

MORAVIAN GEOGRAPHICAL REPORTS



VOLUME 17

NUMBER

ISSN 1210 - 8812

1

2009

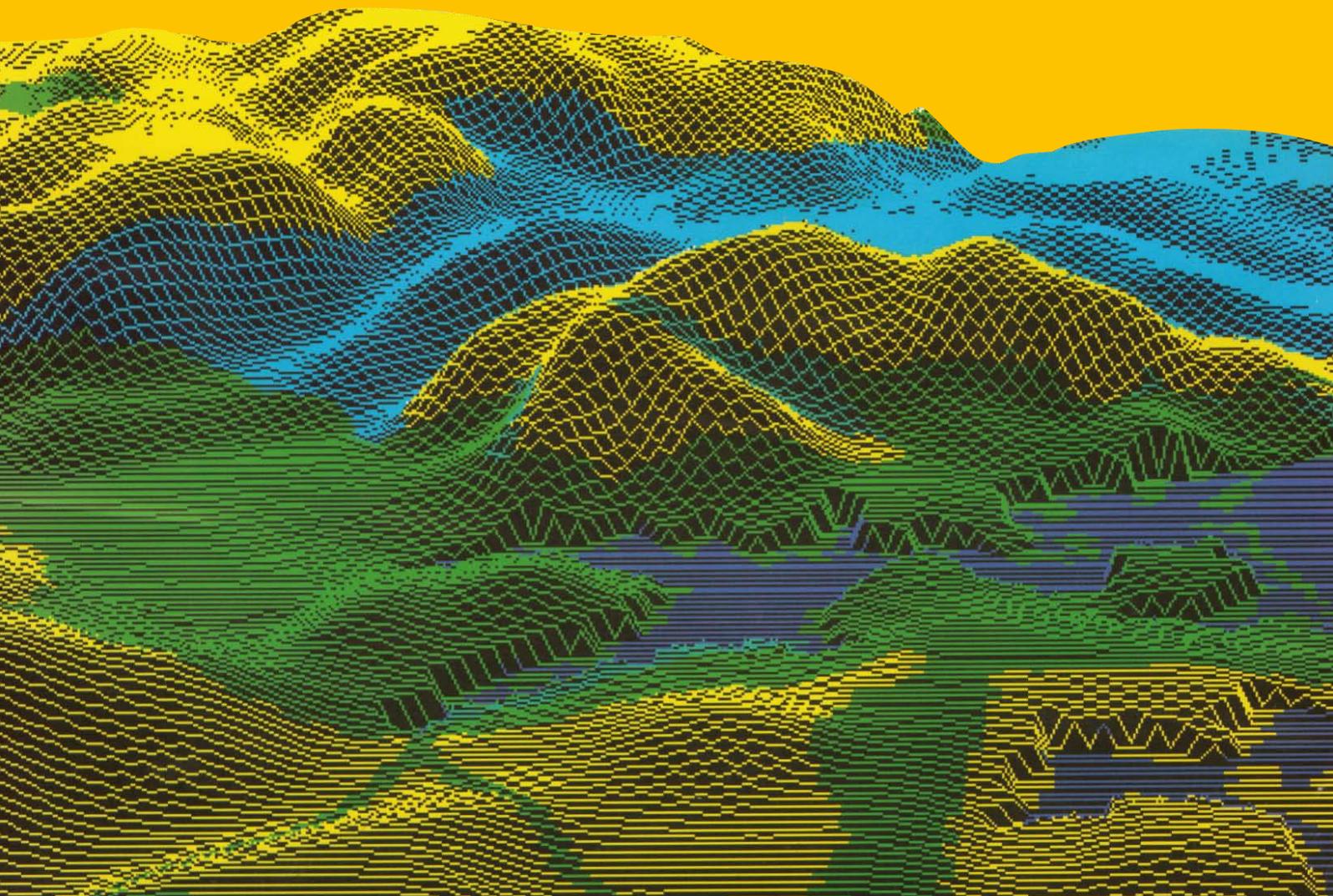




Fig. 2: Traffic congestion on the road crossing Zlín-Malenovice (Photo O. Hájek 2008)



Fig. 3: Traffic saddle in the centre of Zlín (Photo P. Dohnal 2009)

Illustrations related to the paper by O. Hájek et T. Siwek

MORAVIAN GEOGRAPHICAL REPORTS

EDITORIAL BOARD

Bryn GREER-WOOTTEN, York University, Toronto
 Andrzej T. JANKOWSKI, Silesian University, Sosnowiec
 Karel KIRCHNER, Institute of Geonics, Brno
 Petr KONEČNÝ, Institute of Geonics, Ostrava
 Ivan KUPČÍK, University of Munich
 Sebastian LENTZ, Leibniz Institute for Regional
 Geography, Leipzig
 Petr MARTINEC, Institute of Geonics, Ostrava
 Jozef MLÁDEK, Comenius University, Bratislava
 Jan MUNZAR, Institute of Geonics, Brno
 Philip OGDEN, Queen Mary University, London
 Metka ŠPES, University of Ljubljana
 Milan TRIZNA, Comenius University, Bratislava
 Pavel TRNKA, Mendel University, Brno
 Antonín VAISHAR, Institute of Geonics, Brno
 Miroslav VYSOUDIL, Palacký University, Olomouc
 Arnošt WAHLA, University of Ostrava
 Jana ZAPLETALOVÁ (editor-in chief), Institute of
 Geonics, Brno
 Georgette ZRINSCAK, University Sorbonne, Paris

EDITORIAL STAFF

Bohumil FRANTÁL
 Tomáš KREJČÍ, technical editor
 Zdeněk NOVOTNÝ, technical arrangement
 Martina Z. SVOBODOVÁ, linguistic editor

PRICE

280 CZK (excluding VAT) per copy plus the postage
 800 CZK (excluding VAT)
 per volume (four numbers per year) plus the postage

PUBLISHER

Czech Academy of Sciences
 Institute of Geonics, v. v. i., Branch Brno
 Drobného 28, CZ-602 00 Brno
 Identification number: 68145535

MAILING ADDRESS

MGR, Institute of Geonics ASCR, v. v. i.
 Drobného 28, 602 00 Brno
 Czech Republic
 (fax) 420 545 422 710
 (e-mail) geonika@geonika.cz
 (home page) <http://www.geonika.cz>

Brno, March, 2009

PRINT

NOVPRESS s.r.o., nám. Republiky 15, 614 00 Brno
 © INSTITUTE OF GEONICS, v. v. i. 2009
 ISSN 1210-8812

Articles:

Zbigniew DŁUGOSZ, Sławomir KUREK
**POPULATION AGEING AND ITS PREDICTIONS
 FOR 2030 IN THE MAŁOPOLSKIE VOIVODSHIP
 COMPARED TO POLAND AND EUROPE 2**
 (Stárnutí populace a prognóza vývoje populace do roku 2030
 v Malopolském vojvodství ve srovnání s vývojem v Polsku
 a Evropě)

Katja VINTAR MALLY
**BALANCING SOCIO-ECONOMIC DEMANDS
 AND ENVIRONMENTAL PRESSURES:
 MISSION IMPOSSIBLE? 19**
 Vyrovnávání socio-ekonomických požadavků
 a environmentálních tlaků: nemožný úkol?)

Oldřich HÁJEK, Tadeusz SIWEK
**THE PERCEPTION OF PUBLIC CITY TRANSPORT
 (CZECH REPUBLIC) IN ZLÍN AS AN ALTERNATIVE
 TO INDIVIDUAL TRANSPORT BY ITS POTENTIAL
 USERS ACCORDING TO THE LEVEL OF THEIR
 INCOME 30**
 (Vnímání městské hromadné dopravy ve Zlíně (Česká re-
 publika) jako alternativy k individuální dopravě z hlediska
 příjmových skupin jejich potenciálních uživatelů)

Richard JAŠŠ, Miloš FŇUKAL
**THE GERMAN LINGUISTIC ENCLAVES OF BRNO,
 OLOMOUC AND JIHLAVA DURING
 GERMAN-AUSTRIAN IRREDENTISM
 IN THE AUTUMN OF 1918. 40**
 (Německé jazykové ostrovy Brno, Olomouc a Jihlava
 v německo-rakouské iredentě na podzim 1918)

Reports:

Lucie KUBALÍKOVÁ
**BLOCK ACCUMULATIONS IN THE WESTERN
 PART OF THE PODYJÍ NATIONAL PARK (CZECH
 REPUBLIC): PRELIMINARY ANALYSIS OF THEIR
 DISTRIBUTION. 49**
 (Blokové akumulace v západní části Národního parku Podjíví
 (Česká republika): předběžná analýza jejich rozšíření)

Review:

Milan KONEČNÝ
VYSOČINA REGION. THEMATIC ATLAS 56
 (Tematický atlas kraje Vysočina)

POPULATION AGEING AND ITS PREDICTIONS FOR 2030 IN THE MAŁOPOLSKIE VOIVODSHIP COMPARED TO POLAND AND EUROPE

Zbigniew DŁUGOSZ, Sławomir KUREK

Abstract

The demographic situation and future perspectives related to the level and pace of population ageing in Małopolskie Voivodship (a province located in southern Poland, with its capital in Krakow), is compared to the situation in Poland and other European countries (i.e., not only those making up the EU-25). The analysis is based on official empirical materials derived from World Population Prospects, Eurostat and the Central Statistical Office in Warsaw. The results showed that Małopolskie Voivodship, seen in the context of the rest of Poland and Europe, is and could be one of the demographically youngest areas. This does not mean that the level and dynamics of ageing in all parts of the region are low. It must be remembered that, while in West European countries population ageing has reached an advanced level and its pace is slowing down, the processes are only now gaining momentum in East European countries, including Poland.

Shrnutí

Stárnutí populace a prognóza vývoje populace do roku 2030 v Malopolském vojvodství ve srovnání s vývojem v Polsku a Evropě

Cílem článku je prezentovat současnou situaci a perspektivy stárnutí obyvatel v Malopolském vojvodství (území v jižním Polsku s centrem Krakov) ve srovnání se situací v Polsku jako celku a dalších evropských zemích, nejen členů EU-25. Analýza vychází z oficiálních empirických materiálů odvozených z populační prognózy světa, Eurostatu a Centrálního statistického úřadu ve Varšavě. Výsledky ukazují, že Malopolské vojvodství, viděno v kontextu celého Polska a Evropy, je a může být jedním z demograficky nejmladších regionů. To neznamená, že stupeň a dynamika stárnutí je nízká ve všech částech regionu. Je třeba pamatovat, že stárnutí obyvatelstva v západoevropských zemích dosáhlo pokročilého stupně a jeho rychlost zde klesá, zatímco ve východoevropských zemích včetně Polska je stále na vzestupu.

Key words: population ageing, territorial distribution, Europe, Poland, Małopolskie Voivodship

1. Introduction

One of the most serious problems of our time, though not new in Europe, is that of population ageing. It has already occurred in some countries with varying intensity, yet never has it been so widespread across our continent as it is at present. Historically, various criteria have been adopted in order to assess the status and trends related to population ageing. General typological assumptions developed in the early 19th century by Sundbärg (1899) in the form of age pyramid have not lost their validity. Yet some of the later attempts to assess the situation related to demographic age and classification standards created in this respect inter alia by J. Clarke (1965), or by the leading Polish demographer E. Rosset (1959), have not stood the test of time and do not fully reflect the

present-day situation, at least in Europe. Nowadays the situation is determined both by demographic factors and by a wide range of social and economic conditions. On the one hand, rising life expectancy, dropping birth rate, foreign migration, wave-like transition of post-war baby boomers and their echoes (compensating for the loss of life during World Wars I and II) and, on the other hand, the changing life style and family model, improved social and economic conditions, wealth, comfort, growing emancipation and increased professional activity of women, as well as the resultant fall of fertility rate, are just some of the direct and indirect causes of population ageing (Długosz 1996; Grundy 1996; Golini 1997; Kurek 2003; Kurek 2004; Rowland 2003; Kinsella and Philips 2005; Długosz and Kurek, 2006). These developments have been termed the „Second Demographic Transition“ by Van

de Kaa (1987, 1999, 2003) and Lesthaeghe (1995, 2000). Main driving mechanisms underlying the transformations of demographic behaviour are family-related changes including an increase in the acceptance of non-family living arrangements, the postponement of marriage, increased births outside marriage as well as increased divorce rates. A fertility decline below replacement level, which is the main indicator of SDT, occurred in western and northern Europe in the 1960s, then it diffused to southern Europe. In post-socialist countries, the demographic changes have progressed during the era of profound societal transformation, marked by the introduction of market economy (Kotowska, 1999; Sobotka, Zeman, Kantorova, 2003). Naturally, a direct relation between the demographic situation and social and economic conditions over a short period of time cannot be derived. The latter, developing over a long period, stimulate a new quality and potential, thus creating a new picture of the society. In practical terms, obtaining knowledge about the level and scale of the rate of population ageing has two very important aspects.

