

# GEOGRAPHICA ANNONICA

Volume 22, Issue 1 (March 2018)





UNIVERSITY OF NOVI SAD | FACULTY OF SCIENCES  
DEPARTMENT OF GEOGRAPHY, TOURISM & HOTEL MANAGEMENT

INTERNATIONAL SCIENTIFIC JOURNAL

# GEOGRAPHICA PANNONICA

Volume 22, Issue 1, March 2018

INTERNATIONAL SCIENTIFIC JOURNAL  
**GEOGRAPHICA PANNONICA**

UNIVERSITY OF NOVI SAD | FACULTY OF SCIENCES | DEPARTMENT OF GEOGRAPHY, TOURISM & HOTEL MANAGEMENT

#### EDITOR IN CHIEF

Lazar Lazić, lazarus@uns.ac.rs

#### EDITORS

Jasmina Đorđević, jasminadjordjevic@live.com  
Imre Nagy, nagy@rkk.hu  
Milka Bubalo Živković, milka.bubalo.zivkovic@dgt.uns.ac.rs  
Aleksandra Dragin, sadragin@gmail.com  
Mladen Jovanović, mladjenov@gmail.com  
Minučer Mesaroš, minucher@gmail.com

#### TECHNICAL EDITOR

Dragan Milošević, dragan.milosevic@dgt.uns.ac.rs  
Jelena Dunjić, dunjicjelena1@gmail.com

#### EDITORIAL BOARD

**Armelle Decaulne**  
CNRS UMR6042 - GEOLAB  
Clermont-Ferrand cedex, Paris, France &  
Natural Research Centre of North-western Iceland  
Saudarkrokur, Iceland

**Slobodan B. Marković**  
University of Novi Sad  
Faculty of Science  
Novi Sad, Serbia

**Tobias Heckmann**  
Department of Geography, Physical Geography  
Catholic University Eichstaett-Ingolstadt  
Eichstätt, Germany

**János Kovács**  
University of Pécs  
Faculty of Science  
Department of Geology  
Pécs, Hungary

**Petru Urdea**  
West University of Timișoara  
Department of Geography  
Timișoara, Romania

#### Péter Domonkos

University Rovira i Virgili de Tarragona  
Geography Department  
Center on Climate Change (C3)  
Tarragona, Spain

#### Tamás Weidinger

Eötvös Loránd University  
Institute of Geography and Earth Science  
Department of Meteorology  
Budapest, Hungary

#### Thomas Borén

Department of Human Geography  
Stockholm University  
Stockholm, Sweden

#### Tadeusz Strykiewicz

Adam Mickiewicz University  
Institute of Socio-Economic Geography and Spatial  
Management  
Poznań, Poland

#### Marko Krevs

University of Ljubljana  
Faculty of Art, Department of Geography  
Ljubljana, Slovenia

#### Horst Förster

Universität Tübingen  
Geographisches Institut  
Tübingen, Germany

#### Károly Kocsis

Geographical Research Institute  
of the Hungarian Academy of Sciences  
Budapest, Hungary

#### Konstantinos Andriotis

Cyprus University of Technology  
Department of Hotel & Tourism Management  
Cyprus

#### Jung Sung-Chae

Honam University  
Department of Tourism Management  
Gwangju, South Korea

## ADVISORY BOARD

### Ulrich Hambach

Geowissenschaften Universität Bayreuth  
LS Geomorphologie  
Bayreuth, Germany

### Milivoj Gavrilov

University of Novi Sad  
Faculty of Science  
Novi Sad, Serbia

### Darko Ogrin

University of Ljubljana  
Faculty of Art, Department of Geography  
Ljubljana, Slovenia

### Nina Nikolova

"St. Kliment Ohridski" University of Sofia  
Faculty of Geology and Geography  
Department of Climatology, Hydrology and  
Geomorphology  
Sofia, Bulgaria

### Anna Leonowicz

University of Zurich  
Department of Geography  
Geographic Information Science (GIS)  
Zurich, Switzerland

### Zorana Lužanin

University of Novi Sad  
Faculty of Science  
Novi Sad, Serbia

### Carlos Ferrás Sexto

University of Santiago de Compostela  
Geography Department  
Santiago de Compostela, Spain

### Lajos Boros

University of Szeged  
Department of Economic and Social Geography  
Szeged, Hungary

### Elena Matei

Bucharest University  
Faculty of Geography  
Bucharest, Romania

### Yoel Mansfeld

University of Haifa  
Department of Geography and Environmental Studies  
Center for Tourism, Pilgrimage & Recreation Research  
Haifa, Israel

### Klodiana Gorica

University of Tirana  
Faculty of Economics, Department of Marketing  
Tirana, Albania

### Damir Demonja

Institute for Development  
and International Relations, IRMO,  
Zagreb, Croatia

### Praveen Kumar Rai

Banaras Hindu University  
Department of Geography  
Varanasi, India

## EDITORIAL OFFICE

Faculty of Sciences  
Department of Geography, Tourism and Hotel Management  
Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia  
tel. +381 21 450-105  
fax +381 21 459-696  
Official site: [www.dgt.uns.ac.rs](http://www.dgt.uns.ac.rs)

## CONTACTS

### Lazar Lazić, PhD, full professor

Department of Geography, Tourism and Hotel Management, Serbia, [lazarus@uns.ac.rs](mailto:lazarus@uns.ac.rs)

### Dragan Milošević, teaching assistant

Department of Geography, Tourism and Hotel Management, Serbia, [dragan.milosevic@dgt.uns.ac.rs](mailto:dragan.milosevic@dgt.uns.ac.rs)

### Official mail of the Journal

[gpscijournal@gmail.com](mailto:gpscijournal@gmail.com)

### Internet portal

[www.dgt.uns.ac.rs/pannonica.html](http://www.dgt.uns.ac.rs/pannonica.html)

### Instructions to authors

[www.dgt.uns.ac.rs/pannonica/instructions.htm](http://www.dgt.uns.ac.rs/pannonica/instructions.htm)

## PRINTED BY

[www.sajnos.rs](http://www.sajnos.rs)

## CIRCULATION

300

# Contents

---

## ***N. Aydan Sat***

- Monocentric or Polycentric?  
Defining Morphological Structure of NUTS-2 Regions of Turkey from 2000 to 2016 ..... 1  
[DOI: 10.5937/gp22-15726](https://doi.org/10.5937/gp22-15726)

## ***Gábor Vasárus, Péter Bajmócy, József Lennert***

- In the Shadow of the City: Demographic Processes and Emerging Conflicts  
in the Rural-urban Fringe of the Hungarian Agglomerations ..... 14  
[DOI: 10.5937/22-16572](https://doi.org/10.5937/22-16572)

## ***Vahid Rahdari, Alireza Soffianian, Saeid Pourmanafi, Razieh Mosadeghi, Hamid Ghaiumi Mohammadi***

- A Hierarchical Approach of Hybrid Image Classification for Land use  
and Land cover Mapping ..... 30  
[DOI: 10.5937/22-16572](https://doi.org/10.5937/22-16572)

## ***Vuk Tvrtko Opačić, Amra Banda***

- Alternative Forms of Tourism in Mountain Tourism Destination:  
A Case Study of Bjelašnica (Bosnia and Herzegovina) ..... 40  
[DOI: 10.5937/22-16621](https://doi.org/10.5937/22-16621)

## ***Darko Gavrilović, Goran Vasin, Dejan Mikavica, Smiljana Đukićin Vučković, Ljubica Ivanović Bibić, Rastislav Stojsavljević***

- The Influence of German Settlers on the Formation and Development  
of an Industrial Town in Habsburg Bosnia: Teslić (1878-1918) ..... 54  
[DOI: 10.5937/22-16623](https://doi.org/10.5937/22-16623)

## ***Ondřej Šerý, Hana Svobodová, Zdeněk Šilhan, Zdeněk Szczyrba***

- Shrinking of Cities in the Czech Republic and its Reflection on Society:  
Case Study of Karviná City ..... 68  
[DOI: 10.5937/22-16622](https://doi.org/10.5937/22-16622)

# Monocentric or Polycentric? Defining Morphological Structure of NUTS-2 Regions of Turkey from 2000 to 2016

---

N. Aydan Sat<sup>A</sup>

Received: August 22, 2017 | Revised: November 13, 2017 | Accepted: November 14, 2017

DOI: 10.5937/gp22-15726

## Abstract

The popularity of polycentricity has been increasing in recent years. European spatial planning literature and policy documents that emphasize the positive effects of polycentricity can be one of the reasons for the increase in the popularity of the concept. Although not as clear and planned as in European countries, it is argued that, Turkey's metropolitan cities are also evolving from monocentric spatial structure to polycentric ones. However, there is no empirical study on the measurement of this spatial evolution at national and micro-regional scale in Turkey. From this point of view, this study aims to clarify changes in the morphological structure of Turkey from 2000 to 2016 at national and micro-regional scales and to examine the proposition of 'the spatial configurations of the settlements, especially metropolitans, have been evolving from monocentric to polycentric as results of the dynamics of the 21st century' in Turkey case. The results of empirical analyses show that there is a possibility for Turkey to be a more monocentric in following years if the historical trends continuous.

**Keywords:** Morphological Polycentricity, Rank-Size Rule, Primacy Index, Micro-Regional Analysis, Turkey

## Introduction

---

Polycentric spatial configuration is generally defined as more than an activity centre cluster in an urban territory and it is commonly accepted as an opposite spatial form of monocentricity. Polycentric distribution representing an optimal amalgamation of more locational factors whereby each centre possesses those kind of facilities, which correspond to the specific features, and resources of that centre (Romelic, 1997). The numbers of activity centres can be changed according to degree of decentralization of economic activities from the main city and complexity of cross-commuting flows among these fragmented spatial formations (Davoudi, 2003). Although the concept is very popular in academic and political arena, it is still a fuzzy con-

cept. According to the literature, polycentricity can be explained not only analytical and normative approaches but also different spatial scales (Waterhout et al., 2005, Kloosterman & Musterd, 2001; Nordregio et al., 2004). Davoudi (2003) explains these approaches under four different dimensions; analytical dimension, normative dimension, spatial scale dimension and morphological and functional dimension.

Analytical dimension emphasizes that every settlement can be spatially defined, measured, and characterized whether it is polycentric or not. Normative dimension, on the other hand, utilizes existing polycentric configurations and supports the formation of such spatial restructuring. According to spatial

<sup>A</sup> Department of City and Regional Planning, Faculty of Architecture, Gazi University, Eti Mah. Yukselis S. No:5, 06570 Maltepe, Ankara-Turkey; bniecibe@gazi.edu.tr

scale dimension, the spatial scale should be clarified carefully in all empirical studies. Urban, urban-region, regional, interregional, national and international scales are mostly preferred scales used in empirical studies. It is possible to define these scales as macro, meso and micro in general (Waterhout et al., 2005; Davoudi, 2003).

Morphological and functional dimension highlights that polycentricity is formed by special morphological structures of settlements and the roles of centres and functional associations among them. According to morphological dimension, centre is a place in which population and employment are agglomerated and these centres are physically located separately from each other. This spatial configuration means at the same time, low hierarchical structure, since there is no dominating centre in this system. In functional dimension, on the other hand, centre is seen as a “node” that attracts many flows and provides many economic facilities its surroundings. Flows, relations and cooperation among centres are the main concerns of this type of dimension (Meijers, 2005; Green, 2007; Limtanakool et al., 2007; Hall & Pain, 2006).

Studies carried out at different spatial scales mostly focus on three topics; the conceptualization and measurement of polycentricity, the clarification of social, economic and environmental advantages and disadvantages associated with polycentricity and the examination of the changes in planning and governance approaches associated with polycentricity. Morphological structures, functional relationships, and sometimes more dimensions (eg, regional identity or administrative collaborations) are used to conceptualize and measure the polycentricity. However, each empirical study can follow different methods considering the internal dynamics of the centres.

Today, there is still no systematic approach to the determination of social, economic and environmental advantages and disadvantages associated with polycentricity. The fact that the concept is not clearly defined has an effect on this fuzziness. However, in some of the studies is argued that this model supports sustainability, economic competitiveness and social cohesion (EC, 1999; Hall & Pain, 2006). For example, it is claimed that polycentricity has had a positive impact on climate change issues because it prevents from urban sprawl. It is stated that the agglomeration of activities at certain centres provides protection and improvement of particularly open spaces and green areas, and development of rational and effective transportation plans (Kirk & Hague, 2003).

Another argument is that polycentrism increases the competitiveness of centres, facilitating the efficient distribution of employment among centres and providing even development (Phelps & Ozawa, 2003;

Meijers, 2007). Since, polycentricity provides agglomeration of urban services in certain centres and this spatial configuration pressures land use decisions, which can be resulted in urban sprawl and high land prices. Non-hierarchical structure of polycentric spatial development creates complementary relations among centres and this not only supports even economic development but also increases social integration and quality of life.

The effect of polycentricity on governance capacity is also another argument that needs to be examined more deeply. Some of the researchers point out that polycentric development generates cooperation among local authorities (from municipalities to neighbourhoods), central governments, non-governmental organizations and leading entrepreneurs in different sectors at different levels (McGinnis, 1999; Rivolin & Faludi, 2005; Olsson & Cars, 2011). Strategies and tools that support polycentric development are jointly managed by these groups, and even distribution of results of this structure should be realized among the groups (Davoudi, 2003).

Actually, the concept of polycentricity was first conceived in 1945 by Harris and Ullman as ‘multiple nuclei cities’, and after that study some other important researches were realized on the concept. However, the turning point for acceleration of the concept is the publication of ‘European Spatial Development Perspective’ (ESDP) in 1999. After that, a large number of theoretical and empirical studies have been carried out on polycentric spatial development especially in European settlements. ESDP claims that the more polycentric the urban systems, more efficient, sustainable and equitable than both monocentric urban systems and dispersed small settlements. With this argument, polycentricity is accepted as a key tool to encourage economic competitiveness, social cohesion and environmental sustainability. These propositions often “lack a theoretical rationale and, even more importantly, they have not been sufficiently corroborated through appropriate empirical investigations” (Veneri & Burgalassi, 2012).

In contrast to studies on European settlements, there are limited numbers of studies on polycentric spatial development in developing countries. Turkey as a developing country has also confronted of spatial reconfiguration processes especially after the 1990s. These processes, with the effects of the inefficient planning activities in metropolitan areas often lead to uneven and fragmented urban structures. Although not as clear and planned as in European countries, it is argued that, Turkey’s metropolitan cities are also evolving from monocentric spatial structure to polycentric ones. However, there is no empirical study on the measurement of this spatial evolution

at national and micro-regional scale in Turkey. From this point of view, this study aims to clarify changes in morphological structure of Turkey from 2000 to 2016 at national and micro-regional scales and to examine the proposition of ‘the spatial configurations of the settlements, especially metropolitans, have been evolving from monocentric to polycentric as results of the dynamics of the 21st century’ in Turkey case.

For this aim, degree of polycentricity/monocentricity in Turkey both in NUTS-2 level and in overall national level has been measured morphologically in 2000 and in 2016. Primacy Index and Rank-Size Rule models, which are mostly preferred models in the measurement of degree of polycentricity, are selected for this measurement.

The paper is organised as follows; after introduction, second section gives introductory information about planning activities, policies and strategy documents that effect polycentric development of Turkey

from historical perspective. Third section focuses on the methodology of the empirical study. A historical analysis on the measurement of degree of morphological polycentricity in Turkey both in 2000 and in 2016 is realized to in the fourth section. The results of the empirical study and possible planning and policy implications for Turkey, are discussed in Section five, which concludes.

This study is crucial in terms of both national and international polycentricity debate, because of its ‘spatial scale’ and ‘case study area’. Actually, there is a very limited number of study directly focused on the measurement of the degree of polycentricity at micro-regional scale (Sýkora & Mulíček, 2009; Malý, 2016; Vasanen, 2013). On the other hand, studies on polycentricity are generally focused on European regions and cities. For this reason, studying this spatial development pattern in a developing world, should give different perspectives for both academics and professionals.

## Turkish Policies and Strategy Documents Associated with Polycentric Spatial Development

ESDP and other European strategy documents suggest polycentric spatial development from macro scale to the micro scale to overcome regional inequalities. It is argued that polycentric spatial development can be a tool in eliminating regional disparities and providing sustainable development and social cohesion. Compare to the European studies, polycentricity has been dealt with at the macro level in general and polycentric development policies have been developed on national scale In Turkey. The definition of polycentricity as a policy to address uneven regional development has taken place either directly or indirectly in basic policy and strategy documents in Turkey (Sat et al., 2014). ‘The Ministry of Development of the Republic of Turkey’, which is one of the most important planning institutions in Turkey, prepares ‘Development Plans’ and “Special Expertise Commission (SEC) Reports”. The Ministry of Development was founded in 1960 and it is “... an expert based organization which plans and guides Turkey’s development process in a macro approach and focuses on the coordination of policies and strategy development” (Internet 1). The Development Plans “are prepared using a holistic and participatory planning approach that is consistent with long term targets and takes into consideration inter-sectoral balance. During the Plan preparatory period, SECs are formed that convene for meetings and workshops. Through these committees, the economic and social policy views, recommendations and targets of the diverse groups in society are reflected in the Plan. Turkey has so far prepared ten Development Plans” (Republic of Turkey Ministry

of Development, 2014) and the 1st Development Plan was for the years between 1963 and 1967.

Although the word of ‘polycentricity’ has been firstly used in the 9th Development Plan (2007-2013), there have been policies, giving reference to the concept, since the 1st Development Plan (1963-1967). These policies have focused on balanced distribution of population and functions, to eliminate regional inequalities in the whole country. There have also been various implementations, i.e. ‘growth poles’, to encourage the creation of new centres and to support polycentric development in line with the objectives set out in the key policy and strategy documents. The 9th Development Plan (2007-2013), and its SEC Reports’ spatial development policies were prepared parallel to the EU spatial development strategies. The Settlement-Urbanization Vision of the Report emphasizes elimination of the inequalities among regions and settlements, preservation and improvement of natural and cultural heritage, enhancement of living and urban quality, reduction of risks, assurance of gender equalities, competitive, balanced, complement and sustainable polycentric spatial development. It highlights the gradualization of settlements, polycentric and balanced development in priority primary goals and policies.

The second important institution that prepares basic policy and strategy documents in Turkey is ‘The Ministry of Environment and Urbanization’. Integrated Urban Development Strategy and Action Plan, 2010-2023 (KENTGES) was prepared by The Ministry of Environment and Urbanism as a national urban strategy document in 2010. “KENTGES estab-

lishes principles, strategies and actions for providing healthy, balanced and livable urban development, as well as structural solutions for urbanization. These are grouped under three main axes; restructuring the spatial planning system, improving the quality of space and life in settlements and strengthening the economic and social structures of settlements” (Republic of Turkey Ministry of Public Works and Settlement, 2010:1). KENTGES provides important clues about settlement, urbanization and spatial planning

within the framework of sustainability in order to increase space and quality of life in settlements. One of the principles for sustainable urbanization and settlement; the creation of urban systems, which are polycentric, dynamic, competitive, attractive and have balanced spatial structure.

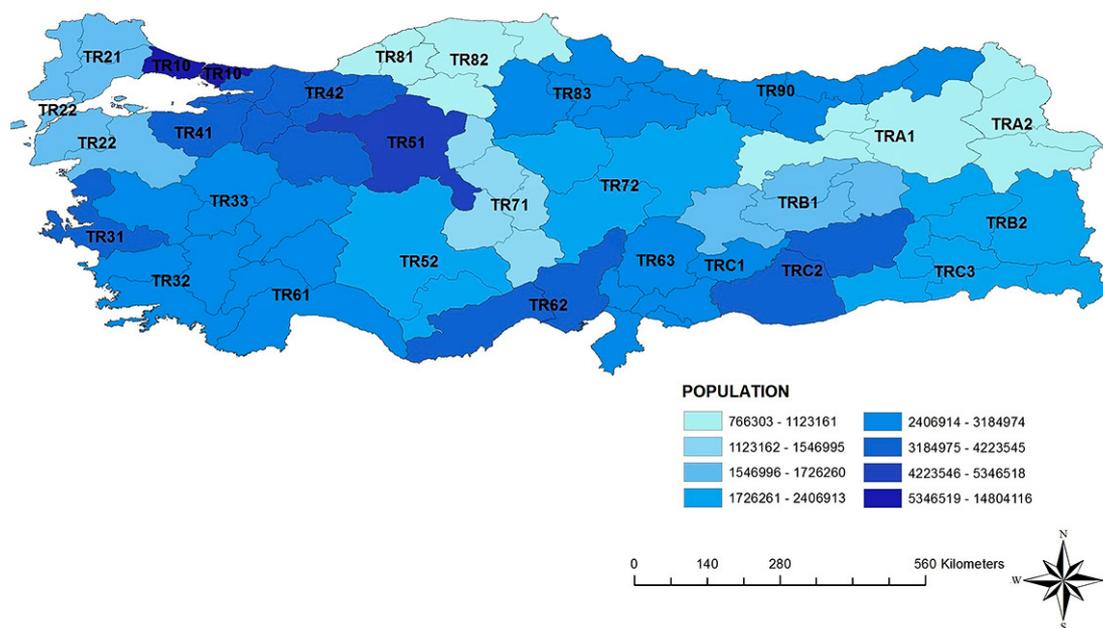
To conclude, in all these policies and implementations, polycentricity has been dealt with at the macro level in general and polycentric development policies have been developed on national scale in Turkey.

## Methodology

The methodology of the empirical study consists of three stages. The first stage is determination of territorial units used in empirical analysis. The second stage is the evaluation of the degree of polycentricity of individual regions and overall national level in two different years; 2000 and 2016, by using Primacy Index and Rank-Size Rule analyses and the third stage is the evaluation of the results of morphological analyses by a complementary perspective.

Determination of territorial units is very crucial in polycentricity studies. In each spatial scale, polycentricity has different meaning and different analyti-

cal framework (Nordregio, 2004). In this study, ‘city’, which refers to municipality in Turkish institutional definition, is used as a territorial unit. The municipality (NUTS-5 level) that has more than 20.000 inhabitants is taken as a basic unit of analysis for the measurement of regional polycentricity. As mentioned in the study of Veneri and Burgalassi, (2012) when considering polycentricity in terms of NUTS-2 regions, using municipalities as a territorial unit, makes the estimations very reliable than other spatial units and enables the regional polycentric development to be more thoroughly characterized. There are 26 NUTS-



**Figure 1. Populations of NUTS-2 regions in Turkey (2016)**

Source: data collected from TURKSTAT (2000) and (2016)

TR10 (Istanbul), TR21 (Tekirdag, Edirne, Kırklareli), TR22 (Balıkesir, Canakkale), TR31 (Izmir), TR32 (Aydın, Denizli, Mugla), TR33 (Manisa, Afyon, Kutahya, Usak), TR41 (Bursa, Eskisehir, Bilecik), TR42 (Kocaeli, Sakarya, Duzce, Bolu, Yalova), TR51 (Ankara), TR52 (Konya, Karaman), TR61 (Antalya, Isparta, Burdur), TR62 (Adana, Mersin), TR63 (Hatay, Kahramanmaras, Osmaniye), TR71 (Kırıkkale, Aksaray, Nigde, Nevsehir), TR72 (Kayseri, Sivas, Yozgat), TR81 (Zonguldak, Karabuk, Bartın), TR82 (Kastamonu, Cankırı, Sinop), TR83 (Samsun, Tokat, Corum, Amasya), TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gumushane), TRA1 (Erzurum, Erzincan, Bayburt), TRA2 (Agri, Kars, Iğdır, Ardahan), TRB1 (Malatya, Elazığ, Bingöl, Tunceli), TRB2 (Van, Mus, Bitlis, Hakkari), TRC1 (Gaziantep, Adiyaman, Kilis), TRC2 (Sanliurfa, Diyarbakır), TRC3 (Mardin, Batman, Sırnak, Siirt)

2 regions in Turkey and 604 municipalities (in level NUTS-5) more than 20.000 inhabitants (Figure 1).

Polycentricity can be analysed in two different methods (Parr, 2004; Green, 2007; Meijers, 2008; Burger & Meijers, 2012; Veneri & Burgalassi, 2012): morphological (Lambooy, 1998; Parr, 2004; Meijers, 2008) and functional (Van der Laan, 1998; Hall & Pain, 2006; Limtanakool et al., 2007; Lin et al., 2015). Morphological analyses are based on the specific characteristics of the region, i.e. size (population, employment, GDP and etc.) and territorial distribution and functional analyses of polycentricity, on the other hand, are focused on flows of goods, people, information, services, economic interactions and etc. to learn about the organizations, interactions and supply-demand relations among these centres (Brezzi & Veneri, 2015). It should be pointed out that, there are diverging methodologies in measurement of polycentricity. While some of the researchers select either one of the two dimensions, the others prefer using both dimensions and create a new multidimensional approach (Ken Sinclair-Smith, 2015). In this study, because there is no committing flow data in municipality level in Turkey, morphological polycentricity is selected as methodology for measurement of polycentricity.

Evaluation of the degree of morphological polycentricity of individual regions is the main concern of the second stage of the study. Primacy Index and the Rank-Size Rule analyses, which are the most popular techniques for measuring morphological polycentricism, are realized for two different years; 2000 and 2016. Primacy Index (Adolphson, 2009; Burger et al., 2011) is calculated as the ratio of people living in the main city –in the principal city- and the total popula-

tion the city-region and, hence, based on the balance in the distribution of nodality scores. In other words, primacy indicator can be applied to describe the dominance of the prime city in relation to the region: the higher the primacy, the more monocentric the region. Primacy Index is presented in equation (1) and  $n=1$  indicates the main city:

$$primacy = \frac{pop(1)}{\sum_{n=1}^N pop(n)} \quad (1)$$

A more complicated measurement model is rank-size rule. This model has been used since the 1960s in urban geography. The focus of this model is to rank cities according to their size in the region. Population and economic production is usually used in the measurement of settlement (Sinclair-Smith, 2015). In this study population variables are preferred for the measurement. The equation (2) of the Rank-Size Rule is:

$$\ln pop = a + \beta \ln rank \quad (2)$$

The slope of equation (2), given by the estimated  $\beta$ , is derived by using ordinary-least-squares log-log rank-size regression method like in the studies of Meijers (2008) and Burger and Meijers (2012). Hierarchical level and polycentricity level within a region can be indicated: the higher the value of estimated  $\beta$ , the higher the level of polycentricity. In other words, a flatter downward slope of the regression line indicates a more polycentric region. In contrast, a steeper downward slope of the regression line indicates a more monocentric region (Burger et al., 2014).

## Results: Morphological Structure of Turkey

The measurement of the degree of polycentricity Turkish regions and changes in these values by time is realized at three different stages this section of the study. At the first stage, Primacy Index analysis, at the second stage Rank-Size Rule analyses are derived in both in 2000 and in 2016. The evaluation of the results of morphological analyses by a complementary approach is realized at the third stage.

### Primacy Index

Primacy Index, as mentioned above, describes the dominance of the prime city in relation to the region: the higher the primacy, the more monocentric the region. Primacy Index shows the ratio of people living in the main city (i.e., the principal city) and the total population the city-region and, hence, based on the balance in the distribution of nodality scores.

Table 1 shows the Primacy Index results in 2000 and in 2016. The ranking of the most polycentric and the most monocentric regions are similar for four regions both in 2000 and in 2016. TR10 (İstanbul) is the most polycentric city in Turkey both in 2000 and in 2016. Additionally, TR10 (Istanbul) is the most populated city in Turkey and it has 38 NUTS-5 regions (municipalities more than 20.000 inhabitants). The results show that, population distribution is more balanced in TR10 relative to other regions. The number of more polycentric regions that include metropolitans in their boundaries is similar both in 2000 and 2016, so it is not possible to say that metropolitans in Turkey are evolving more polycentric by time (Figure 2). Thus, the proposition of ‘the spatial configurations of the settlements, especially metropolitans, have been evolving from monocentric to polycentric as results of

**Table 1.** The Results of Primacy Index (2000 – 2016)

	Primacy 2000		Primacy 2016	
TR10*	0,0751	TR10*	0,0537	Most polycentric ↑ ↓ Most monocentric
TR90	0,0904	TR33	0,0955	
TR33	0,0913	TR42*	0,0962	
TRA2	0,1169	TR22	0,1028	
TR82	0,1171	TRC2*	0,1046	
TR72*	0,1285	TR32	0,1126	
TR21	0,1322	TR31*	0,1142	
TR71	0,1399	TR83*	0,1183	
TR52*	0,1430	TR90	0,1239	
TR83*	0,1458	TR63	0,1244	
TRC3	0,1534	TRA2	0,1335	
TR42*	0,1554	TRB2	0,1376	
TR32	0,1593	TR21	0,1469	
TR63	0,1714	TR61*	0,1684	
TRB2	0,1822	TR81	0,1692	
TR22	0,1867	TR51*	0,1719	
TR51*	0,1920	TRA1*	0,1779	
TR41*	0,2123	TR71	0,1898	
TR81	0,2131	TR82	0,1907	
TR31*	0,2321	TRC3	0,1971	
TR62*	0,2426	TR62*	0,2006	
TRC2*	0,2571	TR41*	0,2123	
TRB1	0,2584	TR72	0,2309	
TRC1*	0,2660	TRB1	0,2519	
TR61*	0,2829	TR52*	0,2588	
TRA1*	0,2883	TRC1*	0,3264	
Mean	0,1782	Mean	0,1619	
TURKEY	0,0131	TURKEY	0,0121	

\*Region, which includes metropolitan(s) in its boundaries; regions above the average value are in grey colour. Source: data collected from TURKSTAT (2000) and (2016), author's processing

the dynamics of the 21st century' is not referred to in Turkey case, according to the results of Primacy Index.

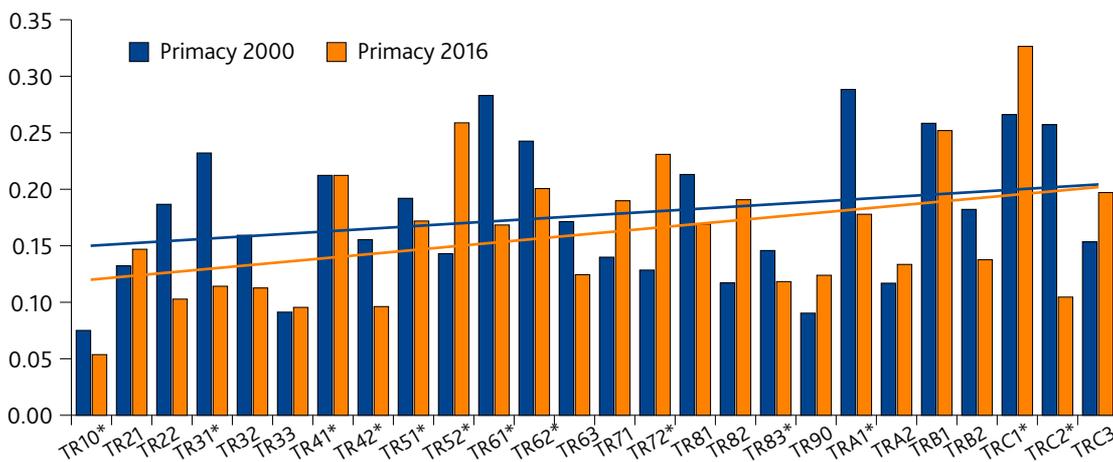
TRA1 (Erzurum, Erzincan, Bayburt) was the most monocentric region in 2000 and TRC1 (Gaziantep, Adiyaman, Kilis) is the most monocentric one in 2016. Each of these two regions have 13 NUTS-5 regions and are taken place on the east part of the country. The results of Primacy Index show that the nodality scores are very high in these regions and the ratio of people living in the main city –in the principal city- and the total population the city-region is very high compare to the other regions in the country (Figure 3, 4).

TR52, TR72, TRC2 and TR31 regions' ranks have changed radically from 2000 to 2016. While TR52, TR72 regions have become more monocentric, TRC2 and TR31 have become more polycentric during these years. Since the Primacy Index shows the ratio of people living in the main city (i.e., the principal city) and the total population the region and, these changes can be explained by these regions' population distribution has becoming more balanced (for TRC2 and TR31) or unbalanced (for TR52, TR72) during these 16 years.

The mean value of Primacy Index is become smaller from 2000 to 2016. Although the difference between these two values is very small (-9,15%), it can be said that Turkey's spatial configuration is becoming more polycentric compare to the 2000s according to the results of micro-regional Primacy Index analysis. Similar result is calculated for Turkey as an overall score. The value of Primacy Index has decreased from 0,0131 to 0,0121 and the ratio of this change is -7,63% (Table 1). Undoubtedly, these ratios are not enough to make general conclusions and predictions for the spatial configuration on Turkey.

**The Rank-Size Rule:**

According to the rank-size distributions, the slope of regression line, (estimated beta), indicates the level of



**Figure 2.** The Results of Primacy Index (2000 – 2016)

Source: data collected from TURKSTAT (2000) and (2016), author's processing

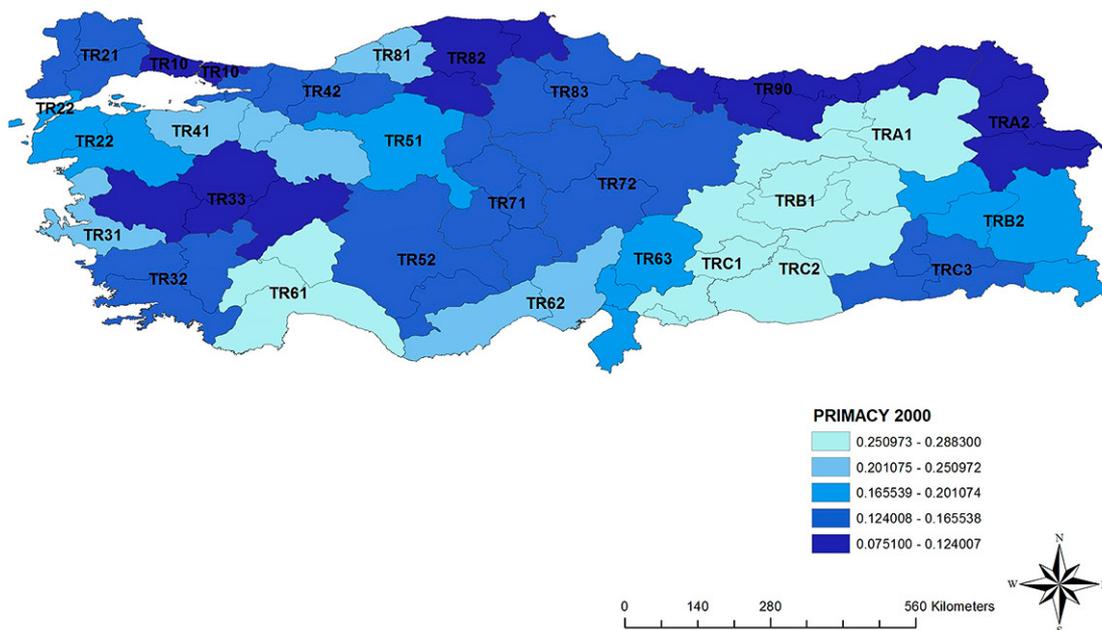


Figure 3. The Levels of Morphological Polycentricity in the Turkish NUTS-2 Regions (with reference to Primacy Index - 2000)

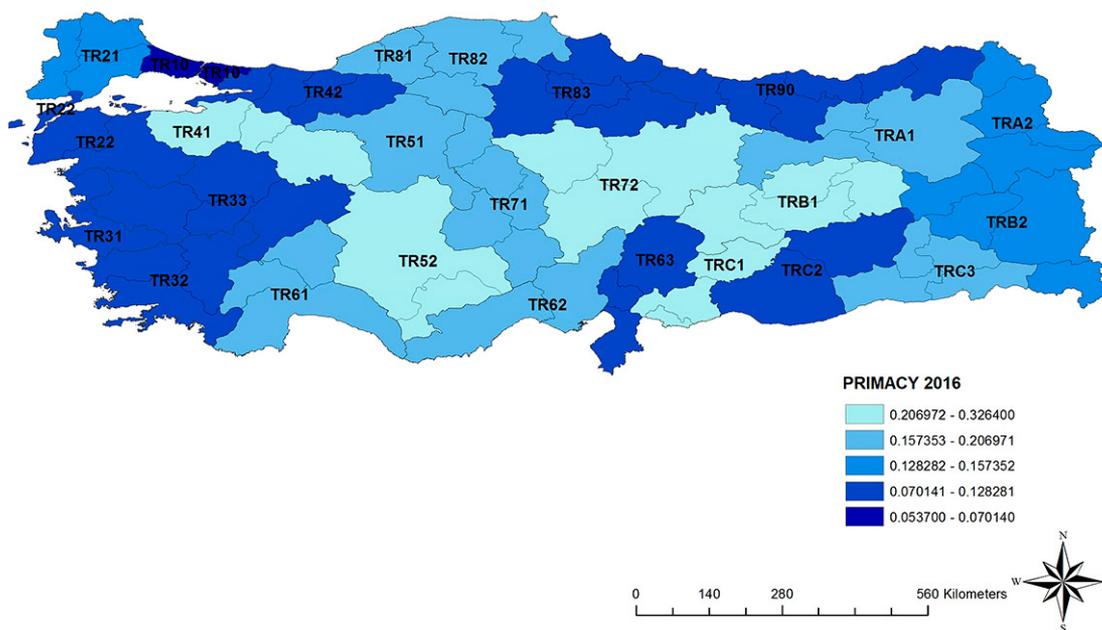


Figure 4. The Levels of Morphological Polycentricity in the Turkish NUTS-2 Regions (with reference to Primacy Index - 2016).

Source: data collected from TURKSTAT (2000) and (2016), author's processing

hierarchy and thus the level of polycentricity within a region. The higher the value of estimated beta means a flatter slope of line interpolating data that indicates a higher the level of polycentricity.

Table 2 shows the rank-size rules results, in other words estimated beta results in 2000 and in 2016. The ranking in the most polycentric and the most monocentric regions are generally same both in 2000 and in 2016 (Figure 5). The results of rank-size distribution analysis show that, TR82 (Kastamonu, Cankırı,

Sinop) was the most polycentric region in 2000. TR10 (Istanbul) in 2016 is the most polycentric region as similar the results of Primacy Index in 2016. An interesting point here is that, while TR82 is one of the least populated region in the country and has 10 NUTS-5 regions (municipalities more than 20.000 inhabitants), TR10 (Istanbul), on the other hand, is the most populated city in Turkey and has 38 NUTS-5 regions. The results mean that the gap among municipalities in terms of population distribution in these two regions

**Table 2.** The Results Rank-Size (estimated beta) Rules in National and Micro-Regional Level (2000 – 2016)

	Beta 2000		Beta 2016	
TR82	-0,55416	TR10*	-0,55271	Most polycentric ↑
TR90	-0,64525	TR22	-0,77326	
TR10*	-0,68584	TR90	-0,79548	
TR22	-0,69533	TRB2	-0,81001	
TRB2	-0,72376	TRA2	-0,85525	
TRA2	-0,75208	TR82	-0,87866	
TR21	-0,75858	TR21	-0,88812	
TRC3	-0,7682	TR83*	-0,89833	
TR33	-0,78586	TR33	-0,9003	
TRA1*	-0,79579	TR63	-0,91111	
TR72*	-0,84423	TR32	-0,91676	
TR32	-0,84936	TR81	-0,92769	
TR52*	-0,85447	TRC2*	-0,93603	
TR83*	-0,85841	TR42*	-0,95079	
TR71	-0,90092	TRC3	-0,97054	
TR63	-0,93475	TRA1*	-0,99176	
TR81	-0,96465	TR31*	-1,03509	
TRB1	-0,97368	TR61*	-1,08673	
TR31*	-1,04497	TR71	-1,15093	
TR42*	-1,04979	TR72*	-1,1816	
TR61*	-1,05111	TR52*	-1,19054	
TRC2*	-1,07544	TR62*	-1,21453	
TR41*	-1,2483	TR41*	-1,25892	
TRC1*	-1,28825	TRB1	-1,30694	
TR51*	-1,41823	TRC1*	-1,52228	
TR62*	-1,47221	TR51*	-1,54852	
Mean	-0,92283	Mean	-1,01742	
TURKEY	-0,8869	TURKEY	-0,9478	Most monocentric ↓

\*Region, which includes metropolitan(s) in its boundaries; regions above the average are in grey colour. Source: data collected from TURKSTAT (2000) and (2016), author's processing

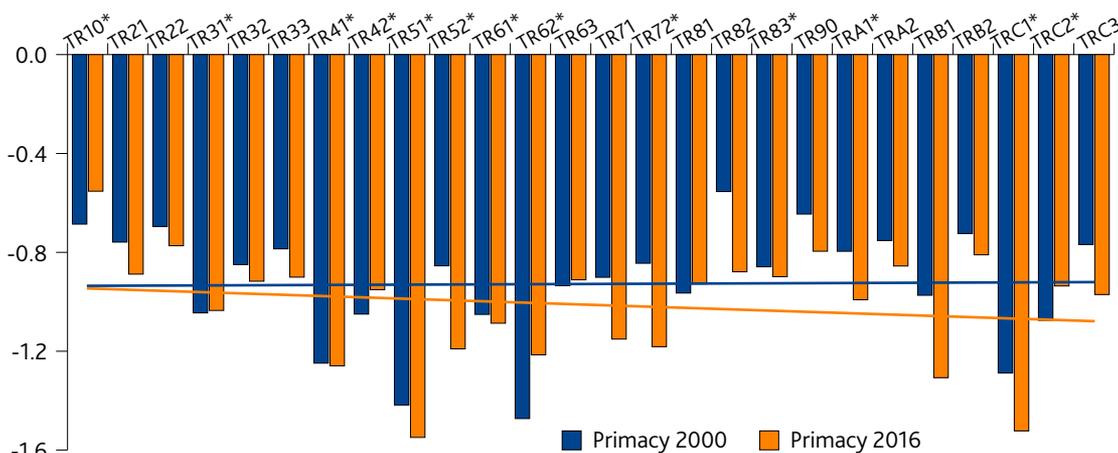
is smaller than other regions in the country. The slope of regression line of these polycentric regions has a flatter slope of line interpolating data (Figure 6).

The number of more polycentric regions that include metropolitans in their boundaries has declined from five to three during 16 years. The proposition of 'the spatial configurations of the settlements, especially metropolitans, have been evolving from monocentric to polycentric as results of the dynamics of the 21st century' is not referred to in Turkey case, according to the results of Rank-Size analysis.

