina.

Current economic development in the Tuzla basin was mostly oriented on the chemical industry and coal manufacturing. With development programmes, improvement of qualification structure, restructure of manufacture, technical, technological and organizational innovations, and reorientation of export to foreign market, numerous enterprises in Bosnia and Herzegovina would faster develop competitive manufacturing in the basin. Natural resources and long-term tradition of development will continue to be important location factors. With attractive development programmes, numerous foreign partners would be attracted faster as well. It came to outstanding polarization on labor market in the Tuzla basin. Social differences between central communities have deepened. Bankruptcy of enterprises, restructuring and manufacture automatization, as well as closure of factories, will have their unwanted consequences. In future, it is additionally expected for the number of employed in industry to decrease. Newer, bigger enterprises in the Tuzla basin will almost not be built, on side due to ecological and spatial limitation, and on the other side, due to inclusion of market value of city land and high land rents. In such situations, private entrepreneurship could encourage opening of new smaller factories.

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