One layer of perceiving the problem can be reduced to the economic aspect – i.e. who is going to provide resources for pensions and disability allowances of the non-working population and how. On the other hand, the problem can be seen in the context of a number of social and medical securities for the oldest population, which is often no longer self-sufficient. It is difficult to assess which component of population growth contributes more to the level and dynamics of population ageing. Van de Kaa (1999) broadened the concept of Second

Demographic Transition (SDT) incorporating into it trends in international migrations and mortality particularly at older ages. Advanced industrialised countries have become countries of immigration and the magnitude of migration increased after the opening of labour markets for new EU members, including Poland. The effect of migration has stronger effect on the population age structure in smaller populations. In turn, a permanent increase in life expectancy, especially at advanced ages has an important impact on ageing (Preston, Himes, Eggers, 1989; Caselli, Vallin, 1990; Kinsella, Philips, 2005).

In Poland, one of the demographically younger region is Małopolska (Little Poland) with its capital of Krakow, although it is spatially diversified with rural and agricultural areas in the north, industrial zone in the middle (along the transportation route from Silesia to the Ukrainian border) and its southern part with the developing tourism. Małopolska is characterised by high birth rates as well as by the natural population growth. On the other hand, the southern part of the region is historically the area of massive population emigration to America. However, the population loss caused by this out-migration was compensated by high fertility.

Therefore, the aim of this article is to present the situation and perspectives related to the level and pace of population ageing in the Małopolskie Voivodship, as compared to Poland and other European countries, not only those making up the EU-25. The analysis dwells on official empiric materials. For Poland, the data derive from the outcomes of the 1988 and 2004



Fig. 1: Administrative division of Poland according to voivodships

censuses and forecasts for the year 2030, while that for Europe include Eurostat data for 1991 and 2004 and forecasts for 2030. Due to the lack of comparable materials, the analysis of the share of persons aged 85 and over and the index value construed on it were based on the 2002 census data for Poland, while for the European projections, data for 2030 originate from World Population Prospects; United Nations (2006). Thus, the materials gathered cover a similar cross-section of time and refer to comparable territorial units. The analysis for Europe excludes Turkey (often considered a part of the European continent on account of its candidature for the EU) and the Vatican – due to its being a specific type of state. In terms of territorial distribution, the analysis for Poland is based on the present-day administrative division of the country (in effect since 1 January 1999) into 16 regions (voivodships; Fig. 1), while the analysis for the Małopolskie Voivodship dwells on the official division into towns and gminas. Only the territorial distribution forecasts for the region are presented according to poviats (Fig. 2), as such forecasts have not been drafted for gminas and towns. As a result, the territorial distribution, as presented in the figures, is generalised. Besides, it must be noted that, in order to facilitate the comparison of the parameter values assumed for territorial cross-sections and timeframes involved, common class groups have been adopted to present how the population ageing has proceeded and will proceed in the future.

2. Methodology

In order to present a full picture of the situation, the analysis is mostly based on generally accepted indicators used to assess the magnitude and dynamics of population ageing. Thus, the analysis uses both static measures: the proportion of persons aged 65–85 and over, and the ageing index (I_{SD}), and dynamic measures, i.e. the dynamic ageing index (W_{SD}).

$$(1) I_{SD} = P_{65+} / P_{0-14} \times 100,$$

where:

I_{SD} – ageing index; P_{65+} – population aged 65 and over; P_{0-14} – population aged under 15

$$(2) W_{SD} = [P_{(0-14)t} - P_{(0-14)t+n}] + [P_{(\geq 65)t+n} - P_{(\geq 65)t}]$$

where:

W_{SD} – dynamic ageing index

$P_{(0-14)t}$ – share of population aged 0–14 at the beginning of the period studied

$P_{(0-14)t+n}$ – share of population aged 0 – 14 at the end of the period studied

$P_{(\geq 65)t+n}$ – share of population aged 65 and more at the end of the period studied

$P_{(\geq 65)t}$ – share of population aged 65 and more at the beginning of the period studied.

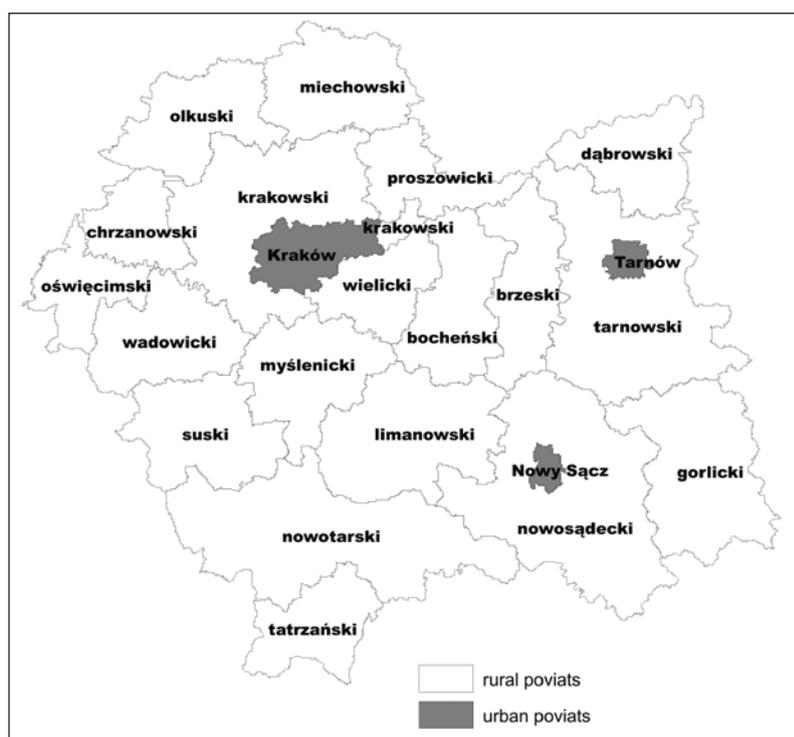


Fig. 2: Administrative division of the małopolskie voivodship according to poviats

A positive value of the index of percentage changes in the age structure indicates the ongoing process of population ageing in the given unit in the period analysed, and the higher the value of the index, the more advanced this process is. By analogy, the negative value of the index highlights the fact that the population is becoming younger.

The analysis also uses measures presenting the relations between old and younger generations, the latter being expected to provide “economic support” (potential support ratio – W_{PW} , not to be confused with the burden index expressed by reverse relation), as well as “social support” (parent support ratio – W_{WM}).

$$(3) \quad W_{PW} = P_{15-64} / P_{65+},$$

$$(4) \quad W_{WM} = P_{85+} / P_{50-64} \times 100$$

where:

W_{PW} – potential support ratio

W_{WM} – parent support ratio

P_{15-64} – population aged 15 – 64

P_{65+} – population aged 65 and over

P_{85+} – population aged 85 and over

P_{50-64} – population aged 50 – 64

3. Population according to the proportion of persons aged 65 and over

The first symptom of population ageing is a growing proportion of persons considered old, i.e. those aged 65 and over – usually taken as a definition age limit for the socio-demographic category of “seniors”. Sixty-five years of age are also in the most of EU countries a legal (regular) age limit for retirement (for obtaining full, unreduced pension). In retrospective terms (Fig. 3), the highest proportion of this age group in the Małopolskie Voivodship in 1988 (with the regional average of 10.1%) was registered in the northern, rural and agricultural gminas of the voivodship (with the values exceeding 18 per cent; Tab. 1). Compared to the rest of Poland (average 9.8%), such high levels were not recorded in any other region. In Europe (1991), the most aged countries were Monaco and Sweden. The lowest proportion of population aged 65 and over was observed mainly in small- and medium-sized towns of the Małopolskie Voivodship (between 5 and 7 per cent).

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE (gminas and poviats)	
1991		1988			
Monaco	22.2	Łódzkie	12.2	Raławice - rural (Miechowski)	19.9
Sweden	17.8	Świętokrzyskie	11.6	Kozłów - rural (Miechowski)	19.2
Norway	16.3	Lubelskie	11.5	Książ Wielki - rural (Michowski)	18.8
Macedonia	8.1	Lubuskie	8.0	Andrychów - urban (Wadowicki)	6.2
Bosnia and Hercegovina	7.2	Warmińsko-Mazurskie	7.3	Olkusz - urban (Olkuski)	6.0
Albania	5.4	Zachodniopomorskie	7.3	Chełmek - urban (Oświęcimski)	5.2
2004					
Monaco	22.4	Łódzkie	14.8	Książ Wielki - rural (Miechowski)	20.7
Italy	19.2	Świętokrzyskie	14.7	Raławice - rural (Miechowski)	20.0
Germany	18.0	Mazowieckie	14.5	Słaboszów - rural (Miechowski)	19.6
Macedonia	10.7	Warmińsko-Mazurskie	11.4	Dobczyce - urban (Myślenicki)	9.0
Moldova	10.3	Lubuskie	11.6	Muszyna - rural (Nowosądecki)	8.8
Albania	8.3	Pomorskie	11.7	Łabowa - rural (Nowosądecki)	8.8
2030					
Andorra	29.3	Śląskie	26.1	Tarnów (urban)	27.9
Germany	27.5	Dolnośląskie	25.6	Kraków (urban)	26.3
Italy	27.2	Łódzkie	25.5	Chrzanowski (rural)	25.8
Ireland	18.4	Wielkopolskie	22.3	Myślenicki (rural)	18.8
Albania	17.3	Małopolskie	22.2	Limanowski (rural)	17.6
Moldova	14.9	Podkarpackie	22.0	Nowosądecki (rural)	17.3

Tab. 1: The extreme values of the percentage of population aged 65 and over in Europe, Poland and Małopolskie voivodship.

Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

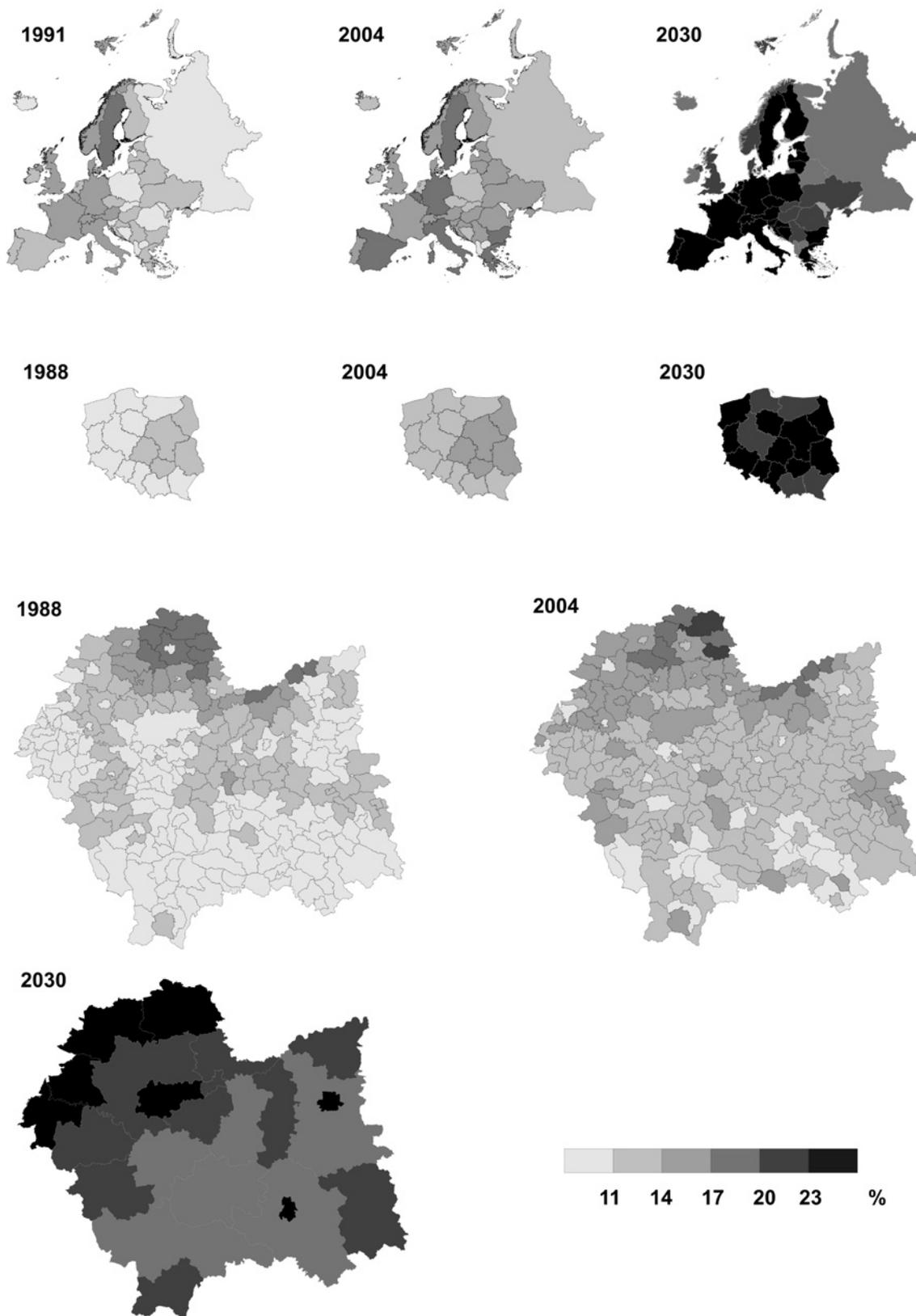


Fig. 3: The level and projections of the percentage of population aged 65 and over.
Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

The lowest figures among rural areas were registered in the southern part of the region. This part of the Małopolska region is traditionally characterised by high fertility. In Poland, the regions with the lowest proportion of 65+ population included northwestern regions of the country, while at a European level, the lowest proportion of 65+ populations can be seen in southeastern countries.