The most monocentric region was TR62 (Adana, Mersin) in 2000. TR51 (Ankara), capital city, is the most monocentric in 2016 (Figure 7, 8). While TR62 become more polycentric in 2016 compare to the 2000, the rank of TR51 did not change very much, from 25th to 26th. As can be seen from the Figure 6, the slope of regression line in the rank-size distribution is steeper than other regions, the population gap is higher, and hierarchical population structure exists in these regions.

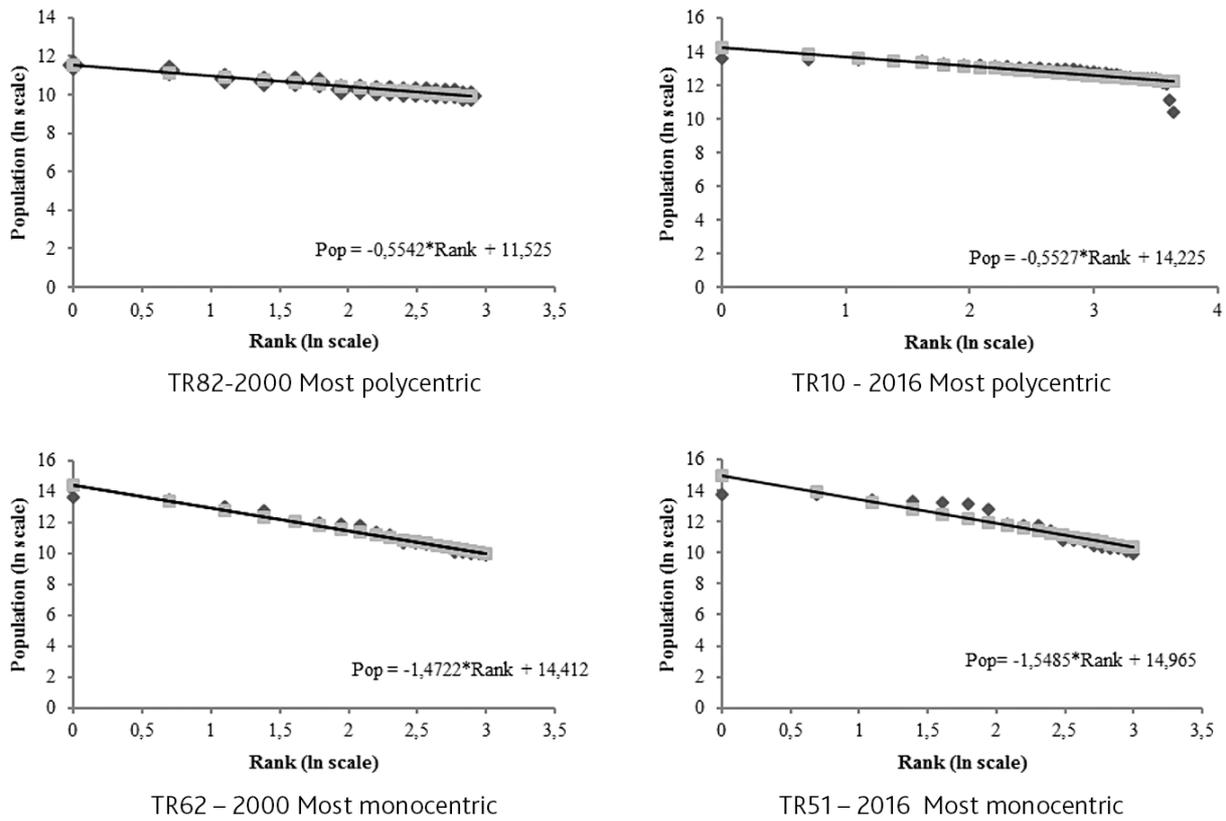
TRC2 and TR52 regions' are the regions whose ranks have changed dramatically from 2000 to 2016. TRC2 (Sanliurfa, Diyarbakır), which is located in the eastern part of the country, was one of the most monocentric regions with  $\beta$ : -1,07544 in 2000, but in 2016 its  $\beta$  value is -0,93603 which is above the average and closed to the polycentric spatial configuration. TR52 (Konya, Karaman), on the other hand, had beta value  $\beta$ : -0,85447 which is above the average in 2000, and the region have become the most monocentric regions with  $\beta$ : -1,19054 in 2016. These results are also supported by Primacy Index analyses. The reasons behind these changes can be related to economic fluctuations in these regions and inefficient planning activities both in macro and in micro-regional levels.

The value of estimated beta has decreased from -0,8869 to -0,9478 in Turkey as an overall score. The percentage the change is -6,9%. Similar trend is seen

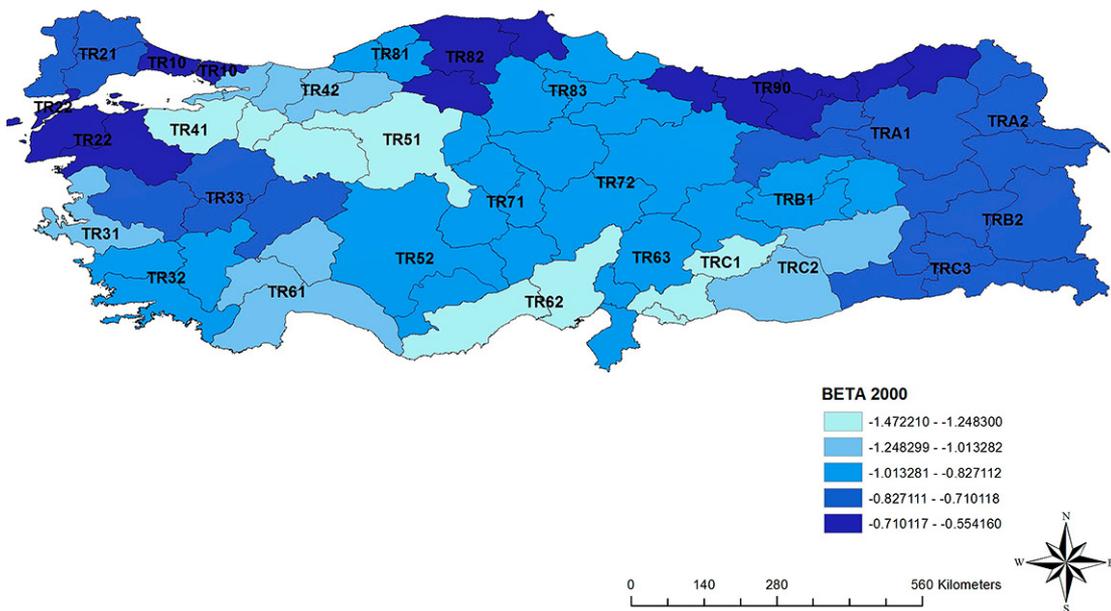


**Figure 5.** The Results of Rank-Size Rule(2000 - 2016)

Source: data collected from TURKSTAT (2000) and (2016), author's processing



**Figure 6.** Examples for Slope Regression Line-Population Threshold of 20.000 (the most polycentric - TR82 and TR10; the most monocentric - TR62 and TR51)  
 Source: data collected from TURKSTAT (2000) and (2016), author's processing



**Figure 7.** The Levels of Morphological Polycentricity in the Turkish NUTS-2 Regions (with reference to Rank-Size Rule- 2000).  
 Source: data collected from TURKSTAT (2000), author's processing

for micro regional level (NUTS-2) analyses. The mean value of estimated beta has been becoming smaller (from -0,92283 to -1,01742) during 16 years. The ratio of this change is -10,3%. These ratios are too small to

make some general conclusions on spatial configuration of Turkey.

Because of the conflicting results of morphological analyses on spatial configuration of Turkey both

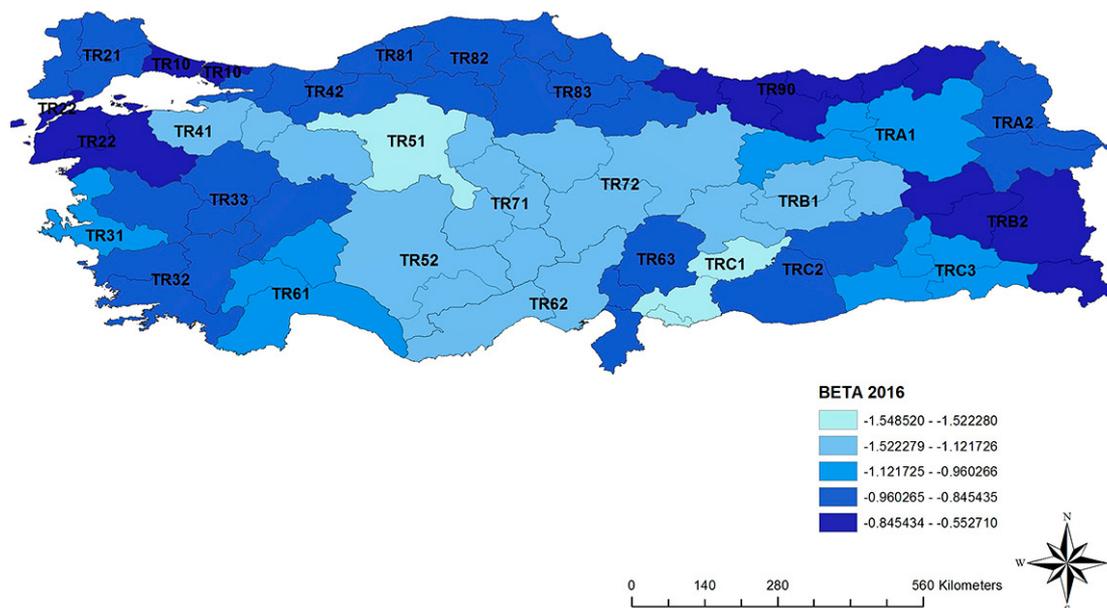


Figure 8. The Levels of Morphological Polycentricity in the Turkish NUTS-2 Regions (with reference to Rank-Size Rule- 2016).

Source: data collected from TURKSTAT (2016), author's processing

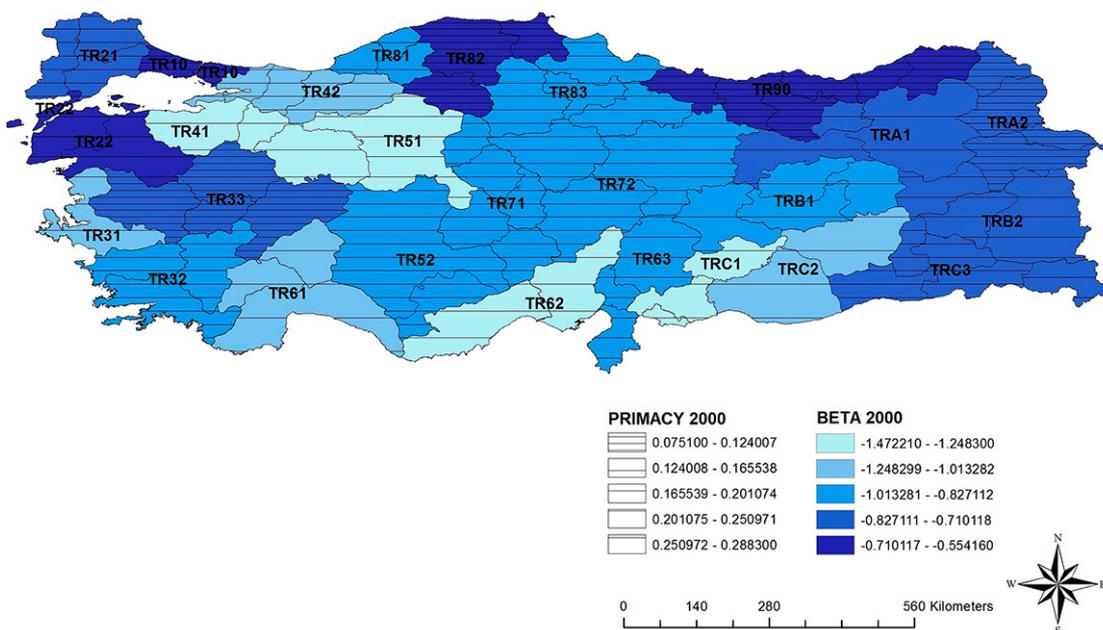
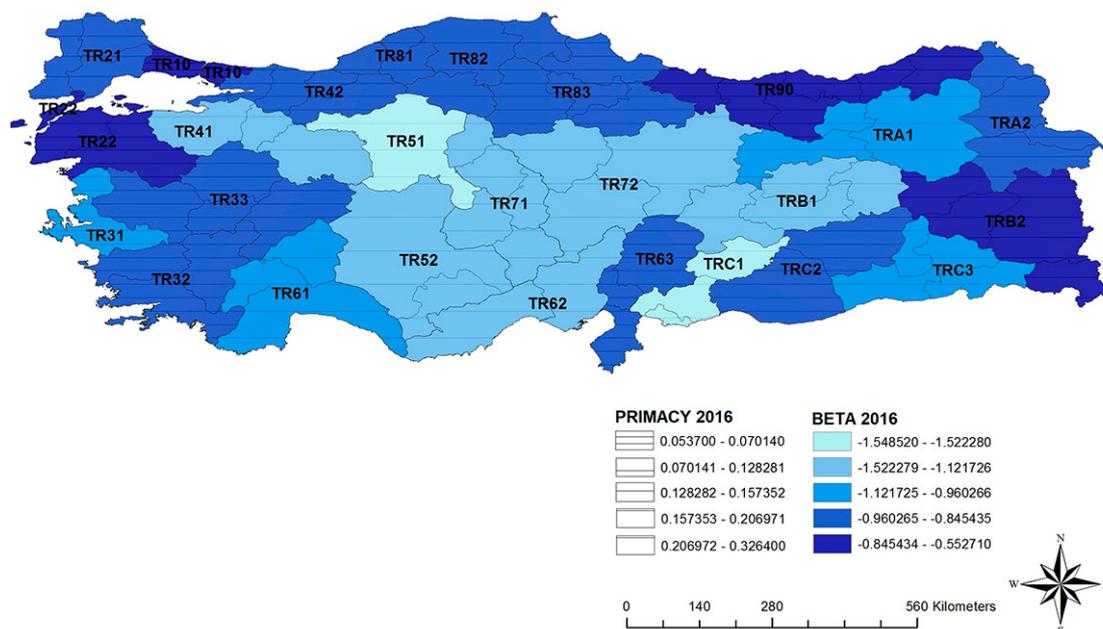


Figure 9. The levels of morphological polycentricity (both Primacy Index and estimated beta) in the Turkish NUTS-2 regions (2000).

Source: data collected from TURKSTAT (2000), author's processing

in NUTS-2 level and overall national level, changes in the number of more polycentric NUTS-2 regions, which have above/below the average estimated Beta/Primacy Index values, are analysed at the last stage of the study (Figure 9, 10). According to the Primacy Index results (Table 1, in grey) the number of regions below the average, in other words, the number of more polycentric regions decreased from 14 to 13. Similar

trend can be seen in Rank-Size Rule Analyses' results (Table 2, in grey) too, the number of more polycentric regions declined from 15 to 13. These results show that number of polycentric regions have been decreasing in years. By taking into account all these analyses, it can be said that there is a possibility for Turkey to be a more monocentric in following years.



**Figure 10.** The Levels of Morphological Polycentricity (both Primacy Index and estimated beta) in the Turkish NUTS-2 Regions (2016).

Source: data collected from TURKSTAT (2016), author's processing

## Conclusion

Following the publication of 'European Spatial Development Perspective' in 1999, a large number of theoretical and empirical studies have been carried out on polycentric spatial development especially in European settlements. In contrast to studies on European settlements, there are limited numbers of studies on polycentric spatial development in developing countries. Turkey as a developing country has also confronted of spatial reconfiguration processes especially after the 1990s. These processes, with the effects of the inefficient planning activities in metropolitan areas often lead to uneven and fragmented urban structures. Although not as clear and planned as in European countries, it is argued that, Turkey's metropolitan cities are also evolving from monocentric spatial structure to polycentric ones. Nevertheless, there is no empirical study on the measurement of this spatial evolution at national and micro-regional scale in Turkey. From this point of view, this study aims to clarify the degree of morphological polycentricity in Turkey in 2000 and in 2016 at national and micro-regional scales and to examine the proposition of 'the spatial configurations of the settlements, especially metropolitans, have been evolving from monocentric to polycentric as results of the dynamics of the 21st century' in Turkey case.

The results of morphological analyses on spatial configuration of Turkey both in NUTS-2 level and in overall country at national level are very confus-

ing. While the results of Primacy Index emphasize polycentricity trend in the country, Rank-Size Rule analyses, on the other hand, resulted in opposite arguments. For this reason, as the last step changes in the number of NUTS-2 regions, which are above/below the average estimated  $\beta$ /Primacy Index values, are analysed. By taking into account all these results, it can be said that there is a possibility for Turkey to be a more monocentric in following years.

In Turkey, polycentricity has been dealt with at the macro level in general and polycentric development policies have been developed on national scale. The definition of polycentricity as a policy to address uneven regional development has taken place either directly or indirectly in basic policy and strategy documents in Turkey. But, all the results of empirical analyses show that these policies and practices have not been effective enough to achieve the targeted outcome.

Undoubtedly, there is a need to make policies and practices more sensitive to regional and local conditions for more balanced and efficient distribution and organization of not only economic activities but also residential facilities. From this perspective, Turkey should prepare policies and strategies to support polycentric spatial development in both the macro and micro-regional scale and these strategies should also be supported by institutions and implementation tools.

## References

- Adolphson, M. (2009). Estimating a Polycentric Urban Structure. Case Study: Urban Changes in the Stockholm Region 1991–2004. *Journal of Urban Planning and Development*, 135(1), 19–30.
- Brezzi, M., & Veneri, P. (2015). Assessing Polycentric Urban Systems in the OECD: Country, Regional and Metropolitan Perspectives. *European Planning Studies*, 23(6), 1128–1145. DOI: 10.1080/09654313.2014.905005
- Burger, M. J., de Goei, B., Van der Laan, L., & Huisman, F. J. (2011). Heterogeneous Development of Metropolitan Spatial Structure: Evidence from Commuting Patterns in English and Welsh City-Regions, 1981–2001. *Cities*, 28(2), 160–170. DOI:10.1016/j.cities.2010.11.006
- Burger, M. J., Van Der Knaap, B., & Wall, R. S. (2014). Polycentricity and the Multiplexity of Urban networks. *European Planning Studies*, 22(4), 816–840. DOI:10.1080/09654313.2013.771619
- Burger, M., & Meijers, E. (2012). Form Follows Function? Linking Morphological and Functional Polycentricity. *Urban Studies*, 49(5), 1127–1149. DOI: 10.1177/0042098011407095
- Davoudi, S. (2003). European Briefing: Polycentricity in European Spatial Planning: From an Analytical Tool to a Normative Agenda. *European Planning Studies*, 11(8), 979–999. DOI: 10.1080/0965431032000146169
- ESPON 1.1.1. (2004). *Potentials for Polycentric Development in Europe. Final Project Report (Luxembourg, European Spatial Planning Observatory Network)*. Available at: <http://www.espon.lu>, (10.09.2005).
- EU Commission. (1999). European Spatial Development Perspective—Towards balanced and Sustainable Development of the Territory of the European Union.
- Green, N. (2007). Functional polycentricity: a formal definition in terms of social network analysis. *Urban Studies*, 44(11), 2077–2103. DOI: 10.1080/00420980701518941
- Hall, P. G., & Pain, K. (Eds.). (2006). *The Polycentric Metropolis: Learning from Mega-City Regions in Europe*. Routledge.
- Kirk, K., & Hague, C. (2003). *Polycentricity Scoping Study, Research output*, Edinburgh: Heriot-Watt University.
- Kloosterman, R.C. & Musterd S. (2001). The Polycentric Urban Region: Towards a Research Agenda, *Urban Studies*, 38(4), 623–63. DOI: 10.1080/00420980120035259
- Lambooy, J. G. (1998). Polynucleation and Economic Development: the Randstad. *European Planning Studies*, 6(4), 457–466. DOI: 10.1080/09654319808720474
- Limtanakool, N., Dijst, M., & Schwanen, T. (2007). A Theoretical Framework and Methodology for Characterising National Urban Systems on the Basis of Flows of People: Empirical Evidence for France and Germany. *Urban Studies*, 44(11), 2123–2145. DOI: 10.1080/00420980701518990
- Lin, D., Allan, A., & Cui, J. (2015). The Impact of Polycentric Urban Development on Commuting Behaviour in Urban China: Evidence from Four Sub-Centres of Beijing. *Habitat International*, 50, 195–205. DOI:10.1016/j.habitatint.2015.08.018
- Malý, J. (2016). Impact of polycentric urban systems on intra-regional disparities: A Micro-Regional Approach. *European Planning Studies*, 24(1), 116–138. DOI:10.1080/09654313.2015.1054792
- McGinnis, M. D. (1999). *Polycentric Governance and Development: Readings from the Workshop in Political Theory and Policy Analysis*. University of Michigan Press.
- Meijers, E. (2005). Polycentric Urban Regions and the Quest for Synergy: Is a Network of Cities More than the Sum of the Parts?. *Urban Studies*, 42(4), 765–781. DOI: 10.1080=00420980500060384
- Meijers, E. (2007). *Synergy in Polycentric Urban Regions: Complementarity, Organising Capacity and Critical Mass*. Delft: Delft University Press.
- Meijers, E. (2008). Measuring Polycentricity and its Promises. *European Planning Studies*, 16(9), 1313–1323. DOI: 10.1080/09654310802401805
- Olsson, A. R., & Cars, G. (2011). Polycentric Spatial Development: Institutional Challenges to Intermunicipal Cooperation. *Jahrbuch für Regionalwissenschaft*, 31(2), 155. DOI: 10.1007/s10037-011-0054-x
- Parr, J. (2004). The Polycentric Urban Region: A Closer Inspection. *Regional Studies*, 38(3), 231–240. DOI: 10.1080/003434042000211114
- Phelps, N., & Ozawa, T. (2003). Contrasts in Agglomeration: Proto-Industrial, Industrial and Post-Industrial Forms Compared. *Progress in Human Geography*, 27, 583–604. DOI: 10.1191/0309132503ph4490a
- Republic of Turkey Ministry of Development. (2014). Information Booklet. Available at: <http://www.mod.gov.tr/Lists/Docs/Attachments/1/Brochure.pdf> (12.07.2016)
- Republic of Turkey Ministry of Public Works and Settlement. (2010). *KENTGES: Integrated Urban Development Strategy and Action Plan*, 4 November 2010, Ankara: Ministry of Public Works and Settlement. Available at: [www.kentges.gov.tr/\\_dosyalar/kentges\\_en.pdf](http://www.kentges.gov.tr/_dosyalar/kentges_en.pdf) (12.07.2016)

- Rivolin, U. J., & Faludi, A. (2005). The Hidden Face of European Spatial Planning: Innovations in Governance. *European Planning Studies*, 13(2), 195-215. DOI: 10.1080/0965431042000321785
- Romelic, J. (1997). Specific Features of Spatial Distribution and Relative Degree Of Development of Agro-Industry In Vojvodina. *Geographica Pannonica*, 1, 26-28.
- Sat, N.A., Varol, Ç., Yenigül, S.B., & Üçer, Z.A. (2014). Avrupa'da ve Türkiye'de Çok Merkezli Mekansal Gelişme Üzerine: Kavramlar, Eğilimler ve Politikalar. Dünya Şehircilik Günü 38. Kolokiyumu 6-8 Kasım İTÜ Mimarlık Fakültesi, İstanbul (In Turkish)
- Sinclair-Smith, K. (2015). Polycentric Development in the Cape Town City-Region: Empirical Assessment and Consideration of Spatial Policy Implications. *Development Southern Africa*, 32(2), 131-150. DOI: 10.1080/0376835X.2014.984378
- Sýkora, L., & Mulíček, O. (2009). The Micro-Regional Nature of Functional Urban Areas (FUAs): Lessons from the Analysis of the Czech Urban and Regional System. *Urban Research and Practice*, 2(3), 287-307. DOI: 10.1080/17535060903319228
- TURKSTAT (2000). Turkish Statistical Institute: census of population statistics. Population by province (2000 Population Census). Available at: <http://www.turkstat.gov.tr/Start.do> (12.03.2016).
- TURKSTAT (2016). Turkish Statistical Institute: census of population statistics. Population by province, (2016 Address Based Population Registration System Population). Available at: <https://biruni.tuik.gov.tr/medas/?kn=95&locale=en> (12.03.2016).
- Van der Laan, L. (1998). Changing Urban Systems: An Empirical Analysis At Two Spatial Levels. *Regional Studies*, 32(3), 235-247. DOI: 10.1080/00343409850119733
- Vasanen, A. (2013). Spatial Integration and Functional Balance in Polycentric Urban Systems: A Multi-Scalar Approach. *Tijdschrift voor economische en sociale geografie*, 104(4), 410-425. DOI:10.1111/tesg.12029
- Veneri, P., & Burgalassi, D. (2012). Questioning Polycentric Development and its Effects. Issues of Definition and Measurement for the Italian NUTS-2 Regions. *European Planning Studies*, 20(6), 1017-1037. DOI: 10.1080/09654313.2012.673566
- Waterhout, B., Zonneveld, W., & ve Meijers E. (2005). Polycentric Development Policies in Europe: Overview and Debate. *Built Environment*, 3, 163-173. DOI: 10.2148/benv.31.2.163.66250
- Internet 1. Republic of Turkey Ministry of Development, webpage, <http://www.mod.gov.tr/Pages/Overview.aspx> (02.05.2016)

# In the Shadow of the City: Demographic Processes and Emerging Conflicts in the Rural-urban Fringe of the Hungarian Agglomerations

---

Gábor Vasárus<sup>A\*</sup>, Péter Bajmócy<sup>A</sup>, József Lennert<sup>B</sup>

Received: November 03, 2017 | Revised: December 31, 2017 | Accepted: January 9, 2018

DOI: 10.5937/22-16572

## **Abstract**

Because of the special settlement system in Hungary a municipality can be divided into three parts, the central inner area (core city), other inner areas (incorporated settlements) and outskirts. Because of this system and special settlement network, the process of suburbanisation in Hungary has some unique characteristics. In this paper we examined the spatial structure and social properties of the rural-urban fringe of four Hungarian cities, with emphasise on the other inner areas and the outskirts.

The outskirts are mostly scattered or interim habitations within the administrative limits of a city or village but these are usually separated from the main built-up areas and almost all of them characterised remote-rural-like infrastructure and way of life. This spatial structure resulted in the phenomenon of the suburbanisation within city limits. Our research aims to examine how it influenced local society and land use pattern in the rural parts of the agglomerations. The used method was based on a questionnaire involving 1800 households and census of outskirts plots in the sample area of a middle-sized city in West Hungary.

During this process, residents tend to change their living conditions to a more rural one without leaving the municipality, thus areas of former villages and outskirts attracted 55.1% of suburban movement outside of Budapest Agglomeration since 1990. Most of the residents came from the city to rural milieu and their main motivations were low utility costs, gardening opportunities and slow lifestyle. A significant part of them is especially looking for remote-rural-like environment and community, however they want to stay close to the city. A high proportion of migrants have low-income and disadvantages. The repeated expansion of modest houses resulted in a chaotic townscape that is creating conflicts within neighbourhoods. Even villages, incorporated villages and outskirts, which are at the same distance from the city centre, show significant differences in rurality, suburban motivations and society. The rural-urban fringe transformed into a highly complex spatial and social structure during post-socialist transformation, therefore the existing urban and spatial development methods of Hungarian Administration are not able to handle this phenomenon.

**Keywords:** conflicts, post-socialist urbanisation, inhabited outskirts, segregation

<sup>A</sup> Department of Economic and Social Geography, Faculty of Science and Informatics, University of Szeged, H-6722 Szeged, Egyetem Street. 2. Hungary; vasarus.geo@gmail.com

<sup>B</sup> MTA, KRTK, Regionális Kutatások Intézete, H-6000 Kecskemét, Rákóczi Street. 3. Hungary

\* Corresponding author: Gábor Vasárus, e-mail: vasarus.geo@gmail.com

## Introduction

Over the last two decades, the number of publications concerning suburbanisation processes of the Asian (Yue et al., 2013) and former socialist countries has significantly increased (Kubes, 2013). It is commonly agreed upon that the classic model of suburbanisation – developed to fit western and Anglo-Saxon countries – does not describe perfectly the ongoing processes of the second and the third world (Ouředníček, 2007; Sýkora & Bouzarovski, 2011). The differences not only appear in the degree (Timár, 2010), duration (Tamaru, 2001) and spatial characteristics of suburbanisation (Kok, 2000), but specific social relations (Kok & Kovács, 1999) and settlement geographical conditions (Nuissl & Rink, 2005) can also generate significantly different subprocesses (Brown & Schafft, 2002) and a highly fragmented spatial structure (Antrop, 2004).

In Hungary, similarly to other post-communist countries, suburbanisation significantly contributes (Szelényi, 1996) to the changes in the settlement system (Bajmócy, 2003), the land use system and internal migration patterns (Dövényi, 2009). Domestic and international comparative researches (Brown et al., 2002; Hardi, 2002) revealed many positive (Kok, 2000) as well as negative impacts (Szirmai, 2011; Timár, 1999) on the local communities involved in the process (Brade et al., 2009; Váradi, 1999). This phenomenon can reshape traditional systems, relationships, interests and identifications within the local society and may lead to serious conflicts (Csanádi et al., 2002; Kok et al., 1999).

Urban land use, lifestyle features and functions penetrate rural space, modify the local way of life, furthermore this process significantly transforms the social, environmental and economic characteristics of affected communities (Csatári et al., 2013). These changes are mostly apparent in the transitional area around the core city in the agglomeration called the rural-urban fridge (Pócsi, 2011). Here, the rapid and extensive transformations resulted an especially fragmented spatial structure characterised by collisions between different interests are unavoidable (Timár & Váradi, 2001). Therefore, the transforming rural-urban fringes can be seen as conflict zones (Timár, 1993; Timár & Baukó, 1999).

The years after 1989 saw a rapid expansion of suburbanisation in parallel with population decline and economic recession (Szirmai, 2011). In the light of this phenomenon, researchers in Hungary have identi-

fied some unique key features of the process (Brade et al., 2009). They emphasized the importance of forced outmigration of the underclass into the suburbs because of high utility costs (Csurgó, 2013), and the significant share of rural migrants who looked for a job, but could not afford any housing within the core city, therefore they settled in the urban-rural fringe instead (Dövényi & Kovács, 1999). Furthermore, the land use of the suburbs is also characterised by second homes, pensioners' holiday cottages and garden zones, which were the recreational substitutes of suburbanisation during the late socialist era (Timár, 1990). Less attractive suburban settlements became migration targets for the broken families (Szelényi, 1996) and the poor, unqualified workforce from remote rural Hungary (Váradi, 1999). This process has been undergone in parallel with the commencing reurbanisation, revival of downtowns and job centralization (Bajmócy & Makra, 2016).

Another unique trait of suburbanisation in Hungary that a significant share of people moving from urban to more rural neighbourhoods does not leave the administrative borders of the core city (Hardi, 2002). Their migration targets include former villages previously attached to the cities and inhabited scattered settlements at the outskirts of the city (Bajmócy, 2000). A particularly high proportion of former countryside dwellers are involved in this process (Balogh & Csapó, 2013), because they usually want to return to their rural lifestyle (Szirmai, 2011). These formerly incorporated villages and inhabited outskirts can also be considered as part of the rural-urban fringe and can be identified as conflict zones (Pócsi, 2009; Pryor, 1968).

While suburbanisation received special attention in the literature of post-communist settlement geography, some of its subprocesses have avoided large-scale scientific interest (Hardi, 2012; Kovács, 1999). This is especially true for the transformation and emerging problems of other inner areas and outskirts within the administrative borders of the city, which areas have drawn only limited attention so far compared to the suburbanisation of sovereign settlements (Balogh, 2012a). In order to address this neglected issue, our present analysis focuses on the demographic processes, the changes in the local society and new problems and conflicts of these areas in four case study cities.

## The overlooked elements of the settlement structure: the typology and characteristics of the outskirts and other inner areas

In our research we used the following definition of suburbanisation: *the process of decentralization of urban population and activities, in the sense of a part of the population, the productive and non-productive activities, the capital and the investments concentrate into the settlements around the cities instead of the urban centres, regardless of administrative borders* (Bajmócy, 2014; Ouředníček, 2007; Timár, 1999).

This definition implies that the interpretation of settlements can deeply influence the perception of suburbanisation. For example, the settlement system of Hungary, as it can be defined in the terminology of human geography, does not completely match the system of local administrative units. Besides the officially delineated, densely built-up central inner area (the historical core and its expansions), we can often find other inhabited “settlements” within the administrative border of the city: officially distinguished other inner areas and different type of inhabited outskirts (Bajmócy, 2014). The other inner areas are mostly former villages which had been incorporated into the administrative area of the larger settlements but did not merged into it in the physical sense (Ónodi et al., 2002). Due to the unique development of the Hun-

garian settlement system, we can also identify different types of inhabited outskirts (like tanyas, wine hills, garden zones, manors, industrial or Roma settlements) which can provide home for a significant number of dwellers (Pócsi, 2011) (Figure 1).

In Hungary, settlement merging has a long tradition. The involved village or small town will disappear in the sense of statistical and legal terms, but they do not lose their rural character or society for a long time (Bajmócy, 2003). During the socialist era incorporating was one of the main tools of forced urbanisation and rural industrialisation. A significant share of these cases could not be explained with social or settlement geographical reasons and usually the physical distance between central and other inner parts has not disappeared, and these formerly sovereign settlements managed to preserve their identity. The major part (94%) of the population lives in the central inner parts of the settlements, but 3% live at the other inner parts and 3% at the outskirts (Bajmócy & Makra, 2016). In addition to the statistically-existent villages there are a large number of ones attached to cities; most of them are within the area of settlements of agglomerations (Timár, 1993). While very often there is

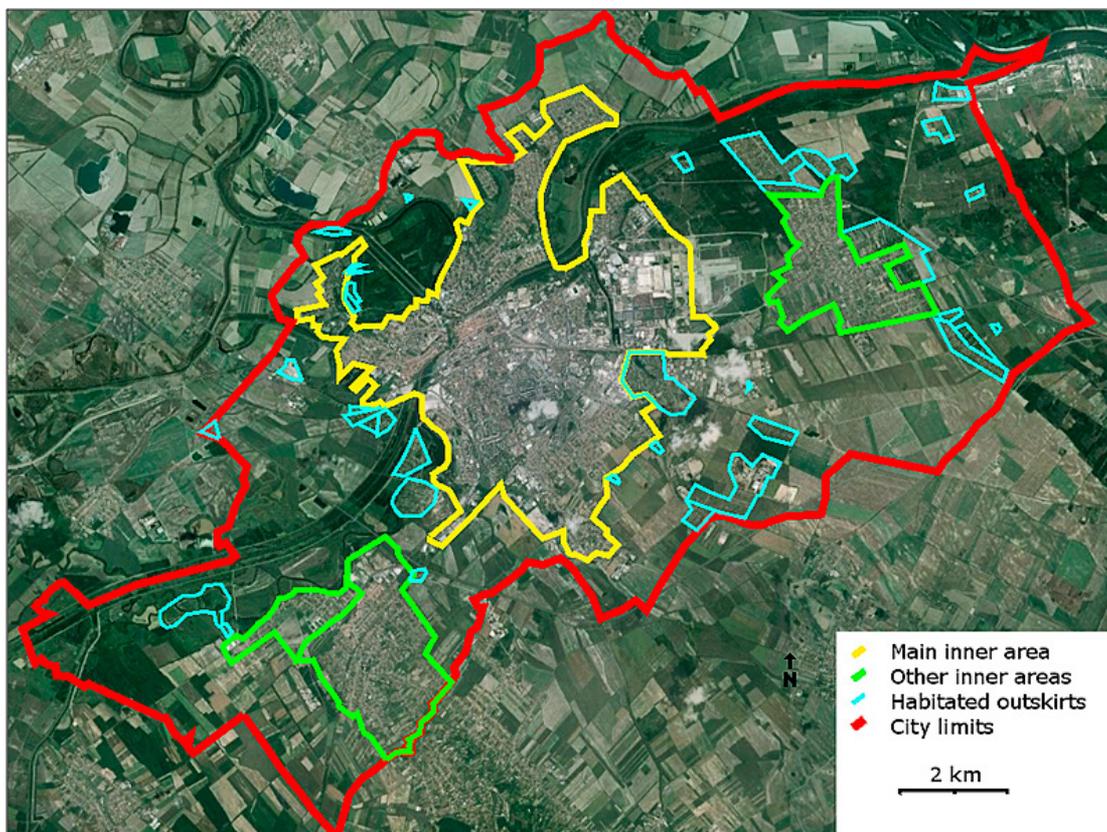


Figure 1. Spatial and administrative structure of a Hungarian city  
Source: Edited by the authors, background: google.maps.com

no difference between the processes and characteristics of the other inner areas and the neighbouring administratively independent villages, most of the statistical data collection and analysis focuses on local administrative units only. As a result, a large part of the transformation of the rural-urban fringe remains unseen (Balogh, 2012a).

The geographical, historical and social characteristics of the country brought a range of special inhabited outskirts into existence. The individualism, the mosaic spatial structure and the emergence of internal frontiers after the decay of the medieval village system all contributed to the formation of these scattered settlement types (Csapó & Balogh, 2013).

The „tanya” is the most distinctive form of outskirts. It is a scattered farm-like habitat, which was emerged in the Great Hungarian Plain after the Ottoman rule (Balogh & Csapó, 2013). The birth of the tanya is connected to the shift from semi-nomadic cattle-breeding to farming activity. Because the Ottoman rule left a very sparse settlement network, it was necessary to establish a system of scattered settlements in order to cultivate the inner frontiers of the Great Hungarian Plain. Though it is a scattered settlement, it was formed as an integral part of the city, because its inhabitants were traditionally urban citizens with a house in the inner area (Becsei, 2010). They spent their summers on the tanya with agricultural activity, while they lived in their home in the city during the winters and their old age. This double residential pattern is the main characteristic of the tanya system. Many researchers see it as a revival of nomadic dual (winter and summer) habitation system, while other scientists consider it as a specific urban area form, produced by the unique social and economic processes in the era (Becsei, 2015).

The number of inhabitants living in the tanya reached its peak in the first half of the 20th century. In the socialist era, in order to push forward collectivization, the government systematically neglected

the farms, thus only a third of the tanyas persisted till 1990, and even those were in poor condition (Csatári & Farkas, 2012). After the transition, the remaining tanyas underwent significant differentiation based on their agricultural and social processes. Some of them continued to decline, while the easily accessible ones became the targets of suburbanisation and de-urbanization (Kovács, 2010).

The other parts of the country are dominated by manors and wine hills. The manor is a hamlet-like small-scale settlement (Figure 2.) without administrative sovereignty which was originally established around a landlord's property (Balogh, 2012a). The estate consisted of a castle or mansion, some poorly constructed rowhouses for the workers and numerous large agricultural structures, but most of them are now in ruined condition. Typical population size ranged between 10 to 100 residents, and in most cases only agricultural and residential functions appeared in these settlements (Pócsi, 2011). They are characterized by small enclosed communities and administrative subordination to the core settlement.

The vineyards form a system similar to tanyas, but the houses much more densely located along ridges due to the characteristics of the grape cultivation. Buildings typically form a street-like line, but similarly to the manors, this is a transition type between scattered and nucleated settlements, with no enclosed settlement core (Égető, 2003). They have strong ties to the city, since most of the residents and owners are citizens of the nearby town (Balogh, 2012a).

Garden zones are traditional appendixes of the core inner area since centuries in Hungary. Unlike other outskirts, they are not separated from the inner areas by physical distance but by function and morphological characteristics. While originally built for small-scale agricultural purposes, during the development of the Hungarian towns of the past 100 years, these zones also provided habitat for the underclass, people dislocated from the city, and the unemployed ones migrat-



**Figure 2.** A typical manor and a tanya  
*Source: own photo*

ing toward the centres from peripheries. Due to cheap plots, additional income from garden work and loose building regulations, they were especially attractive for the least well off people. From the early socialist era, with the establishment of the gardening movement, garden zones became one of the main places for recreation and horticulture as a secondary income source. The small plots in garden zones formed a grid-like settlement pattern with unusually narrow roads and incomplete infrastructure. Parallel with the slow development of infrastructure, the owners started to move to their weekend houses. Most of them used these buildings as secondary homes, but the number of those who permanently settled in the garden zones has been already started to grow in the late socialist era, as a substitute process of suburbanisation.

By the mid-20th century, some other types of outskirts have been formed, like miners' and industri-

al housing estates at outskirts as well as Roma's settlements gained ground. Most of them are similar to hamlets; their main role was to provide housing for the workforce of agricultural, mining or industrial projects in the outskirts, while the Roma groups' housing was based on strong segregation. A significant number of them lacked proper sanitation, safe water supply or other basic human necessities. The composition of properties in these outskirts varied from favela-like huts („putri”) to small block of flats.

The role of rural habitats within the administrative limits of Hungarian cities was important during the post-socialist development because of the variety of roles described above (Beluszky, 1982). These rural inclusions embedded into urban space and often appear as target areas during the suburbanisation process which further strengthened the local characteristics (Ott, 2001; Csatári et. al., 2013).

