

## **SPATIAL MOBILITY OF THE EMPLOYED POPULATION AND OCCUPATIONAL STRUCTURE OF THE LABOUR FORCE IN INDUSTRY OF THE TUZLA VALLEY**

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### ***Abstract***

#### **Spatial mobility of the employed population and occupational structure of the labour force in industry of the Tuzla valley**

The objective of this paper is to show, to a certain extent, daily migrations of labour force in industry of the Tuzla valley. In addition to Tuzla, the three centres are distinguished according to importance of their function of work: Lukavac, Živinice and Banovići. On one hand, we have a strong concentration of industrial jobs, and on the other, almost unindustrialised remaining territory.

#### ***Key words***

daily migrations, distribution of industry, the Tuzla valley and skilled labour

## 1. Introduction

The objective of this paper is to show, to a certain extent, daily migrations of labour force in industry of the Tuzla valley. Apart from Tuzla, and according to importance of their functioning, the three centres are distinguished: Lukavac, Živinice and Banovići. The Tuzla valley is characteristic of dynamical daily migrations of workers. The shown data on the meaning of function of work and increase in number of the employed people in centres of work indicate the polarisation in distribution of jobs in The Tuzla valley. As phenomenon of daily migrations is closely related to intensity of division in the village, there has also been an interpretation that daily migration of labour force from a village to a town is only a necessary lawfulness in transition industrialisation phase. However, series of research conducted indicates that participation of daily migrants in total working population is even increasing with the higher level of industrialisation and development of new tertiary activities. Unfortunately, although we do not have any relevant data by which we could precisely ascertain which of these processes is stronger, yet we are able to point to general tendencies of their development. By analysing the data on daily mobility of the employed population in industrial firms of the Tuzla valley in 1991 and 1999, we are getting to new results indicating the tendency of reducing the permanent moving of population into the centres of work, and strengthening of daily migrations of labour force. Accordingly, it can be concluded that up-to-date development is constantly followed by phenomenon of daily migrations.

## 2. Daily mobility of workers in industrial firms

The Tuzla valley is characteristic of dynamical daily mobility of workers in industrial firms. Along with increase in number of industrial workers until 1991, number of daily migrants increased as well. In May 1991, out of total 17.568 of industrial workers, even 8.964 or 51,0%, commuted to Tuzla, on daily basis, from surrounding settlements that are 5 to 10 kilometres far from Tuzla. Every second worker in industry of Tuzla was a daily migrant. This happened mainly because the industrial firms couldn't allocate sufficient funds for construction of apartments for their workers. The biggest number of daily migrants in 1991 came from the municipalities: Kalesija (869 workers or 22,7 %), then from Živinice (781 or 20,4 %), Lukavac (721 or 18,8 %), Srebrenik (491 or 12,%) and Gračanica (321 or 8,4 %). This is best illustrated by zone of influence of the Tuzla valley. (Table 1-2 and Figure 1).

Tab. 1: Daily migrants in industry of Tuzla in 1991 and 1999.

Municipality	1991	%	1999	%
Banovići	338	8,9	428	9,3
Živinice	781	20,4	897	19,5
Kalesija	869	22,7	994	21,6
Lukavac	721	18,9	897	19,5
Gračanica	321	8,4	469	10,2
Srebrenik	491	12,9	592	12,9
Kladanj	298	7,8	321	7,0
Sum	3.819	100,0	4.598	100,0

Source: Statistical Yearbook of Bosnia and Herzegovina, the Republic Bureau of Statistics, Sarajevo 1991 and Statistical Register of Employment, November 1999.

Tab. 2: Distance of daily migrants in the Tuzla valley in 1999.

Distance from Tuzla	Numbers of daily migrants	%
< 10 km	869	21,2
10 - 15 km	1502	36,7
15 - 20 km	338	8,3
20 - 25 km	1061	25,9
25 - 30 km	321	7,9
Sum	4.091	100,0

Source: Spatial plan of Municipality of Tuzla, 1986, p. 23-28.

In 1999, most of daily migrants (4.390 or 96,6%) came to Mines "Kreka" from the settlements of Lipnica, Šićki Brod, Bukinje, Gornja Tuzla and Husino. Number of daily migrants to firms of chemical industry, which were in the second place in regard to number of employees in that year, was 895 or 32,6%. The Thermal Power Plant of "Tuzla" had 487 daily migrants or 48,3% of the employed workers. From suburbs of Tuzla, 399 workers or 51,9% of the employed people, commuted on a daily basis to metal industry enterprises. Out of total 40 suburbs of Tuzla, most of the daily migrants was from: Šićki Brod (591), Lipnica (396), Bukinje (373), Čaklovići (341), Husino (276) and Mramor (268). Other settlements had less than 200 daily migrants.