In 2004, the area in the Małopolskie Voivodship inhabited by high proportions of persons aged 65 and over increased and comprised central and northern areas, with the highest values in the northern gminas (above 20%), by far exceeding both the regional (13.2%) and the national averages (13.0%). Compared to the rest of Europe, the figures were nearly as high as those for Monaco and Italy. On the other hand, the lowest level in 2004 was registered mainly in the gminas located in the south. The lowest levels for Poland, though a class scale higher, were seen in the northwestern voivodships. Similar lower levels in Europe were seen in some Balkan countries.

What could be the situation like in 2030 in terms of the share of persons aged 65 and over in the population structure? Forecasts for poviats of the Małopolskie Voivodship (the average = 22.2%) suggest that the highest proportions of this age group should be seen

in the largest city poviats of the region and also in the northwestern poviats. Similar levels will also be recorded in most other regions (voivodships) of Poland and in many European countries. In all years under study, the proportion of the elderly varies from country to country, but the greatest contrast is probably between eastern and southeastern Europe (former socialist - transition countries) and western, northern and southern European countries.

4. Population according to the index of ageing

Another measure of assessing demographic age is offered by the index of ageing (I_{SD}), also referred to as elderly dependency burden. The ratio of the oldest (65+) to the youngest (aged 0–14) persons in the Małopolskie Voivodship ranged from 18 to 93 per 100 persons in 1988 (Fig. 4). Apart from the towns of Wieliczka and Zakopane, relatively high values (with the average in the region amounting to 39%), were registered in the rural gminas located north and west of Kraków (Tab. 2). In Poland (with the national average of 38), the highest value was recorded in the area of Łódź, while in Europe it was in the northern, western and southern parts of the continent. On the other hand, the lowest figures within the Małopolskie Voivodship were registered in middle-sized towns and in gminas located in the south of the region. Values

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE (gminas and poviats)	
1991		1988			
Monaco	172	Łódzkie	54	Raławice - rural (Miechowski)	93
Sweden	99	Mazowieckie	48	Kozłów - rural (Miechowski)	86
Italy	93	Świętokrzyskie	46	Książ Wielki - rural (Michowski)	85
Bosnia and Herzegovina	31	Lubuskie	29	Limanowa - rural (Limanowski)	20
Moldova	31	Zachodniopomorskie	27	Łabowa - rural (Nowosądecki)	20
Albania	17	Warmińsko-Mazurskie	26	Chełmek - rural (Oświęcimski)	19
2004					
Monaco	145	Łódzkie	97	Książ Wielki - rural (Miechowski)	131
Italy	136	Mazowieckie	90	Słaboszów - rural (Miechowski)	120
Greece	128	Świętokrzyskie	89	Krzyszowice - urban (Krakowski)	113
Macedonia	51	Wielkopolskie	67	Krynica - rural (Nowosądecki)	36
Moldova	50	Pomorskie	66	Słopnice - rural (Limanowski)	35
Albania	31	Warmińsko-Mazurskie	62	Łabowa - rural (Nowosądecki)	33
2030					
Andorra	257	Śląskie	240	Kraków - urban	279
Italy	237	Dolnośląskie	235	Tarnów - urban	260
Slovenia	223	Łódzkie	228	Nowy Sącz - urban	213
Ireland	106	Pomorskie	175	Myślenicki - rural	124
Albania	89	Małopolskie	171	Nowosądecki - rural	105
Moldova	79	Podkarpackie	168	Limanowski - rural	104

Tab. 2: The extreme values of the percentage of an ageing index in Europe, Poland and Małopolskie voivodship
Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

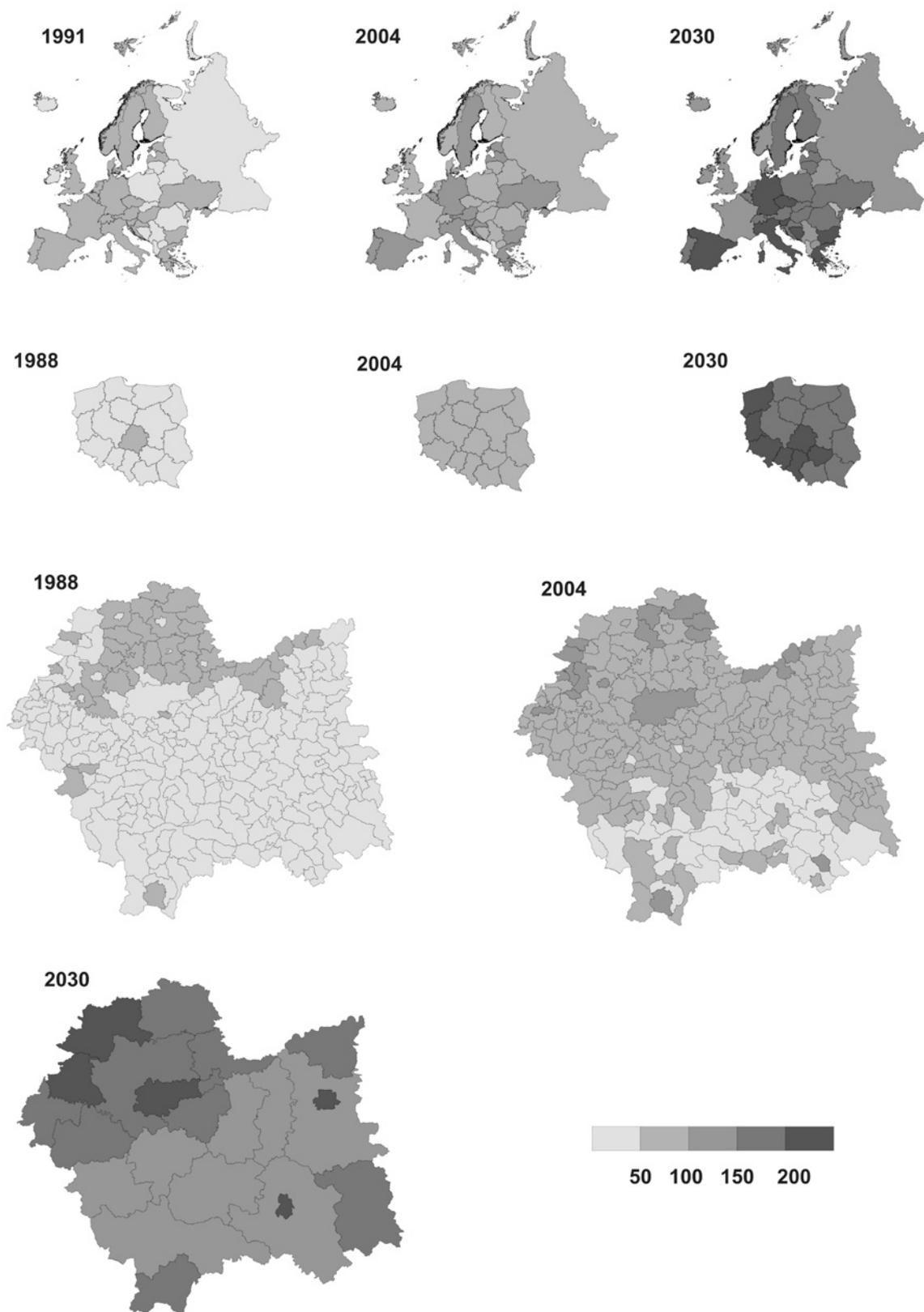


Fig. 4: The level and projections of the ageing index

Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

of this order across Poland were registered in the northwestern part of the country, whereas in Europe, the lowest values, highly divergent from the national average, were registered only in Balkan countries.

In 2004, the values in the towns and gminas in most northern and central parts of the Małopolskie Voivodship ranged from 50–100. Higher values were mainly observed in units located in the northwestern part of the region, where the proportion of the elderly was higher than the share of children. The regional average (74) was similar as the national average (76), while the highest values across Europe were registered in Mediterranean countries. On the other hand, the lowest rates within the same timeframes were seen in the southern areas of the Małopolskie Voivodship, while such low figures elsewhere in Europe for 2004 were observed only in Albania.

The forecasts for the 2030 index are very similar to those concerning proportions of the population aged 65 and over. In the Małopolskie Voivodship, the highest figures of the old-age dependency ratio in 2030 could be observed in the largest cities of the region. Across Poland, similar values should be observed in the west and in some of central regions. Compared to Europe, the rates will correspond to those registered in “the most aged” Mediterranean countries and Germany. Against this background, the population of the Małopolskie Voivodship could be one of the youngest populations among Polish voivodships. A particularly low ratio in the Małopolskie Voivodship should be observed in the southern poviats, yet it will still be higher than the national average for Moldavia and Albania, and will be close to the level of Ireland and Luxembourg. According to the index of ageing, differences between

eastern and western Europe are going to blur because of substantial and sharp decline in fertility in the former in 1990s which exceeded the low values in northern and western countries.

5. Ageing expressed in terms of the dynamic ageing index

The situation presented above will be determined by changes in the proportion of population aged 0–14 and 65+ in the society. The intensity of these changes is presented through a territorial analysis of population distribution according to the dynamic population ageing index (W_{SD}), which, unlike the indexes discussed previously, is a dynamic measure, illustrating the speed of the process. Values calculated for Poland for the period 1988–2004 (Fig. 5) indicate that the Małopolskie Voivodship saw a steady acceleration of the population ageing process (on average 12.3). The fastest ageing areas within the Małopolskie Voivodship comprised mainly towns with values ranging between 16 and 20 (Tab. 3). None of the concerned European countries reached the same level, with the highest rates registered only in Bosnia and Herzegovina and in Russia. It has to be stressed here that in 1988–2004, there was not a single territorial unit that would show a rejuvenating age structure (the slowest ageing rate was seen in the northern, rural gminas). However, in some countries of the continent, a reverse trend was actually seen, i.e. Scandinavian countries and in some mini-states.

According to the forecasts for the poviats of the Małopolskie Voivodship, the highest ageing rate in the years 2002–2030 is expected to be seen in urban poviats and in western poviats, which will be close to the figures for the regions (voivodships). At a European

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE (gminas and poviats)	
1991–2004		1988–2004			
Bosnia and Herzegovina	13.3	Opolskie	14.8	Gorlice - urban (Gorlicki)	20.5
Russia	11.3	Dolnośląskie	14.7	Olkusz - urban (Olkuski)	19.7
Romania	10.7	Zachodniopomorskie	14.5	Andrychów - urban (Wadowicki)	18.4
Monaco	-2.4	Mazowieckie	10.7	Raławice - rural (Miechowski)	3.8
Norway	-2.5	Łódzkie	10.0	Radziemice - rural (Proszowicki)	3.8
Denmark	-2.6	Wielkopolskie	10.0	Kozłów - rural (Miechowski)	3.0
2004–2030					
Andorra	19.5	Zachodniopomorskie	17.5	Nowy Sącz - urban	21.5
Liechtenstein	16.3	Śląskie	17.5	Tarnów - urban	21.5
Albania	15.9	Lubuskie	17.4	Chrzanowski - rural	17.7
Moldova	6.3	Lubelskie	14.1	Miechowski - rural	13.8
Luxembourg	6.1	Małopolskie	13.9	Proszowicki - rural	12.2
Monaco	4.6	Mazowieckie	13.2	Limanowski - rural	11.5

Tab. 3: The extreme values of a dynamic ageing index in Europe, Poland and Małopolskie voivodship
Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