## Methods and data

This research is based on a statistical analysis that used conventional social geographical methodology on the data from the general population censuses and additional HCSO (Hungarian Central Statistical Office) data. Based on the examination of population data and internal migration we selected four Hungarian cities as our case studies (Figure 3). Győr and Szeged are regional centres with a large number of outskirts and with some incorporated settlements, thus a signif-

icant part of suburbanisation remains within city limits. Hódmezővásárhely and Zalaegerszeg are cities with county rights, they have many outskirts with significant population, and suburbanisation has remained almost entirely within the administrative borders. The selection of these four municipalities is also justified by some geographical features. The “tanya” type outskirts are common in Szeged and Hódmezővásárhely, the manors and wine hills are well preserved in Zal-

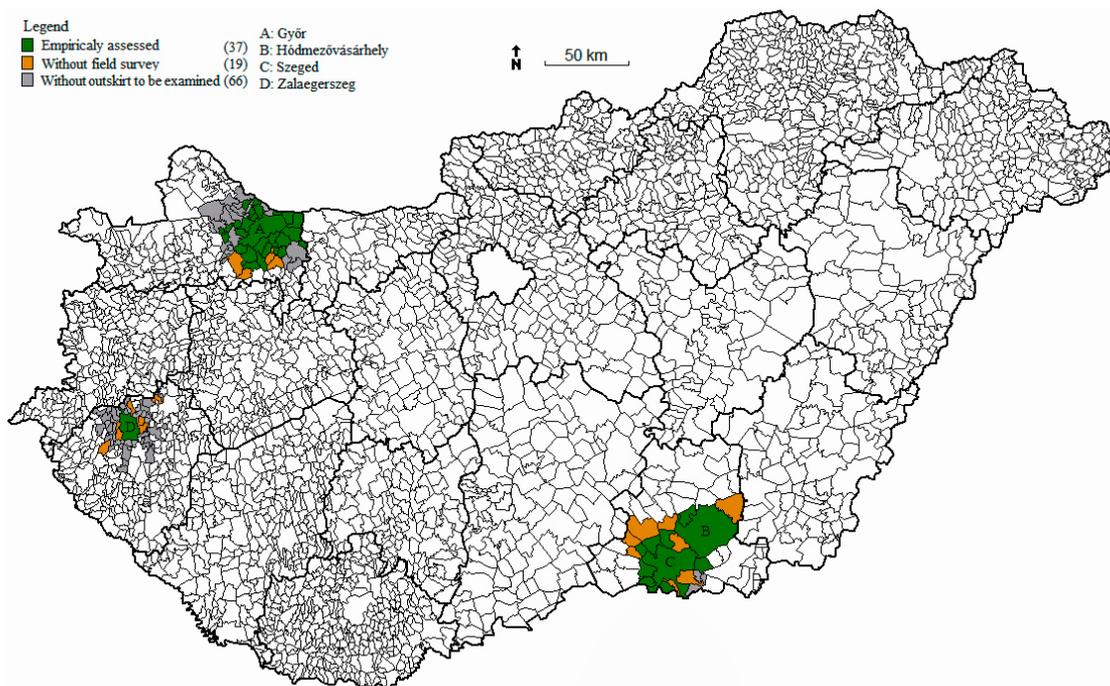


Figure 3. Map of the sample areas

Source: edited by the authors

aegerszeg and Győr, which are typical features of the Transdanubian region. Moreover two of the four cities are smaller and two have larger population thus our results can be more generally valid for the city stock of the country. The sample areas include all other inner areas and outskirts of the selected four case studies.

The detailed analysis of the sample areas consisted of three steps: survey, field examination and interviews. First we conducted a stratified systematic survey that involved 1200 households in the outskirts and another 600 in the other inner areas of the four towns. With this method, every fifth household of the sample areas was included in the survey. The first third of the questionnaires were asked data about housing and migration-related questions. It followed by questions about the various difficulties and social characteristics of the living space. In the last part we requested details about the demographic characteristic of the household. The participants also had the opportunity to formulate their own problems and expectations in the open-ended questions.

Additional information for the surveys was provided by the accompanying fieldwork, during which we classified the household plots, the state of infrastructure and accessibility of the outskirts. Finally we prepared some interviews with local government leaders and other professionals in the sample area in order to examine their attitude toward development planning, supply tasks and daily routine in connection with outskirts and other inner areas.

The results were quantified by grouping the answers with emphasis on preserving subjective opinions. We have analyzed the frequency and the correlations of the answers using basic statistical techniques and simple r2 method. With the combination of these methods, we could get a detailed picture of the demographic processes, social structure, problems and conflicts of the sample areas and these case studies can contribute to the wider understanding of the transformation processes of the rural-urban fringes of Hungary.

## Demographic processes and changes in the local society of the outskirts and other inner areas

From 1990 to 2010, 33.6 % of suburban growth took place in the outskirts and other inner areas (Table 1). This is especially true for agglomerating cities besides Budapest (like our four case studies), where the thin majority of suburban migrants moved to these areas. Villages and the outskirts merged into cities can attract urban out-migrants, because they are mostly interested in the landscape, the condition of infrastructure and the reputation of the place, not in the administrative status of the location.

As a result, the demographic development of these areas after the transition is markedly different from the previous decades. The communist period brought a sharp decline in the population of the outskirts: they lost more than 70% of their inhabitants between 1960 and 1990. After 1990 the population decline of the outskirts stopped, and we can even see a moderate increase in their population, while the population of the other inner parts started to increase rapidly after 1990,

first of all because of the suburbanisation. The demographic processes and following differentiation of the outskirts were in fact similar to the post-socialist development of the small villages (Balogh, 2012b).

According to our empirical research, our sample areas fit into these trends. The main features of the ongoing process can be summarized with the following: half of the outskirts increased their population since the political transition, and all the other inner areas were migration targets during the period. Between 2001 and 2014, the population of the outskirts increased by 92.8% and the other inner areas also experienced a 21.4% rise in the number of inhabitants. Garden zones, wine hills and social facilities have attracted the most newcomers (Table 2).

In Hungary, the population of the other inner areas has begun to grow after 1980. The migration from city to second homes and to former villages and move from peripheries of the country to these affordable

**Table 1.** The role of outskirts and other inner areas as suburban destinations in Hungary. Share of population growth between parts of settlements

	Population growth 1990-2011	Cities (%)		Other settlements (%)		
		Other inner areas	Outskirts	Central inner areas	Other inner areas	Outskirts
Suburbs in Hungary	484745	9.2	9.0	66.4	8.5	6.9
Suburbs around Budapest	296412	0.3	1.3	80.1	12.0	6.2
Suburbs around other cities	188333	23.1	21.0	44.9	3.0	8.0

Source: Own elaboration based on census data (HCSO)

locations were main drivers of this process (Timár, 1993). This trend continued in the 1990s and in some areas, even accelerated after the millennium (Bajmócy, 2003). Due to the previously described demographic differences, the integration of newcomers into the local community is laden with conflicts and may take 5-6 years (Hardi & Nárai, 2005). Due to their urban roots, higher earnings and their way of life, newcomers significantly differ from local-born people (Csurgó, 2013). Immigrants have strong lobbying ability (Weaver & Lawton, 2001) and a different vision of the future (Schuchmann, 2013). Residential function and quality of services are more important in their vision (Sharp & Clark, 2008) than the local landscape (Gant et. al., 2010), architectural (Antop, 2004) and cultural heritage (Pacione, 2013). If the newcomers move to newly built streets or gated communities within rural-urban fringe, spatial separation also appears (Clouth, 1976) which further hinders the integration (Bryant, 1995; Timár & Váradi, 2001).

The society of the examined outskirts has significantly revamped by the persistently high number of immigrants. The majority of respondents came from the core city, but also a high proportion of people moved there from the peripheries of the country. Nearly half of the respondents only moved here after the millennium; this is in accordance with the general trend in Hungary that suburbanisation ran up only after 2000.

This is especially true to the upper and middle class, which only began to outflow into the outskirts areas after the acceleration of suburbanisation. The relatively good environment, the looser regulations and the large and relatively cheap properties were attractive for this group (Kovács, 1999). The increasing number of wealthy households started a rural gentrification process in the outskirts (Timár et. al., 2000). The early settlers improve the reputation of the area; this

attracts new residents, which raises real estate prices (Bourne, 1996). Through lobbying, the newcomers start to reshape the place of residence to fit into their rural image concept (Csurgó, 2013). They do not perceive the outskirts as a place for agricultural activity with unavoidable inconveniences (smell, noises), they only long for the scenery of an idealized image of rural landscape (Phillips, 2009). This “landscape-fetishism” may contribute to the elimination of traditional land use (Stockdale, 2010) and it leads to the displacement of the original inhabitants (Szirmai, 2011).

We asked the respondents to evaluate the composition of the local community in order to sharpen the image of the transformation of the population. According to the answers from the other inner areas, the substantial majority of the local residents are either high-income migrants from the core area of the city or local born people with average social status. It shows a stark contrast with the answers from the outskirts, where most of the respondents mentioned those who were forced out from the city, career starters, underclass and other disadvantaged groups (Table 3).

However, according to interviewees in the outskirts, nearly 90% of the newcomers are from the lower third of middle class and are exposed to the risk of impoverishment. They are fleeing to the outskirts because there they are at least able to maintain the semblance of their previous status due to the reduced living costs. However, we can also find immigrants from the upper class concentrated in the best areas of the outskirts.

Their answers also revealed the presence of some groups which do not appear in the official statistics. For example, 13.1% of the population of outskirts are hobby garden cultivators or ones who lives partly at core city, but they live at the outskirts during the summer half of the year. They do not appear in the statistics as local residents, even if they spend a part of or

**Table 2.** Population growth of outskirts in agglomerations of Hungary

Type	Number of outskirts with growing population	Population change 1990-2011	Population	
			1990	2011
Social institutes	12	1521	1113	2634
Manors	188	-980	5960	4980
Inspector homes	179	103	2798	2901
Peri-urban streets	144	7319	6897	14216
Wine hills	252	6376	3675	10051
Garden zones	76	13749	5884	19633
Holiday cottage zones	33	749	136	885
Tanyas	406	6267	43661	49928
Others, mixed	8	629	2027	2656
All outskirts	1298	35733	72151	107884

Source: Own elaboration based on census data (HCSO)

the whole year in the outskirts and they use the local infrastructure. A significant number of them unlawfully live in their properties, which were not built for residential purposes or were made without a construction permit. In addition, similarly to other post-communist states, a quite high number of residents of the outskirts do not have home address there, most of them still officially hold the address of their previous apartment (Ouředníček, 2007).

Moreover, 11.8% of the respondents mentioned the problem of the illegal occupiers. Poor, unemployed people from the peripheries of the country tend to permanently or temporarily move into the unused houses, summer houses or roughly built huts. Unfortunately, these buildings are often completely inadequate for habitation because these constructions do not have running water neither heating. Data about the real size of this group is not available, but according to the interviewees' answers, their percentage is steadily increasing due to the high number of extremely poor immigrants.

The different types of outskirts and other inner areas attract and provide home to different socioeconomic groups. New residents in the outskirts can be divided based on their income. For low-paid households, the main preferences were low utility cost, relatively attractive environment, and additional income from horticulture, while middle class households also take the larger plots, rural lifestyle and recreational possibilities into account. This is observable in the case of the study areas too: the population of the examined outskirts and other inner areas have different characteristics. In the case of the other inner areas, nearly two-thirds of the newcomers previously lived in detached houses, and the intention to maintain their lifestyle was an important motivation in their choice of place. From other reasons, familial changes (37.3%) and proximity of workplace (30.6%) were mentioned the most frequently.

The outskirts with the worst accessibility and environmental endowments attract gypsies, migrant workers, divorced people and single-parent families due to the low utility costs (Váradi, 2013). This is not a new phenomenon: after the elimination of Roma settlements in the socialist era, the families usually displaced to the worst quality outskirts (Balogh & Bajmócy, 2011). After the fall of the socialist regime, the forced migration of poor families from cities to these outskirts accelerated (Balogh & Csapó, 2013). It is also a general experience in the post-communist cities that the real estate price boom of the inner suburban belt (Schafft, 2000), the increasing unemployment and rising utility costs forced out the low income (McManus & Ethington, 2007) migrants to the affordable plots of the areas with poor accessibility (Helling, 2002; Kok, 1999).

Sometimes even good accessibility can facilitate segregation and increase the share of deprived groups. Because of their good accessibility and attractive reserve areas, some of the manors, the industrial housing estates and garden zones are attractive for industrial suburbanisation. The capital intensive investments of the corporations as well as large landowners displace local residents from the property market. The increased noise and environmental pollution induced a selective emigration from these areas (Abda – Pillingépuszta, Győr – Somosmajor, Sashegypuszta). In such outskirt areas – for example Somosmajor – only the elderly and the Romani people remain. They are unable to move out because the lasting environmental inequality made their houses unsellable.

Seemingly paradoxical that intensifying farming activity can also induce similar processes as industrial expansion. While agriculture is a crucial element of the traditional landscape of the outskirts, large-scale agricultural production can also contribute to the irreversible loss of "genius loci". In order to gain more land for crop production, the desolated tanyas are often demolished and then ploughed up. Residents tend to give up their gardens and secondary homes because scenic degradation, dust, allergenic weeds and pesticides have substantial adverse effects on their quality of life. The remaining plots and buildings of the former wine hills, garden zones and manors form islands in the arable land (Pér – Sótóidűlő, Győrújfalu – Mártonháza). For example only a single mother and her two children remained in Pázmándfalu – Bercel, because they don't have any financial opportunity to move away.

On the other hand, bad accessibility does not always deter higher status migrants. With their preserved environment, even the remotest outskirts can be attractive for lifestyle changer seniors and artists. The upper and middle class also began to outflow into the outskirt areas after the acceleration of suburbanisation because the relatively good environment, the looser regulations and large and relatively cheap properties were attractive for this group (Timár, 2001).

The selection between migration destinations is highly influenced by personal relationships and this contributes to an increase in segregation (Bajmócy & Balogh, 2012a). Residents with similar social status move into the same street or section of road, thus they form closed groups at the outskirts. The first immigrants give the locality a good reputation, and later are followed by their colleagues and friends. Accordingly, some outskirts were almost exclusively dominated by teachers, doctors or policemen (Győr – Kertváros, Vámoszabadi – Zártkert, Győrzámoly – Solinka). In the cases where the houses are arranged in groups, the separation is even stronger.

**Table 3.** The composition of local population of the sample areas (%).

Migration characteristics of respondents (n=598)		Other inner areas	Outskirts
Local born		45.8	8.4
Newcomer		53.4	58.4
Among newcomers	From the main city	22.8	43.6
	From other parts of the agglomeration	14.9	7.8
	From abroad	7.8	4.0
Periodically living in the city and at Outskirt/other inner area		0.8	33.2

Source: own elaboration based on field survey

### Newcomers and locals, deprived groups and high-class residents: conflicts and problems in the suburbanising other inner areas and outskirts

Due to the high rate of immigration to these areas, some serious social conflicts have evolved. The answers indicate that both the spatial segregation and close cohabitation of the different social groups can be the source of conflicts. Most often, the contrasts in earnings, different lifestyles and the newcomers' weak connections with local communities were the roots of the problems. Because the outskirts are populated by a wide range of different social and demographic groups, the differences in the revenue are especially high (Figure 4.) in this area. For example, there we can find high-status intellectuals living next to an underclass family who destitute in a winterized hut, which was originally built for agricultural purposes (Csatári et. al., 2013; Varadi, 2015).

they do not express their opinion, even if you directly ask them...". As an easier way, most of them keep a distance from the newcomers, and they start to hinder the "non-locals" and "Audi-drivers" life. For example, they disrupt the flow of traffic and deliberately schedule the noisy tasks in the garden for the dawn as a specific and pointless way to protect their interests.

The deprived groups of the outskirts are hard to approach, and their financial difficulties often remain unseen. Some of them were squeezed out of the city because of the high utility costs or dept problems or they are slightly impoverished pensioners who are „actually hide at the outskirt in shame”, according to an interviewee from Zalaegerszeg. They do not ask assistance from the government or the society even



**Figure 4.** Suburban „palace” and poor home in the same outskirt garden zone

Source: own photo

The newcomers' relations and social networks link them to the city. It is difficult to integrate into a new community, since they are not part of it and they have direct contact only with their direct neighbours. Some immigrants use the outskirt only as a commuter settlement and they are indifferent toward the local community. Local-born people do not have any lobbying ability, and as one interviewee from Zalaegerszeg expressed: „They believe they do not have a say in, so

when they desperately need it. For this reason, it is common for pensioners and marginal families to live in vacation homes which are generally unfit for longer housing (e. g. in ones without heating). The social welfare system and the community have little information about these marginal groups.

The results of the survey revealed some of the problems of the residents. 31.4% of the respondents considered the condition of roads a pressing issue, because

many streets are dangerous due to the too narrow roadways and the nearly total lack of sidewalks. Roadways without concrete base and eroded shoulder are unable to satisfy the demands of the current traffic. In many manors and tanya areas there are no permanent streets, only pieces of land with trails on them. Especially families and single moms with children suffer from the transport constraints (Helling, 2002), thus living in a poorly accessible area have greater impact on the lives of women (Hirt, 2008). Some of these wives described it as a „home imprisonment” for the winter half of the year. Long commuting also takes time from tending the gardens (Soltész, 1990). Services, institutions and workplaces are only available in the inner core, thus city public transport is essential for the less affluent and older age groups. Therefore improving accessibility is decisive in shaping the future of these areas (Hardi, 2005).

Public transportation is not able to offset the negative effects of poor accessibility. It is difficult to reach bus stops in most of the outskirts, 32.6% of the respondents claimed they need to walk more than 3 km, on roads which are in a poor state and impassable after heavy rain or winter season, to reach the nearest bus stop. The problems are further enhanced as some local residents are responding to the increasing traffic with the arbitrary closure of roads.

Disadvantages in infrastructure are compensated by the strong community and cheaper living, whereas people moved there accept certain difficulties in exchange for opportunities. Despite the hardships, 81.5% of the respondents like to live here, mostly because of the quiet way of life (50.0%) and good accessibility (15.4%). This fact is significant because most of the outskirts have degraded infrastructure.

Garden zones and vineyards are the most attractive outskirt types for suburban population, their cheapness (28.6%), the environmental conditions (29.6%) and the possibility of horticulture (37.1%) are the main appeals. However, environmental advantages do not necessarily relate to the quality of living place, because overhead lines may pass through some outskirts, ruins or industrial areas may lie next to residential properties. Usually, the relief, a nearby forest or simply an open green space promise relatively better quality of life than a block of flats. Most of the streets are characterized by detached houses and weekend homes. Along the narrow, unpaved roads, dead-end streets and at the perimeters of habited areas a higher frequency of weedy, unused gardens and properties in poor condition can be observed (Csurgó, 2013).

Regardless of their location, the majority of manors have inferior building stock, nearly two-thirds of the buildings are in poor condition or almost ruined. The

jointly owned row houses (originally built as servants' house before 1945) are outwardly uncared, because no one wants to spend on them, on the contrary the inside of flats in these buildings are often in good condition, since they feel it as their own.

Instead of residential functions, owners often want to strengthen the economic function of the manor, so they neglect the maintenance of buildings, keep the roads in poor condition and make living there more difficult in various ways in order to accelerate the depopulation process. A respondent even reported that she/he cannot receive her/his guests without the permission of the landowner in the manor. In few outskirts the noise of the newly built plant make everyday life impossible.

Despite any difficulties, the strong community and the low utility costs are powerful attractive factor, thus only 23% of the respondents wanted to move. Inhabitants of the segregated manors do not feel bad about their residential situation, in fact a significant number of them like to live here. They are socialized into this status, adapted to the circumstances, and their way of life is organised around their strong communities, which make them easier to overcome the problems. Gyórságpusztá is a vivid example, where an agro-industrial corporation has ploughed the gardens and ditches around the manor, but the marginalized residents living below poverty line started to dig a new ditch. The common goal reunified the community and helped them overcome apathy. After finishing the new ditch, they did not cease community work; they started to renovate their flats little by little.

Through the example of Táplánypusztá, we can also show the negative example of phenomenon we described above. This manor lies near to Győr, next to a highway, but without public utilities. After 1989 marginalised groups moved there, and they could not maintain the buildings, thus the outskirt started to decline. The local government was also unable to handle the problem, because all properties are privately owned in this manor. An abandoned and partly demolished former pig farm is deteriorating next to the habited houses. This ruin is a major source of threat, since a part of the population complements their earnings by excavating building materials. The properties that lie further from the highway are decayed, the backyards are full of junk and waste, and one of the row houses were burned out due to illegal electricity connections.

In spite of previously described situation, the local community is relatively strong there. Because of the poor accessibility of the manor and their limited financial possibilities, the residents can only count on each other. A high number of residents suffer from alcohol problems and most of them are temporarily or

long-term unemployed. The population of the manor developed into a secluded and defensive local community based on reciprocity and the common feeling of deprivation. Therefore, people living there cut off almost every relationship with the residents of the nearby developing village, to which settlement the manor administratively belongs to.

In areas like these, the formation of self-helping communities based on reciprocity can be observed. These voluntarily segregated areas are common, Csá-

ford in Zalaegerszeg, Bőny - Páskum, Győr - Fazekasvermek, Pósdomb, Győrságpuszta and Ikrény - Dózsa Major in the agglomeration of Győr, Sándorfalva - Kövágódűlő and Tiszasziget - Térvárpuszta in the agglomeration of Szeged are typical examples. The differentiation of tanyas is going in the same way, marginalized groups and low-income single pensioners spatially concentrated in the most isolated buildings (Bordány – Meződűlő, Domaszék – Bojárhalom, partly Hódmezővásárhely – Kopáncs, Rárós).

## The transforming spatial structure of the rural-urban fringes of Hungary

As a result of social processes, a more mosaic pattern of settlement morphology is under formation (Figure 5.). The modern houses of the new residents, and the most deteriorated houses populated by aged local-born ones are spatially concentrated, too. It is typical practice to construct new greenfield neighbourhoods near to poorest parts of the area due to low land prices. The significant and clearly visible difference among properties in a short distance makes the reshape of the settlement pattern even more striking and disturbing. Traditional streets have been undergone a relative depreciation since the expanding building stock of new streets has become the new baseline of comparison (Tóth, 2000).

The increase in the population of the outskirts leads only to the renewal of a small percent of the houses, because most newcomers want to build a new home. According to our field survey 15.1% of the buildings are new or recently renovated, and 8.2% of them are ruined or deserted. In this regard, the distinctive types of outskirts significantly differ from each other. For example, 60% of property stock of manors are ruined or in bad condition.

The illegal construction and expansion of buildings were found in each sample area. The newly built buildings are often too big and/or do not fit into the

landscape, which reduces the environmental beauty of the locality (Váradi, 1999). The construction of estates with a floor area of around 100 sqm (without permission) on small plots renders the land-use planning and road-widening almost impossible. Despite the aforementioned issues, the local governments rarely make steps against this illegal sprawl in order to acquire the expected tax revenue and due to the already chaotic townscape.

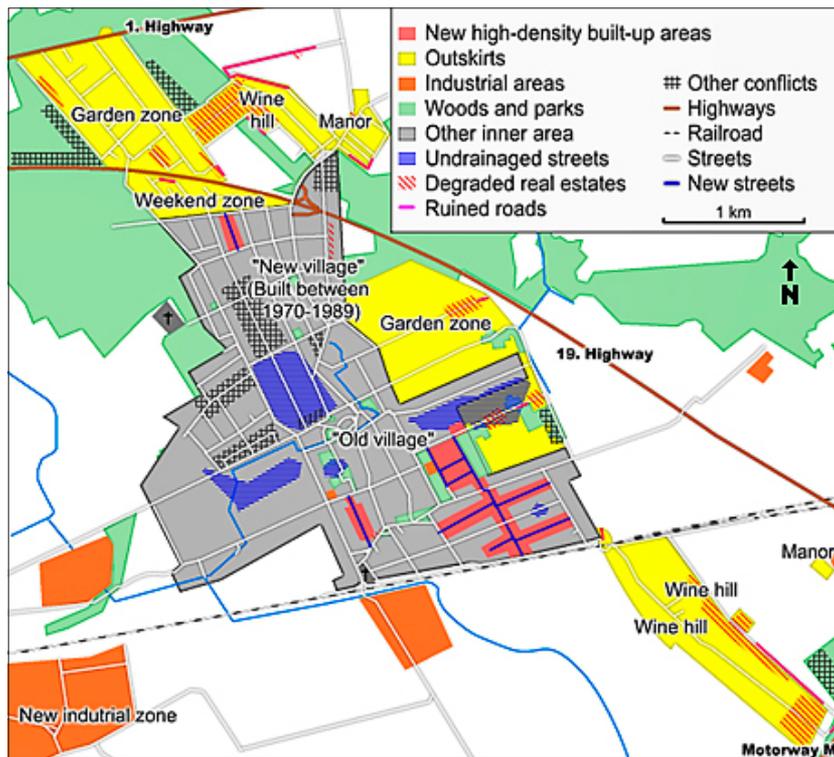
In the other inner areas, the growth of housing stock is usually realized by increasing building density, filling out empty plots, carving out smaller empty plots from a larger property or opening new streets within low-density blocks rather than by greenfield investments. The relatively few new residential areas and gated communities are constructed along the main roads leading to the city centre from the other inner areas. This represents significant increase in the size of the residential areas for some areas. Investors are trying to achieve higher profits thus the typical sizes of plots developed after 2000 are extremely small; furthermore the number of duplexes and multi-unit houses are high.

The increasing housing density sharpens the already existing conflicts originated from settlement

**Table 4.** The composition of proprietries and plots by usage and condition at the sample areas.

Real estate distribution, by land use and condition (%) (n= 9290)		All outskirts	Outskirts with good accessibility and landscape (Wine hills, Garden zones and Periurban streets)	Outskirts with unfavourable accessibility (Manors, Tanyas, and other types)
Gardens	Unused	10.9	4.9	11.4
	Hobby garden	40.9	35.9	41.3
Plots with building	New or renovated	7.9	13.8	7.1
	Average	31.8	35.5	31.0
	Poor condition	3.0	5.8	4.1
	Uninhabitable	2.2	1.3	2.1
	Ruined	1.2	0.1	5.0
Plant. factory or commercial unit		2.4	0.4	27.4

Source: own elaboration based on field survey



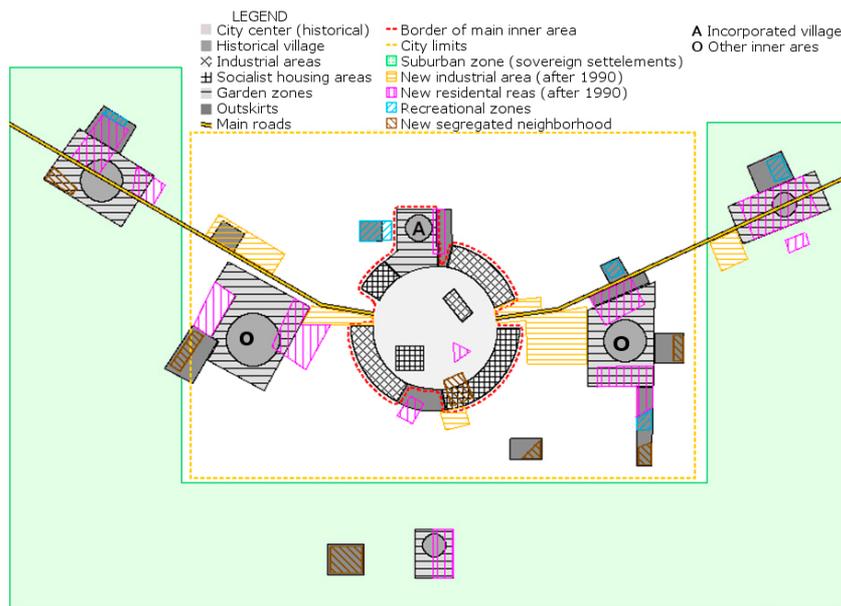
**Figure 5.** Spatial transformation and conflicts in an example other inner area, Győrszentiván

Source: Edited by the authors

geographical characteristics. An excellent example for this is the issue of inland excess water, because many outskirts and other inner areas have fields without natural drainage outlet. In the seventies, a drainage system has been built, but the lack of maintenance and the expansion of built-up areas reduced the efficiency of the system. A lot of newcomers, who were

less familiar with the local conditions, filled the ditches in the front yard, further obstructing drainage.

As a result, a highly complex spatial structure was formed in the peripheral areas of cities, particularly where the other inner areas and outskirts are relatively close to each other (Figure 6). In these areas, the mixing of different land use forms, social groups



**Figure 6.** The spatial structure of suburbanisation in case of a city with outskirts and other inner areas

Source: Edited by authors

and lifestyles are the main determinants of the chaotic land use patterns. As a consequence of the emerging conflicts and controversies, the local population declines and the newcomers begin to reshape the area according to their own perception. The existing development methods cannot handle the fragmented spatial structure. The fragmented spatial structure is typical in post-socialist cities (Ott, 2001).

In some areas, marginal and wealthy groups are concentrated in close proximity to each other and segrega-

tion is not apparent in settlement level. Outskirts are attractive for both groups, but their land use profiles are different, thus there is a significant separation between groups of the population with distinct financial opportunities at micro level. Because of the myriad of emerging conflicts, neither groups are able to fully enjoy the benefits of the locality; moreover, the cohesive strength of the local community is eroded in the long term. In addition, the overused or missing elements of infrastructure further reduce the quality of life in these areas.

## Conclusion

Because of the special settlement system in Hungary a municipality can be divided into three parts, the central inner area (core city), other inner areas (incorporated settlements) and outskirts. In this paper we examined the structural and social features of the rural urban fringe zone of four Hungarian cities. The analysed areas are characterized by the intense inflow into the outskirts and other inner areas. This process is both driven by marginal and high status groups, and the two groups often move to the same neighbourhoods. This process generates numerous positive effects, the infrastructure and building stock is partially renewing and the population is growing, and what is more important to the local governments, the tax revenues are also growing.

Dynamic changes have generated numerous conflicts, the infrastructure is overused, illegal land use changes and construction has become common. Local governments are often turning a blind eye to the numerous irregularities for the hoped tax revenues. Segregation in the outskirts decreases and grows simultaneously. Within the outskirts separation is greatly reduced because the newcomers are moving to plots currently available for sale. This leads to an almost random pattern, which is slightly modified by the state of infrastructure. However, in the attractive outskirts and other inner areas rural gentrification

process starts, then newcomers may displace the old residents.

In contrast to the previous researches, neither the distance from the centre nor physical conditions are decisive factors. Accessibility – especially the availability of public transport – has the greatest impact on the development of those areas; hence a patchy and mosaic-like spatial structure is formed instead of a coherent ring of suburbia in the rural-urban fringe of Hungarian towns and cities. At a micro level renewing and rapidly declining zones are randomly located in the areas and there may be some hot spots of changes developing in the opposite direction within a street. Therefore suburbanisation at outskirts and other inner areas is slightly different from the forms of the sovereign villages and towns in agglomerations which have been examined in detail.

Local governments cannot handle these phenomena, because they do not have the necessary funding, and on the other hand, they don't have enough information even to survey the problem due to the distrustful, hardly approachable local residents and the lack of statistical databases. Therefore, settlement geography has a prominent role in laying the foundations of practical interventions aimed to resolve the numerous existing conflicts of the outskirts and other inner areas of the suburbs.

## References

- Antrop, M. (2004). Landscape change and the urbanization process in Europe. *Landscape and Urban Planning*, 67(1-4), 9-26. doi:10.1016/S0169-2046(03)00026-4
- Bajmócy, P. (2003). Sikeresek, de falvak?, Nagyvárosaink néhány egyéb belterületének fejlődése 1980-tól napjainkig. In T. Kovács (Ed.), *A vidéki Magyarország az EU-csatlakozás előtt. VI. Falukonferencia*. Pécs: MTA RKK - MRTT. Pécs, pp. 160-165. (in Hungarian with English summary).
- Bajmócy, P. (2014). A szuburbanizáció két évtizede Magyarországon. In T. Kóródi, M.J. Sansumné, S.B. Siskáné, & E. Dobos (Eds.), *VII. Magyar Földrajzi Konferencia Kiadványa*. Miskolc: Miskolci Egyetem Földrajz - Geoinformatika Intézet. pp. 24-34. (in Hungarian with English summary).
- Bajmócy, P., & Balogh, A. (2012). Egykori majorok tipizálása Vas megyei példákön. *Földrajzi Közlemények*, 2, pp. 165-181. (in Hungarian with English summary).

- Bajmócy, P., & Makra, Z. (2016). Központi-, egyéb belterületek és külterületek népesedési trendjei Magyarországon 1960-2011 között. *Településföldrajzi Tanulmányok*, 2, pp. 3–21. (in Hungarian with English summary).
- Balogh, A. (2012). *A külterületek településföldrajzi vonatkozásai. Nyugat-Magyarországi Egyetem Savaria Egyetemi központ Tudományos közleményei (Természettudományok 14)*. Szombathely: NYME Kiadó. 127–138. (in Hungarian with English summary).
- Balogh, A. (2012). A Nyugat-dunántúli régió külterületi településrészeinek földrajzi sajátosságai. In V. Pál (Ed.), *A társadalomföldrajz lokális és globális kérdései: Tiszteletkötet Dr. Mészáros Rezső professzor 70. születésnapja alkalmából*. Szeged: SZTE TTIK Gazdaság- és Társadalomföldrajz Tanszék. pp. 134–145. (in Hungarian with English summary).
- Balogh, A., & Csapó, T. (2013). Manors and scattered farms. special settlement forms of outskirts areas in Hungary. *Revija Za Geografijo / Journal For Geography*, 2, pp. 81–94.
- Becsei, J. (2010). Az alföldi tanyarendszer településmorfológiai sajátosságai. *Tér-Talénum-Tanítványok*, 1, pp. 57–72. (in Hungarian with English summary).
- Becsei, J. (2015). Az alföldi tanyarendszer. In S. Kókai & L. Boros (Eds.), *Tiszteletkötet Dr. Gál András geográfus 60. születésnapja alkalmából*. Nyíregyháza-Szerencs: NyF TFI Bocskai István Katolikus Gimnázium. pp. 83–104. (in Hungarian with English summary).
- Beluszky, P. (1982). Egy alig ismert településedezeti elem, a kertség. *Földrajzi Értesítő*, 2-3, pp. 325–328. (in Hungarian).
- Bourne, L.S. (1996). Reinventing the suburbs: Old myths and new realities. *Progress in Planning*, 46(3), 163–184. doi:10.1016/0305-9006(96)88868-4
- Brade, I., Smigiel, C., & Kovács, Z. (2009). Suburban residential development in post-socialist urban regions. the case of Moscow, Sofia, and Budapest.. In H. Kilper (Ed.), *New Disparities in Spatial Development in Europe*. (pp. 79–104). Berlin, Heidelberg: Springer Nature. doi:10.1007/978-3-642-03402-2\_7
- Brown, D.L., & Schafft, K.A. (2002). Population deconcentration in Hungary during the post-socialist transformation. *Journal of Rural Studies*, 18(3), 233–244. doi:10.1016/S0743-0167(01)00046-8
- Bryant, C.R. (1995). The role of local actors in transforming the urban fringe. *Journal of Rural Studies*, 11(3), 255–267. doi:10.1016/0743-0167(95)00020-n
- Clouth, H.D. (1976). *Rural geography. an introductory survey*. Oxford: Pergamon.
- Csanádi, G., & Csizmady, A. (2002). Szuburbanizáció és társadalom. *Tér és társadalom*, 3, pp. 83–107.
- Csatári, B., & Farkas, J. (2012). A város-vidék peremzóna sajátos geográfiai jellemzői és konfliktusai Kecskemét példáján. In A. Farsang, L. Mucsi, & B.I. Keveiné (Eds.), *Táj - érték, lépték, változás*. Szeged: GeoLitera. pp. 197–210. (in Hungarian with English summary).
- Csatári, B., Farkas, J.Z., & Lennert, J. (2013). Land use changes in the rural-urban fringe of Kecskemét after the economic transition. *Journal of Settlements and Spatial Planning*, 2, pp. 153–159.
- Dövényi, Z., & Kovács, Z. (1999). A szuburbanizáció térbeni-társadalmi jellemzői Budapest környékén. *Földrajzi Értesítő*, 1–2, pp. 33–57. (in Hungarian with English summary).
- Dövényi, Z. (2009). A belső vándormozgalom Magyarországon. *Folyamatok és struktúrák. Statisztikai Szemle*, 7-8, pp. 748–762. (in Hungarian with English summary).
- Égető, M. (2003). A filoxeravésztlől a második világháborúig. *Rubicon*, 1-2, pp. 84–87. (in Hungarian).
- Gant, R.L., Robinson, G.M., & Fazal, S. (2011). Land use change in the 'edgeland's': Policies and pressures in London's rural-urban fringe. *Land Use Policy*, 28(1), 266–279. doi:10.1016/j.landusepol.2010.06.007
- Hardi, T. (2002). Szuburbanizációs jelenségek Győr környékén. *Tér és Társadalom*, 3, pp. 57–83. (in Hungarian with English summary).
- Hardi, T., & Nárαι, M. (2005). Szuburbanizáció és közlekedés a győri agglomerációban. *Tér és Társadalom*, 1, pp. 81–101. (in Hungarian with English summary).
- Hardi, T. (2012). Győr, Miskolc és Pécs agglomerációja a vidéki szuburbanizációban. In P.E. Somlyodyné (Ed.), *Az agglomerációk intézményesítésének sajátos kérdései*. Pécs: Publikon. pp. 15–42. (in Hungarian).
- Helling, A. (2002). Transportation, Land Use and the Impacts on Srawl on Poor Children and Families. In G.D. Squires (Ed.), *Urban Sprawl. Causes, Consequences, and Policy Responses*. Washington DC: Urban Institute. pp. 119–139.
- Hirt, S.A. (2008). Stuck in the suburbs? Gendered perspectives on living at the edge of the post-communist city. *Cities*, 25(6), 340–354. doi:10.1016/j.cities.2008.09.002
- Kok, H., & Kovács, Z. (1999). The process of suburbanization in the agglomeration of Budapest. *Netherlands Journal of Housing and the Built Environment*, 14(2), 119–141. doi:10.1007/bfo2496818
- Kok, H. (1999). Migration from the city to the countryside in Hungary and Poland. *GeoJournal*, 49(1), 53–62. doi:10.1023/a:1007092228633
- Kovács, A.D. (2010). Kecskemét-Méntelek - a sajátos helyzetű, tanyás városrész - településkörnyezeti jellemzői és társadalmának jövőbeni elképzelései. In V. Szabó & I. Fazekas (Eds.), *II. Települési Környezeti Konferencia*. Debrecen: Debreceni Egyetem Tá-

- ívvelmi és Környezetföldrajzi Tanszék. pp. 49–54. (in Hungarian with English summary).
- Kubeš, J. (2013). European post-socialist cities and their near hinterland in intra-urban geography literature. *Bulletin of Geography. Socio-economic Series*, 19(19), 19–43. doi:10.2478/bog-2013-0002
- Mcmanus, R., & Ethington, P.J. (2007). Suburbs in transition: new approaches to suburban history. *Urban History*, 34(02), 317–337. doi:10.1017/s096392680700466x
- Nuissl, H., & Rink, D. (2005). The ‘production’ of urban sprawl in eastern Germany as a phenomenon of post-socialist transformation. *Cities*, 22(2), 123–134. doi:10.1016/j.cities.2005.01.002
- Ónodi, G., Cros, K.Z., Gubicua, C., Horváth, J., & Molnár, M. (2002). A kertsek és kertművelés szerepe és jövője I. Településrendezési, szabályozási javaslatok. *Falu-Város-Régió. Falu-Város-Régió*, 2, pp. 3–8. (in Hungarian).
- Ott, T. (2001). From Concentration to De-concentration — Migration Patterns in the Post-socialist City. *Cities*, 18(6), 403–412. doi:10.1016/s0264-2751(01)00032-4
- Ouředníček, M. (2007). Differential suburban development in the prague urban region. *Geografiska Annaler: Series B, Human Geography*, 89(2), 111–126. doi:10.1111/j.1468-0467.2007.00243.x
- Phillips, M. (2009). Counterurbanisation and rural gentrification: an exploration of the terms. *Population, Space and Place*, 6, 539–558. doi:10.1002/psp.570
- Pacione, M. (2013). Private profit, public interest and land use planning—A conflict interpretation of residential development pressure in Glasgow’s rural-urban fringe. *Land Use Policy*, 32, 61–77. doi:10.1016/j.landusepol.2012.09.013
- Pócsi, G. (2009). Dinamikus átalakulások Budaihegyen, Kecskemét város-vidék peremzónájában. In T. Csapó & (. Kocsis (Eds.), *A közép- és nagyvárosok településföldrajza*. Szombathely: Savaria University Press. pp. 322–334. (in Hungarian with English summary).
- Pócsi, G. (2011). Land Use Change of the ‘Small Hobby Gardens’ in the Peri-Urban Area of Szeged, Hungary. *Forum geografic*, 10(2), 312–321. doi:10.5775/fg.2067-4635.2011.018.d
- Pryor, R.J. (1968). Defining the Rural-Urban Fringe. *Social Forces*, 47(2), 202–215. doi:10.2307/2575150
- Roose, A., Kull, A., Gauk, M., & Tali, T. (2013). Land use policy shocks in the post-communist urban fringe: A case study of Estonia. *Land Use Policy*, 30(1), 76–83. doi:10.1016/j.landusepol.2012.02.008
- Sharp, J.S., & Clark, J.K. (2008). Between the Country and the Concrete: Rediscovering the Rural-Urban Fringe. *City & Community*, 7(1), 61–79. doi:10.1111/j.1540-6040.2007.00241.x
- Schafft, K. (2000). A network approach to understanding post-socialist rural inequality in the 1990’s. *Eastern European Countryside*, 6, pp. 25–40.
- Schuchmann, J. (2010). Szuburbanizáció vagy Reurbanizáció jellemzi ma a Budapesti agglomerációt?, Válaszok az eltérő fejlettségű szuburbán lakosság lakóhelyi elégedettsége és költözési szándékainak elemzése alapján. In T. Csapó & (. Kocsis (Eds.), *A településföldrajz aktuális kérdései..* Szombahely: Savaria Press. 131–142. (in Hungarian with English summary).
- Soltész, J. (1990). Borsod-Abaúj-Zemplén megye zártkertjeinek helyzete, különös tekintettel a Tokaj-Hegyaljai történelmi borvidékre. *A Falu*, 4, pp. 33–40.
- Stockdale, A. (2010). The diverse geographies of rural gentrification in Scotland. *Journal of Rural Studies*, 26(1), 31–40. doi:10.1016/j.jrurstud.2009.04.001
- Sýkora, L., & Bouzarovski, S. (2012). Multiple Transformations. Conceptualising the Post-communist Urban Transition. *Urban Studies*, 49(1), 43–60. doi:10.1177/0042098010397402
- Szelényi, I. (1996). „Cities under Socialism - and After. „ In *Cities After Socialism. Urban and Regional Change and Conflict*. In G. Andrusz, M. Harloe, & I. Szelényi (Eds.), *Post-Socialist Societies*. Oxford: Blackwell. pp. 286–317..
- Szirmai, V. (2011). Urban sprawl in Europe. An Introduction. In V. Szirmai (Ed.), *Urban Sprawl in Europe. Similarities or Differences?*. Budapest: Aula Kiadó. pp. 15–44.
- Tanmaru, T. (2001). Suburban Growth and Suburbanisation under Central Planning: The Case of Soviet Estonia. *Urban Studies*, 38(8), 1341–1357. doi:10.1080/00420980123612
- Timár, J. (1993). A városok körüli rurális peremzóna átalakulásának néhány sajátossága az alföldön. In Kovács, T. (eds). *Kiút a Válságból. II. falukonferencia*. MTA RKK, Pécs, in Hungarian with English summary). In T. Kovács (Ed.), *Kiút a Válságból. II. falukonferencia*. Pécs: MTA RKK. pp. 303–308.
- Timár, J. (1990). Kérdőjelek és hiányjelek a tanyakutatásban. *Tér és Társadalom*, 2, pp. 49–62. (in Hungarian with English summary).
- Timár, J. (1999). Elméleti kérdések a szuburbanizációról. *Földrajzi Értesítő*, 1–2, pp. 7–31. (in Hungarian with English summary).
- Timár, J., & Baukó, T. (1999). A „város-vidék peremzóna”, néhány sajátossága és szerepe az alföldi városok átalakulásában. *Alföldi tanulmányok*, 17, pp. 94–111. (in Hungarian with English summary).
- Timár, J. (2001). A háztartási „túlélési stratégiák” területi szempontú kutatásának néhány elméleti kérdése és empirikus eredménye az átmenet időszakában Magyarországon. In Z.I. Ekéné (Ed.), *10 éves*

- a Debreceni Egyetem Társadalomföldrajzi és Területfejlesztési Tanszéke*. Debrecen: DE Társadalomföldrajzi és Területfejlesztési Tanszé. pp. 209–218. (in Hungarian with English summary).
- Timár, J., & Váradi, M.M. (2001). The uneven development of suburbanisation during transition in Hungary. *European Urban and Regional Studies*, 4, pp. 349–360.
- Timár, J. (2010). Van-e poszt szocialista urbanizáció?, néhány gondolat a magyarországi szuburbanizációról és dzsentifikációról. In Barta, Gy. et. al. (eds.). *A területi kutatások csomópontjai*. MTA RKK, Pécs, in Hungarian with English summary). In (. Barta & et. al. (Eds.), *A területi kutatások csomópontjai*. Pécs: MTA RKK.
- Tóth, Z. (2000). Településkörnyezet II. Az épített környezet. In G. Enyedi (Ed.), *Magyarország településkörnyezete*. Budapest: MTA. pp. 151–186. (in Hungarian).
- Váradi, M.M. (2013). Megélhetés és támogató kapcsolatok - az aprófalusi szegénység arcai. Esettanulmány 2008-ból. In K. Kovács & M.M. Váradi (Eds.), *Hátányban vidéken*. Budapest: Argumentum Kiadó. pp. 106–131. (in Hungarian with English summary).
- Váradi, M.M. (2015). A túlélés és a társadalmi betago-lódás között. szegénység, kirekesztettség és kapcsolatrendszerek. In T. Virág (Ed.), *Törésvonalak. Szegénység és etnicitás vidéki terekben..* Budapest: Argumentum Kiadó. 45–68. (in Hungarian with English summary).
- Váradi, M.M. (1999). Hová megyünk lakni?, Szuburbanizációs minták és konfliktusok a budapesti agglomeráció budai oldalán. Esettanulmány. In (. Barta & P. Beluszky (Eds.), *Társadalmi-gazdasági átalakulás a budapesti agglomerációban*. Budapest: Regionális Kutatási Alapítvány. 115–129.
- Weaver, D.B., & Lawton, L.J. (2001). Resident Perceptions in the Urban-Rural Fringe. *Annals of Tourism Research*, 2, pp. 439–458.
- Yue, W., Liu, Y., & Fan, P. (2013). Measuring urban sprawl and its drivers in large Chinese cities. The case of Hangzhou. *Land Use Policy*, 31, 358–370.