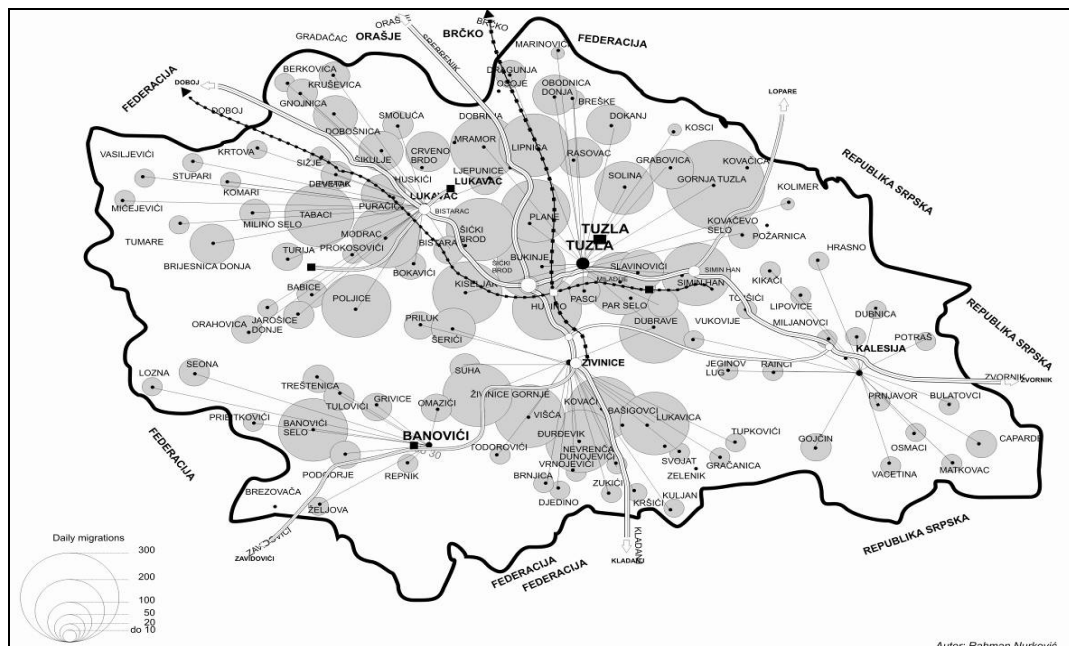
In 1999, 2.558 workers or 49,9%, came to work every day to chemical industry of Lukavac, mostly to chemical industry (1.235 or 37,3%) and mines (996 or 75,4%). From settlements along the highway and railroad Tuzla-Doboj, 327 workers or 66,7% of the employed came to work in industry of Lukavac. The biggest number of daily migrants to industry of Lukavac came from settlements of Modrac (129), Poljice (108), Prokosovići (107) and Puračić (98).

Intensity of daily migrants in Živinice is rather different in single industrial firms to which, out of total of 3.803 of employees in 1999, 2.011 or 52,8 % of the employed people commuted per day. Most of daily migrants had mines (1.475), then wood (450) and metal industry (86). Most of daily migrants gave the settlements: Đurđevik (345), Višća (193), Bašigovci (192) and Gornje Živinice (121). From other settlements 10 to 50 of daily migrants were coming. In the same period, 1.966 workers or 65,7 % of total employed population, commuted every day from suburbs to industry of Banovići. Most of daily migrants came to mines (1.497 or 64,5%), then to factory "Helios" (356 or 82,8%) and to firms in the textile industry (113 or 47,07 %). The settlement of Tulovići gave 410 of daily migrants, Treštenica 309, Banovići Selo 238, Grivice 126, Čatići 117 and Milići 113; and 11 settlements gave less than 100 daily migrants employed in industry.

In four minor industrial firms of Kalesija there were 488 workers. In 1999, there were 244 daily migrants or 50,0 %. The wood industry plants had 80 workers who commuted on daily basis, which is 60,1% of the employed in that branch of industry. Printing industry had 70 daily migrants or 57,3 %, metal 48 or 18,5% of all daily migrants. The biggest number of daily migrants was given by the nearest settlements by the road and railroad: Gojčin (47), Caparde (46) and Tojšići (22), and other six settlements, gave less than 10. For entire area of the Tuzla valley, it can be concluded that the biggest number of daily migrants came from the settlements by the highway Kalesija-Tuzla-Lukavac, then by the regional road Banovići-Živinice-Tuzla, and by the railroad of Lukavac-Tuzla. All other settlements from which daily migrants come are connected with local roads leaning toward the

regional roads. Over 90% of the migrants live in the settlements that are connected with bus lines and the railroad.