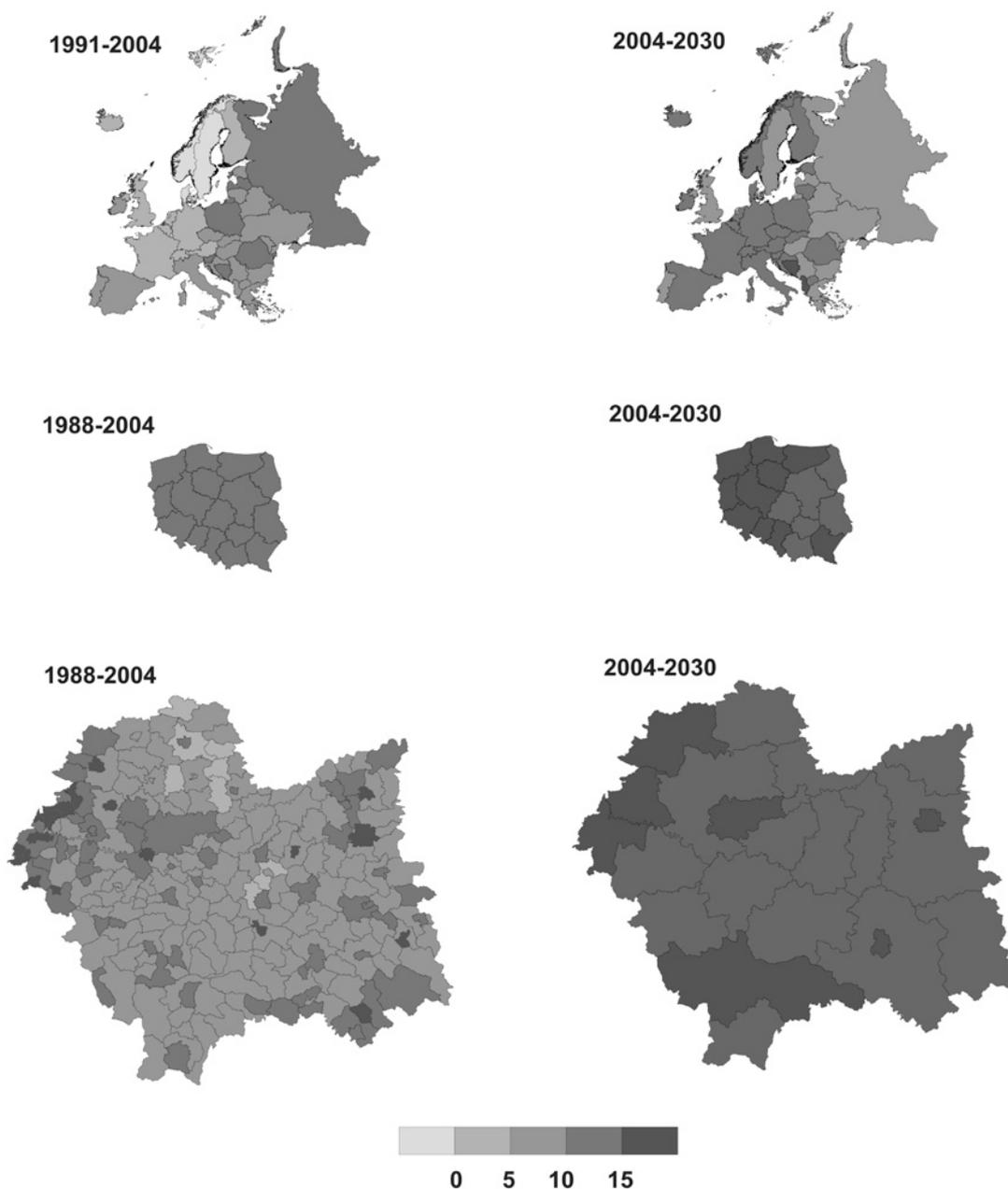


Fig. 5: The tendencies of ageing according to the dynamic ageing index W_{SD}
 Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

level, the figures (for 2004–2030) will be comparable to countries considered relatively young at the turn of the century (mainly central-eastern and southeastern countries). Forecasts for the period before 2030 also suggest that the lowest ageing rate in the Małopolskie Voivodship could be seen in agricultural poviats (with the values between 13 and 14), while across the country, in the central and eastern voivodships. In Europe, the lowest pace before 2030 will be recorded in countries considered demographically oldest at the beginning of the 21st century. Thus, many of these countries are expected to reach the same or even higher shares of

the elderly in 2030 than expected in the western and northern countries of Europe.

6. Population according to the share of persons aged 85 and over

The situation presented above reflects, with certain exceptions, the territorial distribution of the population aged 85 and over (Fig. 6). Knowledge of the situation in this respect is very important, as it may serve as a foundation for planning social policy for this group of people, namely in the field of medicine and social care.

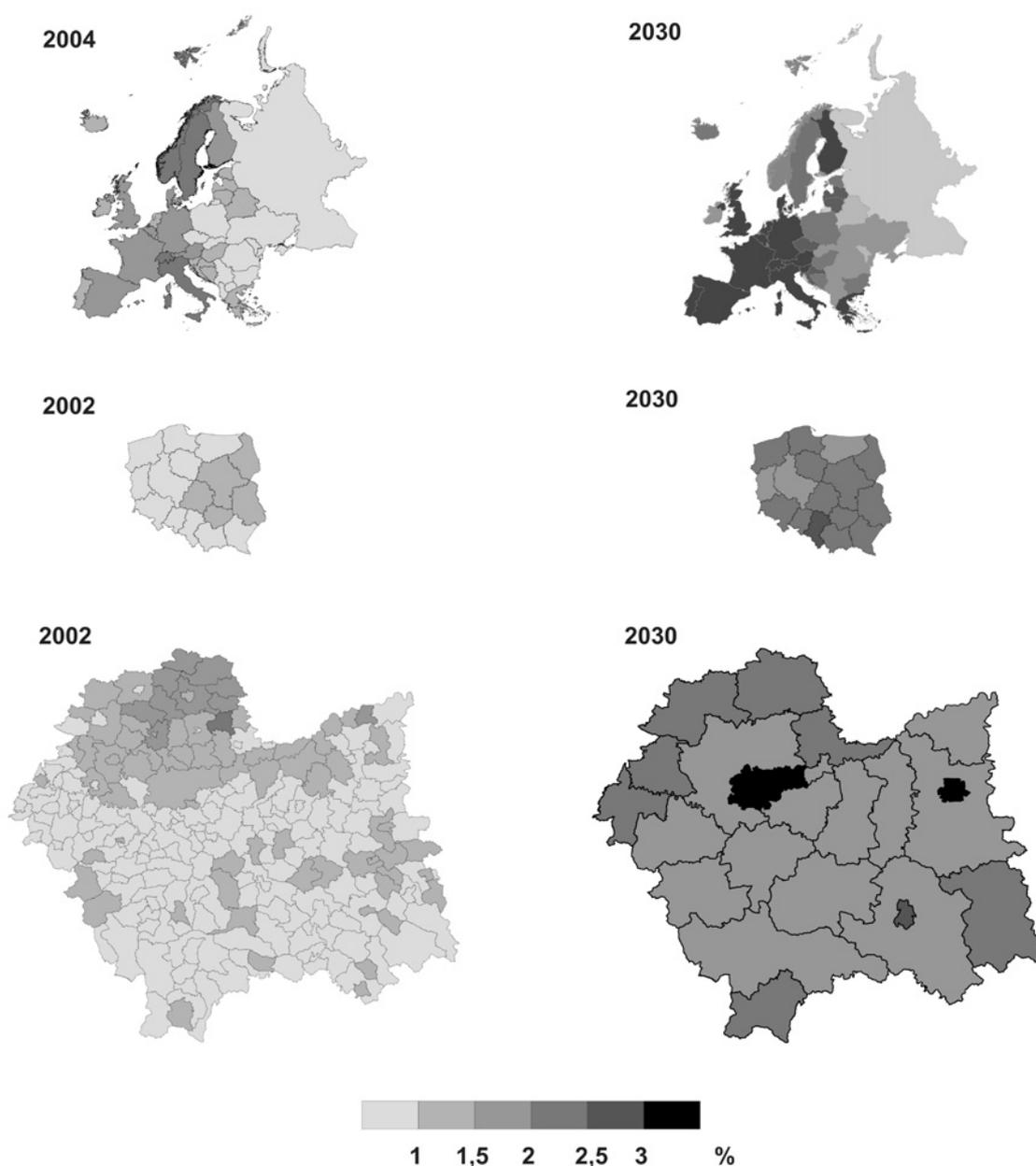


Fig. 6: The level and projections of the percentage of population aged 85 and over

Source: own elaboration based on data from Eurostat, World Population Prospects 2006 and Central Statistical Office in Poland

As mentioned before, due to the lack of comparable data, the analysis for Poland and Europe was based on data from different years, i.e. 2002 and 2004 respectively. The forecasts used are for 2030 and 2025 respectively.

In 2002, gminas with high proportions of persons aged 85 and over were mostly concentrated in the north of the Małopolskie Voivodship (Tab. 4). The highest values in Poland, yet a class lower, were recorded in central and eastern voivodships. A clearly higher proportion of the oldest persons (85+) in Europe was observed in 2004 in countries with the relatively high life expectancy, unlike in East-Central Europe. The

lowest shares of population aged 85 and over in the Małopolskie Voivodship (with the average of 0.9%) in 2002 were seen in gminas belonging in the southern poviats. Across the whole country, similar values were recorded in the north and western voivodships, while in Europe in Balkan countries.

As shown by forecasts for 2030, high proportions of the population aged 85 and over in the Małopolskie Voivodship should be expected in poviats surrounding the largest cities of the Małopolskie voivodship, in the north-west and some in the south. According to estimates for the entire country, such high proportions

should be seen in most of the voivodships. In Europe, particularly high shares are expected in southern, western and northern countries. The lowest share could be recorded in Małopolska in southern poviats (1.5–1.6%); in Poland – in northern and western voivodships. In Europe, remarkable differences should be still visible between its western and eastern parts.

7. Population according to the potential support index

The above trends give rise to questions concerning the economic and social situation of elderly persons in the future. A preliminary answer may be obtained through the application of the following measures – potential

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE (gminas and poviats)	
2004		2002			
Monaco	3.2	Podlaskie	1.1	Radziemice - rural (Proszowicki)	2.1
Sweden	2.4	Mazowieckie	1.1	Kozłów - rural (Miechowski)	2.1
Italy	2.0	Łódzkie	1.1	Raclawice - rural (Miechowski)	1.9
Albania	0.5	Warmińsko-Mazurskie	0.6	Uście Gorlickie - rural (Gorlicki)	0.5
Moldova	0.4	Zachodniopomorskie	0.6	Łabowa - rural (Nowosądecki)	0.5
Macedonia	0.4	Lubuskie	0.6	Czorsztyn - rural (Nowotarski)	0.5
2025		2030			
Italy	3.9	Śląskie	2.6	Tarnów - urban	3.1
Germany	3.9	Podlaskie	2.4	Kraków - urban	3.0
Greece	3.7	Mazowieckie	2.3	Nowy Sącz - urban	2.5
Macedonia	1.3	Lubuskie	1.9	Myślenick - rural	1.6
Moldova	0.9	Warmińsko-Mazurskie	1.8	Limanowski - rural	1.6
Albania	0.6	Wielkopolskie	1.8	Nowosądecki - rural	1.5

Tab. 4: The extreme values of the percentage of population aged 85 and over in Europe, Poland and Małopolskie voivodship.

Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE (gminas and poviats)	
1991		1988			
Albania	11.4	Zachodniopomorskie	9.1	Chełmek - urban (Oświęcimski)	12.7
Bosnia and Herzegovina	9.6	Warmińsko-Mazurskie	8.7	Skawina - urban (Krakowski)	11.0
Macedonia	8.4	Lubuskie	8.0	Olkusz - urban (Olkuski)	10.7
Norway	4.0	Lubelskie	5.5	Słaboszów - rural (Miechowski)	3.1
Sweden	3.6	Świętokrzyskie	5.4	Gręboszów - rural (Dąbrowski)	3.1
Monaco	2.9	Łódzkie	5.3	Raclawice - rural (Miechowski)	2.9
2004		2004			
Albania	7.9	Warmińsko-Mazurskie	6.2	Dobczyce - urban (Myślenicki)	7.9
Moldova	6.7	Lubuskie	6.2	Muszyna - urban (Nowosądecki)	7.7
Macedonia	6.5	Pomorskie	6.0	Alwernia - urban (Chrzanowski)	7.6
Greece	3.6	Lubelskie	4.8	Wietrzychowice - rural (Tarnowski)	3.2
Italy	3.5	Łódzkie	4.7	Książ Wielki - rural (Miechowski)	3.1
Monaco	2.8	Świętokrzyskie	4.7	Raclawice - rural (Miechowski)	3.1
2030		2030			
Moldova	4.4	Wielkopolskie	2.9	Nowosądecki - rural	3.4
Albania	3.7	Podkarpackie	2.9	Limanowski - rural	3.3
Macedonia	3.5	Małopolskie	2.9	Myślenicki - rural	3.1
Monaco	2.2	Dolnośląskie	2.5	Chrzanowski - rural	2.1
Germany	2.2	Opolskie	2.5	Kraków - urban	2.1
Andorra	2.0	Śląskie	2.4	Tarnów - urban	2.0

Tab. 5: The extreme values of the potential support ratio in Europe, Poland and Małopolskie voivodship

Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

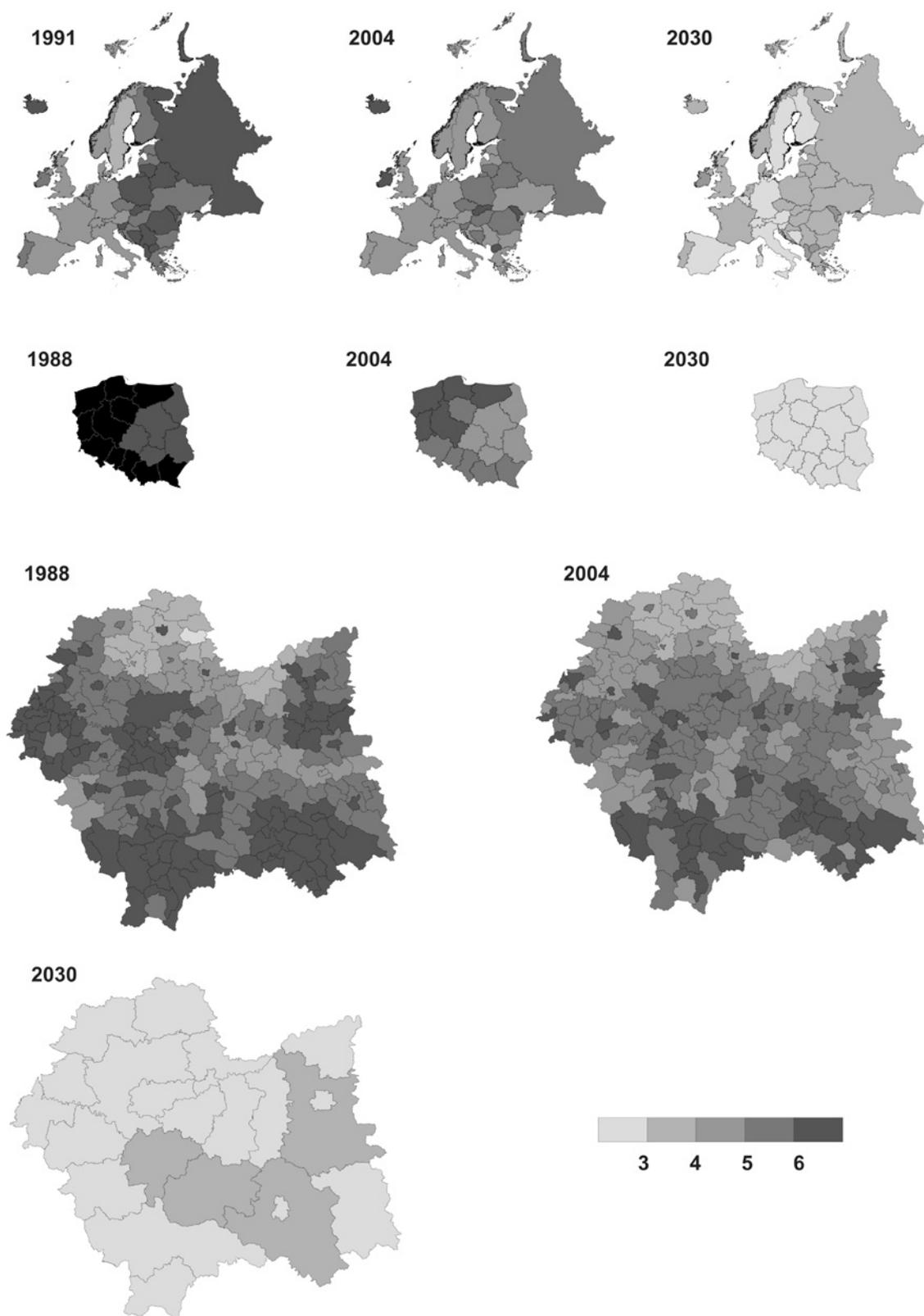


Fig. 7: The level and projections of the potential support ratio (W_{pw})
Source: own elaboration based on data from Eurostat and Central Statistical Office in Poland

support index and parent support ratio. The former shows the number of persons aged 15–64 per one person aged 65 and over. In theory, the values of this ratio can help assess the potential of the professionally active population expected to work for the benefit of retired persons. The situation in Poland and in some East-Central Europe countries is still relatively more favourable in this respect than in West European countries.

In the Małopolskie Voivodship in 1988 (Fig. 7), the most favourable situation occurred in southern and western towns and gminas as well as in suburban zones of the largest cities. The highest values of the region (with regional and national averages of 6.4 and 6.9 respectively) were recorded in towns (Tab. 5). Similar values for the same period were recorded exclusively in the northern and western Poland, while across Europe in Balkan countries.

The least favourable situation, i.e. the lowest proportion of persons considered to be at working age per a hypothetical retiree, occurred in the northern rural areas of the voivodship. Across the whole country, the lowest values were observed in central-eastern voivodships, while across Europe – in southern and northwestern countries. The situation changed significantly in 2004. Although Małopolska, seen within a similar territorial structure, i.e. divided into towns and villages, saw similar disparities in the potential support ratio, with an average of 6.4. The highest ratios across the whole country (with a national average of 5.4) were observed in northwestern voivodships, while in Europe, in central-eastern and southeastern countries. The least favourable situation in the Małopolskie Voivodship

in 2004 was registered again in rural gminas of the Miechowski Powiat in the north; across the country the situation was still the worst in central and eastern voivodships; while in Europe – again in southern and northwestern countries.

The noticeable changeability in the indicator values in years 1988–2004, as well as the forecasts, indicates the worsening of economic intergenerational relations. It is estimated that the 2030 values of the potential support ratio for the Małopolskie Voivodship at a powiat level will not exceed four professionally active persons per one retiree. The most favourable situation is expected to occur in southern poviats. In Poland (with an average of 2.7%), the situation should be relatively positive in the Podkarpackie, Wielkopolskie and Małopolskie voivodships, which will correspond to the values for Moldavia, Albania, Macedonia and Ireland.

The least favourable situation in the Małopolskie Voivodship could occur in the big city poviats. Across the whole country, the lowest values should be observed mainly in the Upper Silesia, while in Europe the disparities between east and west will become less distinguished.

8. Population according to the parent support ratio (W_{wm})

Another measure illustrating the situation of the elderly is the parent support ratio, which expresses the number of persons aged 85 and over per one person at the age of their children (50–64 years old), i.e. those who can provide direct support to their parents, in particular

EUROPE (countries)		POLAND (voivodships)		MAŁOPOLSKIE gminas and poviats)	
2004		2002			
Monaco	15.4	Podlaskie	7.4	Radziemice - rural (Proszowicki)	13.7
Sweden	12.2	Mazowieckie	6.5	Mędrzechów - rural (Dąbrowski)	13.4
Norway	11.4	Świętokrzyskie	6.5	Raławice - rural (Miechowski)	11.9
Slovakia	4.0	Lubuskie	4.0	Andrychów - urban (Wadowicki)	3.2
Moldova	3.0	Dolnośląskie	4.0	Jordanów - urban (Suski)	3.2
Macedonia	2.3	Zachodniopomorskie	3.6	Skawina - urban (Krakowski)	3.1
2030					
Germany	21.6	Podlaskie	11.8	Tarnów - urban	14.0
Switzerland	21.2	Śląskie	11.7	Kraków - urban	12.6
Sweden	20.4	Lubelskie	10.8	Nowy Sącz - urban	11.5
Macedonia	6.9	Warmińsko-Mazurskie	9.1	Myślenicki - rural	7.9
Belarus	6.7	Lubuskie	9.0	Myślenicki - rural	7.8
Russia	6.2	Wielkopolskie	8.4	Nowosądecki - rural	7.8

Tab. 6: The extreme values of the parent support ratio in Europe, Poland and Małopolskie voivodship
Source: own elaboration based on data from Eurostat, World Population Prospects 2006 and Central Statistical Office in Poland

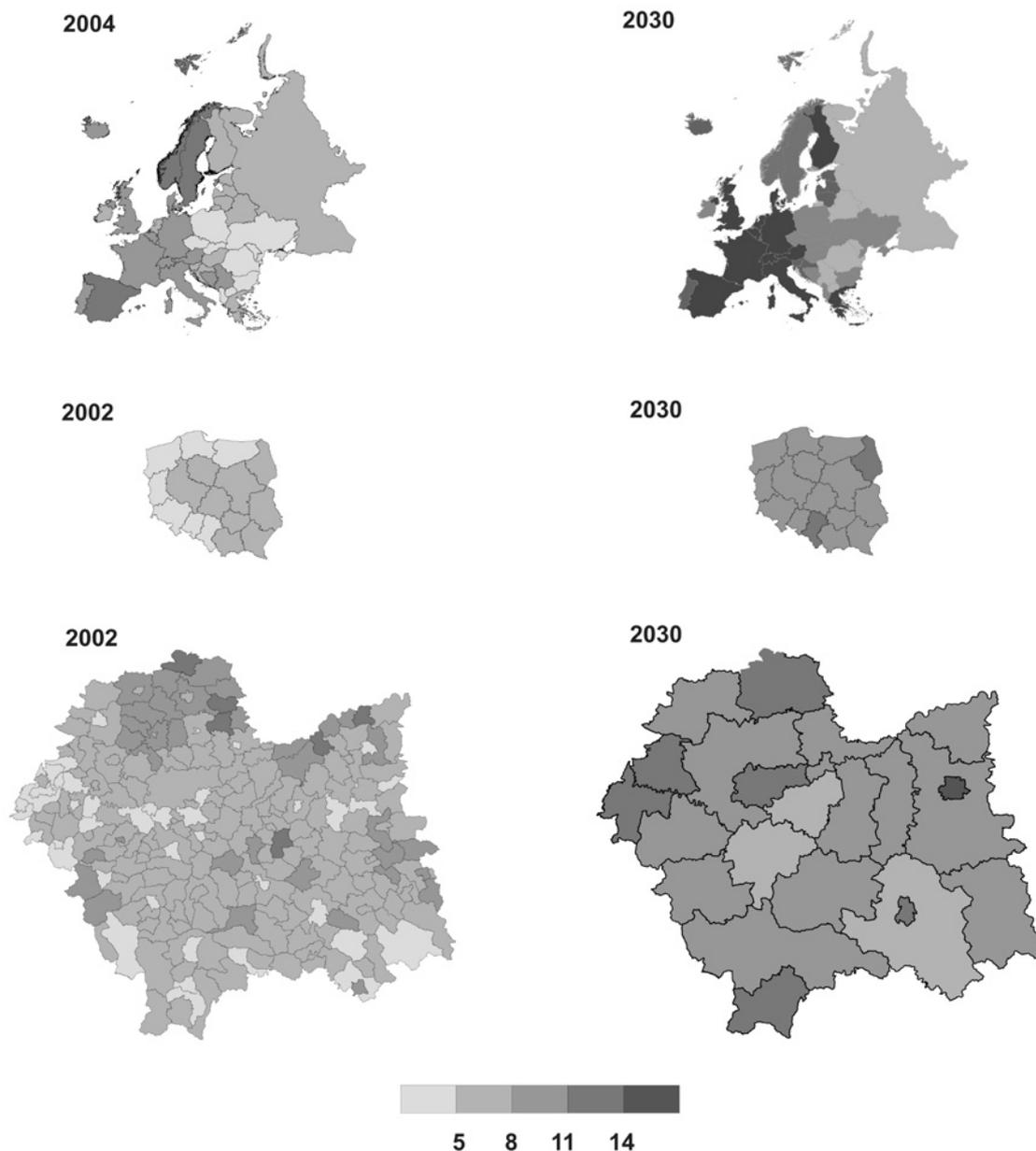


Fig. 8: The level and projections of the parent support ratio (W_{SD})
 Source: own elaboration based on data from Eurostat, World Population Prospects 2006 and Central Statistical Office in Poland

through taking direct care of them. The data available for 2002 suggest that the situation in the Małopolskie Voivodship in this respect was quite complex in terms of the territorial distribution (Fig. 8). Although most of gminas showing the highest indicator values were those located in the north of the voivodship, also the other parts of the voivodships showed extreme values (with respect to a regional average of 5.7). At a national level, voivodships that recorded values above the average (5.2%) in this respect included central-eastern regions. In Europe (2004), the highest values were registered in the part of the continent at a higher stage of economic development (Tab. 6). Lower indicator values were recorded in urban areas of the Małopolskie Voivodship, which corresponded to the result in the western part

of Poland. In Europe, a similar situation was seen in its eastern part.

According to the forecasts for 2030, the average indicator value for the Małopolskie Voivodship could rise to 10.2. This means that it will be higher in the major cities of the region. Compared to the rest of Poland, these values will correspond to values for the Podlaskie and Śląskie voivodships. Still they will be much lower as compared to the situation in Europe. The highest values should be recorded in 2030 in most EU-15 countries.

The projection shows that lower values of this ratio in the Małopolskie Voivodship in 2030 could occur

in southern poviats, while in Europe – in eastern countries, due to the relatively lower life expectancy.

9. Conclusions

The above analysis allows us to draw some general conclusions. In the nearest future, the Małopolskie Voivodship, seen in the context of the rest of Poland and Europe, is and will be one of the demographically youngest areas, which results not only from the relatively low proportions of persons aged 65+ and 85+. This does not mean that the level and rate of ageing in all parts of the region are relatively low. It must be remembered that, while in West European countries the population ageing has reached an advanced level and its pace is slowing down, the processes are only now gaining momentum in East European countries, including Poland. Thus, following the general national trend, the rural areas of the Małopolskie Voivodship, which traditionally have a large proportion of the elderly, will soon be joined by towns and cities of the region, which have been “protected” against old age by young immigrants.

How far and how dynamically the trends will proceed in Poland and in the Małopolskie Voivodship depends largely on the fertility rate among the echo generations of the post-war baby boomers. As recent studies showed, replacement migration is not a solution to offset population ageing (United Nations, 2000; K. Saczuk, 2003; J. Bijak et al., 2005). In Poland, at a local level, however, policy-makers should develop measures aimed at balancing the shortage of labour force resulting from the selective emigration of young people. Nonetheless, in the long run, the policies should aim at increasing fertility, by creating a family supportive and friendly environment for individual decisions concerning childbearing.