# A Hierarchical Approach of Hybrid Image Classification for Land use and Land cover Mapping

---

Vahid Rahdari<sup>A</sup>, Alireza Soffianian<sup>A\*</sup>, Saeid Pourmanafi<sup>A</sup>,  
Razieh Mosadeghi<sup>B</sup>, Hamid Ghaiumi Mohammadi<sup>C</sup>

Received: August 22, 2017 | Revised: October 6, 2017 | Accepted: November 27, 2017

DOI: 10.5937/22-16620

## Abstract

Remote sensing data analysis can provide thematic maps describing land-use and land-cover (LULC) in a short period. Using proper image classification method in an area, is important to overcome the possible limitations of satellite imageries for producing land-use and land-cover maps. In the present study, a hierarchical hybrid image classification method was used to produce LULC maps using Landsat Thematic mapper TM for the year of 1998 and operational land imager OLI for the year of 2016. Images were classified using the proposed hybrid image classification method, vegetation cover crown percentage map from normalized difference vegetation index, Fisher supervised classification and object-based image classification methods. Accuracy assessment results showed that the hybrid classification method produced maps with total accuracy up to 84 percent with kappa statistic value 0.81. Results of this study showed that the proposed classification method worked better with OLI sensor than with TM. Although OLI has a higher radiometric resolution than TM, the produced LULC map using TM is almost accurate like OLI, which is because of LULC definitions and image classification methods used.

**Keywords:** Error matrix, Hierarchical classification, Iran, land use/cover, Plasjan sub-basin

## Introduction

---

Satellite data are often used to prepare land-use and land-cover maps. (Chrysoulakis et al., 2010; Lakshmi et al., 2015). Selection of proper land-use classification method is crucial in many inventories especially in watershed's uplands, which are usually water sources for wetlands (Anderson, 1976; Purkis et al., 2006; Mie et al., 2015; Tian et al., 2015). When satellite images data are used to produce LULC map, it is often very difficult to identify spectrally unique land-use/cover classes because of similar spectral responses arising from different features (Roy et al., 2014; Knudbya et al., 2014; Es-

toque & Murayama, 2015; Lakshmi et al., 2015). Several methods can be employed to produce LULC by employing remote sensing data (Purkis & Klemas, 2011; Lakshmi et al., 2015; Al-doski et al., 2013). However, it should be noted that in case land surface objects have a similar reflectance or a small area, most of them could not provide high accurate maps (Gao & Xu, 2016). Using low radiometric resolution imageries, land classification can be a serious challenge because of spectral mixing of different surface elements and landscape complexity (Julien et al., 2011; Stenzel et al., 2016).

<sup>A</sup> Natural Resource Faculty, University of Zabol, Iran, Vahid\_rahdari@yahoo.com; soffianian@cc.iut.ac.ir; Spmanafi@yahoo.com

<sup>B</sup> Griffith Centre for Coastal Management, Griffith University, QLD, Australia, R.mosadeghi@griffith.edu.au

<sup>C</sup> Soil & Geomorphology in Iranian Soil and Water Research Institute, Isfahan, Iran, hghaiumi@gmail.com

\* Corresponding author: Alireza Soffianian, e-mail: soffianian@cc.iut.ac.ir

In such cases, application of hybrid classification approach in hierarchical way will produce better land-use/land-cover maps (Lakshmi et al., 2015). In this method, land-use/land-cover maps are produced by combining different methods like unsupervised, supervised, object-based methods and different indices produced from satellite images (Anderson, 1976; Homer et al., 2004; Di Gregorio, 2005; Disperati et al., 2015; Misra & Balaji, 2015; Lakshmi et al., 2015).

Several studies compared the accuracies obtained by different image classification methods and ap-

plied imageries with different radiometric resolutions for producing accurate LULC maps (Benfield et al., 2007; Alves et al., 2012; Vieira et al., 2012; Al-doski et al., 2013; Knudbya et al., 2014; Estoque & Murrayama, 2015; Mei et al., 2015; Disperati et al., 2015; Poursanidis et al., 2015; Mirsa & Balaji, 2015; Knudby et al., 2015).

The objective of this study is to develop a hybrid classification method to prepare accurate land-use/cover maps even when imageries with lower radiometric resolutions are used.

## Methods and data

### The study area

The study area was Pelasjan sub-basin including the western part of the Gavkhooni watershed located in central Iran and covering approximately 412,999 hectares. The Zayandehrood is the major river in Gavkhooni watershed to which Pelasjan sub-basin gives the highest portion of water. The Gavkhooni wetland is located in the eastern part of Gavkhooni watershed and is the terminal basin of the Zayandehrood River. Pelasjan sub-basin average temperature is 8-13 C° with 400-1250 mm precipitation. Agriculture activities and animal husbandry are the main activities of people living in these areas. Figure 1 shows the location of the Zayandehrood River Basin and Pelasjan sub-basin in the western part of the Gavkhooni wetland in Iran.

### Dataset

The Operational Land Imager (OLI) and Thematic Mapper (TM) sensors were launched with Landsat satellites and are useful in natural resources studies. OLI sensor measures in the visible, near infrared, and short wave infrared portions of the spectrum in 11 bands. TM sensors with 7 bands are in visible wavelengths and in infrared. The temporal resolution of both TM and OLI are 16 days. Considering the fact that the study area was located between two Landsat paths, 164 and 165, two images were downloaded from the USGS website. Because the highest vegetation cover was in June and August, satellite images were downloaded for susceptible months. Table 1 shows satellite data selected for this study.

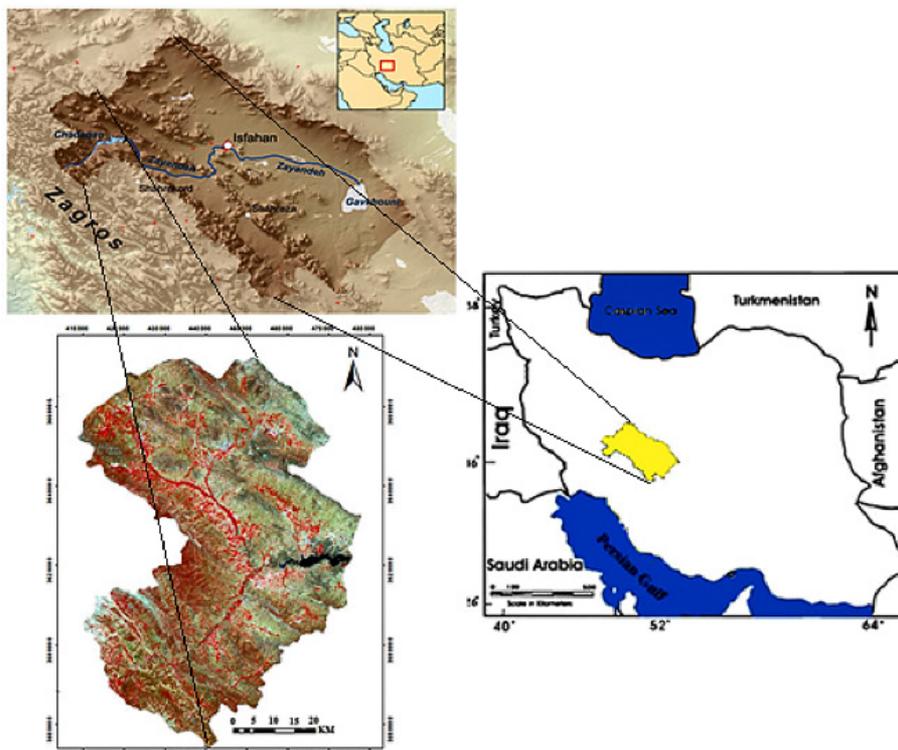


Figure 1. Pelasjan sub-basin located in the western part of Gavkhooni wetland

**Table1.** Satellite sensor specification

Date	Satellite	Sensor	Sensor ID	Pixel size
13-AUG-1998	Landsat	TM	Path/row 165/37	30
06-AUG-1998	Landsat	TM	Path/row 164/37	30
10-JUN-1998	Landsat	TM	Path/row 165/37	30
03-JUN-1998	Landsat	TM	Path/row 164/37	30
03-Jan-1998	Landsat	TM	Path/row 164/37	30
09-JUN-15	Landsat	OLI	Path/row 165/37	30
02-JUN-15	Landsat	OLI	Path/row 164/37	30
12-AUG-15	Landsat	OLI	Path/row 165/37	30
5-AUG-15	Landsat	OLI	Path/row 165/37	30

In addition, aerial images, digital elevation model 1:25/000 topographic maps were used to best understand the study area’s situation.

**Field studies**

Field studies were conducted to collect training areas for each LULC class to be used in the image classification. Positions of the lands under agricultural areas were determined with GPS. To check the status of the vegetation cover crown percentage (VCCP), 270 plots with 7.3 meters were measured.

In this study, samples from each LULC were collected by paying attention to imageries spatial resolution (30m); and they were collected in a homogenous area of LULC. In this order, we take samples in homogenous areas, which at least are more than 30-metersdistant from margins. Therefore, by avoiding marginal land-use/land-cover reflectance, we achieve almost pure reflectance samples for each LULC.

Because there were not enough data for 1998 image, by using topographic maps and aerials and by comparing TM and OLI image false color composites (FCC), NDVI images values in TM and OLI and field studies, VCCP in each recorded plot was predicted.

**LULC classification**

Based on the available data and field studies, 7 LULC classes were defined for the study area (Table 2).

**Satellite image Pre-processing**

Earth atmosphere is a mixed of gases, liquid and solid particles, most of these are optically active causing absorption, diffusion and scattering. Signals which measured at the satellite is the emergent radiation from the earth surface atmosphere system in the sensor observation direction. The radiance measured at sensor is known as Top of Atmosphere (TOA) radiance. Atmospheric corrections aim to convert the TOA radiance of the objects into the near earth reflectance (Lakshmi et al., 2015). Atmospheric correction was done using Fast Line-of-sight Atmospheric Analysis of Spectral Hypercubus (FLAASH) algorithm. FLAASH was developed to provide accurate, physics-based derivation of atmospheric properties in Envi 5.1. FLAASH includes correction for the adjacency effect, cirrus and opaque cloud classification and adjustable spectral polishing for artifact suppression (Jia et al, 2014; Lakshmi et al., 2015).

**Satellite image processing – Hierarchical image classification**

First, for image processing, the conceptual model of the three-level earth’s surface matrix that was shown in Figure 2 was applied on both TM and OLI data.

**Table 2.** LULC classification (Feranec, et al., 2007; Feranec, et al., 2010)

Short description	Class
Agricultural arewhich mainly are drainage with other than rain water	Drainage agriculture
Agriculture areas that irrigate only with rain water	Rain-fed agriculture
Natural vegetation upper than 50%	Dense range land
Vegetation cover crown less than 50%	Sparse range land
Trees with rangelands	Forest
Housing developments	Residential areas
water bodies including; dam, natural and manmade lakes	Water bodies

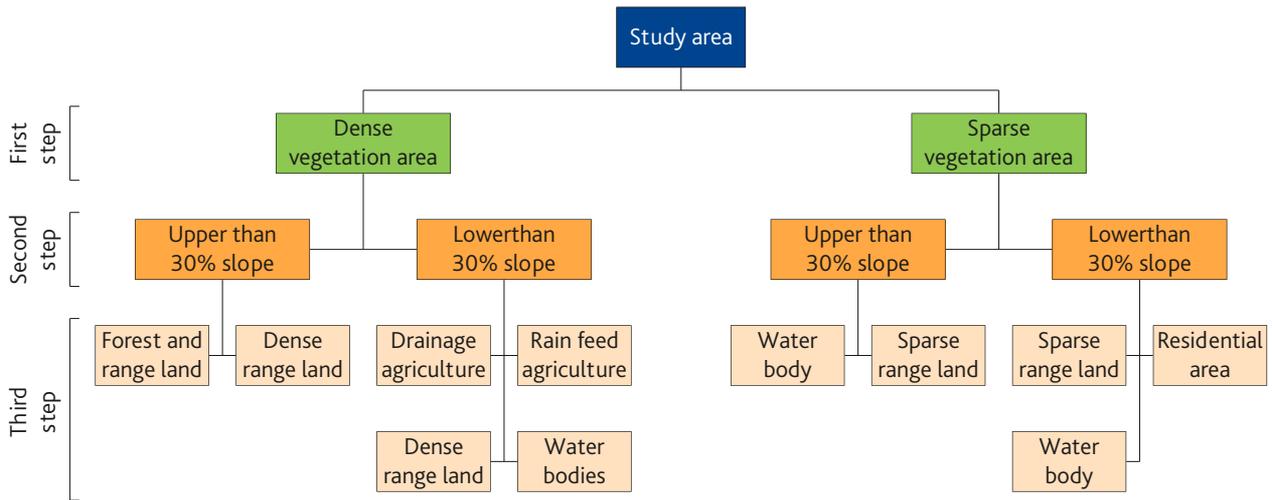


Figure 2. Hierarchical structure of Pelasjan matrix

### First step

At this step, the lower cover crown percentage of rain-fed agriculture was considered as the threshold of 50% cover crown for separating from sparse rangeland and other LULC. To map VCCP, NDVI index was used as follows (Equation 1) (Mukherjee, 2004; Oldeland et al., 2010; Peña & Brenning, 2015):

$$NDVI = \frac{NIRb - REDb}{NIRb + REDb}$$

Simple linear regression was done between samples taken as the dependent variables and their NDVI values for each image as independent variables. Using prepared VCCP models, the VCCP maps prepared two classes of dense vegetation and sparse vegetation. Field control and comparison with FCC image showed that there were some mixings between the cultivation area (especially rain fed agriculture) and dense rangeland. In this step, because of drainage, agriculture areas separate more correctly.

### Second step

For initial separation of the rain-fed agricultural area and dense rangeland during field studies, and by overlaying first step vegetation map on slope percentage image, it become clear that 30 percent slope was the threshold between rain-fed area and dense rangeland. On the other hand, there was no rain-fed cultivation over 30 percent slope in mountain areas. By applying 30 percent slope threshold in the first step, dense vegetation in more than 30 percent, which were mostly dense rangelands and forests, were separated from dense vegetation in less than 30 percent slope

that were mostly drainage and rain-fed agricultural areas (Figure 2).

### Third level

On the third level of the hierarchical model (Figure 2), four categories: drainage, rain-fed agriculture, forest and dense rangeland were considered as the sub-classes for the dense vegetation (>50% vegetation coverage). On the other hand, three categories were determined as the sub-classes for the low-density vegetation (<50%) including residential areas, sparse rangeland, and land under water. Because agriculture lands have geomatics shapes, by paying attention to their reflectance and their shape, they were classified as rain-fed and drainage agriculture using object-based image classification method, and were separated from satellite data. Other LULCs were classified with Fisher supervised image classification. Residential area maps for TM image were produced using TM image for January 1998 when the land was totally covered with snow, only residential areas did not have snow cover; and residential areas were separated by applying Fisher image classification method.

Finally, all the individual layers were combined to produce LULCs maps.

### Maps accuracy assessment

For accuracy assessment, samples were collected in field studies and were used for TM images. Some areas were selected as samples by considering field studies results and FCC images comparison. The overall accuracy and Kappa coefficient, commission error and omission were also determined.

## Results and discussion

### Satellite image classification

In supervised classification methods, especially in Fisher classification method, to produce accurate maps, it is important to take samples that are really pure samples of each land-use reflectance (Al-doski et al., 2013). Therefore, samples for each land-use must be prepared in areas far from margins of a land-use/land-cover. In this study, by proposing a sampling in heterogeneous area of each land-use/land-cover and by taking at least 30 meters distance from marginal land-use/land-cover (pixels in border of two land uses/land covers), we managed to achieve pure samples that were really samples of a land use/land-cover (LULC).

Image classifications results have shown that LULC classes with similar reflectance values in different bands have more errors. Moreover, small patches of isolated land covers can increase the classification errors because of impacts of the reflections from the adjacent pixels. In their studies, Luna, Cesar (2003); Yuan et al.(2005); Kamusoko and Aniya (2007); Lakshmi et al. (2015); Estoque and Murayama (2015), mentioned that similarity between LULCs increase errors in image classification. Kamusoko and Aniya (2007) explained that the accuracy of the classification depends on the degree of differentiation among the spectral reflections of LULC classes. Figures 3a and 3b

show graphs signatures over used bands for TM and OLI simultaneously either as a spectral response pattern or mean reflectance ( $b_{1,...,n}$  = band number).

As shown in figures 3a and 3b, especially the dense rangeland and rain-fed agriculture follow almost similar reflectance patterns in all bands of the imager (19). In these images, rain-fed, dense rangeland and forest almost have the same reflectance trend. Residential areas have high reflectance in all bands, and water reflectance is the lowest after near infrared band.

In this study, by paying attention to LULC similarity and complexity, hierarchical scheme of LULC was designed for satellite image classification. Disperati et al. (2015), for satellite image classification, designed 3 and 4 levels for land classes and mentioned they produced land maps in each level; and at the end, they combined all results together to achieve the final LULC map.

In this study, for VCCP, models were prepared using NDVI index that is a common and useful vegetation index for surviving different kinds of plants (Mukherjee, 2004; Oldeland et al., 2010; Jovanović et al., 2015). Formulae 2 and 3 have shown the vegetation cover crown percentage model.

*Equivalent 2:*

$$Y = 179.3X + 24.89$$

$$R^2 = 0.89 \text{ P-value} < 0.01 \text{ for the year 2016}$$

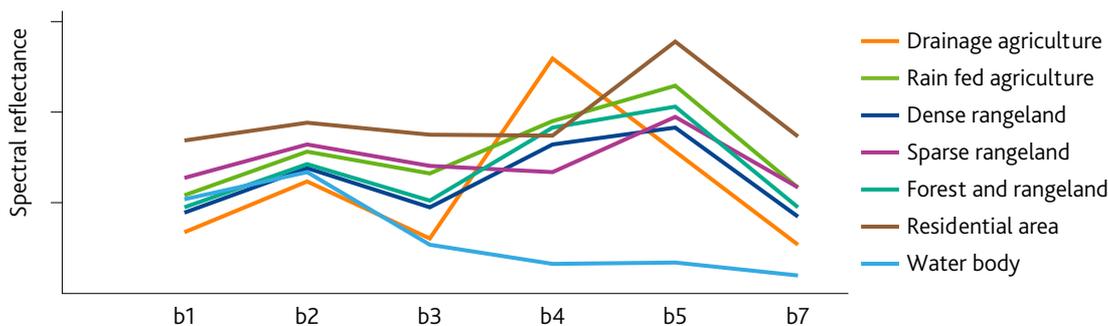


Figure 3a. An example of the spectral profile for TM

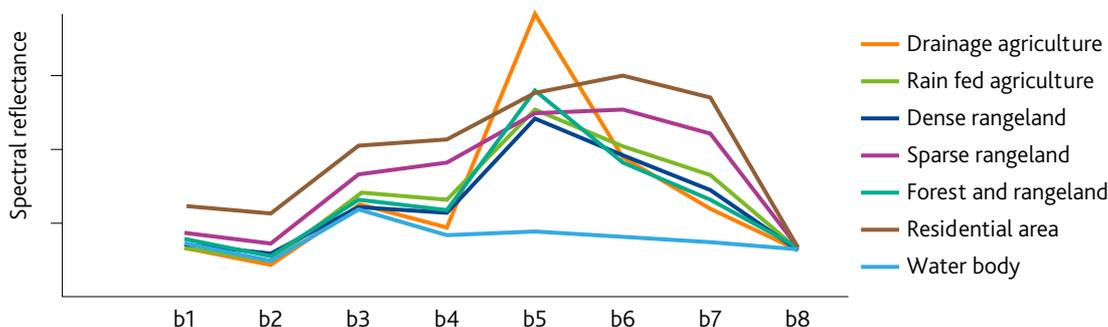


Figure 3b. An example of the spectral profile for OLI

*Equivalent 3:*

$$Y = 240.95X + 16.13$$

$$R^2 = 0.80 \text{ P-value} < 0.0 \text{ for the year 1998}$$

Where Y is vegetation cover crown percentage, and X is values in NDVI index.

The range of NDVI values are -1 to 1, the lower values show lower VCCP and the upper values are related to areas with more VCCP. In this study, initial image classifications showed that it was not possible to separate agricultural area especially rain-fed agriculture from dense rangeland. In addition, NDVI classification on the basis of produced modes could not separate dense rangeland from agriculture areas in the first level. The field samplings and overlaying FCC images on slope map indicated that dense rangelands are normally located on slopes greater than 30 percent in mountain areas, while drainage and rain-fed agriculture were located on slopes less than 30 percent slope. Thus, by overlaying the slope layer on the satellite images in GIS area using multiple method, dense rangelands which were mostly located on mountain areas were separated.

Finally, LULC maps were proposed using the conceptual model, and images were classified with hybrid

method in 7 layers for years 1998 and 2016. Yuan, et al. (2005); Kamusoko and Aniya (2007) used hybrid image classification and explained that this method is applicable in land with complex reflectance. Figures 4a and b and 5a and b, respectively show LULC maps of the area in the second and third stages. Table 4 shows each class area in hectares.

Residential areas that were small patches were distributed across the study area, and therefore their reflectance was influenced by the neighboring pixels (Malmir et al., 2015). Fisher classification method was able to separate the residential areas in both sensors. In some cases, residential areas and low-density rangeland were classified as one class in TM sensor images. Fisher supervised classification method can separate LULC with high accuracy when training sites were collected accurately (Al-doski et al., 2013). In this study, samples from each LULC were collected by paying attention to OLI spatial resolution; and they were collected in homogenous areas. Table 4 shows there is no significant change in drainage agriculture area and increase in rain-fed agriculture. From 1998 to 2016, water area in The Zayandehrood dam had a 1671-hectare decrease. On the basis of table 2, during this time, dense rangelands and forests decreased, too.

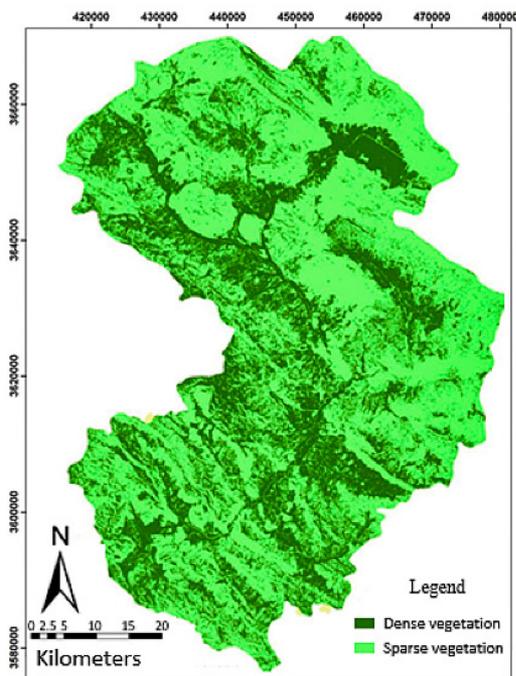


Figure.4a. Dense and sparse vegetation (level 2)

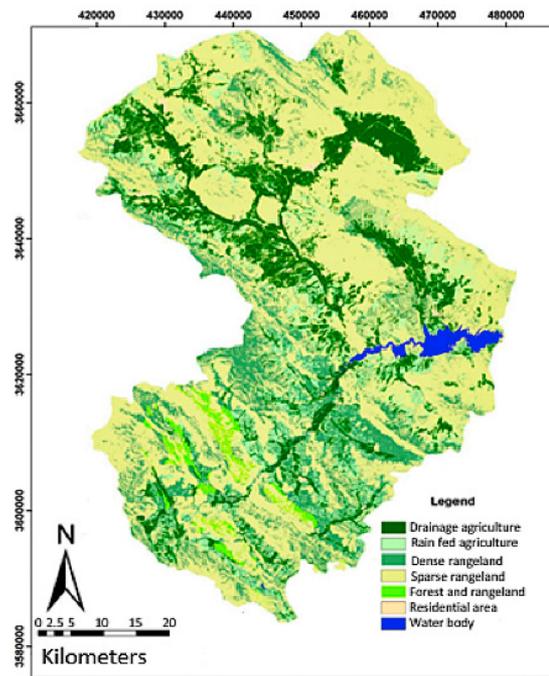
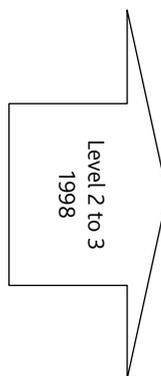


Figure.4b. LULC map (level 3)

Table 4. Pelasjan sub-basin LULC area (Hectare)

LULC class/ Area (ha)	Drainage agriculture	Rain-fed agriculture	Dense range land	Sparse range land	Forest	Residential area	Water body
Class area 1998	58665	18285	58135	257929	12028	3467	4490
Class area 2016	58029	25685	48854	262406	11102	4269	2654

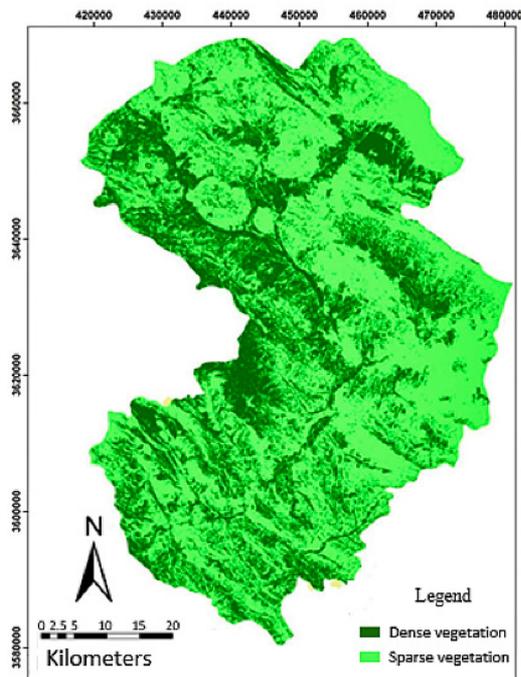


Figure 5a. Dense and sparse vegetation 5(level 2)

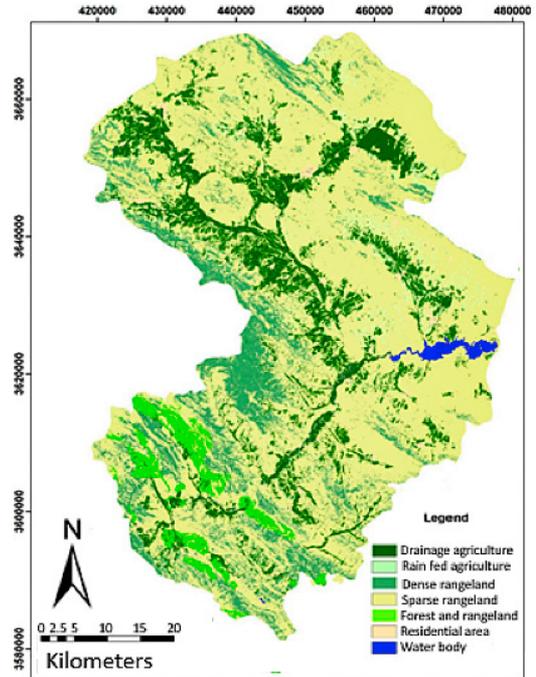
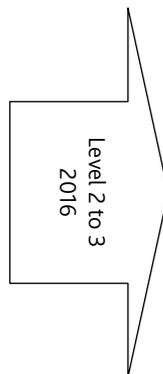


Figure 5b. 9LULC map (level 3)

### Accuracy assessment of classification

In this study, for classification accuracy assessment using field study samples and produced maps, error matrices produced for hybrid method results, and kappa coefficient, overall accuracy, precision of producer and user, commission and omission errors were

calculated and shown in Tables 5 and 6 (Lunetta & Lyon, 2004; Benfield et al., 2007; Al-doski et al., 2015, Lakshmi et al., 2015).

Error matrices, tables 5 and 6, show that most errors related to misclassified areas are related to rain-fed and drainage agriculture areas and dense range

Table 5. LULC error matrix for map1998 (Pixel)

Classes	Drainage agriculture	Rain-fed agriculture	Dense range land	Sparse range land	Forest	Residential area	Water body	Total	ErrorC
Drainage agriculture	21695	448	1825	21	857	164	0	25037	0.1335
Rain-fed agriculture	1850	3017	1850	511	627	13	0	6069	0.5017
Dense range land	166	539	24564	2114	1947	1	0	29331	0.1625
Sparse range land	408	209	1772	42715	3721	550	0	49375	0.1351
Forest	0	0	1660	454	6973	0	0	7887	0.1159
Residential area	63	0	0	425	0	3636	0	3944	0.1021
Water body	0	0	0	0	0	0	14552	14552	0
Total	24119	4213	31671	46240	14125	4681	14552	136195	-
ErrorO	0.1028	0.2839	0.2244	0.0762	0.5063	0.2232	0	-	-

ErrorO = Errors of Omission (expressed as proportions)

ErrorC = Errors of Commission (expressed as proportions)

90% Confidence Interval = +/- 0.000815 (0.046447 - 0.048076)

95% Confidence Interval = +/- 0.000971 (0.046291 - 0.048232)

99% Confidence Interval = +/- 0.001278 (0.045984 - 0.048539)

Kappa: 0.81

Overall accuracy: 0.84

**Table 6.** LULC error matrix for map 2016 (Pixel)

	Drainage agriculture	Rain-fed agriculture	Dense range land	Sparse range land	Forest	Residential area	Water body	Total	ErrorC
Drainage agriculture	23608	998	463	106	93	95	0	25363	0.0692
Rain-fed agriculture	537	5240	1665	23	19	5	0	7489	0.3003
Dense range land	15	1047	28549	71	1019	0	0	29669	0.0700
Sparse range land	573	15	2758	43088	1336	181	0	48983	0.1203
Forest	0	0	1784	0	13241	0	0	15025	0.1187
Residential area	0	0	0	264	99	3390	0	3753	0.0967
Water body	0	0	0	0	0	0	14552	14552	0
Total	24733	7300	33577	45594	15907	3171	14552	144834	-
ErrorO	0.0454	0.2821	0.1893	0.0106	0.1623	0.0765	0	131668	-

*ErrorO = Errors of Omission (expressed as proportions)*

*ErrorC = Errors of Commission (expressed as proportions)*

*90% Confidence Interval = +/- 0.000815 (0.046447 – 0.048076)*

*95% Confidence Interval = +/- 0.000971 (0.046291 – 0.048232)*

*99% Confidence Interval = +/- 0.001278 (0.045984 – 0.048539)*

*Kappa: 0.87*

*Overall accuracy: 0.91*

lands together. Figures 3.a and b show that these misclassifications are related to similarity between drainage and rain-fed agriculture in dense rangeland areas. TM error matrix (table 5) has shown that most misclassifications are for relating rain-fed agriculture to dense rangelands and forests.

Table 6 indicates that in the map prepared by OLI image, rain-fed agriculture, drainage agriculture, dense and sparse rangelands were separated correctly. In prepared maps, some drainage agricultural pixels are wrongly related to residential areas because of small green spaces in residential areas. On the other hand, because forests included trees and rangeland to-

gether, in this class, there is a high misclassification between different vegetation classes, and therefore it has high commission and omission error in two imageries.

Using TM and OLI images, land-use/land-cover was extracted due to different reflectance behaviors of water compared to other phenomena (Figure 3 a and b). Tables 5 and 6 show produced map using TM sensor has overall accuracy 84% and with kappa coefficient 0.81, and produced map using OLI sensor has overall accuracy 91% and with kappa coefficient 0.87, which is more than TM. This difference was predictable because of OLI characteristics like more radiometric and spectral resolution.

## Conclusion

LULC spectral profiles have shown LULCs digital numbers were more separated in OLI with 16-bit than TM data, so this is the reason for the less accuracy in TM map with 8-bit radiometric resolution (Figures 3a and 3b). Applying proposed hybrid method inland hierarchy concept could produce almost the same accurate maps for two imageries data. In this study, Fisher classification (Al-doski et al., 2013), object-based classification (Blaschke, 2010; Vieira et al., 2012; Phinn et al., 2012), and NDVI vegetation index (Peña & Brenning, 2015; Oldeland et al., 2010) were used in designed hybrid classification method.

Error matrices have shown more accurate image classification results in the map provided by OLI sensor than TM, especially in mapping different vegetation types and separating land surfaces such as residential areas.

Considering the similarity of some LULC reflectance in this study, in the hierarchy concept of land matrix, hybrid method can produce acceptable LULC maps. Thus, providing detailed maps of LULC that have small areas and similar reflectance will be possible through appropriate methods for each defined land level using different imageries.

## References

- Al-doski, J., Shattri, M., & Zulhaidi, M.S. (2013). Image classification in remote sensing. *Journal of Environment and Earth Science*, 3(10), 141-147.
- Anderson, J.R. (1976). *A Land Use and Land Cover Classification System for Use with Remote Sensor Data*. U. S. Government Printing Office.
- Benfield, S.L., Guzman, H.M., Mair, J.M., & Young, J.A.T. (2007). Mapping the distribution of coral reefs and associated sublittoral habitats in Pacific Panama: a comparison of optical satellite sensors and classification methodologies. *International Journal of Remote Sensing*, 28, 5047-5070.
- Blaschke, T. (2010). Object based image analysis for remote sensing. *ISPRS Journal of Photogrammetry and Remote Sensing*, 65, 2-16.
- Chrysoulakis, N., Abrams, M., Feidas, H., & Korei, A. (2010). Comparison of methods using ASTER data for the area of Crete, Greece. *International Journal of Remote Sensing*, 31(24), 6347-6385.
- Di Gregorio, A. (2005). Di Gregorio, A. (2005). *Land cover classification system: Classification concepts and user manual: LCCS (No. 8)*. Rome: Food and Agriculture Organization of the United Nations.
- Disperati, L., Gonario, S., & Viridis, P. (2015). Assessment of land-use and land-cover changes from 1965 to 2014 in Tam Giang-Cau Hai Lagoon, central Vietnam. *Applied Geography*, 58, 48-64.
- Estoque, R.C., & Murayama, Y. (2015). Classification and change detection of built-up lands from Landsat-7 ETM+ and Landsat-8 OLI/TIRS imageries: A comparative assessment of various spectral indices. *Ecological Indicators journal*, 56, 205-217.
- Feranec, J., Hazeu, G., Christensen, S., & Jaffrain, G. (2007). CORINE land cover change detection in Europe (case studies of the Netherlands and Slovakia). *Land Use Policy*, 24(1), 234-247.
- Feranec, J., Jaffrain, G., Soukup, T., & Hazeu, G. (2010). Determining changes and flows in European landscapes 1990-2000 using Corine land cover data. *Applied Geography*, 30(1), 19-35.
- Gao, J., & Xu, L. (2016). An efficient method to solve the classification problem for remote sensing image. *AEU - International Journal of Electronics and Communications*, 69(1), 198-205.
- Homer, C., Huang, C., Yang, L., Wylie, B., & Coan, M. (2004). Development of a 2001 national land cover database for the United States. *Photogrammetric Engineering and Remote Sensing*, 70(7), 829-840.
- Jia, K., Wei, X., Gu, X., Yao, Y., Xie, X., & Li, B. (2014). Land cover classification using land sat 8 operation land imager data in Beijing, China. *Geocarto international*, 29(8), 941-951.
- Jovanović, M., & Milanović, M. (2015). Normalized Difference Vegetation Index (NDVI) as the Basis for Local Forest Management. Example of the Municipality of Topola, Serbia. *Polish Journal of Environmental Studies*, 24(2), 529-535.
- Julien, Y., Sobrino, J.A., & Jiménez-Muñoz, (2011). Land use classification from multi-temporal Landsat imagery using the Yearly Land Cover Dynamics (YLCD) method. *International Journal of Applied Earth Observation and Geoinformation*, 13, 711-720.
- Kamusoko, C., & Aniya, M. (2007). Land use/cover change and landscape fragmentation analysis in the Bindura District, Zimbabwe. *Land Degradation and Development*, 18(2), 221-233.
- Knudby, A., Mtwana, N.L., Palmqvist, G., Wikström, K., Koliji, A., Lindborg, R., & Gullström, M. (2014). Using multiple Landsat scenes in an ensemble classifier reduces classification error in a stable nearshore environment. *International Journal of Applied Earth Observation and Geo-information*, 28, 90-101.
- Lakshmi, N., Kantakumar, L.N., & Neelamsetti, P. (2015). Multi-temporal land use classification using hybrid approach. *The Egyptian Journal of Remote Sensing and Space Sciences*, 18(2), 289-295.
- Luna, A.R., & Cesar, A.R. (2003). Land use, land cover changes and coastal lagoon surface reduction associated with urban growth in northwest Mexico. *Landscape Ecology*, 18(2), 159-171.
- Lunetta, R.S., & Lyon, J.G. (2004). *Remote Sensing and GIS Accuracy Assessment*. CRC Press.
- Malmir, M., Kheirkhah, Z.M.M., Monavari, S.M., Jozi, S.A., & Sharifi, S. (2015). Urban development change detection based on Multi-Temporal Satellite Images as a fast tracking approach—a case study of Ahwaz County, southwestern Iran. *Environmental monitoring and assessment*, 187(3), 108.
- Mei, A., Ciro, M., Fontinovo, M., Bassani, A.A., & Petracchini, F. (2015). Landsat 8 vs. Landsat 5: A comparison based on urban and peri-urban land cover mapping Dimitris.. *Journal of African earth science*, 5, 15-24.
- Misra, A., & Balaji, R. (2015). A Study on the Shoreline Changes and LAND-use/ Land-cover along the South Gujarat Coastline. *Procedia Engineering*, 116, 381-389. doi:10.1016/j.proeng.2015.08.311
- Mukherjee, S. (2004). *Text Book of Environmental Remote Sensing*. New Delhi: Macmillan India Limited.
- Nurdin, N., Komatsu, T., Agus, , Akbar, A.M., Djilil, A.R., & Amri, K. (2015). Multisensor and multitemporal data from Landsat images to detect damage to coral reefs, small islands in the Spermonde ar-

- chipelago, Indonesia. *Ocean Science Journal*, 50(2), 317-325. doi:10.1007/s12601-015-0029-x
- Oldeland, J., Dorigo, W., Lieckfeld, L., Lucieer, A., & Jürgens, N. (2010). Combining vegetation indices, constrained ordination and fuzzy classification for mapping semi-natural vegetation units from hyperspectral imagery. *Remote Sensing of Environment*, 114(6), 1155-1166. doi:10.1016/j.rse.2010.01.003
- Peña, M.A., & Brenning, A. (2015). Assessing fruit-tree crop classification from Landsat-8 time series for the Maipo Valley, Chile. *Remote Sensing of Environment*, 171, 234-244. doi:10.1016/j.rse.2015.10.029
- Phinn, S.R., Roelfsema, C.M., & Mumby, P.J. (2012). Multi-scale, object-based image analysis for mapping geomorphic and ecological zones on coral reefs. *International Journal of Remote Sensing*, 33(12), 3768-3797. doi:10.1080/01431161.2011.633122
- Poursanidis, D., Chrysoulakis, N., & Mitraka, Z. (2015). Landsat 8 vs. Landsat 5: A comparison based on urban and peri-urban land cover mapping. *International Journal of Applied Earth Observation and Geoinformation*, 35, 259-269. doi:10.1016/j.jag.2014.09.010
- Purkis, S., & Klemas, V. (2011). *Remote Sensing and Global Environmental Change*. West Sussex, UK: Wiley-Blackwell. doi:10.1002/9781118687659
- Purkis, S.J., Myint, S.W., & Riegl, B.M. (2006). Enhanced detection of the coral *Acropora cervicornis* from satellite imagery using a textural operator. *Remote Sensing of Environment*, 101(1), 82-94. doi:10.1016/j.rse.2005.11.009
- Roy, D.P., Wulder, M.A., Loveland, T.R., C.E. Woodcock, , Allen, R.G., Anderson, M.C., . . . Bind-schadler, R. (2014). Landsat-8: Science and product vision for terrestrial global change research. *Remote Sensing of Environment*, 145, 154-172. doi:10.1016/j.rse.2014.02.001
- Stenzel, S., Fassnacht, F.E., Mack, B., & Schmidtlein, S. (2017). Identification of high nature value grassland with remote sensing and minimal field data. *Ecological Indicators*, 74, 28-38. doi:10.1016/j.ecolind.2016.11.005
- Tian, B., Zhou, Y., Thom, R.M., Diefenderfer, H.L., & Yuan, Q. (2015). Detecting wetland changes in Shanghai, China using FORMOSAT and Landsat TM imagery. *Journal of Hydrology*, 529, 1-10. doi:10.1016/j.jhydrol.2015.07.007
- Vieira, M.A., Formaggio, A.R., Rennó, C.D., Atzberger, C., Aguiar, D.A., & Mello, M.P. (2012). Object Based Image Analysis and Data Mining applied to a remotely sensed Landsat time-series to map sugarcane over large areas. *Remote Sensing of Environment*, 123, 553-562. doi:10.1016/j.rse.2012.04.011
- Yuan, F., Sawaya, K.E., Loeffelholz, B.C., & Bauer, M.E. (2005). Land cover classification and change analysis of the Twin Cities (Minnesota) Metropolitan Area by multitemporal Landsat remote sensing. *Remote Sensing of Environment*, 98(2-3), 317-328. doi:10.1016/j.rse.2005.08.006

# Alternative Forms of Tourism in Mountain Tourism Destination: A Case Study of Bjelašnica (Bosnia and Herzegovina)

---

Vuk Tvrтко Opačić<sup>A</sup>, Amra Banda<sup>B\*</sup>

Received: May 13, 2017 | Revised: December 08, 2017 | Accepted: December 27, 2017

DOI: 10.5937/22-16621

## Abstract

For better development of alternative tourism supply in mountain tourism destinations it is necessary to identify and evaluate tourism attractions that could be better valorised when creating tourism products. It is an essential part of the destination analysis to determine perception of local population and tourists when evaluating tourism attractiveness. Olympic Mountain Bjelašnica in Bosnia and Herzegovina is a representative case study of mountain tourism destination, whose recent phase of tourism development is characterized by a variety of tourism supply that allows practicing many forms of tourism with the dominance of the winter tourist season and the skiing tourism of mass character. The principal aim of the study is to determine the differences in the evaluation of tourism attractions of alternative tourism in tourism supply of Bjelašnica within and between group of local residents and tourists. Direct survey was conducted during the summer 2016 and sample included 98 local residents and 111 tourists. Results show: a) tourists evaluate most of attractions higher than local residents, b) some attractions are higher evaluated by younger and more educated local residents, c) older tourists evaluate cultural and historical heritage better, while tourists with college degree are most satisfied with tourism and recreational infrastructure considering the age, gender and level of education, and d) all clusters of attractions are rated as more attractive by tourists who stay at purpose-built mountain tourist resort Babin Do, compared to those in Bjelašnica's villages. Results can be applied as a guideline to raise local residents' awareness of tourism attractions and developing more specific tourism supply that will address not solely mass tourism, but also alternative forms of tourism.