Fig. 1: Daily migrations of labour force to industry of the Tuzla valley in 1999.



Source: Statistical Yearbook of Bosnia and Herzegovina, the Republic Bureau of Statistics, Sarajevo 1991 and Statistical Register of Employment, November 1999.

The data show that the bus transportation is used by 46,4%, railroad by 35%, and private cars and other transportation by 18,6% of the migrants. In Tuzla, there are 70% of daily migrants using a bus. Total of 35% of the employed workers in industry of Lukavac, Živinice and Banovići use the railroad transportation and 34% the workers' bus lines. Today, majority of daily migrants come to work in industry of the Tuzla valley from Lukavac and Živinice, primarily for developed transportation network in those areas. Number of daily migrants from the neighbouring municipalities of Srebrenik, Kladanj and Gračanica is also increasing. Since 1991, the biggest increase of daily migrants was from directions of Srebrenik (171), Gračanica (148) and Kladanj (23).

### 3. Occupational structure of labour force

General and expert knowledge make basic qualitative properties without which one cannot imagine a modern industrial production. It requires higher general education of workers, which enables more successful professional mobility and flexibility. That need is a result of the industrial development, technical progress, introducing new technologies into production and more explosive spreading of knowledge (Malačić, 1985, 35-37).

For productivity of labour force in industry of the Tuzla valley the vocational education, which, along with on-the-job training forms the occupational structure, is significant. With entire economic development in the Tuzla valley education of

workers in industrial firms improved as well. The younger, new workers were more educated than those who have already worked. Occupational structure is being improved by the employment of new workers. In industrial firms and plants of the Tuzla valley, we have followed the occupational structure of the industrial labour force at different levels. We analysed the occupational structure of the employed in 1991 and 1999 according to branches of industry. In 1991, there were most workers with lower educational background, 8.842 or 24,1% of all employed. They are followed by unskilled workers (6.606 or 18,0%), then highly skilled workers (6.253 or 17,1%), with secondary school qualifications (5.635 or 15,4%), skilled workers (5.156 or 14,0%), semiskilled workers (2.750 or 7,5%), with two-year post-secondary school qualification (753 or 2,1%) and with university qualification (656 or 1,8%).

In comparison with the average of Bosnia and Herzegovina, occupational structure in the analysed area is, basically, weaker. In industry of the Tuzla valley minor participation had the employees with university qualifications, two-year post-secondary school qualification and secondary school, while the participation of unskilled and semiskilled workers was higher. Until 1991, the occupational structure of industrial labour force has improved against the previous period. Number of highly educated workers increased to 656 or 1,8%, number of workers with two-year post-secondary school qualification to 753 or 2,1% and with secondary school to 5.635 or 15,4% of all employed workers. Number of highly skilled workers increased thanks to additional training and internal reorganization in major industrial firms (The Saltworks of Tuzla, Thermal Power Plant of "Tuzla", Soda Plant Lukavac). Despite huge efforts of educational policy, which aspired toward forming the skilled labour force through network of primary and secondary schools, industry of the Tuzla valley has still unfavourable occupational structure. First of all, this is caused by a relatively young industrialisation, which relied on cheap and uneducated labour force. On the other hand, it is a consequence of specific branch structure with prevalence of industry with big participation of the unskilled labour (mines and chemical industry). Finally, we mustn't forget social status of the workers in valley of Tuzla. Large number of the employed comes from suburban housing estates and, in addition to working in a factory; they work on their land, too. Due to everyday commuting and working on the land, workers are overloaded and do not express a special will for additional education. Essential differences also exist in occupational structure of the employed in branches of industry of the Tuzla valley.