In view of the second demographic transition concept it must be concluded that a major cause of the pace of population ageing are fertility trends. At an international level, the slow-down of ageing in Western and Northern Europe is largely attributable to relatively higher fertility rates, moderately below the replacement level. This childbearing pattern has been achieved by the introduction of new social and economic policies aimed at providing greater support to families with children. Furthermore, the delayed births have been recuperated as women have reached their late twenties and thirties. In addition, the increasing size of immigrant populations with higher fertility rates has also played an important role in the observed rise in the TFR in some northwestern countries.

In Southern Europe and in German-speaking countries, the low levels of TFR resulted from the

postponement of births with a notably smaller recuperation among women at the age of thirty or more. In Central and Eastern Europe, including Poland, the early childbearing pattern was until the beginning of the 1990s replaced by the late pattern with a profound reduction of birth rates. In Poland, the overall number of births dropped by 37% between 1989 and 2003; however, a slight increase was observed in recent years. As a result, the former Eastern block countries, although with the lowest level of ageing so far, have experienced a rapid increase in the ageing dynamics. The reason of such a pronounced shift in family formation has been explained by socio-economic crises connected with transition from central planned to free market economy, as well as by the diffusion of western norms, values and attitudes.

The former includes a difficult situation on the labour market and increased unemployment, a decline in social functions and child-related services provided by the state, the rapid increase of participation in tertiary level of education, high costs of housing, as well as the availability of a range of career opportunities, consumer attractions and leisure activities (Kotowska et al., 2008). The latter shows in the late formation of marriage union and its increasing instability, in the substantial increase of divorce rates and out-of-wedlock births, and in the increased use of modern contraception.

At national and local level, the spatial variation of population ageing measures was strongly connected with the birth rates and migration, both past and present. Northern and western voivodships have been relatively younger so far because of post-war immigration of young people while the eastern rural regions have shown high levels of ageing due to high emigration to urban areas and abroad. The disparities in fertility rates apart from urban/rural division resulted also from the distribution of local ethnic groups, i.e. the Kashubians in the north and highlanders in the south of the Małopolskie voivodship recorded high fertility rates which contributed to low ageing levels. Underlying causes of the rapid ageing in urban areas in recent and projected years include a decline of migration rates and shifts in the dominant direction of population movements from rural-urban to urban-rural, especially to suburban zones.

General trends related to demographic ageing translate into a dramatic change in the situation related to economic security as the level of public pensions expenditures is increasing (Council of European Union, 2003; European Commission, 2006).

An urgent policy challenge in Europe is to reform the pay-as-you-go pension systems that should be replaced

with solutions based on individual savings throughout the working life rather than on generation transfer. Poland, which is working its way up, may have serious problems facing the challenges of retirement security, namely in view of the incoming retirement of baby boomers and the high emigration rates among young people. The situation is likely to affect the oldest citizens, i.e. those aged 85 and over, whose proportion will be rising due to the increasing life expectancy. Despite the traditionally strong bonds between generations in Poland and the provision of care for the elderly by their children, we can increasingly witness a departure from the traditional family

behaviour, esp. towards the infirm and ill, for which Poland, unlike developed countries, is not suitably prepared either in terms of infrastructure or economy (European Foundation for the Improvement of Living and Working Conditions, 2005; Hryniewicz, 2003; Krzyszkowski, 2006).

In view of the above, it can be seen that the inevitable process of population ageing involves a number of risks and challenges both for the national and local government, which have to face these problems and take suitable steps in due course.

References:

- BIJAK J., KUPISZEWSKA D., KUPISZEWSKI M., SACZUK K. (2005): Impact of international migration on population dynamics and labour force resources in Europe.
- CASELLI G., VALLIN J., (1990): Mortality and population ageing. In: *European journal of population*, Vol. 6, p. 1–25.
- CEFMR Working Paper 1/2005, Warsaw, 78 pp.
- CENTRAL STATISTICAL OFFICE, Warsaw, www.stat.gov.pl.
- CLARKE, J. I. (1965): *Population geography*. Pergamon Press, Oxford, 164 pp.
- COUNCIL OF THE EUROPEAN UNION (2003): Joint report by the Commission and the Council on adequate and sustainable pensions, 7165/03, Brussels.
- DŁUGOSZ, Z. (1996): Zróżnicowanie struktury wieku na świecie a metody jej klasyfikacji, *Przegląd Geograficzny*, Vol. 68, No. 1–2, p. 151–165.
- DŁUGOSZ, Z., KUREK, S. (2006): Demographic ageing of European Union countries. In: Komornicki, T., Czapiewski, K. [eds.]: *Regional periphery in Central and Eastern Europe*, Europa XXI, 15, Polish Academy of Sciences, Stanisław Leszczycki Institute of Geography and Spatial Organization Centre for European Studies, Polish Geographical Society, Warszawa, p. 185–198.
- EUROPEAN COMMISSION (2006): Adequate and sustainable pensions, Synthesis Report, http://ec.europa.eu/employment_social/spsi/docs/social_protection/2006/rapport_pensions_final_en.pdf.
- EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS (2005): Employment in social care in Europe, <http://www.eurofound.europa.eu/pubdocs/2005/125/en/1/ef05125en.pdf>.
- EUROSTAT, Population and Social Conditions, <http://epp.eurostat.ec.europa.eu>.
- GOLINI, A. (1997): Demographic trends and ageing in Europe. Prospects, problems and policies, *Genus*, Vol. 53, No. 3–4, p. 33–74.
- GRUNDY, E. (1996): Population ageing in Europe. In: COLEMAN D., [ed.], *Europe's population in the 1990s*. New York, Oxford University Press, p. 267–296.
- HRYNKIEWICZ, J. (2003): Polityka społeczna wobec procesu starzenia się ludności. In: Kowaleski J. T., Pietruszek M [eds.], *Wybrane problemy współczesnej demografii*, p. 83–118.
- KINSELLA, K., PHILLIPS, D. R. (2005): Global aging: the challenge of success. *Population bulletin*, Vol. 60, No. 1, p. 3–40.
- KOMORNICKI, T., CZAPIEWSKI, K. [eds.] (2005): *Regional periphery in Central and Eastern Europe*. Europa XXI, Vol. 15, Polish Academy of Sciences, Stanisław Leszczycki Institute of Geography and Spatial Organization Centre for European Studies, Polish Geographical Society, Warszawa, p. 185–198.
- KOTOWSKA, I. (1999): Przemiany demograficzne w Polsce w latach 90. w świetle koncepcji drugiego przejścia demograficznego. *Monografie i Opracowania*, Vol. 461, Szkoła Główna Handlowa w Warszawie.
- KOTOWSKA, I., JÓŹWIĄK, J., MATYSIAK A., BARANOWSKA A. (2008): Poland: Fertility decline as a response to profound societal and labour market changes? *Demographic Research*, Vol. 19, No. 22, p. 795–854, [on-line] <http://www.demographic-research.org/Volumes/Vol19/22/>.
- KRZYSZKOWSKI, J. (2006): Usługi opiekuńcze dla ludzi starych w miejscu zamieszkania w Polsce I innych krajach UE. In: Kowaleski J. T., Szukalski P. [eds.]: *Starość i starzenie się jako doświadczenie jednostek i zbiorowości ludzkich*, Łódź, p. 150–155.

- KUREK, S. (2003): The spatial distribution of population ageing in Poland in the years 1988-2001, *Bulletin of Geography* No. 2, UMK Toruń, p. 65–76.
- KUREK S. (2004): The population ageing process against vital statistical changes in Polish towns, *Bulletin of Geography* No. 3, UMK Toruń, p. 83–96.
- LESTHAEGHE, R., (1995): The second demographic transition - An interpretation. In: Mason, Karen O., Jensen, An-Magritt [eds.]: *Gender and family change in industrial countries*. Oxford, Clarendon Press: p. 17–62.
- LESTHAEGHE, R., (2000): Europe's demographic issues: fertility, household formation and replacement migration. In: Working paper, United Nations expert group meeting on Policy responses to population ageing and population decline. New York, 16–18 October 2000. New York: United Nations.
- PRESTON, S. H., HIMES C., EGGERS M., (1989): Demographic conditions responsible for population ageing. *Demography*, Vol. 26, No. 4, p. 691–703.
- ROSSET, E. (1959): Proces starzenia się ludności. *Studium Demograficzne*, PWN, Warszawa, p. 763.
- ROWLAND, D. T. (2003): *Demographic methods and concepts*. Oxford University Press, New York, 546 pp.
- SACZUK, K. (2003): Development and critique of the concept of replacement migration. CEFMR Working Paper 4/2003, Warszawa, 25 pp.
- SUNDBÄRG, G. (1899): Sur la répartition par âge et sur les taux de la mortalité, *Bulletin de l'Institut International de Statistique*, Vol.12, p. 89–94.
- UNITED NATIONS (2000): Replacement migration: is it a solution to declining and ageing populations? United Nations Population Division, New York.
- UNITED NATIONS (2006): World population prospects: The 2006 revision, population division. Department of Economic and Social Affairs, <http://www.un.org/esa/population/publications/wpp2006/wpp2006.htm>.
- VAN DE KAA, D. J., (1987): Europe's second demographic transition. In: *Population Bulletin*, Vol. 42, No. 1, p. 1–59.
- VAN DE KAA, D. J., (1999): Europe and its population: the long view. In: van de Kaa, D. J., Leridon, H., Gesano, G., Okólski M. [eds.]: *European populations: Unity in diversity*. Dordrecht etc., Kluwer Academic Publishers, p. 1–194.
- VAN DE KAA, D. J., (2003): The idea of a second demographic transition in industrialized countries. In: *The Japanese Journal of Population*, Vol. 1, No. 1, p. 1–34. http://www.ipss.go.jp/webj-ad/WebJournal.files/population/2003_4/Kaa.pdf.

Authors' addresses:

Prof. dr. hab. Zbigniew DŁUGOSZ
Pedagogical University of Cracow, Institute of Geography,
ul. Podchorążych 2, 30-084 Kraków, Poland
e-mail: zdlugosz@ap.krakow.pl

Dr. Sławomir KUREK
Pedagogical University of Cracow, Institute of Geography,
ul. Podchorążych 2, 30-084 Kraków, Poland
e-mail: sgkurek@ap.krakow.pl

BALANCING SOCIO-ECONOMIC DEMANDS AND ENVIRONMENTAL PRESSURES: MISSION IMPOSSIBLE?

Katja VINTAR MALLY

Abstract

The majority of European countries are quite successful in achieving a high level of human development in terms of longevity, education, and income. However, the consumption of natural resources and ecological services in Europe is disproportionately high and causes not only local and regional, but also global environmental problems. Consequently, the measurement of development achievements should include not only economic and social “benefits”, but also environmental “costs”. This article explores linkages between the socio-economic development, on the one hand, and its accompanying environmental pressures on the other hand. To this end, a new alternative measure of overall development is introduced – the development balance index. Its calculation combines the human development index, quantifying socio-economic achievements, and the ecological footprint, evaluating the environmental pressures. The development balance index enables researchers to evaluate the level of the general balance of economic, social, and environmental development. Subsequently it strongly modifies our deep-rooted images of the overall development and general well-being in the world.

Shrnutí

Vyrovňávání socio-ekonomických požadavků a environmentálních tlaků: nemožný úkol?

Většina evropských zemí je v dosahování vysoké úrovně lidského rozvoje poměrně úspěšná, což potvrzují ukazatele jako jsou délka života, vzdělání nebo příjem. Nicméně evropská spotřeba přírodních zdrojů a ekologické služby jsou nepřiměřeně vysoké a způsobují nejen lokální a regionální, ale také globální problémy v životním prostředí. V důsledku toho by měření rozvojových úspěchů mělo kromě ekonomických a sociálních “zisků” zahrnovat také environmentální “náklady”. Tento příspěvek proto zkoumá vazby mezi socio-ekonomickým rozvojem na straně jedné a s ním spojené environmentální tlaky na straně druhé. Za tímto účelem představuje autorka nový alternativní ukazatel k měření celkového rozvoje – index vyváženého rozvoje. Jeho výpočet kombinuje index lidského rozvoje, kvantifikované socioekonomické zisky a ekologickou stopu (ta hodnotí environmentální tlaky). Index vyváženého rozvoje nám umožňuje hodnotit úroveň obecné vyváženosti mezi ekonomickým, sociálním a environmentálním rozvojem. Dále pak výrazně modifikuje naši hluboce zakořeněnou představu o celkovém rozvoji a všeobecném blahobytu na světě.