**Keywords:** tourism attractions, tourism supply, mountain tourism, alternative forms of tourism, Bjelašnica, Bosnia and Herzegovina

## Introduction

---

Mountain tourism with numerous types of activities represents one of the most significant forms of tourism (Heberlein et al., 2002; Yang et al., 2009; Voiculescu et al., 2012). Bosnia and Herzegovina is endowed

with hilly - mountainous relief that always had a place in its tourism supply. Together with Igman, Jahorina, Vlašić, Kupres and Blidinje, Bjelašnica is one of the leading ski resorts and the highest ski centre in Bos-

<sup>A</sup> Department of Geography, Faculty of Science, University of Zagreb, Marulićev trg 19/II, 10000 Zagreb, Croatia; vtopacic@geog.pmf.hr

<sup>B</sup> Department of Geography, Faculty of Science, University of Sarajevo, Zmaja od Bosne 33-35, 71000 Sarajevo, Bosnia and Herzegovina; amra.banda@pmf.unsa.ba

\* Corresponding author: Amra Banda; e-mail: amra-catovic@hotmail.com; amra.banda@pmf.unsa.ba, tel. +38733 723 803

nia and Herzegovina (Hamad et al., 2010). Skiing, as a most common winter tourism activity became popular on Bjelašnica since 1950's. First skis were brought in village Šabići in 1957 and during the 1957 and 1958 ski courses on Bjelašnica were organized. Although through history, mountain area of Bosnia and Herzegovina were very popular for hiking, mountaineering and skiing (Šehić, 1985), they are still not sufficiently well-established tourism destinations.

The study area of this research is Bjelašnica, mountain tourist area of exceptional value, which is favourably exploited due to their location: in the central part of the state, 30 km far from the capital city of Sarajevo. Bjelašnica is karst mountain, which on average is covered with snow for several months, usually from November to May, and sometimes in the summer (Drešković et. al., 2015). Apart from ski resort, Bjelašnica is a popular weekend picnic area, attractive because of opportunities for hiking, mountain biking, and water sports (rafting and canoeing on the nearby rivers), paragliding, suitable for the development of summer alternative tourism supply (Gafić & Džeko, 2011). It is an extremely important destination for the development of dominant winter mountain tourism, then rural tourism, as well as various sports and recreational activities in Bosnia and Herzegovina.

Bjelašnica is a representative example of mountain tourism destination that has passed through several stages of tourism development. These six stages (Table 1) do not correspond entirely to typical developmental stages of Butler's tourism area life cycle model, but

each stage has a specific recreational and tourism activities, i.e. vary in share and significance of alternative tourism supply (Banda & Opačić 2017).

In the last two decade, tourism on Bjelašnica has developed rapidly resulting with severe environmental consequences. Also, ski resorts such as Bjelašnica face the problems of global warming and winters poor in snow. Taking this into account, Bjelašnica started gradual development of alternative forms of tourism, which are also important for extending the tourist season. These alternative forms, such as rural and ecotourism preserve the environment and cultural heritage as well as respect the local community.

"New tourists" find especially attractive climbs to the highest peak Observatory, Hranisava, Obalj and Kravac. As an important element of the geomorphological attractions is Megara cave, also known under the name of Kuvija, located in the western part of Bjelašnica (range Preslica, on the north slope of the hill Orlovac). Among the most important tourism attraction of Bjelašnica for the development of alternative tourism is certainly Rakitnica river canyon. Rakitnica canyon is morphological phenomenon developed in the zone of deep karst, which separates Bjelašnica from Visočica (Lepirica, 2005). It is popular among tourists especially from May to October. The most popular hydrographic landscape element of Bjelašnica mountain area is Studeni potok, which is known by its meanders, which are reminiscent of the legend of the dragon-large snake. Bjelašnica is a mountain that is characterized by great wealth and di-

**Table 1.** Stages of tourism development on Bjelašnica Mountain

PERIOD	CHARACTERISTICS
1878-1918 (Austria-Hungary)	<ul style="list-style-type: none"> <li>• construction of hiking facilities</li> <li>• publication of mountain guides</li> <li>• first recreational-tourism trips</li> </ul>
1918-1945 (between World War I and World War II)	<ul style="list-style-type: none"> <li>• large number of field trips</li> <li>• first alpine feats</li> <li>• ski competitions during the event "Bjelašnički dani"</li> <li>• development of primarily winter recreational supply</li> </ul>
1945-1978 (after World War II until assigning Sarajevo to be the host of 14th Winter Olympic Games)	<ul style="list-style-type: none"> <li>• 1957 first skis on Bjelašnica</li> <li>• beginning of ski courses (1957 and 1958)</li> <li>• development of winter and summer recreational supply</li> <li>• significant number of travellers in mountain houses</li> </ul>
1978-1992 (Winter Olympic Games 1984 until breakup of Yugoslavia)	<ul style="list-style-type: none"> <li>• predominance of mass winter ski tourism supply</li> <li>• attempts to extend tourism season with lower hotel prices in summer</li> <li>• international ski competitions</li> </ul>
1996-2000 (post-war tourism reconstruction)	<ul style="list-style-type: none"> <li>• reconstruction of facilities</li> <li>• winter tourism supply still prevailing</li> </ul>
after 2000 (modern period)	<ul style="list-style-type: none"> <li>• winter tourism and recreational supply</li> <li>• efforts in developing summer tourism supply</li> <li>• problems with unplanned construction</li> <li>• lack of tourism development strategy</li> </ul>

Source: Banda, Opačić 2017

versity of the plant world, particularly in the Rakitnica canyon. Mountain landscape of Bjelašnica is also recognizable for their villages. Lukomir, highest altitude and most remote village in the entire country is known by its vernacular architecture. Tourists visit it in summer in order to taste local food and see its specific architecture (Temimović & Jahić, 2009). This whole region is marked with old cattle and caravan roads which date back to Roman times. Among the most numerous monuments of medieval period are "stećci" (medieval tombstones) from the 14th or 15th century near the village Tušila, between Bjelašnica and Visočica (Bešlagić, 2004).

In the recent period 2000-2017., Bjelašnica can be observed as a mountain destination with the winter tourism supply, which seeks to expand tourism season throughout the year.

In tourism market, Bjelašnica is still known as a winter ski tourism destination. Ski centre Bjelašnica includes downhill trail, which leads from the top of the mountain (2067 m) to Babin Do (1300 m). Almost parallel to it are three steeper slopes, which were used for training athletes. The trails for giant slalom and slalom are located on the east side of the mountain and trail Količevka is ideal for beginners. According to *Activity plan for KJKP ZOI'84 for the location Bjelašnica* (2011), vertical transport includes two-seat and three-seat cable cars, five ski lifts and a few baby lifts (capacity of 5,000 skiers per hour). Trail for night skiing is part of the downhill-run, in the finish area (total length 750 m). Tourists can also rent ski equipment. As a part of alternative tourism supply, snowboarding and ski touring are developing. Accommodation facilities on Bjelašnica include hotels Maršal, Han and Bjelašnica, mountain houses and private facilities that offer apartments and rooms (Hamad et

al., 2010). Alternative tourism supply in summer is very poor. Tourists, mostly foreign come in organized groups to visit villages (for example Lukomir and Umoljani), sightseeing locations and to have lunch. Among tourists, very popular is also quad bike ride. In future, strong development of tourism and recreational activities is planned in the area of Babin Do, the main point of winter recreation. The extension of this zone is planned to massif Šiljak with the target areas in Štinji Do and Donja Grkarica (Sustainable Development Strategy of Trnovo Municipality, 2013).

According to Banda and Opačić (2017), Bjelašnica is faced with numerous challenges and problems in alternative tourism supply development, such as:

- traffic congestion and insufficient parking place;
- sewage problem;
- obsolete vertical transportation;
- tourism attractions by the winter season is almost nonexistent;
- poorly developed alternative tourism supply for the winter months;
- the lack of facilities after skiing (for example wellness);
- insufficient utilization of tourism potential of other tourism attractions.

The objective of the study to identify the evaluation of tourism attractiveness of attractions of alternative tourism in tourism supply of Bjelašnica, as well as to determine the differences in the evaluation of tourism attractions: a) between local residents and tourists, b) between local residents considering the age, gender and level of education, c) between tourists considering the age, gender and level of education, and d) between tourists who stay at villages of Bjelašnica and tourists who stay at the purpose-built tourist resort Babin Do.

## Literature review

Numerous authors in their research have analyzed physical-geographical and social-geographical characteristics as well as the historical development and cultural heritage of the mountainous area of Bosnia and Herzegovina. However, tourism and tourism-geographical research in mountain areas has not been paid great attention.

The scientific and economic interest for mountain tourism in Bosnia and Herzegovina, as well on Bjelašnica has been underlined in economic studies and spatial-planning documentation such as *Study of the long-term development of tourism in Bosnia and Herzegovina* by Bogdanović (1970) and *Strategy of tourism development of SR B&H* by Praljak-Kesić (1987). Extensive spatial planning documentation was

prepared for the 14<sup>th</sup> Winter Olympics, including *Spatial plan of the special area for the maintenance of the 14<sup>th</sup> Winter Olympics Sarajevo* (for the mountain areas Igman, Bjelašnica and Jahorina).

Mihić (1984) published a book titled *Bjelašnica and Igman – Mountains of 14<sup>th</sup> Winter Olympic Games* that presents detailed geographical features of Bjelašnica and Igman, as well as development of mountain tourism, mountaineering and skiing on Bjelašnica and Igman through history, with special chapter dedicated to the XIV Winter Olympics. Among the first geographers to write about Bjelašnica mountain tourism was also Čehajić (1987) in her doctoral thesis *Tourism development in Bosnia and Herzegovina – geographical study*.

Many mountain guides with information for tourists about hiking trails and mountain huts on Bjelašnica and other mountains were also published, among which should be mentioned *Mountaineering & Tourist Guide on Mountains Around Sarajevo* by Babić and Bozja (2006). In 2007, *Master plan for development of rural eco-tourism in area of Bjelašnica* was conducted, which presents analysis of tourism attraction base of alternative tourism.

Also significant is a paper titled *Regional aspects of tourist potentials of Canton Sarajevo - classification and valorisation* by Nurković et al. (2009) as it represents a scientific literature in the field of geography that analysis tourism potential of the mountainous area of Bjelašnica. In the same year, in the paper *Development potentials of rural tourism on Bosnia and Herzegovina mountains with special review on village Lukomir*, authors Temimović and Jahić discuss rural tourism in Bjelašnica's villages. Hamad et al (2010), give a different perspective analysing Bjelašnica and other mountains as ski resorts in their paper titled *A Competitive Analysis Of Ski Resorts In Bosnia And Herzegovina Using Differential Advantage Proforma*.

In scientific literature, tourist satisfaction has been identified as an important concept in establishing the performance of different destinations. According to Peter and Olson (1996), level of tourist satisfaction with a particular trip is the result of different factors, i.e. level of tourists satisfaction will depend both on their expectations regarding the attractions and attributes in the destination, and of course from the perception of the outcome. Danaher and Arweiler (1996) established that, positive tourist feedback is focused mainly on outdoor activities, although the experience associated with transport and accommodation affect the degree of tourist satisfaction. It is important for the mountain tourism destinations that supply vary of outdoor activities to understand that the activities performed during the stay at the holiday destination and the experiences during these activities are clear sources of satisfaction for the tourist.

Despite the amount of research focusing on studying the level of tourist satisfaction, there is a need to investigate the relationship between destination attractions and tourists' satisfaction from the tourist's perspective in order to gain an in-depth understanding of tourists' attitudes and behaviour after they visit certain mountain destinations.

Tourists and the local community differently perceive and evaluate tourism attractions. Researchers have tested a number of socio-demographic fac-

tors (age, sex, education, income, length of residence, knowledge of tourism involvement in tourism activity) that may affect people's attitudes. In the literature, there are many studies surveying attitudes of residents towards tourism development (Perdue et al., 1991; Ap, 1992; Lankford & Howard, 1994; Andereck & Vogt, 2000; Mason & Cheyne, 2000; Sheldon & Abenoja, 2001; Gursoy et al., 2002; Easterling, 2004; Aguilo & Rosselo, 2005; Andiotis, 2005; Ritchie & Inkari, 2006; Huh & Vogt, 2008; Ogorelc, 2009; Sharma & Dyer, 2009; Frauman & Banks 2011; Vargas et al., 2011). On the other hand, only a few studies have explicitly considered perceptions of residents toward tourism attractions (McClung, 1991; Thach & Axinn, 1994; Alhemoud & Armstrong, 1996; Wong & Cheung, 1999; Jurowski & Gursoy 2004; Lawton, 2005).

Taken collectively, the many surveys of residents demonstrate that one cannot presume uniformity among local people in their views of tourism and its attractions. Researchers have shown that the members of the local community, who are employed in tourism industry or have personal economic benefits from tourism development, are generally more favourable towards tourism than those who are not (Haralambopoulos & Pizam, 1996; Brunt & Courtney, 1999; Sirakaya et al., 2002; McGehee & Andereck, 2004; Andereck et al. 2005; Vargas-Sanchez et al., 2009). Some authors disagree with these statements and conclude that residents being economically dependent on tourism find more negative association with tourism manifesting this in a strong negative attitude (Pizam et al., 1978; Williams & Lawson, 2001; Teye et al., 2002). On the same argument, we can conclude that residents' perception of tourism is influenced by the possibility of having an economic gain (Haralambopoulos & Pizam, 1996; Gilbert & Clark, 1997; Brunt & Courtney, 1999; Sirakaya et al., 2002; McGehee & Andereck, 2004).

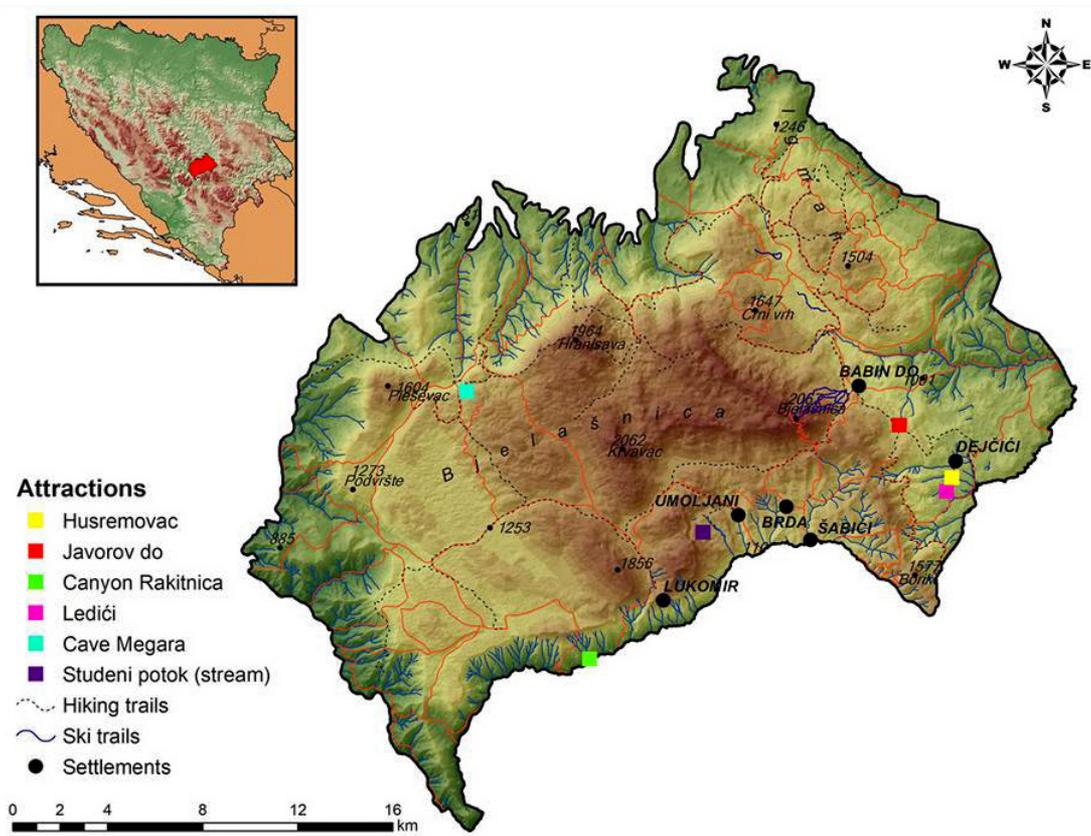
Alternative forms of tourism actually encourage the development of products based on the comparative advantages of each destination attractions. Provision of appropriate tourism infrastructure should come together with tourism attraction elements in order to develop alternative tourism supply. The mix of destination attractions and facilities create a set of intangible "subjective experiences" for tourists known as tourism product (Kim, 2001).

To know how destination and their attractions are perceived is especially important in order to attract visitors. Image perception is not solely a result of media tools since it develops out of a combination of several personal experiences (Horriagan, 2009).

## Methodology

The evaluation of tourism attractiveness of attractions of alternative tourism by local residents and tourists was made in direct questionnaire survey using the commemorative sample method in villages of Bjelašnica (Brda, Dejići, Lukomir, Šabići, Umoljani) with registered tourism activity, as well as in a tourist resort Babin Do without local residents (Figure 1).

Research instrument consisted of socio-demographic variables (gender, age, education, employment, marital status, monthly income) and evaluation of tourism attractiveness of the attraction base elements of alternative tourism as well as tourism and recreational infrastructure. Research instrument for local residents included additionally question of their



**Figure 1.** Tourism attractions of alternative tourism on Bjelašnica analysed in the survey

Source: according to the topographic map of Bosnia and Herzegovina, sheet Sarajevo, R 1: 200 000, edited by authors, 2017

The evaluation of tourism attractiveness of attractions of alternative tourism on Bjelašnica was made using the scale of 5 marks in which the grade 1 indicated the lowest tourism attractiveness and grade 5 the highest tourism attractiveness. The population in the survey conducted during the summer 2016 consisted of adult permanent residents in mentioned villages as well as tourists who had at least one overnight stay in these villages or in Babin Do. Questionnaires were filled face to face during the weekends in June and respondents were included based on their accessibility and willingness. Therefore convenient sample was used. Prior to fulfilling questionnaire respondents were informed about the survey and that anonymity would be guaranteed. Survey sample consisted of 98 local residents and 111 tourists.

residential area, while research instrument for tourists included question about their place of stay in destination. For the better illustration and interpretation of the results, the individual tourism attractions of alternative tourism indicated in the survey (17 in total) were classified into 6 common tourism attractions, i.e. clusters modelled on Kušen's classification of tourism attractions (2002; 2010) (Table 2).

Besides descriptive statistics (average valuation and the frequency of respondents' answers), the survey carried out the statistical analysis in SPSS program to determine the differences in the evaluation of tourism attractiveness of the attraction base elements of alternative tourism, using standard statistical methods: correlation analysis, one-way ANOVA and t-test.

**Table 2.** Classification of tourism attractions of alternative tourism on Bjelašnica used in the survey

COMMON TOURISM ATTRACTIONS (CLUSTERS)	INDIVIDUAL TOURISM ATTRACTIONS
Climate and geomorphological characteristics	climate characteristics
	canyon of river Rakitnica
	cave Megara
Landscape	landscape characteristics
	Javorov do
	Studeni potok (stream)
	Husremovac and Ledići villages
Cultural and historical heritage	"stećci" (medieval tombstones)
	mosque in Umoljani village
	watermills in Umoljani village
	Lukomir village
Culture of life and work	traditional cattle breeding
	local gastronomy
Events	"Days of mountain biking"
	"Mountaineers encounters"
Tourism and recreational infrastructure	tourist resort Babin Do
	hiking trails – Via Dinarica

Source: authors classification according to Kušen's theoretical model (2002;2010)

## Results and discussion

### Sample characteristics

It can be noticed that in the survey sample with both local residents and tourists dominate men (Table 3).

Survey population of local residents is much older comparing to tourists with difference of more than 20 years between average age of two groups of respondents. Also, tourists are more educated than local residents, which can be explained with negative demographic consequences of long term emigration of younger and more educated population from moun-

tain area of Bosnia and Herzegovina, and also with the fact that tourists in mountain tourism destinations are more educated than local residents. In survey sample of tourists, more than three quarters stayed in Bjelašnica's villages, while less than one quarter stayed at tourist resort Babin Do. This stratification of participants was carried out because the main part of alternative tourism supply on Bjelašnica is concentrated outside of Babin Do, tourist resort mainly focused on mass ski tourism.

**Table 3.** Sociodemographic structure of respondents

SAMPLE CHARACTERISTICS		LOCAL RESIDENTS (N=98)	TOURISTS (N=111)
Gender (%)	Men	53.06	55.86
	Women	46.94	44.14
Average age (years)		M=57.18 (SD=16.19)	M=34.46 (SD=9.07)
Level of education (%)	Primary school	33.67	-
	High school	45.92	30.63
	College	16.32	19.81
	University and higher (PhD)	4.08	49.55
Residence (for local residents)/ Place of stay (for tourists) (%)	Bjelašnica's villages	100.00	75.68
	Babin Do	-	24.32

Source: results of the questionnaire survey, June 2016

**The differences in the evaluation of tourism attractiveness of common attractions of alternative tourism between local residents and tourists**

T-test determined statistically significant differences in the evaluation of tourism attractiveness of common attractions of alternative tourism between local residents and tourists for all clusters except for the “climate and geomorphological attractions” (Table 4). However this cluster has high evaluations both by local residents and tourists.

both local residents and tourists give highest grades for “landscape” and lowest for “tourism and recreational infrastructure.”

When we look at the level of individual attractions evaluation, similar differences can be found on a descriptive statistical analysis. Comparing the average grades of attractiveness of the individual attractions, it can be concluded that local residents (in relation to tourists) find more attractive 5 out of 17 estimated individual attractions: canyon of river Rakitnica (aver-

**Table 4.** The evaluation of tourism attractiveness of common attractions of alternative tourism on Bjelašnica by local residents and tourists

COMMON ATTRACTION(CLUSTER)	LOCAL RESIDENTS		TOURISTS		T-TEST
	M	SD	M	SD	
Climate and geomorphological attractions	4.60	0.36	4.54	0.42	t=1.060 df=207 p=0.290
Landscape	4.21	0.29	4.59	0.32	t= -9.096 df=207 p=0.000
Cultural and historical heritage	4.18	0.42	4.31	0.41	t= -2.213 df=207 p=0.028
Culture of life and work	3.85	0.54	4.11	0.75	t= -2.914 df=207 p=0.004
Events	3.79	0.54	4.10	0.67	t= -2.728 df=117 p=0.007
Tourism and recreational infrastructure	2.84	0.63	3.73	0.71	t= -9.518 df=117 p=0.000

Source: results of the questionnaire survey, June 2016

It can be noticed that both locals and tourists give relatively high grades to common tourism attractions of alternative tourism on Bjelašnica. In the evaluation of some individual attractions was not found any significant variability of answers (for example, all respondents graded tourism attractiveness of canyon of river Rakitnica with 4 and 5). The tourists found all clusters more attractive than locals, with the exception of the cluster “climate and geomorphological attraction” that locals find slightly more attractive than tourists, which we can conclude from negative t-values. Based on t-values and significance test, the biggest differences in evaluation are found in clusters “landscape” and “tourism and recreational infrastructure”. Significant differences are found in clusters “cultural and historical heritage”, “culture of life and work” and “events”, but t and p values suggest that these differences in evaluation are not so prominent as it is the case in previous two clusters. Among the clusters with statistically significant differences,

age grade 4.93 by local residents and 4.82 by tourists), landscape characteristics (average grade 4.80 by local residents and 4.67 by tourists), mosque in Umoljani village (average grade 4.39 by local residents and 4.31 by tourists), watermills in Umoljani (average grade 4.23 by local residents and 3.96 by tourists) and local gastronomy (average grade 4.78 by local residents and 4.64 by tourists).

The tourists gave better grades because they are more thrilled with natural and cultural attractions, especially those who visited Bjelašnica for the first time (“wow factor”). For the numerous tourists, especially foreign tourists (Western and Central Europe, Middle East), the natural and cultural attractions of Bjelašnica represent the huge change in relation to physical environment and surroundings in, for instance, urban environment of the permanent residence, and that positively affects the grade. Similar was the research of Alhemoud and Armstrong (1996), where they state that more impressive to the tour-

ists are attractions they do not see in their own country. Furthermore, we should keep in mind that tourists evaluate the attraction base elements in the period of vacations when they are more relaxed and tend to have more positive attitudes. Also, in that period they are motivated to get tourist experience in a chosen destination.

Perception of tourism attractions and positive tourism impacts is an important variable that influences residents' attitudes and opinions. Previous studies conducted by Perdue et al. (1991) and Brida et al. (2011) show that in the case of mountain destinations like Bjelašnica, tourism development is supported by the local community mainly if they have a positive perceptions regarding tourism attractions, environmental and economic impacts. Our research shows that local residents are not fully aware of the value and tourism attractiveness of natural and cultural possessions on Bjelašnica, mainly because they do not benefit from tourism as they should. Also, illegal construction of mainly accommodation facilities caused many environmental issues, which fully support the mentioned fact that locals are less willing to support tourism if they hold a negative perception of tourism impacts. According to Brida et al. (2011), residents perceiving tourism as a cause of increase of the investment at the destination and better public services will support tourism as well as its natural and cultural resources. On Bjelašnica, authorities do not invest enough in infrastructure (primarily traffic) or support local community in tourism development.

The common tourism attractions of "events" and "tourism and recreational infrastructure" as well as their individual attractions received the higher grades by tourists than by local residents. The differences in higher grades by tourists can be explained with the fact that attractions from mentioned clusters are designed specifically for tourists and recreationalists, so they are more familiar to tourists than for local residents. The local residents gave lower grades to tourist resort Babin Do in relation to tourists (average grade 2.33 by locals and 3.41 by tourists), so we can conclude that, although less educated, local residents are indeed aware of physiognomic and ecological unacceptability, oversize and unsuitability of this centre of mass winter tourism in a sensitive mountain ecosystem.

### *The differences in the evaluation of tourism attractiveness of common attractions of alternative tourism between local residents considering the age, gender and level of education*

The differences in evaluation of tourism attractiveness of common attractions of alternative tourism in surveyed local population considering the age are examined using the correlation analysis. Negative correlation is found only between the age of participants and the evaluation of tourism attractiveness of the cluster "events" ( $r = -0.376$ ;  $p = 0.001$ ) which indicates that as older the local residents are, they rate the events as less attractive. There are statistically significant differences in evaluation of the individual attractions of alternative tourism, for the event "Days of mountain biking" considering the age of local residents ( $r = -0.342$ ;  $p = 0.004$ ) whilst for another evaluated event "Mountaineers encounters" the difference is not found. It can be explained with the fact that mountain biking is less attractive activity for older respondents personal practicing as they have limited physical abilities, therefore they also find it less attractive in tourism supply.

The differences in evaluation of tourism attractiveness of common attractions of alternative tourism in surveyed local population considering the gender are examined using t-test, but there are not found statistically significant differences for any of common tourism attractions.

Considering the level of education, the surveyed local population is classified into three categories: a) with primary school degree, b) with high school degree, and c) with college/university and higher degree (PhD). Statistically significant difference in evaluation of tourism attractiveness of common attractions of alternative tourism considering the level of education of local residents is identified using the one-way ANOVA and it was only for the cluster "cultural and historical heritage" ( $F = 3.266$ ,  $df = 2$ ,  $p = 0.042$ ). The local population with high school degree finds it the most attractive for alternative tourism supply (average grade 4.28), followed by respondents with college/university degree (average grade 4.19) and in the end the respondents with primary school degree (average grade 4.04). As for the individual attractions in the domain of cultural and historical heritage, the statistically significant difference is found only for "stećci" (medieval tombstones) ( $F = 3.172$ ,  $df = 2$ ,  $p = 0.046$ ). Those tombstones became part of UNESCO World Heritage List (WHL) in 2016. WHL inscription contributes to positive and creative atmosphere in destination especially with the local entrepreneurs involved in tourism. Moreover, the presence of a World Heritage Sites generates positive expectations on local residents and tourists, as well as all stakeholders in tourism (Biagi

& Pulina, 2009). For mosque in Umoljani, watermills in Umoljani and Lukomir village, the differences between local residents considering the level of education are not identified.

### ***The differences in evaluation of tourism attractiveness of common attractions of alternative tourism between the tourists considering the age, gender and level of education***

The differences in the evaluation of tourism attractiveness of common attractions of alternative tourism in surveyed population of tourists considering the age are examined using the correlation analysis. Positive correlation is registered only between the age of respondents and the evaluation of tourism attractiveness of cultural and historical heritage ( $r=0.266$ ;  $p=0.005$ ) which indicates that as older the tourists are, they find Bjelašnica's cultural and historical heritage as more attractive. In analyzing the evaluation of the individual attractions in domain of cultural and historical heritage, the statistically significant difference considering the age of tourists is noticed for "stećci" (medieval tombstones) ( $r=0.232$ ;  $p=0.002$ ), as well as for Lukomir village ( $r=0.191$ ;  $p=0.047$ ) whilst for mosque and watermills in Umoljani village the difference is not found. Positive correlation between the age of surveyed tourists and individual attractions of alternative tourism is recorded for traditional cattle breeding from common tourism attraction "culture of life and work" ( $r=0.309$ ;  $p=0.015$ ) as well as for canyon of river Rakitnica ( $r=0.236$ ;  $p=0.019$ ) from common tourism attraction "climate and geomorphological attractions". The given result confirms the theory that cultural and natural heritage as tourism attractions are more attractive to older tourists. Looking at tourism attractions, culture and nature, were most important among senior tourists, when choosing holiday destination according to the European Commission project ESCAPE (European Senior Citizens' Actions to Promote Exchange in Tourism) Report on Senior Tourists Needs and Demands (2017). As in our case, cultural and historical heritage were preferred tourism attractions, among respondents in the mentioned project. Senior tourists gave highest preferences to clean nature and affordable cost of the natural and cultural heritage sites when choosing holiday destinations.

The differences in evaluation of tourism attractiveness of common attractions of alternative tourism between tourists considering the gender are examined using t-test, but statistically significant differences are not found for any of common tourism attractions.

Considering the level of education, the surveyed tourists are classified into three categories: a) with

high school degree at least, b) with college degree, and c) with university degree or higher (PhD). Statistically significant difference in evaluation of tourism attractiveness of common attractions of alternative tourism considering the level of education of tourists is determined using one-way ANOVA and it was only for "tourism and recreational infrastructure" ( $F=4.109$ ,  $df=2$ ,  $p=0.019$ ). The surveyed tourists with college degree find it the most attractive (average grade 4.11), followed by respondents with university degree (average grade 3.65), and in the end the surveyed tourists with high school degree and primary school degree (average grade 3.63). In determining the differences in the evaluation of the individual attractions from this cluster, the statistically significant difference between the tourists considering the level of education is found for purpose-built tourist resort Babin Do that is ponderous in the whole cluster "tourism and recreational infrastructure" ( $F=3.445$ ,  $df=2$ ,  $p=0.035$ ). Tourist attractiveness of Babin Do is rated with the highest grades by participants with college degree (average grade 3.86), followed by surveyed tourists with university degree (average grade 3.31), and in the end the respondents with high school degree and primary school degree (average grade 3.26). Based on this it can be assumed that purpose-built tourist resorts with catering and entertainment supply are most interesting to average educated tourists that, generally, are not interested in cultural and historical heritage in less visited parts of Bjelašnica, but on the other hand, are financially able to visiting/staying in "popular" tourist resorts. They are not so much bothered with their physiognomic and ecological unsuitability in a sensitive mountain ecosystem. The most educated tourists are not "wowed" when visiting Bjelašnica, because a central element of their visit is often the learning dimension. Garms et al. (2016), conducted a research among German tourists in Scandinavian mountains, and came up with similar results. Visitors in this research wanted to learn more about plants, animals, or just the ecosystem as a whole. Brochures, information boards, and guided tours (which lack on Bjelašnica) were highly appreciated. It can be assumed that more educated tourists evaluate attractiveness of Babin Do with lower grades because they expected more information in destination. Also, clearly signposted hiking trail network and a visitor centre, guarantee a certain feeling of safety when being on the mountain. On the other hand, tourists with high school degree evaluate tourist attractiveness of Babin Do with lowest grades which can be explained with their lowest income – certain activities in tourism supply over there are less available to them.

**The differences in the evaluation of tourism attractiveness of common attractions of alternative tourism between tourists who stay in Bjelašnica's villages and tourists who stay in tourist resort Babin Do**

The statistically significant differences in the evaluation of tourism attractiveness of common attractions of alternative tourism between tourists who stay in Bjelašnica's villages (Brda, Dejčići, Lukomir, Šabići, Umoljani) with registered tourism activity and tourists who stay at tourist resort Babin Do are determined using t-test, for the following clusters: "climate and geomorphological attractions", "culture of life and work", and "tourism and recreational infrastructure" (Table 5)<sup>1</sup>.

reational infrastructure". Significant differences are found in clusters "climate and geomorphological attractions" and "culture of life and work", but t and p values suggest that these differences in evaluation are not so prominent as it is the case in the previous. Among the clusters with statistically significant differences, both tourists in Bjelašnica's villages and Babin Do give highest grades for "climate and geomorphological attractions" and lowest for "tourism and recreational infrastructure".

When we look at the level of individual attractions evaluation, similar differences can be found on a descriptive statistical analysis. Comparing the average grades of attractiveness of the individual attractions, it can be concluded that tourists who stayed at Babin

**Table 5.** The evaluation of tourism attractiveness of common attractions of alternative tourism on Bjelašnica by tourists who stayed in Bjelašnica's villages and tourists who stayed in tourist resort Babin Do

COMMON ATTRACTION	TOURISTS IN BJELAŠNICA'S VILLAGES		TOURISTS AT BABIN DO		T-TEST
	M	SD	M	SD	
Climate and geomorphological attractions	4.48	0.42	4.73	0.40	t= -2.697 df=109 p=0.008
Landscape	4.58	0.32	4.63	0.33	t= -0.735 df=109 p=0.464
Cultural and historical heritage	4.29	0.40	4.35	0.47	t= -0.657 df=207 p=0.512
Culture of life and work	4.02	0.78	4.39	0.54	t= -2.250 df=109 p=0.026
Tourism and recreational infrastructure	3.63	0.64	4.07	0.82	t= -2.945 df=109 p=0.004

Source: results of the questionnaire survey, June 2016

It can be seen that tourists at Babin Do find all clusters more attractive than tourists in villages of Bjelašnica, which we can conclude from negative t-values. Based on t-values and significance test, the biggest differences in evaluation are found in cluster "tourism and rec-

Do in relation to tourists in Bjelašnica's villages find more attractive 9 out of 15 examined individual attractions: climate characteristics (average grade 4.63 given by tourists from Babin Do and 4.43 by tourists from Bjelašnica's villages), canyon of river Rakitnica (average grade 4.94 by tourists from Babin Do and 4.79 by tourists from Bjelašnica's villages), cave Megara (average grade 4.00 by tourists from Babin Do and 3.42 by tourists from Bjelašnica's villages), landscape characteristics (average grade 4.81 by tourists from Babin Do and 4.62 by tourists from Bjelašnica's villages), mosque in Umoljani village (average grade 4.52 by tourists from Babin Do and 4.25 by tourists from Bjelašnica's villages), Lukomir village (average grade 4.88 by tourists from Babin Do and 4.57 by tourists from Bjelašnica's villages), traditional cattle breeding

<sup>1</sup> Most of tourists who stay in tourist resort Babin Do are not familiar with the two events from the survey ("Days of mountain biking" and "Mountaineers encounters") and for that reason it wasn't possible to examine if there are statistically significant differences between tourists who stayed in Bjelašnica's villages and tourists who stayed in Babin Do when evaluating the cluster "events" nor when evaluating the individual attractions "Days of mountain biking" and "Mountaineers encounters". This confirms the theory that tourists who stay at tourist destinations of mass tourism are less introduced with alternative tourism supply. Moreover, they are less interested in life of local community in destination.

(average grade 3.60 by tourists from Babin Do and 3.12 by tourists from Bjelašnica's villages), Babin Do (average grade 4.04 by tourists who stayed there and 4.79 by tourists from Bjelašnica's villages) and hiking trails - Via Dinarica (average grade 4.40 by tourists from Babin Do and 4.20 by tourists from Bjelašnica's villages). This fact must be taken into account because, according to Yuksel and Yuksel (2001), lower grades may prompt tourists not to return in the future and may also impact on likelihood of recommending.

Regardless of lower grades by tourists from Bjelašnica's villages, it should be mentioned that areas as mountains are primarily appreciated in more urbanized countries for providing a contrast to the stress of urban life. Exploration of the typical landscape type is often as an incentive for visit (Garms et al. 2016), as also concluded from our survey, where landscape characteristics are highly graded by both tourists from Bjelašnica's villages and Babin Do. Though, tourists from the villages are more willing to learn about the tourism destination supply, while tourists from Babin Do are in a more stationary state. Resort visitor satisfaction levels are linked with the resort product's variety and tourism attractions i.e. what the resort has to offer in terms of facilities and utilities (Inbakaran et al., 2012). Therefore, tourists who stay in Babin Do are not very familiar with the wider area, so it is possible that they give grades without previous destination background knowledge, while tourists from Bjelašnica's villages are more interested for alternative tourism supply, and grade tourism attractions on their experience.

## Conclusion

The Olympic mountain Bjelašnica in Bosnia and Herzegovina is a typical example of mountain tourism destination where tourism supply was influenced by alternative forms of tourism in all of six developmental stages of tourism this mountain went through. Its tourism development has passed different political circumstances, with current challenge to reach successful recovery after the collapse of socialist Yugoslavia. In recent years, obvious are efforts in development of summer and winter alternative tourism supply as a supplement to mass ski tourism which is still the main tourism product of Bjelašnica.

For better development of alternative tourism supply it is necessary to identify and evaluate tourism attractions that could be better valorised when creating tourism products. It is an essential part of the destination analysis to determine perception of local residents and tourists when evaluating tourism attractiveness.

Based on the research of Li et al. (2008) and Donohoe (2012), tourists visit heritage sites to experience unique cultures, and to learn about destination's cultural identity, which confirms the fact that "stećci" (medieval tombstones) received high grades by tourists from Bjelašnica's villages as well as tourists from Babin Do (average grade 4.31 by tourists from Bjelašnica's villages and 4.16 by tourists from Babin Do). "Stećci" are being promoted as an important part of local history and tradition, especially since they have been listed in the UNESCO World Heritage List<sup>2</sup>. On Bjelašnica, they have been embedded in history and cultural traditions of the local community. Watermills in Umoljani village (average grade 4.04 by tourists from Bjelašnica's villages and 3.67 by tourists from Babin Do), Husremovac and Ledići villages (average grade 4.22 by tourists from Bjelašnica's villages and 3.67 by tourists from Babin Do) received higher grades by tourists from Bjelašnica's villages. Here, we should emphasize that the mentioned villages received the higher grades by tourists who stayed there than the tourists from Babin Do – because for their attractiveness they have been chosen by those tourists at the first place. For the same reason, tourists who prefer staying at purpose-built tourist resorts and who stayed at Babin Do give higher grades to that resort than the tourists from the villages.