In 1991, most of the employed people with advanced school was in mines (406 or 2,5%) and chemical industry (146 or 1,3%), which is understandable as these are the two leading branches of industry. Particularly low percentage of workers with advanced school was in food-processing industry (7 or 0,4%), then in footwear industry (6 or 0,7%) and civil engineering (6 or 0,7%). Low participation of workers with two-year-post secondary school was in mines (406 or 2,5%), then in chemical industry (260 or 2,3%), and significant participation was in electrical manufacturing industry (32 or 1,8%), then in wood (15 or 1,8%) and textile industry (8 or 1,7%). In other branches of industry (metal industry, building, footwear industry, food-processing and printing industry) their participation was below 1,0 % of the employed. In 1999, in industry of the Tuzla valley there were 6.987 of the unskilled workers or 25,9% of the employed. There followed the employed people with lower educational background (5.435 or 20,1%). There were 4.301 of highly skilled workers or 16,0%, 3.464 skilled workers or 12,9% and 2.578 semi-skilled or 9,6%. University education and post-secondary education had only 1.117 of the employed

people or 4,1%. Participation of unskilled workers significantly increased (from 18,0% to 25,9%), then semi-skilled workers (from 7,5% to 9,6%) as well as participation workers with advanced school (from 2,0% to 2,5%). Reducing the participation was recorded with the employed people with lower educational background (by 4,0%) and the employed with secondary school background (by 4,0%). Participation of employed highly-skilled and skilled workers reduced by 1,1% and the employed with post secondary school by 0,2%.

In all branches of industry, the highest was participation of the workers with lower educational background. In printing industry there were 98 or 38, 3%, then in textile industry 168 or 35,,3%, in chemical industry 3.330 or 29,4%. Then follow the building industry with 264 or 28,8%, footwear production with 186 or 23,1%, and out of total employed workers 3.669 or 22,6%. In textile industry, there were 96 or 20,1% workers with secondary school background. On the second place was the footwear production with 147 workers or 18,3%, on the third place were mines with 2.809 workers or 17,3%. It is interesting that chemical industry, as one of the leading branches of industry, takes, according to participation of workers with secondary school qualifications, the fifth place with 1.699 workers or 15,0%, after wood industry with 142 or 16,8% the employed. Most of the unskilled workers was in mines (3.393 or 20,9%) and in chemical industry (1.518 or 13,4%). This is understandable because these were significant branches of industry in Tuzla and Lukavac. Then follow metal industry (524 or 22,7%), food-processing industry (251 or 14,9%), civil engineering (246 or 26,8%) and electrical manufacturing industry (206 or 11,6%).

If we analyse this according to branches of industry we will notice that in 1999 the mines had the highest decline of participation of the workers with secondary school background (from 17,3% to 1,5%) and with lower educational background (from 22,6% to 20,8%). In chemical industry there was a decline of participation of the employed workers with lower educational background by 11,5%, highly-skilled by 6,4% and skilled workers by 2,9%. Participation of the employed workers with secondary school background in chemical industry increased in 1999 by 9,6%, then with advanced school by 0,5% and with university education by 0,2%. In that branch of industry there was an increase in employed unskilled workers by 8,2% and semi-skilled workers by 2,3%). In electrical manufacturing industry, in 1999, there was a reduction in skilled workers by 8,0% and semi-skilled workers by 2,5%. Out of the remaining branches of industry, we would also emphasise the data for metal and food-processing industry. Metal industry recorded the highest reduction in participation of the employed skilled workers (by 9,2%). Participation of skilled workers in food-processing industry was 16,2%, whereas participation of the employed workers with lower educational background recorded increase of 17,1%. As the analyses have shown, participation of the employed workers with university education does not exceed 2 % in a single branch of industry, which is partially a consequence of resigning the skilled personnel and closing the industrial firms. The interesting fact is that within the leading branches of industry (mines, chemical and electrical manufacturing industry), where highly educated labour force is indispensable, its participation is the lowest.

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***Summary***

The paper relies on thorough theoretical and practical knowledge of spatial processes of industrialisation and its emerging forms, not only in our country but also in the world. In the first chapter daily migrations of labour force in the Tuzla valley were discussed. In addition to Tuzla, the three centres are distinguished according to importance of their function of work: Lukavac, Živinice and Banovići. The Tuzla valley is characterised by dynamical daily migrations of workers. The shown data on importance of function of work and increase in number of the employed in centres of work indicate the polarisation in distribution of jobs in the Tuzla valley. With increase of number of industrial workers until 1991, number of daily migrants increased as well. Out of total 17.568 industrial workers, in May 1991 even 8.964 workers or 51,0% daily commuted to Tuzla from surrounding settlements, which are 6 to 10 kilometres away from Tuzla. Every second worker in industry of Tuzla was a daily migrant. For productivity of labour force in industry of the Tuzla valley vocational education, which, along with on-the-job training forms the occupational structure, is significant. In industrial firms and plants of the Tuzla valley, we have followed the occupational structure of industrial labour force at different levels. We have analysed the occupational structure of the employed people in 1991 and in 1999, according to branches of industry.