Key words: *sustainable development, methods, ecological footprint, human development, development balance index*

1. Introduction

In the last decades, the growing evidence of environmental degradation and (un)natural disasters have contributed to the determination, that sustainable development has to become a new global, regional, and local development paradigm. Sustainable development as a phrase and paradigm was first discussed by the World Conservation Union in its World Conservation Strategy (1980). Although the document focused on environmental issues, it also recognized the interrelationship between the environment, social concerns and economic activities. However, only twenty years ago, due to the Brundtland Commission (i.e. World

Commission on Environment and Development) report Our common future (1987), the emphasis on the human side of sustainable development became equal to the emphasis on environmental and economic sustainability (Hardi and Barg, 1997). Over the years, its definition of sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Our common future, 1987) remained the most popular and widespread description, often being misused and criticized, though (see Greer-Wooten, 2004, for a brief review of critics). The Brundtland definition not only called for an environmentally sound economic development within the planets ecological limits but

introduced also very important issues of intra- and inter-generational equity (Towards..., 2001; Moran et al., 2008).

Therefore, modern development strategies in Europe and worldwide should strive towards decoupling environmental degradation and resource consumption from economic and social development (Environment 2010..., 2001; Plut, 2005; Vintar Mally, 2006a). Sustainable development – as an overarching objective of the European Union set out in the Treaty – aims at the constant improvement of the quality of life and well-being for present and future generations (Renewed EU Sustainable..., 2006). Following the commitments of the 1992 UN Conference on Environment and Development in Rio de Janeiro and the adoption of the Agenda 21 (1992), the European Union included sustainable development in the Treaty of Amsterdam (The Treaty..., 1997; Kako resno..., 2000). Consequently, sustainable development became at least formally the fundamental objective of the EU.

At the Göteborg summit in June 2001 the European Council finally adopted the first EU Sustainable Development Strategy (A Sustainable Europe..., 2001). However, unsustainable trends in the past years and the enlargement of the European Union contributed to the decision of issuing a more ambitious and renewed Sustainable Development Strategy in June 2006 (Renewed EU Sustainable..., 2006).

Implementing sustainable development strategies includes also monitoring and measuring the progress made, which calls for the development of suitable indicators. The later was also highlighted in the conclusions of the Rio de Janeiro conference and Johannesburg summit (i.e. in Agenda 21 (1992) and in Plan of Implementation (2002)) as well as in both EU sustainable development strategies (see A Sustainable Europe, 2001 and Renewed EU Sustainable Development Strategy, 2006). Indicators of sustainable development serve as tools for translating the concept into practical terms, defining concrete development goals and measures, and as an orientation for making political decisions and evaluating the progress of achieving the goals. The majority of contemporary sustainability researches use numerous quantitative and sometimes also qualitative indicators in an ambition to encompass and “measure” relevant sustainability issues.

In October 2008 the Compendium of Sustainable Development Indicator Initiatives (according to Pinter et al. (2005) probably the most ambitious database to date to keep track of the sustainable development indicators efforts) showed 840 entries

(Compendium..., 2008). It is not the purpose of this article to present and evaluate different initiatives for tracking progress at various spatial levels. However, among those of international importance, two sets of sustainable development indicators should be mentioned. In 1996, United Nations Commission for Sustainable Development developed a set of 132 indicators (Indicators..., 1997), which were tested around the world and finally reduced to 58 indicators (Indicators..., 2001; Pinter et al., 2005). In European Union, a special task force was established in 2001 in order to develop its own set of indicators. The final result is a list of 155 indicators classified in three levels according to main objectives and measures. Unfortunately, statistical calculations for many of the indicators are still not available (Measuring progress..., 2005; Final..., 2005).

Besides the growing number of indicator initiatives, there are also numerous attempts to create aggregate measures of different aspects of sustainability. According to Pinter, Hardi and Bartelmus (2005) some of the most prominent are human development index of the United Nations Development Programme (UNDP), the environmental sustainability index and environmental performance index reported by the World Economic Forum. While human development index includes only social and economic indicators (Human..., 2005), the other two indices aggregate more than 20 environmental indicators (see for example, 2005 Environmental Sustainability Index, 2005; 2008 Environmental Performance Index, 2008). Parallel to these initiatives, there is still growing interest in producing “green gross domestic product” that would take into account the cost of pollution and natural capital depletion (Pinter et al., 2005). Already in the 1990s some unsuccessful attempts to include environmental concerns into human development calculation were recorded (Atkinson and Hamilton, 1996).

Lately, the sustainable human development index was developed by Constantini and Monni (2007), additionally using four representative environmental indicators, replacing gross domestic product by green net national product, and modifying normalization criteria. However, those four environmental indicators cover only some selected environmental pressures. Upgrading human development index by the environmental dimension is also the key idea of this article. In comparison to sustainable human development index, only one additional indicator (i.e. ecological footprint as a synthetic evaluation of total environmental pressures) is used instead of numerous partial environmental indicators and it does not affect the normalization. We are fully aware of the fact that

this is only one of many alternative indices. It links human development index and ecological footprint, which represent widely accepted metrics for ecological sustainability and human development (see discussion in Moran et al., 2008).

In praxis, the concept of sustainable development is reflected in the search for possibilities of socio-economic development within the existing environmental limitations or in a form of coincident consideration and weighing of economic, social and environmental aspects of development (Vintar Mally, 2006b). Accordingly, the article investigates theoretical and empirical relation between socio-economic development and environmental pressures in the European countries. The research is based on the idea of minimum requirements for sustainable development worldwide, challenging our society to effectively balance socio-economic demands and environmental pressures, which is from the viewpoint of current way of life still often considered to be mission impossible.

2. Theoretical and methodological approach

Socio-economic and environmental aspects of development are closely interrelated and interdependent, and should therefore be treated within a single framework (Vintar Mally, 2006a). The sustainable development paradigm, as a theoretical and methodological basis of our research, offers possibilities of bringing these different development aspects to a common denominator. As elaborated above, developing and improving sustainable development indicators has already come a long way. Nevertheless, there is still no consensus on widely acceptable aggregation methods. Analyzing individual economic, social and environmental indicators, examining past and predicting future trends, and searching for the linkages

between different variables are indeed necessary, but the aggregation of good quality indicators is crucial in providing clear and politically strong messages.

The presented methodological approach consists of two levels. At the first level, the research comprises the empirical analysis of some representative synthetic indicators, covering all three basic development areas: economic, social, and environmental. At the second level, an alternative development index – so called development balance index – is presented, which was developed by the author in order to upgrade already well established human development index by an environmental aspect (Fig. 1).

The human development index was developed in the 1990s and is yearly published in so called Human Development Report by UNDP. This index combines three different socio-economic indicators, covering average life expectancy, education performance (i.e. adult literacy rate and school enrollment), and gross domestic product per capita (Human Development..., 2005). The development balance index upgrades the above mentioned social and economic dimensions by environmental dimension. To this end, the ecological footprint is used, presently being one of the leading environmental indicators (Bossel, 1999; Hawken et al., 2004; Wheeler, 2004). Ecological footprint concept was initially developed in 1990s by Mathis Wackernagel and his colleagues (see Rees, 1992; Wackernagel and Rees, 1996). Every two years new calculations are published in so called Living Planet Report by World Wildlife Fund. Ecological footprint measures the extent to which individual countries are using global natural resources, especially when compared to the biocapacity (as a kind of carrying capacity) of their own ecosystems (Living Planet..., 2006; Moran et al., 2008). Consequently,

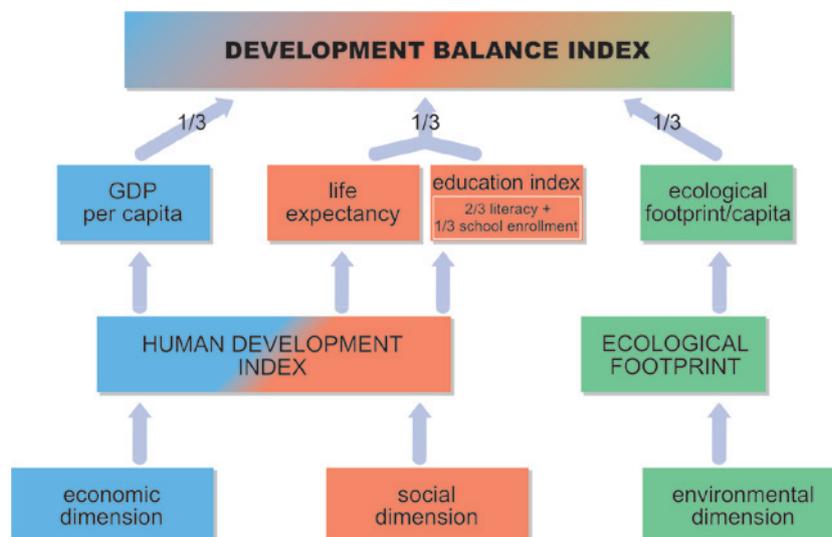


Fig. 1: Conceptual framework for the calculation of development balance index

the development balance index (Fig. 1) comprises the achievements of socio-economic development on the one hand and their accompanying environmental pressures on the other. This alternative index attempts to evaluate the level of general balance of development in each country or/and region, strongly modifying our deep-rooted images of overall development and general well-being in the world (Vintar Mally, 2006b).

This article reviews calculations for all countries of the world with available data for the ecological footprint and human development indices. Further in-depth discussion, however, focuses on development characteristics of 40 European countries (twenty-seven member states of the European Union and their neighbouring countries).

3. Socio-economic development versus environment

Traditionally, progress has been measured by gross domestic product (GDP) and some other narrow economic and social indicators. Since the beginning of the 1990s, the human development index has won recognition as the leading socio-economic measure, surpassing the traditional understanding of both economic and social development (Vintar Mally, 2006b). The human development index focuses on its three measurable dimensions: living a long and

healthy life (as measured by life expectancy at birth), being educated (as measured by adult literacy rate and combined primary, secondary, and tertiary enrollment ratio), and having a decent standard of living (as measured by GDP per capita in purchasing power parity terms – PPP) (Human Development..., 2005). Although the human development index has many limitations and deficiencies (for example, it does not include aspects of political freedom, social safety and justice, the quality of the living environment, etc.), it is an important orientation for making political decisions and monitoring the progress in the achievement of development goals.

The values of the human development index in high income European countries range from 0.963 (Norway) to 0.867 (Malta) and in middle income European countries from 0.874 (Czech Republic) to 0.766 (Ukraine). The worst ranked European country is Moldova (0.671) due to its low incomes and unfavourable social conditions. Nevertheless, the majority of European countries are quite successful in achieving a high level of human development (Fig. 2). Although the transition countries experienced a drop in the human development index in the 1990s, their indices improved in recent years. Compared to other world countries with similar incomes, European transition countries demonstrate better health and education opportunities. Human development

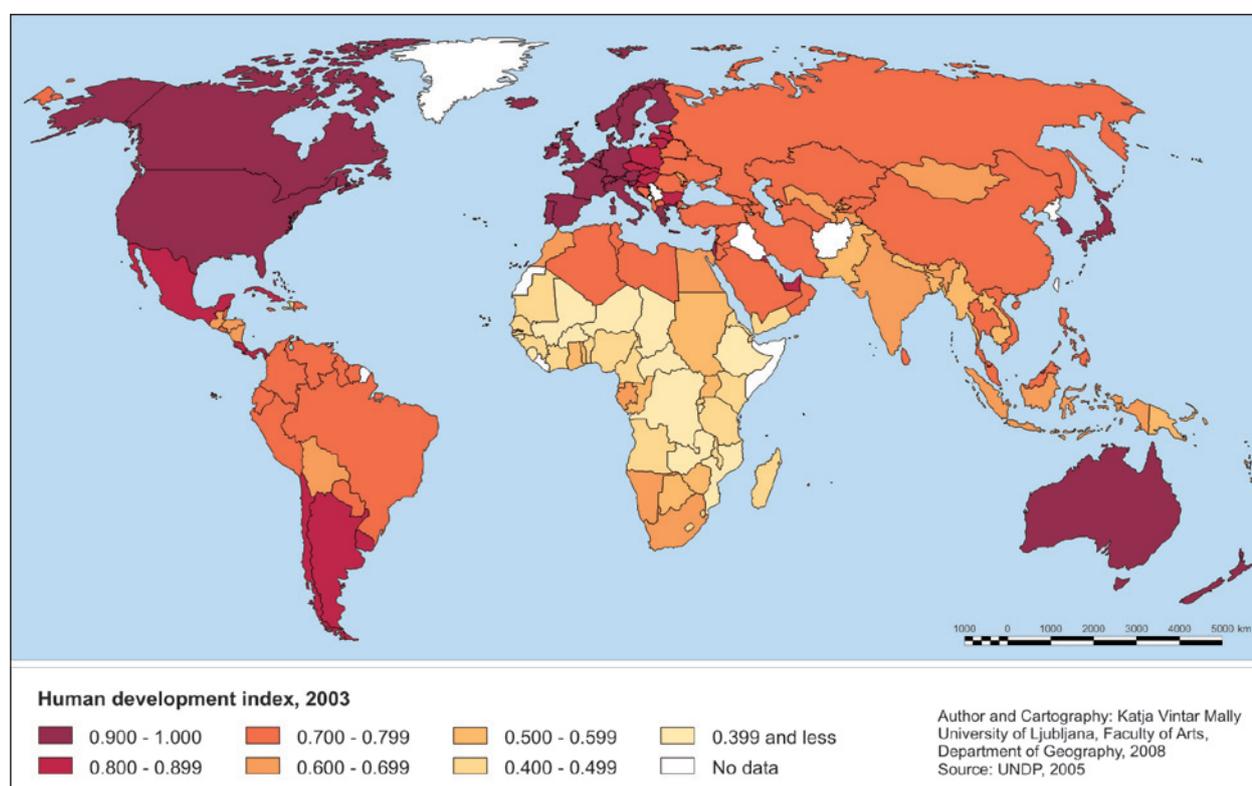


Fig. 2: Human development index, 2003
Source: Human development ..., 2005

index reflects economic and social disparities among countries of the world: while the average value in high income OECD countries reaches 0.911, the average value in Sub-Saharan Africa amounts to 0.515 (24 worst ranked countries are all in Sub-Saharan Africa and Niger has the lowest value of human development index – 0.281) (Human Development..., 2005).