<sup>2</sup> "Stećci" from Bosnia and Herzegovina, Serbia, Croatia and Montenegro were listed in the UNESCO World Heritage List in July, 2016.

Based on the results of statistical analysis of the alternative tourism attraction base it can be concluded that both, local residents and tourists, evaluate common tourism attractions (clusters) of alternative tourism on Bjelašnica with relatively high grades, particularly "climate and geomorphological attractions", "landscape" and "cultural and historical heritage". Both groups give lowest grades for "tourism and recreational infrastructure". Tourists find all clusters more attractive than locals, except for the cluster "climate and geomorphological attractions" where there are no significant differences.

Regarding evaluations of local residents, there are no differences between male and female respondents. The statistical analysis determined only few differences in tourism attractiveness evaluation of common attractions of alternative tourism between local residents considering the age and level of education. As older local residents are, the less attractive they find

the events that require physical forms of recreation (e.g. mountain biking) for they are limited in physical conditions. The local residents with high school degree find cultural and historical heritage the most attractive in alternative tourism supply, followed by participants with university degree, and in the end the participants with primary school degree.

Regarding tourists' evaluations, there are no differences between male and female respondents. The statistical analysis identified some differences in tourism attractiveness evaluation with regard to age and education. Older tourists find the "cultural and historical heritage" of Bjelašnica more attractive. Statistically significant difference in the evaluation of tourism attractiveness of alternative tourism clusters considering the level of education of tourists is found only for the cluster "tourism and recreational infrastructure". It is the most attractive to tourists with college degree before the ones with university degree and high school/primary school degree.

The results of statistical analysis show that all cluster attractions of alternative tourism are rated as more attractive by mass-tourists who stay at Babin Do, as a form of purpose-built mountain tourist resort, than individual tourists from Bjelašnica's villages.

To sum up, Bjelašnica as a typical mountain destination is now in mature development stage in its tour-

ism development and that requires conceiving more complex tourism supply with integrated tourism products, not only of winter, but also of summer tourism, to attract more educated, broad-minded and wealthy tourists. Therefore, the stronger development of alternative forms of tourism that will valorise wide range of tourism attractions in destination can be expected soon. The future role of alternative forms of tourism in total tourism supply can serve in two periods: during winter time – as a supplement to prevailing tourism product of ski tourism, and during summer time – as the central part of Bjelašnica's tourism supply. The main zone of mass ski tourism is recognizable (tourist resort Babin Do), as well as the main zone of individual summer and alternative winter tourism (villages of Bjelašnica).

In order to reach this scenario it is necessary to create and implement the spatial planning documents in a short time, with clear guidelines of tourism development of Bjelašnica. It is also necessary to raise local residents' awareness of real and potential tourism attractions in their surroundings. It all should be done according the postulate of sustainable development in order not to jeopardize the present rich attraction base of alternative forms of tourism by excessive and inappropriate construction of tourism infrastructure.

## References

- Activity plan for KJKP ZOI'84 for the location Bjelašnica. (2011). Sarajevo: Center for economic, technological and environmental development (CETEOB). (in Bosnian) Available at: <http://www.fmoit.gov.ba/userfiles/file/Plan%20aktivnosti%20ZOI%20Bjela%C5%A1nica.pdf> (30.11.2017).
- Aguilo, E., & Rossello, J. (2005). Host Community Perceptions. A Cluster Analysis. *Annals of Tourism Research*, 4(32), 925-941.
- Alhemoud, A.M., & Armstrong, E.G. (1996). Image of Tourism Attractions in Kuwait. *Journal of Travel Research*, 34(4), 76-80.
- Andereck, K.L., & Vogt, C.A. (2000). The Relationship between Residents' Attitudes toward Tourism and Tourism Development Options. *Journal of Travel Research*, 39(1), 27-36.
- Andereck, K.L., Valentine, K.M., Knopf, R.C., & Vogt, C.A. (2005). Residents' perceptions of community tourism impacts. *Annals of Tourism Research*, 32(4), 1056-1076.
- Andiotis, K. (2005). Community groups' perceptions and preferences to tourism development. Evidence from Crete. *Journal of Hospitality and Tourism Research*, 29(1), 67-90.
- Ap, J. (1992). Residents Perceptions on Tourism Impacts. *Annals of Tourism Research*, 19(4), 665-690.
- Babić, B., & Bozja, D. (2006). *Mountaineering and Tourist Guide on Mountain Around Sarajevo*. Sarajevo: Fondation "Pro-Bittra". (in Bosnian).
- Banda, A., & Opačić, V.T. (2017). Spatial Development of Tourism at the Olympic Mountains Bjelašnica and Igman. In N. Drešković (Ed.), *Book of proceedings - 4th Congress of Geographers of Bosnia and Herzegovina*. (pp. 810-826). Sarajevo: Geographical society of Federation of Bosnia and Herzegovina. (in Bosnian).
- Bešliagić, Š. (2004). *Lexicon of stećci (medieval tombstones)*. Sarajevo: Svjetlost. (in Bosnian).
- Biagi, B., & Pulina, M. (2009). Bivariate VAR models to test Granger causality between tourist demand and supply: Implications for regional sustainable growth. *Papers in Regional Science*, 88(1), 231-244.
- Bogdanović, Đ. (1970). *Study of the long-term development of tourism in Bosnia and Herzegovina*. Sarajevo: Urbanist Institute of the Socialist Republic of Bosnia and Herzegovina. (in Bosnian).
- Brida, J.G., Disegna, M., & Osti, L. (2011). Residents' Perceptions of Tourism Impacts and Attitudes

- Towards Tourism Policies in a Small Mountain Community. *SSRN Electronic Journal*, doi:10.2139/ssrn.1839244
- Brunt, P., & Courtney, P. (1999). Host Perceptions of Sociocultural Impacts. *Annals of Tourism Research*, 26(2), 493-515.
- Čehajić, J. 1987. *Tourism development in Bosnia and Herzegovina – geographical study* doctoral thesis. Sarajevo: University of Sarajevo, Faculty of Science. (in Bosnian)
- Danaher, P.J., & Arweiler, N. (1996). Customer Satisfaction in the Tourist Industry: A Case Study of Visitors to New Zealand. *Journal of Travel Research*, 35(1), 89-93.
- Donohoe, H.M. (2012). Sustainable heritage tourism marketing and Canada's Rideau Canal world heritage site. *Journal of Sustainable Tourism*, 20(1), 121-142.
- Drešković, N., Pobrić, A., & Đug, A. (2015). *Tourism and potentials - mountain areas Bjelašnica, Treskavica, Visočica*. Sarajevo: University of Sarajevo, Faculty of Science. (in Bosnian).
- Easterling, D. (2004). The residents' perspective in tourism research: a review and synthesis. *Journal of Travel & Tourism Marketing*, 17(4), 45-62.
- ESCAPE (European Senior Citizens' Actions to Promote Exchange in Tourism): Report on Senior Tourists Needs and Demands. Available at: [http://www.ageplatform.eu/images/ESCAPE\\_Needs\\_and\\_expectations\\_FINAL.pdf](http://www.ageplatform.eu/images/ESCAPE_Needs_and_expectations_FINAL.pdf) (08.04.2017).
- Frauman, E., & Banks, S. (2011). Gateway community resident perceptions of tourism development: Incorporating importance-performance analysis into the limits of change framework. *Tourism Management*, 13(1), 128-140.
- Gafić, M., & Džeko, Š. (2011). *Olympic Mountains of Sarajevo*. Sarajevo: Tourist Board of Sarajevo Canton. (in Bosnian).
- Garms, M., Fredman, P., & Mose, I. (2016). Travel motives of German tourists in the Scandinavian mountains: the case of Fulufjället National Park. *Scandinavian Journal of Hospitality and Tourism*, 17(3), 239-258. doi:10.1080/15022250.2016.1176598
- Gilbert, D., & Clark, M. (1997). An Exploratory Examination of Urban Tourism Impact, with Reference to Residents Attitudes in the Cities of Canterbury and Guildford. *Cities*, 14(6), 343-352.
- Gursoy, D., Jurowski, C., & Uysal, M. (2002). Residents attitudes: a structural modelling approach. *Annals of Tourism Research*, 29(1), 79-105.
- Hamad, M., Smajić, E., Mujkić, A., Bečić, A., Šabotić, A., Yurt, C., & Duman, T. (2010). A Competitive Analysis Of Ski Resorts In Bosnia And Herzegovina Using Differential Advantage Proforma. In M. Handžić (Ed.), *Proceedings of 2nd International Symposium on Sustainable Development*. (pp. 422-428). International Burch University.
- Haralambopoulos, N., & Pizan, A. (1996). Perceived Impacts of Tourism: The Case of Samos. *Annals of Tourism Research*, 23(3), 503-526.
- Heberlein, A.T., Fredman, P., & Vuorio, T. (2002). Current Tourism Patterns in the Swedish Mountain Region. *Mountain Research and Development*, 22(2), 142-149.
- Horrigan, D. (2009). Branded Content: A New Model For Driving Tourism Via Film And Branding Strategies. *Tourismos, An International Multidisciplinary Journal of Tourism*, 4(3), 51-65.
- Huh, C., & Vogt, C.A. (2008). Changes in residents' attitudes toward tourism over time: a cohort analytical approach. *Journal of Travel Research*, 46(4), 446-455.
- Inbakaran, R., George, B., Jackson, M., Rodrigues, E., & Melo, F. (2012). Identifying resort tourism market segments based on visitor demographics: a study. *Academica Turistica*, 5(2), 85-94.
- Jurowski, C., & Gursoy, D. (2004). Distance effects on residents' attitudes toward tourism. *Annals of Tourism Research*, 31(2), 296-312.
- Kim, C.S. (2001). *Tourism Product Development: A Case Study of Wildlife Viewing in the Squamish Valley*. Simon Fraser University. (Master Dissertation).
- Kušen, E. (2002). Tourism attraction base. Zagreb: Institute for Tourism. (in Croatian).
- Kušen, E. (2010). A system of tourism attractions. *Tourism*, 58(4), 409-424.
- Lankford, S.V., & Howard, D.R. (1994). Developing a Tourism Attitude Impact Scale. *Annals of Tourism Research*, 24(1), 121-139.
- Lawton, L. (2005). Resident Perceptions of Tourist Attractions on the Gold Coast of Australia. *Journal of Travel Research*, 44(2), 188-200.
- Lepirica, A. (2005). Basic morphological and morphostructural characteristics of the Rakitnica Canyon. *Acta Carsologica*, 34(2), 449-458.
- Li, M., Wu, B., & Cai, L. (2008). Tourism development of World Heritage Sites in China: A geographic perspective. *Tourism Management*, 29(2), 308-319.
- Mason, P., & Cheyne, C. (2000). Residents' attitude to proposed tourism development. *Annals of Tourism Research*, 27(2), 391-411.
- Master plan for development of rural eco-tourism in area of Bjelašnica*. (2007). Sarajevo: The Sarajevo Economic Region Development Agency (SERDA). (in Bosnian).
- McClung, G.W. (1991). Theme Park Selection: Factors Influencing Attendance. *Tourism Management*, 12(2), 133-140.

- McGehee, N., & Andereck, K. (2004). Factors Predicting Rural Residents' Support of Tourism. *Journal of Travel Research*, 43(2), 131-140.
- Mihčić, L. (1984). *Bjelašnica and Igman - Mountains of 14th Winter Olympic Games*. Sarajevo: SOUR "Veselin Masleša". (in Bosnian).
- Nurković, S., Mirić, R., Drešković, N., & Jahić, H. (2009). Regional aspects of tourist potentials of Canton Sarajevo - classification and valorisation. In R. Nurković (Ed.), *Proceedings of the International Scientific Seminar "Tourism as a Regional Developmental Factor"*. (pp. 31-43). Tuzla: University of Tuzla. (in Bosnian).
- Ogorelc, A. (2009). Residents' perceptions of tourism impacts and sustainable tourism development. *International Journal of Sustainable Economy*, 1(4), 373-387.
- Perdue, R., Long, P., & Gustke, L. (1991). The Effects of Tourism Development on Objective Indicators of Local Quality of Life. In *Travel and Tourism Association 22nd Annual Proceedings*. (pp. 191-201).
- Peter, P.J., & Olson, J.C. (1996). *Consumer Behavior & Marketing Strategy (4th ed)*. New York: McGraw-Hill.
- Pizam, A., Neumann, Y., & Reichel, A. (1978). Dimensions of tourism satisfaction with a destination area. *Annals of Tourism Research*, 5(3), 314-322.
- Praljak-Kesić, T. (1987). Strategy of tourism development of SR B&H. *Economic Gazette*, 37(4), 341-351. (in Bosnian).
- Ritchie, B.W., & Inkari, M. (2006). Host Community Attitudes Toward Tourism and Cultural Tourism Development: The Case of the Lewes District, Southern England. *International Journal of Tourism Research*, 8(1), 27-44.
- Sharma, B., & Dyer, P. (2009). An Investigation of Differences in Residents' Perceptions on the Sunshine Coast: Tourism Impacts and Demographic Variables. *Tourism Geographies*, 11(2), 187-213.
- Sheldon, P.J., & Abenoja, T. (2001). Resident attitudes in a mature destination: the case of Waikiki. *Tourism Management*, 22(5), 435-443.
- Sirakaya, E., Teye, V., & Sönmez, S. (2002). Understanding Residents' Support for Tourism Development in the Central Region of Ghana. *Journal of Travel Research*, 41(1), 57-67.
- Spatial plan of the special area for the maintenance of the 14th Winter Olympics Sarajevo*. (1979). Sarajevo: Department for Urban Development Planning Sarajevo. (in Bosnian).
- Sustainable Development Strategy of Trnovo Municipality*. (2013). Sarajevo: Municipality of Trnovo. Available at: <http://www.trnovo.ba/strategija-2012-2016/> (02.12.2017); (in Bosnian).
- Šehić, M. (1985). *Transversal guide to the mountains of B&H*. Sarajevo: Mountaineering Union of Bosnia and Herzegovina. (in Bosnian).
- Temimović, E., & Jahić, H. (2009). Development potentials of rural tourism on Bosnia and Herzegovina mountains with special review on village Lukomir. In S. Musa (Ed.), *Proceedings of the First international scientific symposium Transformation of the rural area of SE Europe in the conditions of transition and integration into the European Union*. (pp. 217-225). Mostar: Geographical society of Herzegovina. (in Bosnian).
- Teye, V., Sirakaya, E., & Sönmez, S. (2002). Resident's Attitudes toward Tourism Development. *Annals of Tourism Research*, 29(3), 668-688.
- Thach, P., & Axinn, C.N. (1994). Patron Assessments of Amusement Park Attributes. *Journal of Travel Research*, 32(3), 51-60.
- Vargas-Sánchez, A., de los Ángeles, P.M., & Porras-Bueno, N. (2009). Understanding residents' attitudes toward the development of industrial tourism in a former mining. *Journal of Travel Research*, 47(3), 373-387.
- Vargas-Sánchez, A., Porras-Bueno, N., & de los Ángeles, P.M. (2011). Explaining residents' attitudes to tourism. Is a universal model possible?. *Annals of Tourism Research*, 38(2), 460-480.
- Voiculescu, M., Popescu, F., & Olaru, M. (2012). Patterns of Winter Tourism Activity in the Bucegi Mountains - the Prahova Valley (the Southern Carpathians). *Forum geographic Studii și cercetări de geografie și protecția mediului*, 11(2), 182-194.
- Williams, J., & Lawson, R. (2001). Community issues and the resident opinions of tourism. *Annals of Tourism Research*, 28(2), 269-290.
- Wong, K.F., & Cheung, W.Y. (1999). Strategic Theming in Theme Park Marketing. *Journal of Vacation Marketing*, 5(4), 319-332.
- Yang, M., Hens, L., Ou, X., & de Wulf, R. (2009). Tourism: An Alternative to Development? Reconsidering Farming Tourism and Conservation Incentives in Northwest Yunnan Mountain Communities. *Mountain Research and Development*, 29(1), 75-81.
- Yuksel, A., & Yuksel, F. (2001). Comparative performance analysis: Tourists' perceptions of Turkey relative to other tourist destinations. *Journal of Vacation Marketing*, 7(4), 333-355.

# The Influence of German Settlers on the Formation and Development of an Industrial Town in Habsburg Bosnia: Teslić (1878-1918)

---

Darko Gavrilović<sup>A</sup>, Goran Vasin<sup>B</sup>, Dejan Mikavica<sup>B</sup>,  
Smiljana Đukićin Vučković<sup>A</sup>, Ljubica Ivanović Bibić<sup>A</sup>, Rastislav Stojsavljević<sup>AB\*</sup>

Received: September 06, 2017 | Revised: January 07, 2018 | Accepted: January 18, 2018

DOI: 10.5937/22-16623

## Abstract

This paper studies the formation and development of the Bosnian town of Teslić from the Austro-Hungarian occupation of Bosnia and Herzegovina in 1878 to the end of the First World War in 1918. The goal is to emphasize the significant characteristics of the town's development: the spread of capitalism; economic modernization; the arrival of a non-Slavic, predominantly German population; and the town as the leader of industrialization in Bosnia and Herzegovina. The industrial origin of Teslić and its structure demonstrate Austria-Hungary's need to economically integrate Bosnia and Herzegovina into its state area. The aim of this paper is to show to what extent the dynamics of industrial development influenced the town's formation and to see how the colonist population, which was mostly of German origin, influenced the industrial development and social life of the town.

**Keywords:** German settlers, industrial town, development, Bosnia, Teslić

## Introduction

---

In order to form a historical picture of the town of Teslić, we need to reconstruct a period of several decades covering its formation and development as an industrial settlement, and then its position as a small town within Austria-Hungary (from the end of the 19<sup>th</sup> century to 1918). Since Teslić was built as an industrial settlement, this paper mostly devotes its attention to the industrial history of this town, which played a major role in its formation. The focus of the paper then shifts towards the role of predominantly Austrian and German colonists<sup>1</sup> in the industri-

al development, which dictated the formation of this Bosnian town and the surrounding region. The second part of the paper deals with the cultural development of the town, as well as with the labour union battles that accompanied industrialization. Both in the historiography of Bosnia and Herzegovina and of the former Yugoslavia, writing about the history of large and small towns in the form of monographs, studies, chronicles, theses and articles was mostly left to amateurs. This type of historical writing was not attractive enough for renowned historians, which is why today we can find only a few works written by professional historians who devoted their research to this part of microhistory. This paper is

<sup>1</sup> Documents from the archive did not make a distinction between Austrian and German nationalities. Still, it is evident from their places of origin.

<sup>A</sup> University of Novi Sad, Faculty of Sciences, Department of Geography, Tourism and Hotel Management, Trg Dositeja Obradovića 3, Novi Sad, Serbia

<sup>B</sup> University of Novi Sad, Faculty of Philosophy, Department of History, Dr Zorana Đinđića 2, Novi Sad, Serbia

\* Corresponding author: Rastislav Stojsavljević; e-mail: rastislav.stojsavljevic@dgt.uns.ac.rs

based on archival material on the formation and development of the town of Teslić from 1878 to 1918, as well as on data obtained from newspapers and col-

lections of published sources and memoirs dating back to that period including contemporary literature, modest in scope.

## A review of former research on the Teslić area

Petar Bogunović and Branislav Begović wrote rather short monographs on the history of Teslić and the surrounding region. The authors found a piece of data on the German role in the birth of this town in a manuscript by Dragiša Vasić entitled “Teslić and the Surrounding Region between Feudalism and Capitalism (1918-1941)”. Even though Bogunović and Begović presented some interesting and proven facts about the formation of this region and its population, both these authors gave credit for the development of Teslić to those whose political views were closest to their own. In accordance with this, the works of Branislav Begović, written in Socialist Yugoslavia, steered predominantly towards criticism of the Austro-Hungarian government and its exclusive exploitation of Bosnia and Herzegovina and its people, and to a certain extent, they revealed the influence of the communist political myths that the author used to attack capitalism. Besides its compulsory criticism of Austria-Hungary, the book written by Petar Bogunović, published in 1937, describes efforts that the Kingdom of Serbs, Croats and Slovenes made in order to industrialize this town and make it grow<sup>2</sup>.

Nevertheless, the paper was given a clear outline only with the help of data from archival records and

published sources, which provided a distinct insight into how the first industrial settlement was built under Austro-Hungarian rule at the same site where several villages once stood at the time of the Ottoman Empire. This settlement then grew into the small town of Teslić which, due to its modern appearance and the significance of German and Austrian colonists, was named “Little Berlin”.

The history of this town begins in 1878 when, at the Congress of Berlin, the Great Powers gave Austria-Hungary official permission to indefinitely occupy Bosnia and Herzegovina – Turkish provinces at the time – on the grounds of the sultan’s inability to impose order on this region after the Herzegovina Uprising of 1875–77. Bosnia and Herzegovina, as the least developed country, thus became an integral part of the economic region of Austria-Hungary and it was surrounded by an organized state with a leading market economy, as opposed to the Ottoman Empire. Bosnia and Herzegovina was under Austro-Hungarian rule for forty years (1878–1918). In 1882, the Provincial Government, which had been active in Sarajevo since January 1, 1879, became subordinate to the Joint Ministry of Finance of Austria-Hungary, which had been entrusted with supreme authority within Bosnia and Herzegovina (Kraljačić, 1987). The head of the occupying power was an Austrian general in Sarajevo. As early as 1881, the occupied territories were incorporated into the Austro-Hungarian economic zone and monetary system. Austria-Hungary did not change the existing territorial and political organization of the country (Gavrilović et al., 2005; Kapidžić, 1955).

The most substantial progress was achieved in industrial development, which made the existing towns stronger, and also founded a new type of towns in Bosnia – industrial towns, like Teslić.

<sup>2</sup> The Kingdom of Serbs, Croats and Slovenes was formed on the 1st of December 1918. On the 3rd of October, 1929, the name of the state was changed into the Kingdom of Yugoslavia. In order to gain inner strength, the state was sympathetic to the idea of Yugoslavdom, as a form of South Slavic nationalism. As an integrating factor, it was meant to strengthen the state and absorb ethnical nationalism of three Yugoslav peoples acknowledged by the state (Serbs, Croats and Slovenes). Therefore, the literature from that period frequently emphasizes a hostile attitude towards Austria-Hungary, which was accused of holding South Slavic peoples captive and thereby of hindering the process of integration. In the Kingdom of Serbs, Croats and Slovenes Germans had the status of a minority.

## Location of the Teslić area

The municipality of Teslić is one of the largest municipalities in Republika Srpska. It is situated in north-central Bosnia, that is, it occupies part of the south west of the Republika Srpska entity. With a total area of 846 square kilometres it is among the largest municipalities in Republika Srpska. It borders with the municipalities of Doboj, Tešanj, Maglaj, Žepče, Zenica, Travnik, Kotor Varoš and Čelinac. The town of

Teslić is located in the valley of the Velika Usora River (the Great Usora River), at an altitude of 204 m, on the main road Doboj – Teslić – KotorVaroš – Banja Luka. It is 85 km from Banja Luka, and 26 km from Doboj.

According to the preliminary data acquired from the last population census in 2013, the municipality of Teslić had 41,904 residents (in the 1991 census it had



Figure 1. The geographic position of Teslić in Bosnia and Herzegovina  
Source: <http://www.dalekoodposla.com/mape/auto-karta-bosne.jpg> (May 16, 2015)



Figure 2. Teslić today  
Source: <https://www.google.ba/maps/@44.6005676,17.8557497,2715m/data=!3m1!1e3> (May 16, 2015)

59,854). The town of Teslić itself has about 7,500 residents today.

Teslić is a relatively new town. It was founded in the last decades of the 20<sup>th</sup> century along with the first projects of industrialization in this region.

## Industrialization, urbanization and development

The Tešanj District, where the towns of Tešanj and Doboј stood out due to their size, and which also included the rising town of Teslić, was “a small version of Bosnia”. It incorporated all three basic types of towns that existed in the period of Austro-Hungarian rule – the oriental and Islamic, the mixed, and the new “European” types of town. Tešanj stood out as an oriental and Islamic type of town with a “char-

shia” (an oriental market-place) and narrow winding “sokaks” (small oriental streets) crammed with little wooden stores and handicraft shops, whose residents of different faiths lived in separate parts of the town at the end of the 19<sup>th</sup> century. The Austro-Hungarian government approached the process of building and developing Bosnian towns in accordance with the principles applied in the Monarchy. According to



Figure 3. List of industrial towns in Bosnia under Austria-Hungarian rule

these principles, the old urban structure of towns remained unchanged, and new European structures were built on empty sites. Since Teslić was a town that had only just begun to grow at the time of Austro-Hungarian rule, such action was not necessary. Teslić was originally built as an industrial settlement, which then grew along with the factories and gradually took on the shape of a modern town. These three types of towns were included in industrialization but in different ways. Traditional Islamic towns had to be restructured, while mixed and European towns could start their industrialization from the start. During Austro-Hungarian rule, there were 33 industrial towns of all three types which were mentioned. The railway network was not developed, and it connected only a few towns with major mines.

The process of industrialization and urbanization refers to cities and towns, and it is considered to be the most significant element in the transformation of a settlement. Changes in cities and towns are reflected in an increase of the urban population, in workforce migration, and in the transformation of the physiognomic features of towns and their surrounding area. The impact of industry on settlements can be observed through changes in the functional structure of towns and their surroundings, as well as through demographic elements (Đukićin et al., 2014). The industrial origin of Teslić and its structure demonstrated the need of Austria-Hungary to economically integrate Bosnia and Herzegovina into its state area and

at the same time find which regions of that country had the greatest growth and industrial potential. On the other hand, this area successfully fit into the rudiments of industrial development.

Industrial development is studied in numerous fields of science. Developed countries of the world have gone far with regard to industrial development; thus, their experts studied this subject in depth (Kaya, 2010; Kohli, 2004; Koo, 1990; Kerr, 1983; Kerr et al.; 1960). By deliberating the behaviour and arrangement of various industrial activities in space and time and establishing functional relations between them it can be seen that parallel to these processes, changes of territory also happen. One factor common to all phases of industrial development is the migrational movement of the population, in terms of its intensity and direction. A characteristic of the first phase of industrial development is urbanization – the creation of urban industrial areas that are compact by nature (Desmet & Rossi-Hansberg, 2009).

Teslić was founded in the last decade of the 19<sup>th</sup> century in an area where two rivers, the Great Usora (Velika Usora) and the Small Usora (Mala Usora), meet. The town was built in this area for several reasons – the abundant forest resources necessary for building chemical wood-processing factories in the vicinity, coal deposits<sup>3</sup> (Zadro, 1934), the spaciousness of

<sup>3</sup> The first geological study of Bosnia and Herzegovina was conducted at the time when this territory was a part of Austria-

the valley, agricultural production in nearby villages, and the fact that apartments for factory workers and foremen were usually built near a factory. The wood processing industry was the main driving force in the economic development of Teslić. By October of 1886, the Provincial Treasury of Bosnia and Herzegovina had already signed a basic contract for a ten-year exploitation of Bosnian oak woods with the company "Morpurgo&Parente" from Trieste (AB&H, 1886). In order to facilitate exploitation, this company built a narrow gauge railway in the Usora region (from Usora, near Doboј, to Pribinić)<sup>4</sup> (Juzbašić, 1973), where an industrial settlement was founded, which was what later developed into the town of Teslić (AB&H, 1902). In 1896, an Austrian, Joseph Kranc, notified the joint minister of finance, Benjamin Kallay, of his intention to start a joint-stock company called "Bosansko a.d. za preradu drveta" in Teslić<sup>5</sup> (Report on the Administration of Bosnia and Herzegovina, 1906). In 1911, a seed processing plant was opened there and it was considered to be one of the most modern of its kind in Europe at the time, in addition to another one in Budslavica in the Czech Republic (Begović et al., 1978; Begović, 1986). One of the companies that participated in establishing the joint-stock company was a company called "Aktiengesellschaft für Trebertrocknung" from Kasel, that purchased a patent developed by German engineer Franz Josef Bergmann. The company was financed by capital from the renowned "Leipziger Bank", which was hit hard when the company "Aktiengesellschaft für Trebertrocknung" from Kasel went bankrupt. That also caused changes in the company "Bosansko a.d. za preradu drveta"<sup>6</sup> (AB&H, 1902). A steam sawmill for the destructive distillation of wood was built next to the factory and put into operation in

1905. In 1912, the sawmill factory employed 20 workers, two of whom were foremen of German nationality (Hadžibegović, 1980).

In 1902, an electrical power station was also built and so the town of Teslić had electricity, while the neighbouring towns of Doboј and Tešanj used petroleum lamps for a long time to come. Banja Luka, which was the district capital, did not have electricity until after 1910<sup>7</sup> (Mikić, 2004; Sarajevski list, 1914). Besides that, Teslić was the first town in the Tešanj District to have a fire department, whose formation was dictated by the process of factory production. Hanrah Weisberg, a mechanical engineer, was the first commander of the fire department. Until 1910, it had 40 members, 26 of whom were colonists, and the majority of them were Austrians and Germans<sup>8</sup> (Vasić, 2014). There are records of eight colonists who opened retail stores and three who opened taverns in the town of Teslić and surrounding villages, while "Bosansko a.d. za preradu drveta" opened two smaller hotels in Teslić<sup>9</sup> (AB&H, 1924). A cinema was opened in 1915, that is, twenty years after the first showing of the film made by the Lumiere brothers and only nine years after the opening of the first cinema in Paris (AB&H, 1905).

"Majstorske kolone", buildings for mechanics (administrative workers) and "Pilanske kolone", buildings for sawmill workers were located on the main street. This is where upper-class employees of the Teslić society lived. Unfortunately, like numerous other "coal towns", Teslić also had railway tracks going through its main street (the Usora-Pribinić railway), while tracks leading to the factory and to the forests passed through most of the remaining streets. The railroad station was located in the centre of the town. The chemical factory, locomotives and dust coming from the roadways polluted the air. The chemical factory was located near the Velika Usora River and it was polluting the water. Therefore the Provincial Government in Sarajevo was forced to deal with this problem (AB&H, 1905). Negative aspects of progress and modernization in this region led to pollution, damage to natural environment and to random building in a later phase of the town's industrial development.

---

Hungary. It was carried out by Dr. Friedrich Kacer. He estimated that "a quarter of the given quantity could be exploited – approximately 12 million tons, in other words"

<sup>4</sup> Building of railways in Bosnia and Herzegovina was extremely important for its industrialization. Since planning and carrying out of construction projects required skilled professionals, Austria-Hungary was forced to turn to foreigners because such workers were not available in Bosnia. Therefore, Germans had an extremely important role in this task. Consequently, it should not be surprising that knowledge of German language was a requirement for getting jobs in Bosnian railroads. Thus, for instance, 556 employees out of the total number of 700 employees in the railroad workshop in Sarajevo, were foreigners, while all the major repairmen were Germans.

<sup>5</sup> The intention was to use the planned railway Usora-Pribinić as means of transportation product to the main railway of Bosnia and Herzegovina and finally to the market as quickly as possible.

<sup>6</sup> The management board consisted of: Otto Steinbeis, Dr. Josef Kranz, Herman Kalenberg, a chemist from Vienna, Gustav Bloh, a court attorney from Vienna, Dr. August Bantlin, an industrialist from Konstanz, Hugo Blank, an industrialist from Berlin, Luis Fade, an executive from Frankfurt am Main.

<sup>7</sup> The construction of a water supply and an electrical power station in Doboј did not begin until the spring of 1914.

<sup>8</sup> Of the 51 documented companies in Teslić and the towns surrounding it during Austria-Hungary rule, 11 were owned by colonists, nine of which were Austrians and Germans and two Jewish. This data was found in the issues of "Bosanskiglasnik" (from 1904 to 1917).

<sup>9</sup> The Kingdom of Serbs, Croats and Slovenes was established on the 1st of December, 1918 and "up to the moment of writing this report, not one new building had been erected in Teslić. Therefore, one may justly conclude that the inventory presents construction activity that took place while Bosnia and Herzegovina was part of Austria-Hungary".



Figure 4. Teslić at the beginning of the 20<sup>th</sup> century

A school, hotels, a reading room for employees and a casino were built near the factory and the main street. The pollution in the town was lessened to some degree by planting a line of trees and by improving the town park with precious tree species<sup>10</sup> (Mikić, 2004).

Most of the workers lived in the eastern part of the town, on the left shore of the Velika Usora. This part of the town was given the name “Radničke kolone”. These were lower-quality buildings.

The buildings located on Brunnenstrasse were called shacks by the management, and that is why in 1915, the company president suggested to the Konstanz management to tear down these structures and move the foremen and better workers from “Radničke kolone” to “Majstorske kolone” (ARS, 1915). Towards the

end of the First World War, three villas were built in the city park for the management of the company and of the sawmill factory and for doctors.

The development of industry and transport was accompanied by the need for a number of new professions that could not be found among the local population. For that reason, qualified manpower was brought in from other countries (Hadžibegović, 1980). Thus, skilled workers, and technical and commercial experts in Teslić were foreigners, mostly of German origin, whereas labourers were from the local population. According to the statistics of the Provincial Government of Bosnia and Herzegovina, in 1911, 41% of the supervisors and foremen in “Bosansko a.d. za preradu drveta” in Teslić were foreigners (Vasić, 2014).

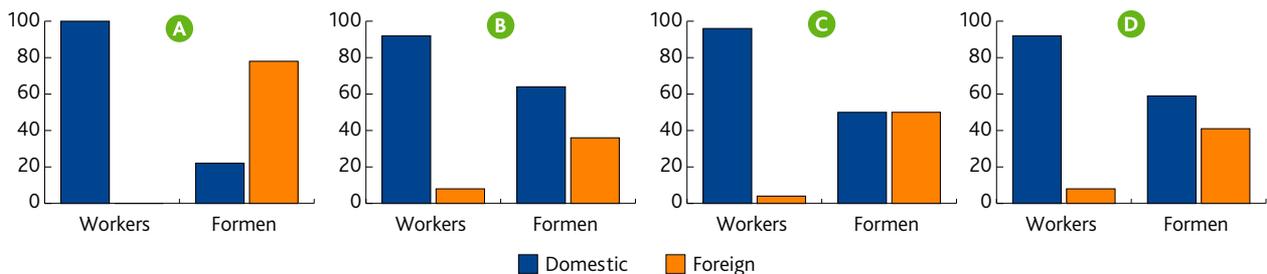


Figure 5. A - Structure of the labour force (%) in the sawmill plant of “Bosansko a.d. za preradu drveta” from Teslić on December 31, 1911; B - Structure of the labour force (%) in the wood processing plant of “Bosansko a.d. za preradu drveta” from Teslić on December 31, 1911; C - Structure of the labour force (%) in the railroad plant of “Bosansko a.d. za preradu drveta” from Teslić on December 31, 1911; D - Total structure of the labour force (%) in forest exploitation of “Bosansko a.d. za preradu drveta” from Teslić on December 31, 1911

The graphs are based on the Statistics of the Provincial Government of Bosnia and Herzegovina, Sarajevo, 1912.

<sup>10</sup> The Austro-Hungarian government paid great attention to planting lines of trees. It was recorded that in the capital of the Banjaluka District (Banjaluka), which also included Teslić, an Austrian general named Jelzon ordered his army to bring seedlings of pine trees, linden trees and spruce trees and plant them on both sides of the road so that 1885, a 17-kilometer-long lane consisting of 4,714 trees was planted. Đ. Mikić, op.cit., p. 85.

The graphs presented here point to the conclusion that the number of foreigners among the workers was low, whereas their percentage among the foremen and supervisors was high. The graphs also show that it was necessary to hire immigrants to perform skilled jobs due to the fact that local people were undereducated,



Figure 6. Railroads in Bosnia during Austria-Hungarian rule 1878-1918

and also that the percentage of hired foreigners depended on the complexity of the jobs performed by the foremen and supervisors.

Until the end of Austro-Hungarian rule, the factory founded by “Bosansko a.d. za preradu drveta” from Teslić was managed by engineers of Austrian and German origin: Georg Ludwig, Wilhelm Strecker, Fritz Sile and Dr. Hans Zorn.

The most densely populated settlement of the industrial town of Teslić was not located in the rural municipality of Teslić, but rather on the territory of the village of Stenjāk (Bogunović, 1937). The reason for this was that the industry was located in the unpopulated part of Stenjāk and consequently an industrial settlement also developed in this part of the village. Since that area was separated from the rest of the village by the Velika Usora River and it also abutted onto the settlements of Teslić, the town began to grow by means of joining the rural municipality of Teslić with this part of Stenjāk, which were newly populated by factory workers.

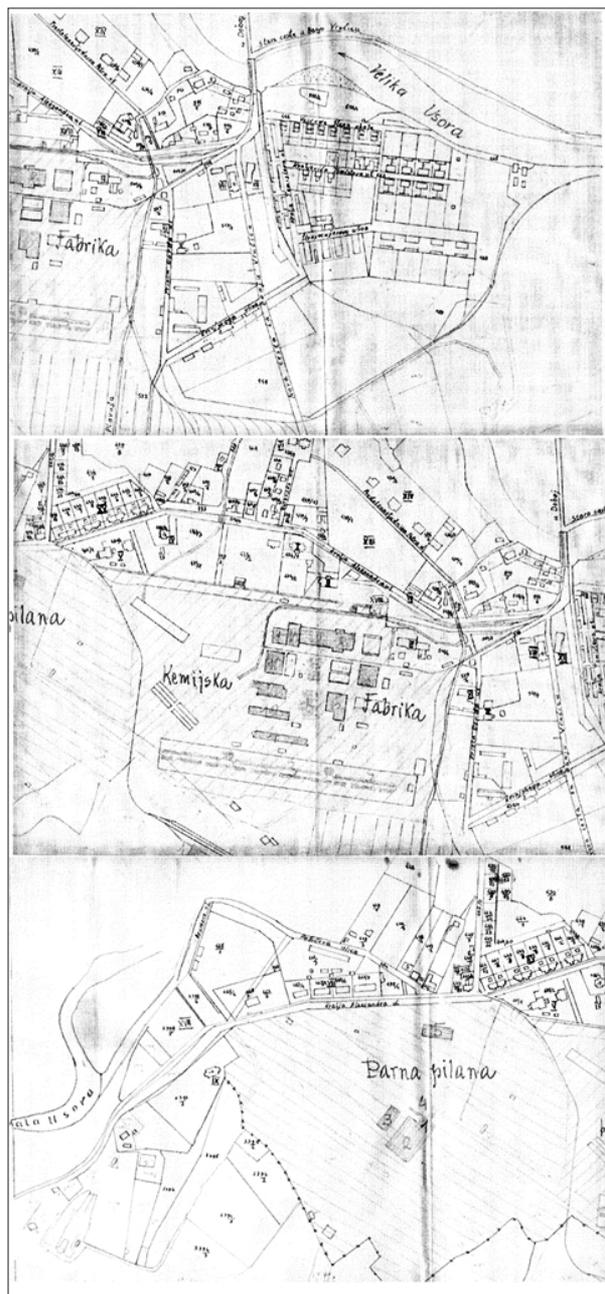


Figure 7. Urban plan of Teslić under Austria-Hungarian rule

### Migrations and population structure changes

During the period between 1878 and 1918, the Tešanj District, where the town of Teslić was built, remained within the same boundaries, with branch offices in Doboј, and as such it was a part of the Banjaluka region. Whereas it was mostly Slovenes who migrated to other regions of Austria-Hungary, Germans mostly emigrated to the Banjaluka region. Franz Pfanner played a key role in colonization (Zaplata, 1934). The difficulties that Germany was experiencing at that time – the growing influence of the “Kulturkampf”, which was not favourable to Roman Catholics, and poor crop yields from 1876 to 1878 – soon made peo-

ple show interest in Pfanner and approach him. First, families began to arrive. It was recorded that the first immigrants, 196 of them, came from Essen, followed by others from Oldenburg, Hanover and Braunschweig. The first foreign settlement bore the name of its founder Windthorst (today Nova Topola) (AB&H, ARS, PJD, DDT, Kutija građe na nemačkom jeziku (A Box of Construction Material in German)), June 16, 1915; 1879). Besides Germans, settlers from South Tyrol, hit by flooding, also played a significant role in the first phase of colonization (Hauptman, 1965). The intention of the Austro-Hungarian government was

clearly described by Apel, the head of the Provincial Government, who emphasized the need for colonization and its significance, and above all its aim to improve crop cultivation and provide more food for people (AB&H, 1883) – which was accomplished during the forty-year Austro-Hungarian rule. Estimates indicate that there were approximately 30,000 farmers who colonized the Teslić area (Hadžibegović, 1980).

The purpose of migrations was not only to strengthen agriculture, but to industrialize the country as well. While in the Ottoman Empire, 120 officials managed the Bosnian vilayet, after the arrival of Austria-Hungary and due to increased industrialization, there was a need for a larger administration. That is why the number of administrators increased from 689 to 13,266 during the period just after the occupation to the year 1912 (Hadžibegović, 1990). The administration consisted mainly of foreigners, mostly because the local population was not qualified enough to perform such duties due to its high illiteracy rates and undereducation<sup>11</sup> (Sugar, 1963).

Germans held the positions with the highest levels of responsibility since they formed the administration<sup>12</sup> (Juzbašić, 1969). In order to set in motion a period of transition to industrialization, to form an effective administration and an efficient military and administrative apparatus, to begin the construction of transport and industrial infrastructures, to found and develop educational, cultural and scientific institutions, Austria-Hungary intensified migrations from other parts of the empire to Bosnia and Herzegovina (Hadžibegović, 2007). In some regions of Bosnia and Herzegovina, villages were built only for the colonists (Gavrilović et al., 2005). The Monarchy began to build roads, and by the beginning of the 20<sup>th</sup> century 1,684 kilometres of railways were built in Bosnia, which meant that conditions for the industrialization of the country were provided.

The social structure of population of Bosnia and Herzegovina gradually began to change after 1878. The changes occurred when the Condominium entered the broader Austro-Hungarian economic and political domain and thus began to take part in new economic activities, especially industrial develop-

ment, the exchange of goods and currency in villages, and migrations. However, despite industrialization, the population in Bosnia was predominantly made up of farmers<sup>13</sup> (Selimović & Hadžić, 2008). When Teslić began to mature as an industrial town, it became necessary to settle the factory workers and management personnel in its area. Considering the fact that local management personnel were virtually non-existent, the new administration needed to encourage workers and managers to come from more developed parts of the Monarchy. While the 1879 and 1885 population censuses did not reveal a single foreigner in the Teslić region, the census conducted in 1895, after the rise of industry and construction of residential buildings for factory workers, counted 31 foreigners. Significant growth in the number of this category of the population was achieved during the period from 1895 to 1910, that is, at the time when Teslić was founded and developed<sup>14</sup> (Mikić, 1990). According to the Report on the Administration of Bosnia and Herzegovina in 1906, there were 54 newly established settlements that accommodated 9,660 colonists, and six of them were in the Tešanj District. So, for example, in just the factory settlement in Stenjajk, there were 118 German Protestants out of a total number of 191 foreigners (Report on the Administration of Bosnia and Herzegovina, 1906). According to the 1910 population census in Bosnia and Herzegovina, the Tešanj District, with a population of 51,019 citizens, had 2,409 foreigners, of whom 769 were Germans (Population census in Bosnia and Herzegovina, 1910). In the factory settlement in Teslić, colonists were mostly Germans, and they constituted the majority of the company's management. Therefore, during Austro-Hungarian rule, the industrial town of Teslić possessed mostly German characteristics.

Austro-Hungarian policies were undefined and in most of Bosnia and Herzegovina people continued to be engaged in agriculture, especially because most of the population were of Serbian descent and they had habits and a lifestyle similar to the people in neighbouring Serbia, which was a very rural, agricultural country. Other nationalities had the same characteristics.

<sup>11</sup> An increase in the number of administrators was recorded at all levels of government. Only in the district offices and branches, the number of administrators increased from 277 in 1883 to 1041 in 1902.

<sup>12</sup> In 1905, for instance, Germans comprised 11.23% of administration, while local population made up 27.56% of it. At the same time, the authorities claimed that the percentage of local population in administration was influenced by the fact that 87.84% of local population was illiterate.

<sup>13</sup> While after the occupation in 1878, 90% of the population was agrarian, in 1910, this percentage was 87.92%.

<sup>14</sup> Even in 1883, the Tešanj District was under consideration for settling Germans from South Tirol, which was hit by poor crop yields, vineyard pests and floods for several years. Several landowners from Tešanj requested that foreigners work on their peasant homesteads. However, this was not realized because German emissaries did not find enough suitable land.

## The development of educational institutions

It was only at the beginning of the 20<sup>th</sup> century that local people and German people began to interact with each other, and at that time the need arose to educate the offspring of the local people. The illiteracy rate of the local population was very high at that time. At first there were language and cultural barriers, because the heterogeneous local population had only lived within their local communities in the Ottoman Empire for centuries. With the arrival of Austria-Hungary, social and cultural barriers were gradually overcome.

The arrival of Austria-Hungary in Bosnia and Herzegovina initiated the process of establishing public schools, whose main goal was integration of the local population into the cultural environment of the state.

Until the beginning of the twentieth century, schools were mostly of national and religious character. Afterwards, the education process encouraged by the state led to a situation in which more and more children from the heterogeneous local population attended public schools.

South-Slavic journalists often criticized the Austro-Hungarian administration in Bosnia and Herzegovina for doing little to improve education, which is not true, and this paper will show that. They also criticized administration for bringing foreigners to Bosnia and Herzegovina and thus jeopardizing the identity and interests of the local population. The first accusation is false because of the fact that secondary education did not even exist until 1878 (religious schools cannot be considered to be secondary schools, mostly due to the lack of precise school programs and clearly defined curricula). Even though during its forty-year rule, Austria-Hungary did not succeed in recovering the education system of Bosnia and Herzegovina, it did succeed in opening 568 public and private schools, and creating an environment in which there was one primary school per 3,504 residents, at a time when approximately 70% of the population of Bosnia and Herzegovina was under the age of 14 (Džaja, 1990). The second accusation is also unfounded. Settlers certainly did not threaten the cultural interests of the local population. There was no danger of cultural Germanization because the South Slavic regions had already experienced a cultural awakening, and the teaching staff of German descent represented the cornerstone of cultural modernization in this region. Immigrants were more educated than the local population and as such, they were more qualified to perform teaching jobs than any hastily formed group of teachers of local origin. The Provincial Government in Sarajevo exerted great effort to establish public schools because, in Bosnia, schools were denominational, and peo-

ple were accustomed to attending their own religious schools separately and in accordance with their religious beliefs. As far as Muslim schools were concerned, "sibyanmektebi" (primary school) schools were the most numerous and remained so until the end of Austro-Hungarian rule. Since public school attendance among Muslim children was poor until the beginning of the 20<sup>th</sup> century, the authorities strived to reorganize the school programs in SibyanMektebi schools in accordance with contemporary needs<sup>15</sup> (Čurić, 1983). Thus, "mektebiibtidai" schools were opened. However, from the beginning of the 20<sup>th</sup> century, the number of children in both schools increasingly declined because of low motivation among teachers due to low salaries, poorly equipped schools, and also because the government was not interested in their survival (Selimović, 2008). Orthodox schools, attended by the Serbs since 1879, were run by church and school boards, and most of the teaching staff consisted of Serbs from Vojvodina and Croatia. Even after the arrival of Austria-Hungary, the vast majority of Serbian pupils continued to attend these schools. When in May of 1913, Bosnia and Herzegovina declared a "state of emergency" due to the Balkan Wars and the potential danger that the wars would reach the border with neighbouring Serbia, temporary measures were introduced to close down Orthodox cultural institutions, and in October of 1914, Orthodox schools were permanently closed down (Bogićević, 1965). Consequently, a much greater number of Serbian pupils were integrated into public schools (Selimović & Hadžić, 1982). Franciscan schools attended by Roman Catholics remained open even after 1878. They did not have the support of the government, which was fearful that if it supported Franciscan schools, a great number of children would not attend public schools<sup>16</sup>, and their liquidation lasted until 1885. Hence, denominational schools of all three ethnic groups encountered problems and the government did not help to overcome them because it was not in its interest to lower the attendance of public schools. It should also be pointed out that for the entire duration of Austro-Hungarian rule, there was a negative attitude among the local population towards sending girls to schools. This atti-

<sup>15</sup> Even though, according to official Austro-Hungarian records, the number of Sibyan Mektebi schools continuously grew until the beginning of the 20<sup>th</sup> century, the number of pupils did not grow at the same rate as the number of SibyanMektebi schools. In other words, the number of Muslim children attending public schools grew at the beginning of the 20th century.

<sup>16</sup> Many of former Orthodox schools were turned into public primary schools, mostly in villages, during the war and with the consent of Serbian school districts and church school districts.

tude was a result of the inherited notion that there is no need to educate female children<sup>17</sup> (Population census in Bosnia and Herzegovina, 1910). That attitude was especially characteristic of the Bosnian Muslims and Serbs<sup>18</sup> (Bougarel, 2009; Spasojević, 1991). Thus, for example, in the district capital of Banjaluka, the first public school was opened in 1879 and not a single female pupil attended that school until 1903. The local Bosniak and Serbian population had a similar attitude towards a public school in Teslić, founded in 1899 by the company “Bosansko a.d. za preradu drveta” with the aim to provide education for its employees’ children. In 1910, only 4.44% of Serbs in the Tešanj District were literate, mainly for the following reasons: the great majority of Serbs were peasants; not a single school was opened in the villages; and the rural population had a negative attitude towards education. The percentage of literate Bosniaks was just over 4.59%. The literacy rate was the highest among the Roman Catholic population – 22.82% – and that was due not only to the local Croatian population, but for the most part, to Roman Catholic colonists<sup>19</sup> (Population cen-

However, as we can see from this Table, the number of Austrian and German pupils in the first and second grades at the Public Folk School in Teslić was still higher, even though their percentage in the overall population was smaller. It is also obvious that the local population enrolled a small number of girls in schools, while that was not the case with children who attended classes held in German. Finally, the Table also shows the number of children enrolled in the second grade, which gives us information on the enrollment of immigrant children in the school in Teslić.

In June of 1912, after a four-day inspection of the school in Teslić, it was concluded that the school could offer classes to 150 children, and that only 88 children had enrolled because “the education law had not been enforced at the beginning of the school year, and that not a single Muslim child had been enrolled to school out of the 839 Muslims living in the school district” (AB&H, 1912). Nevertheless, the situation improved the following year and 14 Muslim children were enrolled into the school. In the same year, religious stud-

**Table 1.** A report on the pupils enrolled at the Public Folk School in Teslić in the 1905/1906 school year

	1 grade		2 grade		3 grade		4 grade	
	boys	girls	boys	girls	boys	girls	boys	girls
Bosnian Department	24	3	3	5	10	5	3	5
German Department	18	13	4	6	0	0	0	0
Total	42	26	7	11	10	5	3	5

*Table is an integral part of a table concerning the 1905/1906 school year, found in the doctoral thesis of Dragiša Vasić, Teslić i okolina između feudalizma i kapitalizma, 1878-1941 (Teslić and the Surrounding Area between Feudalism and Capitalism, 1878 -1941).*

sus in Bosnia and Herzegovina, 1910). The first teacher in the public school in Teslić was Albert Zerbs, “an American journalist of German descent”, who taught his pupils in German. Nevertheless, at the beginning of the 20<sup>th</sup> century, children from the local population gradually began to attend the school, and so two more teachers were hired – Vilma Jusić and Milan Simović. By 1903, the school had 91 pupils and by 1905 that number had increased to 109 (AB&H, 1906).

ies was introduced in the German department of the Teslić School for 14 Evangelical pupils and these lectures were given by the priest George H. Funk from Derventa (AB&H, 1913).

Furthermore, Teslić had 193 Evangelical residents and as such, it represented one of the branches of the Banjaluka Evangelical Church Municipality. The school grew along with the town. At the onset of the First World War, the school had 164 pupils. Consequently, two school buildings were erected with three classrooms in each, located parallel to the main street, across from “Činovnička kolona” (residential buildings for administrative workers), next to the chemical factory and to the entrance into the sawmill factory. The school was equipped with an abacus, a globe, maps of Bosnia and Herzegovina, maps of Austria-Hungary and of Europe, with pictures of human anatomy and zoology, with a small ore collection and a set of physical education equipment (AB&H, 1913). There were no vocational schools introduced by the Austro-Hungarian administration.

<sup>17</sup> In the Tuzla District, for instance, there were 148,190 women (94.90%) who were completely illiterate. For more detailed information on illiteracy see “Rezultati popisa žiteljstva Bosne i Hercegovine, 1910. godinu u oktobru”

<sup>18</sup> In 1914, in Tešanj, only one pupil attended the public primary school, while at the same time 45 pupils attended the Serbian Orthodox school.

<sup>19</sup> There were districts in Bosnia and Herzegovina with an even lower literacy rate than in the Tešanj District. For instance, the literacy rate among people aged over seven was 11.95% for the whole territory of Bosnia and Herzegovina. Results of the population census in Bosnia and Herzegovina from September 27, 1910, pp. LIV-LXII, 18-47.

## Cultural Societies

The beginning of the 20<sup>th</sup> century marked the appearance of the first cultural societies on Teslić's scene.

Cultural activities led towards respect for the cultural differences between different ethnic and religious communities, as well as towards preservation of the cultural differences of one's own ethnic and religious community. At that time Austro-Hungarian cultural politics tended to respect the cultural differences between all peoples that inhabited its territory.

Cultural societies were established with respect to nationalities. They strived to maintain folk tradition and folk dances; they supplied books and magazines in the languages of their members, and provided assistance in the education of less privileged, but gifted pupils and students. In the beginning, Teslić exuded the spirit of Austria and Germany, and the first cultural society was founded under the name "Deutscher Verein". Its centre was in Sarajevo and it had 15 branches within Bosnia and Herzegovina. The Austrian and German population obviously took a very active part in this society since there arose a need for another branch in the nearby village of Čulić, thus Teslić practically had two branches (Išek, 2002). After 1909, several more German societies were established in Teslić. The "Schützenvereinigung" society (an archery club, one of the only two that existed in Bosnia and Herzegovina) was a leader among them when it came to opening their doors to members of other nationalities. In addition to this society, two more German societies were founded – "Flotennverein" (Society for Navy Assistance) and "Arbeitervereinigung" (Labour Society with social democratic orientation, one of 77 such societies in Bosnia and Herzegovina).

"Arbeiterleserverein", the first reading room for employees in Teslić, was founded in 1899 on the initiative of Austrian and German workers from "Bosnische Holzverwertungs-Aktiengesellschaft"<sup>20</sup> (Sugar, 1963). The Tamburitza Society, very noted in Bosnia, also performed its activities in the reading room and it founded a school of tamburitza for the children of employees. In addition, company employees also participated in the organization of humanitarian aid during the First World War (Sarajevski list, issue 305, December 19, 1917).

<sup>20</sup> During the First World War, in the midst of the economic collapse of the country, this company helped residents of Teslić to lead normal life, as much as it was possible. Austro-Hungarian army particularly needed acetone so the Ministry of War, in cooperation with the Ministry of Finance, strived to increase production of this company through constant intervention. Thus, it was concluded that this factory, as the largest manufacturer of acetone in the country, must be provided with supplies for their workers and their families.

For easier control over labour unions and their battle for workers' rights, the management of "Bosnische Holzverwertungs-Aktiengesellschaft" took advantage of the fact that they were divided into factory workers, sawmill workers, miners, railroad workers and forest workers, then into colonists and farmers, skilled and unskilled workers, and foreign and local workers. Foreign workers in Bosnia and Herzegovina were better organized because they were educated and better paid. They brought labour organization experience from the developed countries of Central Europe. Therefore, they created labour organizations that fought for the economic and political rights of workers. The Central Labour Union of Bosnia and Herzegovina was founded in 1905 and that is where the Social Democratic Party, which was founded in 1909, developed and found its major source of support (Hadžibegović, 1980). One of the means of fighting for worker's rights was strikes (Madžar, 1975). In August of 1911, factory workers showed great solidarity when Schwarzbrenner, an Austrian foreman, was dismissed from his job. The strike lasted for two days. However, the management of the factory refused to give in, and Schwarzbrenner was left without a job (Madžar, 1988). The biggest strike in Teslić occurred in 1912 and lasted from February 13 to March 9. Approximately 350 workers went on strike due to low wages and dismissals from jobs.

During the First World War, Teslić was a very lively and populated place. An increase in the number of workers due to the increased need for acetone resulted in the construction of new residential buildings. Because of high population growth, workers' quarters were of poor quality, built only for temporary lodging, and with the hope that the situation would improve after the war. There were no suitable apartments either for technical experts or for sales professionals. A letter written in 1915 says that a doctor lived in the apartment of an engineer, a chemist in the loft of an administrative building and an engineer in the apartment of an administrator (ARS, PJD, DDT, Wohngebäude, May 11, 1915). Nevertheless, the Monarchy made every effort to provide normal life for its skilled workers. Unfortunately, plans for building a new modern hospital were not realized. However, another cinema was opened (ARS, PJD, DDT, May 29, 1917).

When the war ended, the period in which the town grew according to the Austro-Hungarian model also ended, and the German population was sidelined. Teslić found itself in a new country, the Kingdom of Serbs, Croats and Slovenes. The National Government in Sarajevo immediately made a decision to re-

place Eduard Sonnenfeld, the district chief of German nationality (Isović, 1962). This was followed by the departure of colonists from Bosnia and Herzegovina. An order for the expulsion of foreigners was issued at the beginning of May of 1919. That order pertained to the following foreigners: colonists who came to Bosnia and Herzegovina during the war, foreigners without permanent employment, foreigners engaged in shady businesses, and foreigners who were unreliable with regard to “national loyalty”, that is everyone who was not in the good graces of the new government (Šehić, 1991). Thus began the expulsion of Germans who had built this town. There is evidence that indicates that the expulsion did not take place only during the first year after the new country was formed. It also continued in the years to come. In 1921, three years after the establishment of the new country, “twelve workers were driven out along with their families”, and by 1935, only one German remained in the wood distillation factory (ARS, PJD, DDT, February 20, 1935). According to the 1921 population census,

only 67 Germans still lived in the town. Records from the population census conducted on the whole territory of Bosnia and Herzegovina on January 31, 1921 and data from “Narodno jedinstvo” from the beginning of 1919, show that there were 72,372 “foreigners” living in the country, whereas after 1921 this number decreased to 21,682. With the establishment of the new country and the hostile attitude of the authorities towards the German population in Bosnia and Herzegovina, this “Little Berlin” obviously lost its German population, and after a great economic crisis hit the country in the thirties, the town lost its former industrial potential as well. Nowadays, the observant eye of an expert can still notice beautiful traces in the architecture of the town that carry evidence on how this progressive, small industrial Bosnian town was created and developed.

An understanding of the local imagination and the social-political context in which the architectural consciousness developed and produced its buildings can be found in the literature (Yerolympos, 1993).

## Conclusion

---

The arrival of Austria-Hungary marked the beginning of the industrialization of Bosnia and Herzegovina, that is, the time of establishing first industrial settlements that would later grow into towns.

It was because Austria-Hungary expanded to the territory of Bosnia and Herzegovina that the town of Teslić developed into an industrial area during the spread of capitalism at the end of the 19<sup>th</sup> century. The foundation of this town was greatly influenced by its location – a region with rich forest resources, in the vicinity of a railroad that ran along the river valley of Bosnia – in other words, it attracted foreign capital due to its geographic position. The industrial settlement, which gradually grew into the town of Teslić, was built after the construction of a railway from Usora to Pribinić and because the chemical industry was located in this region. Sudden industrial development had negative consequences as well, such as increased pollution and the random spread of towns, which had been built according to plan at the very beginning of the industrialization period. Since the industry required skilled workers that the local population could not provide, people from other parts of Austria-Hun-

gary, mostly Germans, started to move to this region and they gradually built this town. Because they made up the majority, and due to their influence on the growth of the town, Teslić was given the name “Little Berlin”. Thanks to colonists from German-speaking regions, the town of Teslić took on the urban appearance typical of the architecture of industrial cities in Central Europe, the education in the town was expanded and improved and labour unions that fought for workers’ rights were formed. Mingling native people with immigrants brought about the foundation of the first cultural artistic societies, as well as a waking up of the population to the sense of community, which Austro-Hungary especially encouraged. Nowadays, not much of the German and Austro-Hungarian heritage is left in Teslić. In the communist period, in the second half of the 20<sup>th</sup> century, most factories were expanded on sites where industrial objects from the last decades of the 19<sup>th</sup> century first stood. By the beginning of the 21<sup>st</sup> century most of the factories were abandoned and neglected. The reason for that is dubious privatization and foreign capital, so this heritage can be encountered only in traces.

## Acknowledgement

---

*This research was supported by the Project 114-451-2080/2016 of Provincial Secretariat for science and technological development, ECAP Vojvodina.*

## References

- AB&H. (1879). Zagreb: Provincial Government press. October 4, no. 2318.
- AB&H. (1883). *PG press, Sarajevo*, no. 615, October 20, 20.157.
- AB&H. (1886). *PG press, Sarajevo*, 45 5/64/649.
- AB&H. (1902). *PG press*, 82 15-157/3, 15 202-8.
- AB&H. (1905). *PG press*, 189, 182-3.
- AB&H. (1906). *PG press*, 218, 182-6.
- AB&H. (1912). *PG press*, 281, 87-174/5.
- AB&H. (1913). *PG press*, 232, 87-174.
- AB&H - fond Ministarstva trgovine i industrije Kraljevine Srba Hrvata i Slovenaca - Odeljenje za BiH. (1924). *Poslovanje, inventar fabrike*. 54-936.
- Arhiv Republike Srpske - Destilacija drveta ad Teslić, (1919). *Inventar fabrike 1904-1941/ Factory Inventory 1904-1941*. Teslić.
- ARS, PJD, & DDT. (1915). *Kutija građe na nemačkom jeziku / A Box of Construction Material in German*.
- ARS, PJD, & DDT. (1935). *Povremeni podaci o preduzeću / Periodic Data on the Company*. Teslić.
- Begović, B., & Đurđev, B. (1978). *Razvojni put šumske privrede u Bosni i Hercegovini u periodu austro-ugarske uprave 1878-1918: Sa posebnim osvrtom na eksploataciju šuma i industrijsku preradu drveta / Development of the Forest Industry in Bosnia and Herzegovina under Austro-Hungary Rule, 1878-1918: with special emphasis on the exploitation of forests and industrial wood processing*. (p. 181). Sarajevo: ANUBIH.
- Begović, B. (1986). *Eksploatacija šuma i razvoj industrijske prerade drveta na području usorsko-tesličkog regiona za vrijeme austrougarske uprave u Bosni i Hercegovini / The Exploitation of Forests and Development of Industrial Wood Processing in the Usora-Teslić Region Under Austro-Hungarian Rule in Bosnia and Herzegovina*. (p. 73). Sarajevo: Savez inženjera i tehničara šumarstva i industrije za preradu drveta Bosne i Hercegovine.
- Bogićević, V. (1965). *Istorija razvitka osnovnih škola u Bosni i Hercegovini / History of the Development of Primary Schools in Bosnia and Herzegovina*. (p. 190). Sarajevo.
- Bogunović, P. (1937). *Iz Usorskog kraja i okoline. Istorija-tradicija-položaj / From the Usora Region and the Surrounding Area. History-Tradition-Location*. (p. 27). Sarajevo. Reprint, Teslić, Reprint, Teslić 2000.
- Bosanski glasnik za 1917. (1917). (pp. 40-41). Sarajevo.
- Bougarel, X. (2009). *Od Muslimana do Bošnjaka: Pitanje nacionalnog imena bosanskih muslimana / From Muslims to Bosniaks: The Issue of the National Name of Bosnian Muslims*. In: *Zbornik radova "Rasprave o nacionalnom identitetu Bošnjaka" (Discussion on the National Identity of Bosniaks)*. Sarajevo.
- Gavrilović, D., Đerić, Z., & Josić, Z. (2005). *Stvaranje modernog svijeta / Creating a Modern World*. Banjaluka: Braunschweig.
- Desmet, K., & Rossi-Hansberg, E. (2009). *Spatial Development*. Cambridge: National Bureau of Economic Research. doi:10.3386/w15349
- Đukićin, S., Đorđević, J., & Milanković, J. (2014). Spatial and social changes caused by the continuous exploitation of lignite in the Kolubara lignite basin, the Republic of Serbia. *Acta geographica Slovenica*, 54(1), 41-49. doi:10.3986/ags54102
- Čurić, H. (1983). *Muslimansko školstvo u Bosni i Hercegovini do 1918. godine / The Muslim Education System in Bosnia and Herzegovina up to the Year 1918*. Sarajevo.
- Džaja, S.M. (1990). *Kvalifikovani profili porijeklo, nastavnog kadra u srednjim školama u B i H u austrougarskom razdoblju / Qualifications and Origin of Teaching Staff in Secondary Schools in Bosnia and Herzegovina during Austro-Hungarian Rule*. In: *Zbornik radova, Migracije i Bosna i Hercegovina*. Sarajevo.
- Hadžibegović, I. (1980). *Postanak radničke klase u Bosni i Hercegovini i njen razvoj do 1914. godine / Formation of the Working Class in Bosnia and Herzegovina and its Development up to 1914*. Sarajevo.
- Hadžibegović, I., Hurem, R., Antonić, Z., Hadžirović, A., & Karabegović, I. (1990). *Istorija Saveza komunista Bosne i Hercegovine / The History of the League of Communists of Bosnia and Herzegovina*. Sarajevo.
- Hadžibegović, I. (1997). *Migracije stanovništva u Bosni i Hercegovini 1878-1914. godine / Migrations to Bosnia and Herzegovina in the Period 1878-1914, Presentation on the subject: Problems of Ethnic Development in Bosnia and Herzegovina*. *Institute of History*, 11-12, 312.
- Hadžibegović, I. (2007). *Socijalna struktura Slovenaca u Bosni i Hercegovini od sredine XIX stoljeća do 1991. godine / The Social Structure of the Slovenes in Bosnia and Herzegovina from the Middle of the 19th Century to the Year 1991*. Sarajevo.
- Hauptman, F. (1965). *Regulisanje zemljišnog posjeda u Bosni i Hercegovini i počeci naseljavanja stranih seljaka u doba austrougarske vladavine / The Regulation of Land Ownership in Bosnia and Herzegovina and the First Foreign Settlers under Austro-Hungarian Rule*. *Godišnjak društva istoričara BiH*, 16, 162-163.
- Isović, I. (1962). *Struktura i funkcionisanje organa državne uprave u Bosni i Hercegovini u vreme od*

- 1918 to 1924. godine / The Structure and Functioning of Government Bodies in Bosnia and Herzegovina from 1918 to 1924. *Glasnik arhiva i Društva arhivskih radnika Bosne i Hercegovine*, 2, 35.
- Išek, T. (2002). *Mjesto i uloga HKD, Napredak u kulturnom životu Hrvata Bosne i Hercegovine, 1902-1918 / The Place and Role of CCS, Progress in Cultural Life of Croats in Bosnia and Herzegovina, 1902-1918*. (pp. 47-92). Sarajevo.
- Izveštaj o upravi Bosne i Hercegovine, 1906 / Report on the Administration of Bosnia and Herzegovina, 1906. (1906). (p. 280). Zagreb.
- Juzbašić, D. (1973). *Jezičko pitanje u austrougarskoj politici u Bosni i Hercegovini pred prvi svjetski rat / The Language Issue in the Policy of Austria-Hungary in Bosnia and Herzegovina before the Onset of World War I*. (pp. 30-41). Sarajevo: Svjetlost.
- Kapidžić, H. (1955). *Hercegovački ustanak 1882 godine / The Herzegovina Uprising of 1882*. (pp. 310-327). Sarajevo.
- Kaya, Y. (2010). Globalization and Industrialization in 64 Developing Countries, 1980-2003. *Social Forces*, 88(3), 1153-1182. doi:10.1353/sof.0.0300
- Kerr, C. (1983). *The Future of Industrial Societies: Convergence or Continuing Diversity?*. Cambridge: Harvard University Press. doi:10.4159/harvard.9780674497627
- Kerr, C., Dunlop, T.J., Harbison, F., & Mayers, C. (1960). *Industrialism and Industrial Man: The Problems of Labour and Management in Economic Growth*. Harvard University Press.
- Kohli, A. (2004). *State-Directed Development: Political Power and Industrialization in the Global Periphery*. Cambridge: Cambridge University Press. doi:10.1017/cb09780511754371
- Koo, H. (1990). From Farm to Factory: Proletarianization in Korea. *American Sociological Review*, 55(5), 669-81. doi:10.2307/2095863
- Kraljačić, T. (1987). *Kalajev režim u Bosni i Hercegovini / Kallay's Regime in Bosnia and Herzegovina*. (pp. 14-74). Sarajevo.
- Madžar, B. (1975). *Radnički pokret u Bosni i Hercegovini 1909. godine / Labour Movement in Bosnia and Herzegovina in 1909*. (pp. 139-185). Sarajevo.
- Madžar, B. (1988). *Socijalistički radnički pokret u Bosni i Hercegovini 1911. godine / Socialist Labour Movement in Bosnia and Herzegovina in 1911*. (p. 461). Sarajevo.
- Mikić, Đ. (1990). O kolonizaciji stranih seljaka u Bosni i Hercegovini u vrijeme austrougarske uprave / On the Colonization of Farmers in Bosnia and Herzegovina at the Time of Austro-Hungarian Rule. In *Migracije i Bosna i Hercegovina*. (p. 185). Sarajevo.
- Results of the population census in Bosnia and Herzegovina from September 27, 1910. (1912). Sarajevo. pp. 48-49.
- Sarajevski list, Sarajevo, (1914). 54, March 16, pp. 1, 2.
- Sarajevski list, Sarajevo, (1917). 305, December 19.
- Selimović, S., Hadžićimović, S., & Hadžić, S. (2008). Socijalne promjene stanovništva tuzlanskog kraja, 1878-1941 / Social Changes among the Population in the Tuzla region, 1878-1941. *Povijesni zbornik, godišnjak za kulturu i povijesno naslijeđe*, 2(3), 181.
- Spasojević, M. (1991). Vijek i po rada srpske narodne škole u Tešnju / A Century and a Half of the Serbian Folk School in Tešanj. *Naša škola*, 1(2), 91.
- Sugar, P.F. (1963). *Industrialization of Bosnia-Herzegovina 1878-1918*. (p. 29). Seattle.
- Šehić, N. (1991). *Bosna i Hercegovina 1918-1925 / Bosnia and Herzegovina 1918-1925*. (pp. 326-327). Sarajevo.
- Yerolympos, A. (1993). A new city for a new state. City planning and the formation of national identity in the Balkans (1820s-1920s). *Planning Perspectives*, 8(3), 233-257. doi:10.1080/02665439308725774
- Vasić, D. (2014). *Teslić i okolina u vrijeme transformacije feudalizma u kapitalizam / Teslić and the Surrounding Area between Feudalism and Capitalism*. (p. 403). Banjaluka.
- Zadro, N. (1934). Rudno bogatstvo Bosanske Krajine / Mineral Resources of Bosanska Krajina. *Glasnik Jugoslovenskog profesorskog društva*, 14(10-12), 937.
- Zaplata, R. (1934). Postanak njemačkih naseobina kod Banjaluke / Formation of German Settlements near Banjaluka. *Glasnik jugoslovenskog profesorskog društva*, 14(10-12), 921.
- ~
- Internet 1: <http://www.dalekoodposla.com/mape/au-to-karta-bosne.jpg> (16th may, 2015).

# Shrinking of Cities in the Czech Republic and its Reflection on Society: Case Study of Karviná City

---

Ondřej Šerý<sup>A\*</sup>, Hana Svobodová<sup>B</sup>, Zdeněk Šilhan<sup>C</sup>, Zdeněk Szczyrba<sup>D</sup>

Received: June 17, 2017 | Revised: January 18, 2018 | Accepted: January 28, 2018

DOI: 10.5937/22-16622

## **Abstract**

The shrinking of cities is a process that accompanies cities in post-conjunctural changes, when they are entering a phase of economic decline and the decline in population connected with it. The Ostrava-Karviná area is one of the economically problematic regions in the Czech Republic nowadays but it used to be ranked as one of the economic heartlands in the period of socialism. The region, dependent on bituminous coal mining and heavy industry, gradually began to decline after the year 1989 and one of the consequences is a significant decline in its population. This paper deals with identification of the causes and consequences of shrinking cities explained through the example of the town of Karviná through an analysis of quantitative data, questionnaire surveys, and semi-structured interviews. The questionnaire survey revealed that the main reason causing the departure of young and educated citizens is the lack of work opportunities. High unemployment and thus the presence of many socially disadvantaged people causes the atmosphere in the city to deteriorate, and this is accompanied by social problems, such as ageing of the population or criminality. Lack of safety of citizens and a bad environment are other reasons why young people leave the city. The decreasing number of citizens closes the vicious circle by leading to a lower demand for services, closing of shops and other services and increasing numbers of empty houses and flats. Another essential part of the paper is the question of possible measures by the local authority leading to the elimination of these undesirable phenomena, but also the belief in the necessity of help from the government.

**Keywords:** shrinking city; depopulation; Karviná; economically problematic region; questionnaire surveys; semi-structured interviews

<sup>A</sup> Department of Geography, Faculty of Science, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic; [ondrej.sery@mail.muni.cz](mailto:ondrej.sery@mail.muni.cz)

<sup>B</sup> Department of Geography, Faculty of Education, Masaryk University, Poříčí 7, 603 00 Brno, Czech Republic; [67632@mail.muni.cz](mailto:67632@mail.muni.cz)

<sup>C</sup> Department of Regional Economics and Administration, Faculty of Economics and Administration, Masaryk University, Lipová 41a, 602 00 Brno, Czech Republic; [z.silhan@mail.muni.cz](mailto:z.silhan@mail.muni.cz)

<sup>D</sup> Department of Geography, Faculty of Science, Palacký University Olomouc, 17. listopadu 12, 771 46 Olomouc, Czech Republic; [zdenek.szczyrba@upol.cz](mailto:zdenek.szczyrba@upol.cz)

\* Corresponding author: Ondřej Šerý, e-mail: [ondrej.sery@mail.muni.cz](mailto:ondrej.sery@mail.muni.cz)

## Introduction

Throughout the whole period of their existence, the development of cities has been connected with an increase in the size of their population or area. Economic, political, and other stimuli led to increases in their importance in history; they slowly became centres of political power and economic heartlands. On the other hand, cities distinguished by a decrease in their population and gradual loss of importance appeared in the USA and Western Europe, approximately in the mid-20<sup>th</sup> century. A discussion started on “decreasing” or “shrinking” cities (Martinez-Fernandez et al., 2012). It is a relatively new phenomenon in the post-Soviet states of Eastern Europe (Popes-

cu, 2014), because it has been made possible by closer links with the West, when the Communist regime fell at the turn of the 1980s and 1990s, and the transition from a centrally planned economy to a market economy. The goal of this paper is to characterise the process of “shrinking cities” in the Czech conditions. The perception of the process of shrinking, from the point of view of citizens, is expounded by a case study of a specific town – Karviná – and the causes and consequences of the shrinking were identified by means of semi-structured interviews with local people, along with an evaluation of possible approaches to a solution to this negative phenomenon.

## Context of the shrinking of cities and regions

When we look carefully at the development of cities over the last two or more centuries, it is obvious that it was industry which brought dramatic population and economic development to some cities and population and economic decline to others. However, the shrinking of cities is not connected only with industry; its history is actually much older and is connected with a whole range of changes in the settlement system of many countries around the world, as a result of war events or illnesses (Hollander et al., 2009).

An explanation of the word *shrinking* may seem comprehensible at first sight, i.e. something like thinning or decreasing of cities from the demographic point of view, whilst in reality it is a far more complicated socioeconomic and spatial process. Apart from the decline of the city’s population, it is also about political, economic, or other kinds of urban decline within the hierarchy of the settlement system (Rumpel & Slach, 2012). The shrinking of cities does not directly express a phase of degradation in their development; nevertheless, some authors operate with terms that have negative connotations, e.g. “urban decline” (Clark, 1989), “urban blight” (Couch et al., 2005) or “urban crisis” (Fishman, 2000). The causes of this decrease are as varied as the cases of cities that are studied are frequent. The shrinking of cities does not have an easy or universal explanation. It is a highly complicated phenomenon, which is dependent on economic, political, and social conditions (Hasse et al., 2014).

A long-term decline in population is usually, in the majority of cities, followed by negative phenomena: people react to a crisis in their local economics because of the decline of traditional industrial sectors. Important changes in economic structure and demographic changes caused, besides other things, by ur-

ban citizens moving into suburban areas, lead not just to the shrinking of cities but also to a change in their quality. It has been proved that a high rate of population decline is closely connected with a decrease in the size of settlements or with an increase in the factor of periphery and rurality of space, while there has been expansion in contiguous metropolitan areas (Cawley, 1994; Kupiszewski et al., 2008; Westlund & Pichler, 2012). Population decline in cities is often a consequence of increased migration of young people to the countryside near these cities and also their moving for work-related reasons into economically more successful cities and regions of the given country. The shrinking of cities and regions is influenced not only by migration (emigration) but also by variations in the ages of migrants. After the process of political and economic transformation the migration pattern changed significantly. People aged 35–50 now move more often to suburban or rural areas, younger people aged 25–35 prefer urban areas and older people aged 50–70 move more often into rural areas (Šimon 2014).

The process of long-term decline in the population of cities is particularly typical of industrially developed countries. It is also typical of countries in which urbanisation has reached its ceiling and thus there is no space for a further increase in the share of the urban population. The rate of urbanisation has reached 90% in the USA and the UK, and around 70% in many European countries, including the Czech Republic (Schmeidler, 2012). Even though population decline is considered a key indicator of change, it cannot be considered the main cause of the shrinking of cities and regions. Rumpel and Slach (2012) recommend operationalising the shrinking via other indicators, e.g. the share of uninhabited or unoccupied flats (houses), stagnating or

even decreasing prices of property as a result of an excess of supply compared to demand, or social, industrial, and infrastructure brownfields as a consequence of lower usage of urban areas. A typical instance of a shrinking city is one that went through structural changes in industry, which leads to a decline in the working classes and also to a decrease in the population of citizens. The ascendancy of one sector, in combination with a failure to keep up with technological progress and the increasing importance of the tertiary sector, has become an encumbrance for many cities in the USA and Western Europe (Martinez-Fernandez et al., 2012; Wiechmann & Pallagst, 2012). There is often a decline in the population on a regional level in industrial regions in developed countries (Hudson, 2005; Polèse & Shearmur, 2006), but also in rural and peripheral areas (Ganser & Piro, 2012). Population losses in the countryside are mostly caused by young people moving into cities as a result of an unfavourable situation in the local labour market. Most of the previous research which has been done on the topic (Oswalt & Rieniets, 2007; Turok & Mykhnenko, 2007; Haase et al., 2013, 2014; Wiechmann & Pallagst, 2012; Martinez-Fernandez et al., 2012; Stryjakiewicz, 2014) is related to three basic levels of discussion:

1. Does “shrinking cities” refer only to depopulation, or must there also be other indicators (e.g. a structural crisis of the economy in combination with a high level of unemployment, decrease in housing capacity, and a high accumulation of social problems)?
2. Does population decline only occur within the boundaries of an administrative area? Can cities that have growth in peripheral areas (as a result of suburbanisation) be considered shrinking cities?
3. For how long must a period of population decline last for the term “shrinking cities” to be appropriate?

Not all cities in Europe are shrinking. There are various reasons why some cities attract citizens, while others, on the other hand, lose their population. 370 cities with more than 100,000 citizens lost more than 10% of their population in the last 50 years (Oswalt & Rieniets, 2007). The majority of cities started to lose their population in the 1980s and 1990s. As many as one third of European cities with more than 200,000 citizens went through a decade of population loss at least once in the last 45 years (Turok & Mykhnenko, 2007). The CIRES research study (2013), which provided a detailed analysis of population changes in more than seven thousand cities in Europe (7035) with more than five thousand citizens (including contiguous settlements) in the period 1990–2010, showed that the process of the shrinking of European cities differed significantly. Those that were considered shrinking cities were the ones with a number of citizens which

decreased minimally per year (-0.15%). “Just” 20% of shrinking cities were found in the set. The countries of Central and Eastern Europe had the highest proportion of shrinking cities from a regional point of view. On the other hand, for the states of Western Europe it was typical to have a high share of growing cities (Stryjakiewicz, 2014). The development of cities used to be connected, in classic urban studies approaches, with their increase, growth, and expansion. It is necessary to react to this change and to adapt the management and planning tools with respect to the sustainability of urban development in the new post-industrial phase of development, when cities are losing citizens in the long term (Schmeidler et al., 2011).

Buček (2016) emphasises that the politics of urban development is a multi-hierarchical activity including diverse participants from the public, private, and non-profit sectors, which functions at local (sub-local), regional, national, European, and world levels. We are aware of examples in other countries that demonstrate the possibilities of effective urban planning during a period of shrinking, not just by involving a wide range of people capable of commenting on the problems of the management of shrinking cities (Shetty, 2009; Marotta, 2011), but also by searching for new planning approaches. This is known as the “ecologisation of urban space” (Allweil, 2007; Hollander et al., 2009). The aim of these approaches is to make shrinking cities more attractive for potential citizens, to encourage community-oriented planning, and, last but not least, to modernise the infrastructural networks in these cities. These approaches are not discussed further here due to the character of our paper. Shrinking has become a normal development for many European cities and urban regions, according to research and the current experience of urban and regional projecting (abroad) (Rumpel & Slach, 2014). On the other hand, the urban policies of developed European countries, based on activities which reduce the impact of the shrinking of cities, are not exclusively a matter for the private sector. On the contrary, when it comes to solving urban and regional problems in the post-Soviet countries of Central and Eastern Europe, where the shrinking of cities and regions is a relatively new phenomenon, the public sector has a key role. It will take a while for the public sector to accept the trend of shrinking cities and its economic, social, and spatial consequences. Buček and Bleha (2013) agree with this condition and note that regardless of the reality of the development that has been mentioned, only a minor acknowledgement of “shrinkage” exists in the planning documents of Slovak cities. Local elites do not sufficiently accept the shrinking process and the prevailing practices of the expansion-oriented planning of urban development continue.

## Identification and classification of shrinking cities in the Czech Republic

In the Czech Republic, the problem of shrinking cities has not yet been comprehensively dealt with. There are some individual studies or specialised articles dealing with the shrinking of cities (e.g. Rumpel & Slach, 2012; Rumpel et al., 2012; Rumpel et al., 2013; Rumpel & Slach, 2014; Rink et al., 2014), and, peripherally, Krejčí et al. (2009), along with social aspects of research on city issues (Sýkora & Ouředníček, 2007; Sýkora, 2012, and others). Taking into consideration the fact that the Czech Republic has a characteristic settlement structure (Illner, 2006; Ouředníček et al., 2011) and its historical development is different from the states of Western Europe or the USA, it was not possible to use current methods for the delimitation of shrinking cities. Therefore, within the research project TBo3oMMR0o2 Shrinking Cities and Regions in the Czech Republic, a Methodical Identification of the Causes of the Shrinking of Municipalities and Regions (Svobodová et al., 2015a) was created, which determines one of the possible approaches to a definition of shrinking cities and their classification.

The methodology is based on the intensity of shrinking and development, not just in a city itself but also in its hinterland. The identification of settlements to which this issue is relevant was the first step within the solution of shrinking cities in the Czech Republic. For this purpose, a database of all Czech municipalities was created with relevant data which is related to the causes and consequences of this phenomenon. The period of population decline that was analysed was delimited in the period of the formation of the methodology to the years 2004 and 2014; it is also possible with a more recent ten-year period. In the whole ten-year period 2004–2014, 1,742 municipalities out of the 6,253 which existed in the Czech Republic on January 1, 2014 had a population decline. The number of citizens in the above-mentioned entities on Jan-

uary 1, 2009 was subsequently established. In the period from 2009–2014, 1,375 municipalities registered a population decline. Considering that the research is focussed on shrinking cities and not on municipalities, it was decided to work only with municipalities which had more than 3,000 citizens on January 1, 2014. The reason was that the law no. 128/2000 Coll., on municipalities (the Municipal Arrangement) states in § 3 that “a municipality which has at least 3,000 citizens is a town, if the President of the Chamber of Deputies determines it, after a statement of the government and a proposal from the municipality”. This condition was fulfilled by 239 municipalities which, at the same time, showed a population decline in the years 2004–2014 and 2009–2014. The last step in defining the primary statistical population of the shrinking cities of the Czech Republic was to determine a criterion of a population decline of at least 3% in the years 2009 until 2014, in order to prevent the classification of municipalities which had just a minimal decline in their number of residents, and thus were more “stagnating cities” than shrinking cities. 111 cities fulfilled this condition.

The second step was the taxonomy of shrinking cities. The inspiration for the creation of the typologisation was adopted from the project “Cities Regrowing Smaller” (COST Action CIRES), undertaken in the period 2009–2013 by researchers from 26 European countries (and Australia), which determined three primary types of shrinking:

Type A: Long-term/Continuous Shrinkage

Type B: Irregular/Episodic Shrinkage

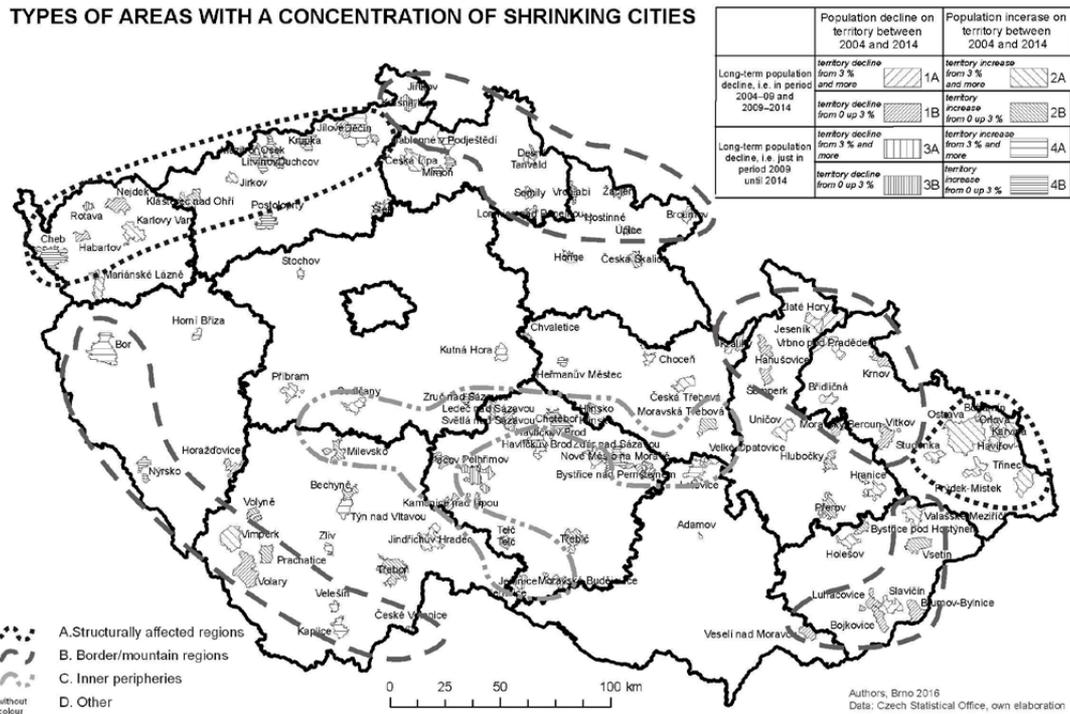
Type V: Time-limited/Temporary Shrinkage

Considering the specifics of individual territories in the Czech Republic, the process of the creation of the typologisation was determined as shown in the following chart:

**Table 1.** Typology specification according to the different rate of development of the territory

	Population decline on territory between 2004 and 2014	Population increase on territory between 2004 and 2014
Long-term population decline, i.e. in the periods 2004–09 and 2009–14	Type 1a (7 cities) territory decline by 3% and more	Type 2a (23 cities) territory increase by 3% and more
	Type 1b (25 cities) territory decline from 0 up to 3%	Type 2b (17 cities) territory increase from 0 up to 3%
Short-time population decline, i.e. just in the period 2009 until 2014	Type 3a (3 cities) territory decline by 3% and more	Type 4a (16 cities) territory increase by 3% and more
	Type 3b (6 cities) territory decline from 0 up to 3%	Type 4b (14 cities) territory increase from 0 up to 3%

*territory = administrative district with extended powers in which the shrinking city belongs, excluding the shrinking city itself*  
Source: Svobodová et al. (2015b)



**Figure 1.** Types of areas with a concentration of shrinking cities

Source: GaREP, spol. s r.o. on the basis of Czech Statistical Office data

The result is the identification and typologisation of 111 shrinking cities in the Czech Republic, of which 46 lie on the territory of economically problematic regions determined in the Strategy of Regional Development of the Czech Republic 2014–2020 (Ministry of Regional Development of the Czech Republic, 2013, p. 150). The biggest continuous territories of economically problematic regions are in North-West Bohemia and the Ostrava area (structurally affected territories – regions with long-term and extensive mining activities and heavy industry) and in the northern part of the republic (border/mountain areas – outlying territories near borders and mostly with a landscape with a mountainous character).

The long-term depopulation of cities is still mostly an issue in Moravia – particularly in the areas of the so-called inner periphery, often lying on regional borders. Other shrinking cities are situated on the above-mentioned territories, where another combination of territorial factors is at work. We can find more important concentrations of cities, such as those in the central part of the South Bohemian region, in the northern part of the Pardubice region, and in the south-eastern part of the Olomouc region (including the north-western parts of the Zlín region). A significant factor is also bankruptcy (reduction of production) of a predominant employer or a sector (e.g. Adamov, Třebíč, or Přerov).

## Methodology of the case study

The town of Karviná, which lies in the north-eastern part of the country, in the Moravian-Silesian region, was chosen as a case study of a shrinking city in the Czech context. Karviná is a part of the wider Ostrava-Karviná agglomeration, which in the period of socialism was one of the economic heartlands of the state. Its economy was based almost only on bituminous coal mining and associated branches of heavy industry (e.g. metallurgy, heavy engineering, or chemical manufacturing). Within the process of transformation, the whole region was affected and Karviná itself

is one of the towns with the highest population decline (Martinát et al., 2016). There were 67,568 people in the town in the year 1994; however, twenty years later, in 2014, there were 56,848 people registered in Karviná, i.e. during this time the population decreased by 15.9%. The depopulation was caused mainly by migration; nevertheless, the population growth is negative.

A questionnaire survey was performed with people in Karviná in the form of personal interviews in May 2015. 880 completed questionnaires were obtained

from citizens aged 18 years old and higher, thus guaranteeing a level of importance of 95% and a maximum deviation of 3.5%.

The sample was also representative with regard to the structure of the citizens according to their gender, age, and the highest level of education they had reached. The results that were obtained were subsequently rewritten into an online form created in the Google Docs application. The questionnaire contained 15 mostly closed questions; in one question the respondents were able to react on an attitude scale (evaluation on a Likert scale from 1 to 5 or the option “no idea”). In some questions it was possible to choose the option “other” and provide one’s own answer. The last five questions were for the purpose of demographic identification. The results of the survey were evaluated according to primary quantitative methods; analysis by means of key words was used in the case of the open questions. Questions relating to the causes and consequences of the shrinking of Karviná, or measures against this undesirable phenomenon, were examined through semi-structured interviews. This type of interview does not have questions formulated in advance and arranged in strict order. Hendl (2008) calls it an “interview according to instructions”, in which the instructions (i.e. a list of questions or rather topics) provides what it is necessary to discuss during the interview. The questioner is responsible for the way of obtaining information and the order it is obtained in, thus allowing adjustments according to the actual situation. On the one hand the “guide” helps the questioner to stick to the topic (research question), while on the other hand it gives sufficient space for the interviewees to express themselves from their own point of view and not to be too bound by the options that are on offer or too limited by a thematic focus. Disman (2011) uses the term “non-standardized interview”, where the key interaction is between a questioner and an interviewee, because the questioner has just a general plan (skeleton) prepared in advance. The answer to a previous question acts as a stimulus for a new question and the interviewee becomes a co-author of the research, or rather a co-creator of the formulation of the question. Using this method, the key

questions and choice of the right interviewees are naturally crucial. With regard to the key question, it was gradually formulated in this final form: “*In what way does the process of the shrinking of the town of Karviná present itself?*” The ways in which a local authority can combat shrinking were central topics and therefore a subsidiary research question was also formulated: “*What kind of measures can the local authority of Karviná take against its shrinking?*” In the first part, the interview dealt with an evaluation of the development of Karviná in the last 10 years from the point of view of the interviewees. This was followed by thematic sections which dealt with the everyday consequences of a shrinking city, the causes of this phenomenon, and the conditions for the development of Karviná in comparison with the surrounding towns. In the second part the document concentrated on the conceptual documents of the town and on possible tools the town can use to combat shrinking, and on the suitability/necessity of the potential involvement of the regional authorities or the state. In May 2015 five semi-structured interviews were conducted with individuals who can be marked as participants in the development of the town of Karviná and have a direct relationship to the topic of the shrinking city. They were the deputy mayor of the town, the deputy director of the contact department of the Labour Office of the Czech Republic in Karviná, an expert on regional development from the local Silesian University (School of Business Administration), the deputy director of an important private company in business in Karviná, and the deputy director of a local non-governmental non-profit organisation. The interviews were conducted in offices at the departments of the above-mentioned individuals, and with their consent were all recorded on a voice recorder. Each interview lasted 45 minutes on average. They were rewritten into textual form, coded, and analysed; the main goal of the thematic analysis was the coherence of its findings with the research question (in other words: the findings should answer the research question in some way) and these findings should be obviously supported by the collected data, or rather build on them (Silverman, 2005).

## Questionnaire survey of inhabitants of Karviná

Within the survey 880 questionnaires were obtained, of which 434 were from men (49.3%) and 446 from women (50.7%). The age of the respondents had to be higher than 18 years. The age structure of the respondents was as follows: 21.6% of the people were aged 18–29 years, 23.2% 30–44 years, 27.3% 45–59 years, and 21.6% of the people were older than 60 years. Their ed-

ucation quite closely resembled the structure of education of the general Czech population, as most of the respondents had secondary education with a school-leaving examination (40.3%) or secondary education without a school-leaving examination (31.6%). Due to the location of the survey, there was a higher share of people with just primary or unfinished education

(16.4 %) and just 11.7% of the respondents had tertiary education. With regard to the economic activity of the respondents, employees of the tertiary sector predominated. There was also a high share of respondents employed in industry, which reflects the industrial focus of the region, which is mainly on coal mining and the manufacturing industry. A high share of the respondents were retired people, who comprise an ever-growing share of the population, which in Karviná is exacerbated by the departure of young and qualified people from the town. 11.3% of the respondents were students who were studying in Karviná at the School of Business Administration, which is a part of the Silesian University in Opava.

Almost half of the respondents (47.9%) answered the opening question, which was “*What do you consider living in Karviná to be like?*”, by stating that it is good (really good or rather good). Living in Karviná was rather bad or really bad for 25.2% of the respondents.

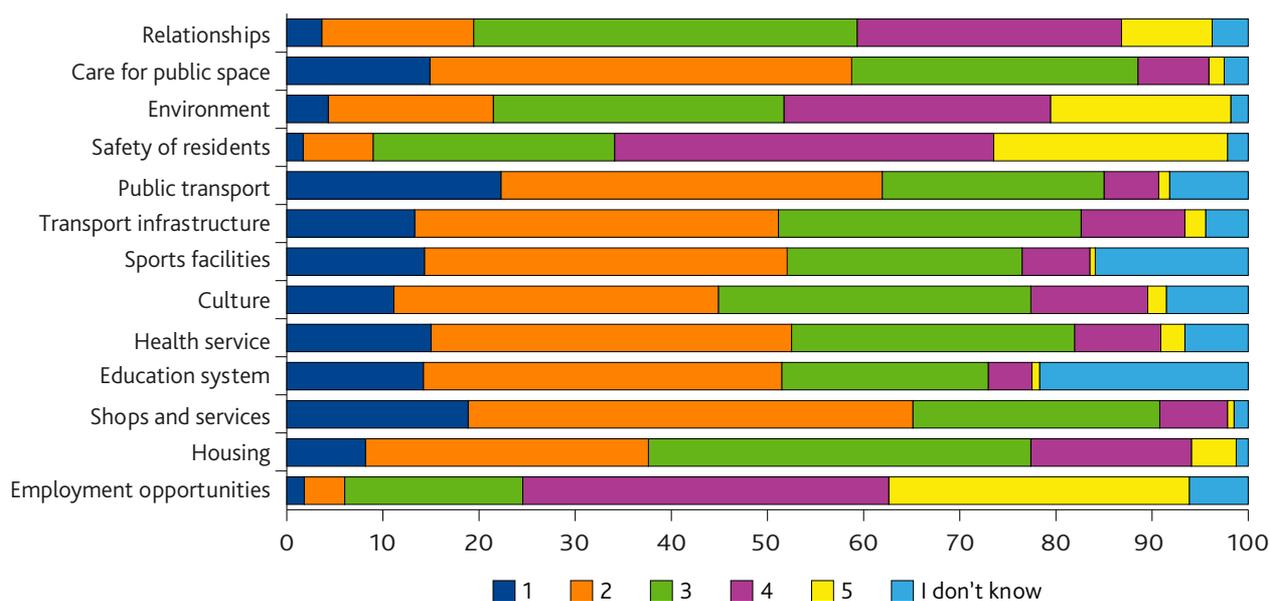
The respondents had the opportunity to evaluate Karviná with marks from 1–5 (1 is the best, 5 is the worst) with regard to several aspects of life in the town. Out of the areas that were mentioned, the services and shops available did best (65.1% of all the respondents gave a mark of 1 or 2, and the average mark was 2.3), followed by public transport (61.9%, 2.2) and care for public spaces (58.8%, 2.4). On the other hand, the worst were the work opportunities (69.3% of all the respondents gave a mark of 4 or 5, and the average mark was 4.0), the safety of citizens (63.8%, 3.8), and the bad environment (46.5%, 3.4). The views on citizens’ safety and work opportunities were analysed according to the age of the respondents and the highest level of ed-

ucation they had reached. Among those with primary and secondary education without the school-leaving examination, the most disappointed citizens were of a higher age, from 45 years and up. Among those with secondary education with the school-leaving examination, on the other hand, the most disappointed respondents were those aged up to 44 years, the same as with university-educated ones. Similarly, opinions about safety vary.

The respondents were asked to express their opinion about evidence of the depopulation of Karviná in the daily life of the town. Overall, 88 respondents mentioned the departures of (young and qualified) people and an empty town. Next, they often mentioned (in 78 cases) the deterioration of the social situation in the town being caused by the presence of Romani people, which is, in their opinion, connected to a decrease in safety and an increase in criminality. Other evidence, according to 60 respondents, is shown by vacant apartments. Also mentioned were the aging of citizens (42 answers), a worse atmosphere in the town (25 answers), and fewer customers, fewer services, and the closing of shops connected with this (25 answers).

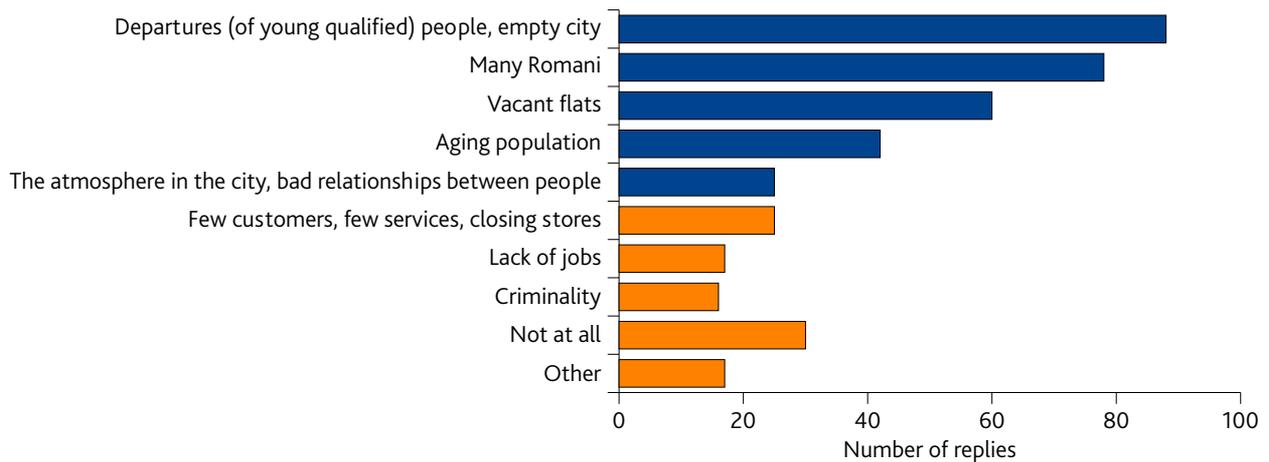
The respondents also reacted to the question whether they had ever considered moving out of Karviná. Almost 55% answered that they were considering or had considered it. A minority (43.8%), on the contrary, answered negatively.

Altogether, 276 respondents who wanted or want to move from Karviná mentioned jobs as their main reason. Other reasons appeared less frequently – family reasons were mentioned in 40 answers, the bad environment and air in 39 answers.



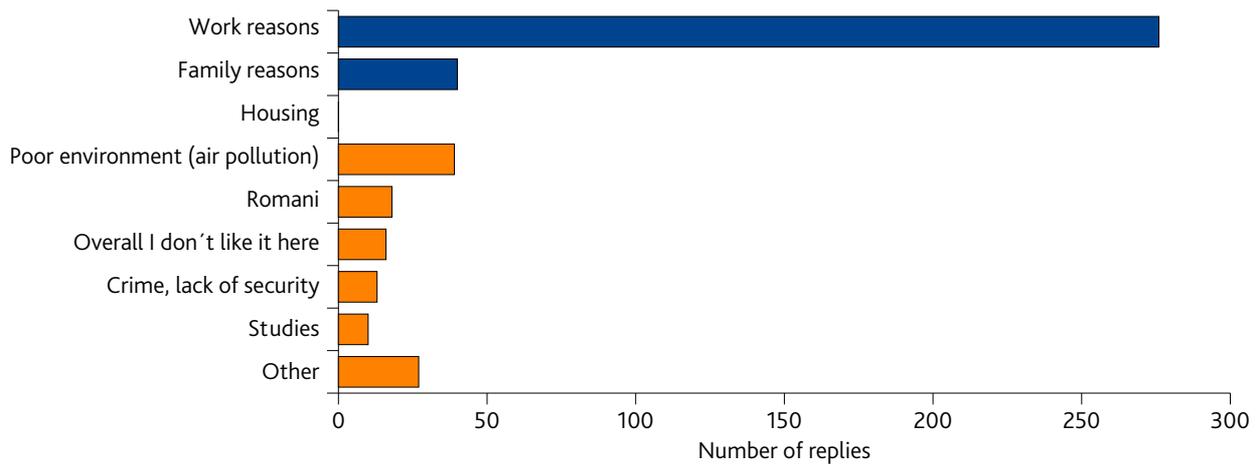
**Figure 2.** How would you evaluate Karviná from your point of view in the areas listed below? (n=880)

Source: Svobodová et al. (2015b)



**Figure 3.** How does depopulation in Karviná influence everyday life in the town? (n=462)

Source: Svobodová et al. (2015b)



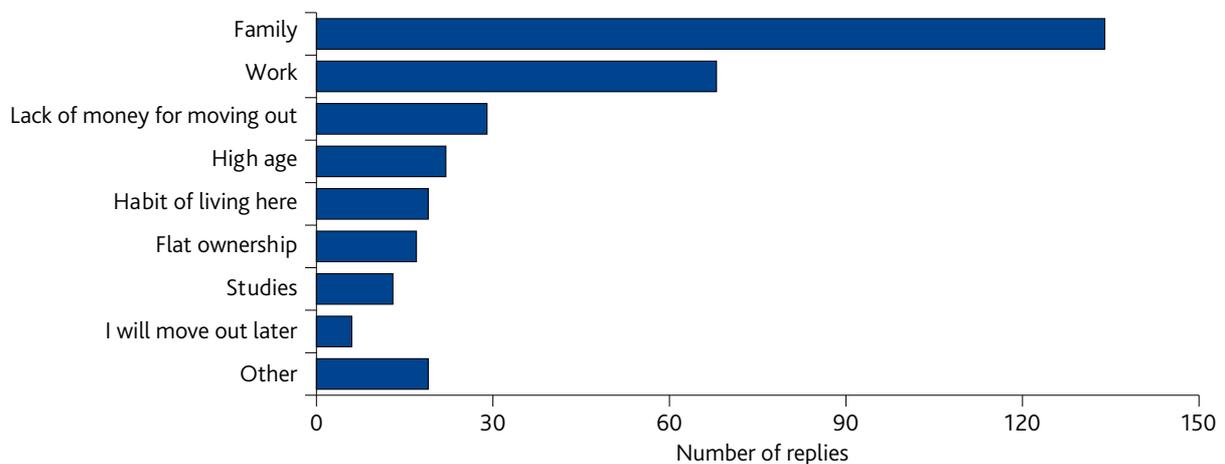
**Figure 4.** For what reason have you considered/are you considering moving out of Karviná? (n=480)

Source: Svobodová et al. (2015b)

Those respondents who wanted to move but decided to stay in Karviná in the end did so in 134 cases because of their family, in 68 cases because of work, and 29 respondents stayed because of a lack of finances. Other reasons, such as advanced age (22 an-

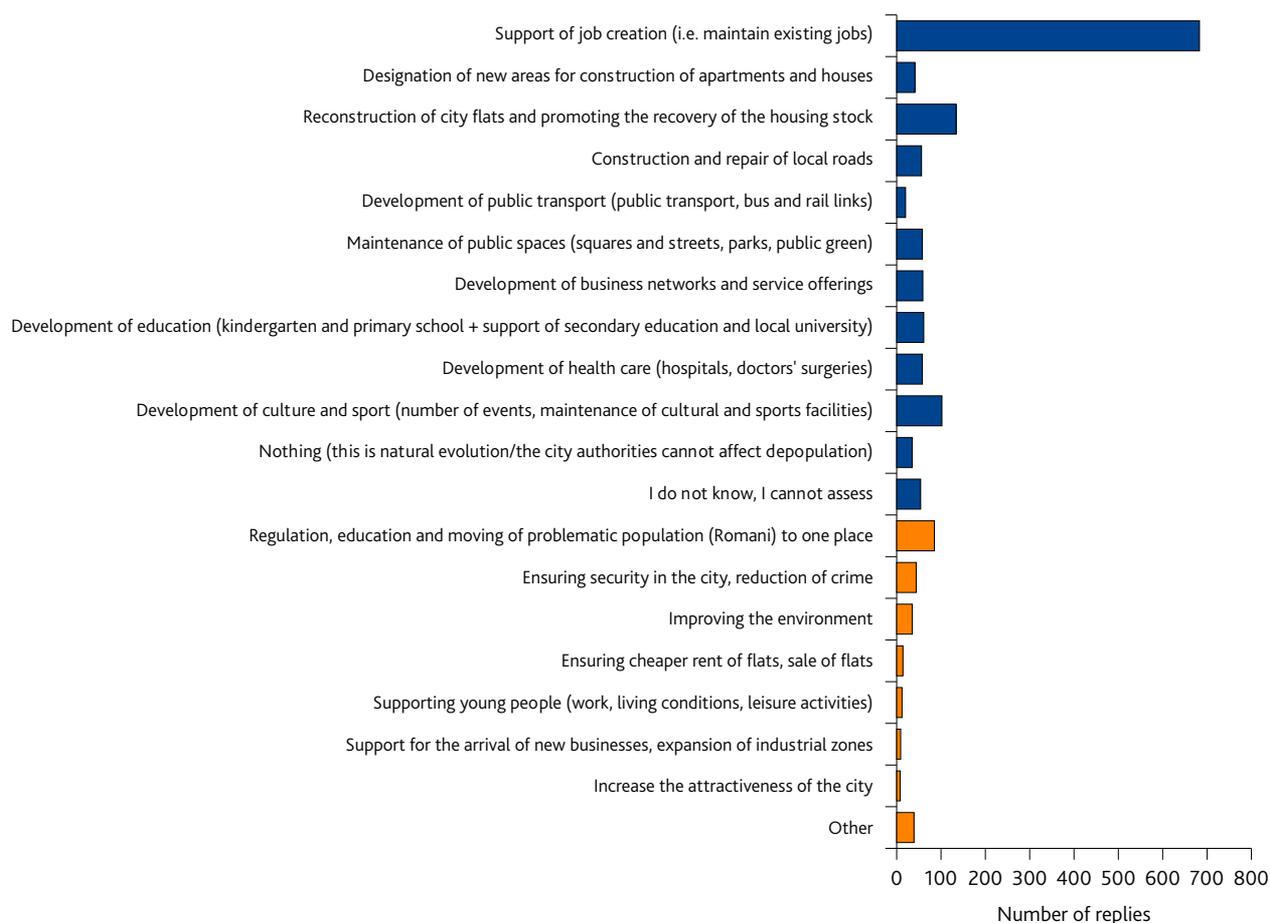
swers) or habit (19 answers), were mentioned less often.

The respondents had the option to file a recommendation as to what the municipal authority of the town of Karviná should do to combat depopulation. Altogether,



**Figure 5.** For what reason have you decided to stay in Karviná? (n=290)

Source: Svobodová et al. (2015b)



**Figure 6.** What should the municipal authority of Karviná do to combat depopulation? (n=880)w

Source: Svobodová et al. (2015b)

77.9% of the respondents asked for support for the creation of job opportunities. 15.2% recommended the reconstruction of city apartments and support for renewal of the housing fund. The development of culture and sport was in third place with 11.6%. In 9.7% of cases people also mentioned problems with the Romani people and recommended educating Romani people and regulating and moving them into specific localities.

The questionnaire survey among the citizens showed that one of the most important needs of the citizens of Karviná nowadays is the need for a job. However, there is a high proportion of unemployed people and issues with a further loss of jobs related to

the planned reduction of coal mining. Nevertheless, one solution could be the expansion of the industrial zone and enticing a big investor.

The open answers often mentioned safety and increased criminality, which, according to the respondents, is often related to an excessive concentration of Romani people in some parts of Karviná. According to respondents, this is often caused by living allowances for socially disadvantaged citizens. The main private property owner in Karviná takes advantage of it and he moves socially disadvantaged people into specific places. Another frequently mentioned problem is the environment, mainly air pollution.

### Semi-structured interviews with local players

Within the semi-structured interviews, too, all the interviewees, who were important players in the development of the town, agreed that the primary problem of the town of Karviná is the lack of job opportunities. In addition, they pointed out that the key (biggest) employer in the town is a mining company which is gradually reducing its activities, and the number of unemployed people will be rather higher. There is a

related question as to whether to support the mining somehow and delay its end, or to decide on a relatively quick closure of the mines, which is expected anyway in the close future. The respondents did not have unequivocal attitudes to this.

*"I perceive mining more negatively for the town; the sooner it ends, the better it will be for the development of the region, in hindsight. ... I do not see any vision,*

*mainly the long-term one. Even though I understand that they cannot say we will close the mines now and it is going to be better in 10 years*” (specialist in regional development, School of Business Administration in Karviná).

The next problem, which is related to unemployment, is that it is mostly young people with higher education who leave the town. According to the statements of the interviewees, it is typical that young people leave for university education in cities with larger populations – such as Ostrava, Brno, or Prague – and they do not come back. What is also important is that it is not only the category mentioned above, but people in general who are marked as “capable”, “assertive”, “skilled at languages”, “productive”, or “who have achieved something”, and thereby the town loses its almost irreplaceable social capital. The declared effort of the local authorities and other institutions is to create an environment in the town which would make Karviná attractive for further life at least to some extent.

*“We do a lot of things for seniors and children, but there is a lack of activities for the category from 15 to 30 years old. Thanks to European money we were able to create a project “Journey to town”, the main goal of which is to awaken pride in where people come from. ... We try to get together with youngsters and communicate to them that they can leave for their studies and then come back and be proud of this region”* (Deputy Mayor, Karviná Municipal Council).

As already mentioned several times, people tend to leave Karviná. But the interviewees pointed out that a certain number of people arrive in the town. However, according to their statements this group of people is marked as “maladjusted”, “socially disadvantaged”, or “Romani people” (one of the respondents spoke directly about a “Romani town”).

According to them, this fact increases the share of abandoned residential and non-residential spaces, which afterwards become an item for the trade in social housing and their accommodation. According to their words, Romani groups do not happen just to be concentrated in the town, but are also segregated and mostly create a subjective feeling of danger and risk, which, after all, confirms the results of the questionnaire survey. The respondents further pointed out that this does not have an influence just on the perception of safety, but also on the development of the local economy, because this again reduces the attractiveness of the town from the point of view of investors. They also overwhelmingly agreed on the opinion that a reform of social policy is necessary, which would provide greater motivation to gain profit and to cease dependency on social benefits on the one hand, and to change the opinion of the public that there is unfair

(undeserved) subsidising at the expense of employed citizens on the other. Nevertheless, the solution of social policy is in the hands of the state. It is necessary to add that it is an aspect strongly influenced by socially biased interpretation of reality.

*“We have enough buildings of our own and belonging to businesses that are empty, there is low purchasing power, and plenty of vacant apartments belonging to private owners, and this attracts maladjusted people, which has an influence on safety and the economic aspect of the town”* (Deputy Mayor, Karviná Municipal Council).

In the statements of the interviewees about possible solutions and measures within the fight against the shrinking of the city, the view was often expressed that help at the state level is necessary. Words were uttered about a “change in the determination of taxes from the budget for structurally affected areas”, “state investments”, “investments for industrial zones from the side of state institutions”, or “higher support for economically weak regions”.

The next tool for achieving an improvement in the current situation is, according to the respondents, a change in the media image of the town, which hides its significant potential. According to their statements, Karviná is still connected with “mining”, “mines”, and “a polluted environment”, which does not provide any reason for a visitor to go there, or possibly think of moving or relocating/founding a company. Nevertheless, the respondents consider important positives to be the presence of a spa, the significant improvement of the environment in the last twenty years, and good transportation or connections with Slovakia and Poland.

*“What do you think of when Karviná is mentioned? It does not present itself as a pleasant town. What is the use of the Darkov Spa being nice when it is not presented well? Until somebody comes here, does anybody recall the connection of “Karviná as a spa town”? Absolutely not. Mine shafts, yes, but not the spa”* (Deputy Director of non-governmental non-profit organisation from Karviná).

Within the interviews the respondents often mentioned the passivity and low level of engagement of the local citizens, which, according to them, emerged from the local social and cultural capital. They spoke about “the heritage of socialism”, “nostalgia”, “poor identity”, “weak connection with the area”, and especially “fatalism”. Poor engagement in public life was named as a major problem leading to insufficient interest in the further fate of the town, but also to a reduction in its overall attractiveness (influence on the social life of the town, creative environment).

*“The problem is that local people have a lack of education and few prospects and they have not worked*

*much anywhere else. Some point out that people do not protest much against this negative development here. When Thatcher was closing the mines at the beginning of the 1990s 100,000 people lost their jobs here and it was just accepted. I see a close connection with education and tradition, also in the period after the fall of socialism people were willing to be more modest. This is typical of this region, such fatalist belief that an employer will come, but maybe he/she will not. Resignation is a good word*" (specialist in regional development, School of Business Administration in Karviná).

When speaking of other developments in the town, another opinion started to appear, that it is necessary to accept that there is a specific trend in the case of (former) "mining towns/cities" which cannot be changed and that is necessary to forget the possibility

that the population decline will once again be turned into an increase. They see as important some reconciliation with destiny and acceptance of the necessity to concentrate on the stabilisation of the current number of citizens and therefore almost exclusively on those citizens who (in the meantime) have not left yet. However, this approach to thinking will require steps which are not yet common in the Czech environment, but which are being taken in other countries (especially in the West). The interviewees mentioned, for instance, the relocation of families, so that individual apartment buildings would be more or less occupied, while it would be necessary to demolish the rest of the empty ones and, for example, make parks instead of them (i.e. basically rationalising housing and the residential fund).

## Conclusion

The town of Karviná is a typical example of a town which is situated in a structurally affected area in the Czech Republic. These areas have very similar features. These are regions which were exposed to significant structural changes within the transformation of the Czech economy from a centrally planned economy to a market economy, in particular the decline of the extraction of mineral resources. And these areas also have issues with overall economic stagnation and lack of opportunities, which also implies the departure of mainly young and qualified citizens.

When examining the shrinking of Karviná we experienced a strong desire for the cultivation of an environment for life and the creation of a positive environment for business on the side of the municipality and building a positive image of the region in relation to this. Regarding possible changes on the level of the state, in the conducted questionnaire survey and the interviews changes were suggested in the budgetary determination of taxes and in greater public investment. They formulated a demand for the adjustment of the social policy of the state. It is apparent through the case study of the town of Karviná that cities are not reconciled to shrinking and that tendencies and efforts exist to reverse this process back to a pro-expansion tendency. Many cities abroad are reconciled to shrinking and there are known instances

that show the possibilities of effective planning and development of cities as they shrink, not just through the involvement of a wide range of participants able to express themselves with regard to the issues of controlling shrinking cities (Shetty, 2009; Marotta, 2011), but also by searching for new planning approaches, which can overall be called the "ecologisation of city territory" (Allweil, 2007; Hollander et al., 2009). One of the key tasks for the future is to manage to deal with the complex consequences of processes of demographic, economic, and physical settlement and to learn how to plan cities (especially small ones) (Hollander et al., 2009).

The problem of shrinking cities is a very varied issue; to put it simply, each city has a different set of causes and consequences, or factors determining its shrinking and possible measures to eliminate this undesirable phenomenon. The image of a given city plays a significant role. It is more and more obvious that the key factors are mainly the conditions in the local labour market and the preferences of the young generation. The localisation of important employers is a strategic factor in the development of cities. The chance of gaining work, feeling safe in a city, or evaluating the condition of the environment appear to be suitable routes to halting (or at least slowing down) population decline for cities in the Czech conditions.

## Acknowledgement

*This paper was processed within the projects of Masaryk University MUNI/A/1251/2017 and MUNI/A/0976/2016. The authors are grateful for the support received from the students' grant project titled "Socio-economic structures and determinants of the contemporary landscape: analysis and interpretation of geographic reality" funded by the Palacký University Internal Grant Agency (IGA\_PrF\_2017\_021).*

## References

- Allweil, Y. (2007). Shrinking Cities: Like a Slow Motion Katrina. *Places*, 19(1), 91-93.
- Buček, J. (2016). Urban Development Policy Challenges in East-Central Europe: Governance, City Regions and Financialisation. *Quaestiones Geographicae*, 35(2), 7-26. doi:10.1515/quageo-2016-0012
- Buček, J., & Bleha, B. (2013). Urban Shrinkage as a Challenge to Local Development Planning in Slovakia. *Moravian Geographical Reports*, 21(1), 2-15. doi:10.2478/mgr-2013-0001
- Cawley, M.E. (1994). Desertification: Measuring population decline in rural Ireland. *Journal of Rural Studies*, 10(4), 395-407. doi:10.1016/0743-0167(94)90049-3
- Cities Regrowing Smaller (CIRES). (2013). *Fostering Knowledge on Regeneration Strategies in Shrinking Cities across Europe*. <http://www.shrinkingcities.eu> (25. 11. 2015).
- Clark, D. (1989). *Urban Decline*. (p. 161). London: Routledge.
- Couch, C., Karecha, J., Nuissl, H., & Rink, D. (2005). Decline and sprawl: an evolving type of urban development – observed in Liverpool and Leipzig. *European Planning Studies*, 13(1), 117-136. doi:10.1080/0965431042000312433
- Disman, M. (2011). *Jak se vyrábí sociologická znalost: Příručka pro uživatele*. (p. 372). Praha: Nakladatelství Karolinum. (in Czech).
- Fishman, R. (2000). The American metropolis at century's end: Past and future influences. *Housing Policy Debate*, 11(1), 199-213. doi:10.1080/10511482.2000.9521367
- Ganser, R., & Piro, R. (2012). *Parallel Patterns of Shrinking Cities and Urban Growth: Spatial Planning for Sustainable Development of City Regions and Rural Areas*. (p. 283). Burlington: Ashgate.
- Haase, A., Rink, D., Grossmann, K., Bernt, M., & Mykhnenko, V. (2014). Conceptualizing Urban Shrinkage. *Environment and Planning A*, 46(7), 1519-1534. doi:10.1068/a46269
- Haase, A., Bernt, M., Großmann, K., Mykhnenko, V., & Rink, D. (2013). Varieties of shrinkage in European cities. *European Urban and Regional Studies*, 23(1), 86-102. doi:10.1177/0969776413481985
- Hendl, J. (2008). *Kvalitativní výzkum: Základní teorie, metody a aplikace*. (p. 407). Praha: Portál. (in Czech).
- Hollander, J.B., Pallagst, K., Schwarz, T., & Popper, F.J. (2009). Planning Shrinking Cities. *Progress in Planning*, 72(4), 223-232.
- Illner, M. (2006). Velikost obcí, efektivita jejich správy a lokální demokracie. In Z. Vajdová, D. Čermák, & M. Illner (Eds.), *Autonomie a spolupráce: Důsledky ustavení obecního zřízení v roce 1990. Sociologický ústav AV ČR*. (pp. 15-26). Praha. (in Czech).
- Krejčí, T., Klusáček, P., & Lorencová, H. (2009). Je možné přiřazovat Brno a Ostravu mezi tzv. "shrinking cities"? In *Sborník příspěvku z mezinárodní vědecké konference "Region v rozvoji společnosti 2009"*. (pp. 144-150). Brno: Mendelova zemědělská a lesnická univerzita v Brně. (in Czech).
- Kupiszewski, M., Durham, H., & Rees, P. (2008). Internal migration and urban change in Poland. *European Journal of Population*, 14(3), 265-290.
- Law of Czech Republic. Act no. 128/2000 Coll., on Municipalities. (The Municipal Order). (in Czech).
- Marotta, S.J. (2011). *Creative Reconstruction in the City: An Analysis of Art, Shrinking, and the Story of the American Dream in Detroit, MI*. Arizona State University. MA Thesis.
- Martinát, S., Dvořák, P., Frantál, B., Klusáček, P., Kunc, J., Navrátil, J., Osman, R., Tureckova, K., & Reed, M. (2016). Sustainable urban development in a city affected by heavy industry and mining?, Case study of brownfields in Karvina, Czech Republic. *Journal of Cleaner Production*, 118(1), 78-87.
- Ministerstvo pro místní rozvoj ČR. (2013). *Strategie regionálního rozvoje ČR 2014-2020*. (p. 150). Praha: MMR ČR. (in Czech).
- Oswalt, P., & Rieniets, T. (2007). *Global Context. Shrinking Cities, Atlas of Shrinking Cities*.
- Ouředníček, M., Špačková, P., & Feřtová, M. (2011). Změny sociálního prostředí a kvality života v depopulačních regionech České republiky. *Sociologický časopis*, 47(4), 777-803. (in Czech).
- Popescu, C. (2014). Deindustrialization and Urban Shrinkage in Romania. What Lessons for the Spatial Policy?. *Transylvanian Review of Administrative Sciences, [S.l.]*, 42, 181-202. <http://rtsa.ro/tras/index.php/tras/article/view/97>. (20. 12. 2016).
- Rink, D., Couch, C., Haase, A., Krzysztofik, R., Nadolu, B., & Rumpel, P. (2014). The Governance of Urban Shrinkage in Cities of Post-socialist Europe: Policies, Strategies and Actors. *Urban Research and Practice*, 7(3), 258-277.
- Rumpel, P., & Slach, O. (2012). Je Ostrava "smršťujícím se městem"? *Sociologický časopis*, 48(5), 859-878.
- Rumpel, P., & Slach, O. (2014). Shrinking cities in Central Europe. In J. Koutský, P. Raška, P. Dostál, & T. Herrschel (Eds.), *Transitions In Regional Science - Regions In Transitions: Regional Research In Central Europe*. (pp. 142-155). Prague: Wolters Kluwer.
- Rumpel, P., Slach, O., & Boruta, T. (2012). Governance zmenšujících se měst v Evropském kontextu. In J. Koutský & P. Raška (Eds.), *Výzkum regionál-*

- ního rozvoje - vybrané přístupy a témata. *Univerzita Jana Evangelisty Purkyně v Ústí nad Labem*. (pp. 63-74). Ústí nad Labem. (in Czech).
- Rumpel, P., Slach, O., & Koutský, J. (2013). Shrinking Cities and Governance of Economic Regeneration: The Case of Ostrava. *E+M Ekonomie a Management*, 11(2), 113-127.
- Shetty, S. (2009). *Shrinking Cities in the Industrial Belt: A Focus on Small and Mid-size Cities in Northwestern Ohio*. (p. 24). Toledo: The University of Toledo.
- Schmeidler, K. (2012). Fenomén shrinking cities. *Lidé města*, 16(1), 125-147.
- Schmeidler, K., Jiříčková, H., & Zámečník, P. (2011). Výzva shrinking cities u nás, v Evropě i ve světě. *Urbanismus a územní rozvoj*, 14(6), 21-27. (in Czech).
- Silverman, D. (2005). *Ako robiť kvalitatívny výskum: Praktická príručka*. (p. 327). Bratislava: Ikar. (in Slovak).
- Stryjakiewicz, T. (2014). The Process of Urban Shrinkage and its Consequences. *Romanian Journal of Regional Science*, 7, 29-40.
- Svobodová, H., Binek, J., Šerý, O., Bárta, D., Chmelař, R., Šilhan, Z., & Galvasová, I. (2015). *Metodika identifikace příčin procesu zmenšování obcí a měst*. (p. 29). Brno: GaREP, spol. s r.o. (in Czech).
- Svobodová, H., Binek, J., Šerý, O., Chmelař, R., Šilhan, Z., Bárta, D., Szczyrba, Z., & Galvasová, I. (2015). *Zmenšující se města a regiony v České republice. Zpráva k projektu*. (p. 122). Brno: GaREP, spol. s r.o. (in Czech).
- Sýkora, L. (2012). Rozrůstání města do krajiny. Co s tím?. *Veronica*, 26(3), 4-5. (in Czech).
- Sýkora, L., & Ouředníček, M. (2007). Sprawling post-communist metropolis: Commercial and residential suburbanization in Prague and Brno, the Czech Republic. In E. Razin, M. Dijst, & C. Vázquez (Eds.), *Employment Deconcentration in European Metropolitan Areas: Market Forces versus Planning Regulations*. (pp. 209-233). Dordrecht: Springer. 209-233.
- Šimon, M. (2014). Exploring Counterurbanisation in a Post-Socialist Context: Case of the Czech Republic. *Sociologia ruralis*, 54(2), 117-142.
- Turok, I., & Mykhnenko, V. (2007). The Trajectories of European Cities, 1960-2005. *The International Journal of Urban Policy and Planning*, 24(3), 165-182.
- Westlund, H., & Pichler, W. (2012). The Swedish countryside in the neo-urban knowledge economy. *Regional Science Policy & Practice*, 5(2), 225-237.