The evaluation of socio-economic achievements necessarily raises a question of their side effects, especially environmental ones. The most synthetic evaluation of total environmental pressures of a given country or area is presently obtained by the concept of the ecological footprint (expressed in global hectares per capita¹). This aggregate measure examines the ecological capacity required to support a country's consumption of products and even entire lifestyles (Hawken et al., 2004). It presents the total area required to produce the food and fibre that each country consumes, the area needed to absorb the

waste from a country's energy consumption, and the space occupied by its infrastructure (Kitzes et al, 2007; Moran et al., 2008).

The natural resources and ecological services that originate from all over the world and are being used in a particular area, are added up in the footprint and divided by the number of its inhabitants (the area required is expressed in global hectares per capita¹) (Living Planet..., 2004). The ecological footprint is still being methodologically upgraded by Global Footprint Network and its partner organizations² (Moran et al., 2008). However, its current calculations fail to include some significant aspects of resource consumption and waste generation (for example, the land use intensity and freshwater withdrawals, which are becoming strategically more and more important).

The average ecological footprint of 25 European Union member states in 2003 (Fig. 3) was 4.8 global

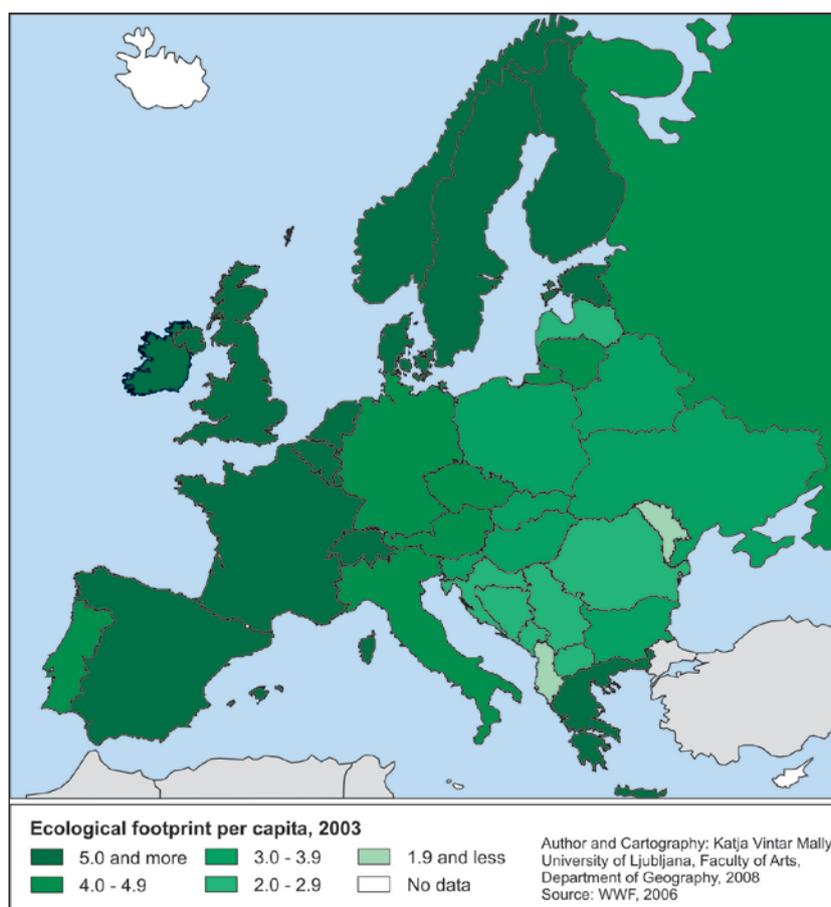


Fig. 3: Ecological footprint of European countries, 2003

¹ global hectares (gha) are hectares with world-average biological productivity (1 hectare = 2.47 acres). Footprint calculations use yield factors in order to take into account national differences in biological productivity and equivalence factors to take into account differences in world average productivity among land types (Living Planet..., 2006). The ecological footprint as well as biocapacity is expressed in global hectares per person.

² see <http://www.footprintnetwork.org>

Country	GDP		life expectancy		education index	ecological footprint		HDI*		DBI**	
	PPP US\$ per capita	index	years	index		gha per capita	index	index	world rank	index	world rank
Albania	4,584	0.638	73.8	0.813	0.888	1.4	0.860	0.780	72	0.783	30
Austria	30,094	0.952	79.0	0.900	0.956	4.9	0.510	0.936	17	0.797	14
Belarus	6,052	0.685	68.1	0.718	0.955	3.3	0.670	0.786	67	0.730	71
Belgium	28,335	0.942	78.9	0.898	0.994	5.6	0.440	0.945	9	0.776	37
Bosnia and Herzegovina	5,967	0.682	74.2	0.820	0.856	2.3	0.770	0.786	68	0.763	48
Bulgaria	7,731	0.726	72.2	0.787	0.912	3.1	0.690	0.808	55	0.755	56
Croatia	11,080	0.786	75.0	0.833	0.904	2.9	0.710	0.841	45	0.788	22
Cyprus	18,776	0.874	78.6	0.893	0.906	...	...	0.891	29	...	...
Czech Republic	16,357	0.851	75.6	0.843	0.928	4.9	0.510	0.874	31	0.749	62
Denmark	31,465	0.960	77.2	0.870	0.993	5.8	0.420	0.941	14	0.770	42
Estonia	13,539	0.819	71.3	0.772	0.968	6.5	0.350	0.853	38	0.680	95
Finland	27,619	0.938	78.5	0.892	0.993	7.6	0.240	0.941	13	0.707	85
France	27,677	0.939	79.5	0.908	0.967	5.6	0.440	0.938	16	0.772	39
Germany	27,756	0.939	78.7	0.895	0.956	4.5	0.550	0.930	20	0.805	9
Greece	19,954	0.884	78.3	0.888	0.964	5.0	0.500	0.912	24	0.770	43
Hungary	14,584	0.832	72.7	0.795	0.959	3.5	0.650	0.862	35	0.786	26
Iceland	31,243	0.959	80.7	0.928	0.981	...	...	0.956	2	...	...
Ireland	37,738	0.990	77.7	0.878	0.969	5.0	0.500	0.946	8	0.805	10
Italy	27,119	0.935	80.1	0.918	0.949	4.2	0.580	0.934	18	0.816	4
Latvia	10,270	0.773	71.6	0.777	0.958	2.6	0.740	0.836	48	0.794	18
Lithuania	11,702	0.795	72.3	0.788	0.973	4.4	0.560	0.852	39	0.745	63
Luxembourg	62,298	1.000	78.5	0.892	0.955	5.6	0.440	0.949	4	0.788	23
Macedonia	6,794	0.704	73.8	0.813	0.874	2.3	0.770	0.797	59	0.773	38
Malta	17,633	0.863	78.4	0.890	0.848	...	...	0.867	32	...	...
Moldova	1,510	0.453	67.7	0.712	0.848	1.3	0.870	0.671	115	0.701	89
Montenegro	...	...	...	...	...	2,3	0,770	...	...	...	...
Netherlands	29,371	0.948	78.4	0.890	0.991	4.4	0.560	0.943	12	0.816	3
Norway	37,670	0.990	79.4	0.907	0.992	5.8	0.420	0.963	1	0.786	25
Poland	11,379	0.790	74.3	0.822	0.962	3.3	0.670	0.858	36	0.784	29
Portugal	18,126	0.868	77.2	0.870	0.974	4.2	0.580	0.904	27	0.790	20
Romania	7,277	0.716	71.3	0.772	0.889	2.4	0.760	0.792	64	0.769	44
Russia	9,230	0.755	65.3	0.672	0.958	4.4	0.560	0.795	62	0.710	84
Serbia	...	...	...	...	...	2,3	0,770	...	...	...	...
Slovakia	13,494	0.819	74.0	0.817	0.912	3.2	0.680	0.849	42	0.788	24
Slovenia	19,150	0.877	76.4	0.857	0.978	3.4	0.660	0.904	26	0.818	2
Spain	22,391	0.903	79.5	0.908	0.973	5.4	0.460	0.928	21	0.768	45
Sweden	26,750	0.933	80.2	0.920	0.994	6.1	0.390	0.949	6	0.760	52
Switzerland	30,552	0.955	80.5	0.925	0.961	5.1	0.490	0.947	7	0.796	16
Ukraine	5,491	0.669	66.1	0.685	0.944	3.2	0.680	0.766	78	0.721	77
United Kingdom	27,147	0.935	78.4	0.890	0.992	5.6	0.440	0.939	15	0.772	40

Tab. 1: Key socio-economic and environmental indicators of European countries in 2003

* Human development index – data and calculations available for 177 countries of the world

** Development balance index – data and calculations available for 142 countries of the world

'...' data not available

Sources: UNDP, 2005; WWF, 2006; author's calculations

hectares per capita, which is more than double their own biological capacity (2.2 global hectares per capita). According to the World Wildlife Fund (Europe 2005..., 2005), the European Union with merely 7% of the world population, uses 17% of the biosphere's regenerative capacity. Another 15 European countries (Tab. 1) use on average 3.8 global hectares per capita (their biocapacity amounts to 4.6 global hectares per capita), also far exceeding the world average of 2.2 global hectares per capita. Only Finland, Latvia, Sweden, Russia, and Norway have some ecological reserves, while the ecological footprint in other European countries exceeds their biological capacity by 0.1 (Belarus, Romania) to 4.4 gha per capita (Luxembourg, Belgium) (Living Planet..., 2006). In other words, the imports of natural resources and ecological services from other parts of the world, particularly from developing countries, enable Europeans to lead their wasteful ways of life.

It is clear that the higher the standard of living, the higher the accompanying environmental pressures. This hypothesis is clearly confirmed by the scatter graphs, exploring the correlation between the ecological footprint and gross domestic product per capita (Fig. 4) on the one hand, and between the ecological footprint and the human development index on the other hand (Fig. 5). The correlation is positive and large, with Pearson correlation coefficients reaching 0.705 in the first case and 0.800 in the second case (with correlation being significant at the 0.01 level). The actual correlation between the ecological footprint and gross domestic product per capita is probably even larger due to the fact that both variables have a skew in the opposite direction. In both cases, the calculations are based on 35 European countries with adequate data. They once again confirm that growing gross domestic product is still one of the most important driving forces behind environmental pressures. The correlations between social indicators and the ecological footprint strongly suggest that social progress has similarly important and direct effects on the extent of environmental pressures.

The comparison of the human development index and the ecological footprint of European countries (Fig. 6) clearly demonstrates how their development path leads away from sustainability goals (the idea of such comparison was first introduced in the Living Planet Report 2004 and further developed in their

Living Planet Report 2006 by the World Wildlife Fund). Minimum criteria for sustainability (upper right quadrant) are satisfied if both of the following conditions are met:

- a) the country's ecological footprint is lower than 1.8 global hectares per capita, which is the average biocapacity available per person on the planet and
- b) the country's human development index is higher than 0.800, which is the threshold for high human development.

No European country so far has met both criteria; moreover, they seem to move in the opposite direction. Changes in the ecological footprint and the human development index from 1975 to 2003 clearly illustrate this trend³. EU-15 countries (data are not available for Belgium, Luxembourg, and Germany), Switzerland, and Norway substantially increased their quality of life in terms of human development indices. In the same period, their resource use growth was four to five times faster in terms of ecological footprint calculations. High income European countries (i.e., EU-15 countries, Cyprus, Iceland, Malta, Norway, Slovenia, and Switzerland) achieve on average a much higher level of human development and use also a noticeably higher share of the global biocapacity. The majority of transition countries (with the exception of Slovenia as a high income country and Moldova as a low income country, all transition countries are also middle income countries) experienced a significant drop in the ecological footprint, especially due to economic difficulties and restructuring in the 1990s. With the economic recovery and growth, these countries are again using more energy and materials, failing to decouple economic growth from resource consumption and following the example of high income countries.

Following the arguments presented above, it can be concluded that in the European countries the socio-economic welfare is being achieved at the expense of environmental deterioration. Consequently, the measurement of development achievements should include not only economic and social "benefits", but also environmental "costs".

Therefore, the development balance index as an alternative index suggests how to combine economic, social and environmental aspects of development in a

³ author's calculations in this paragraph are based on datasets published in Living Planet Report 2006 (2006) and Human Development Report 2005 (2005).

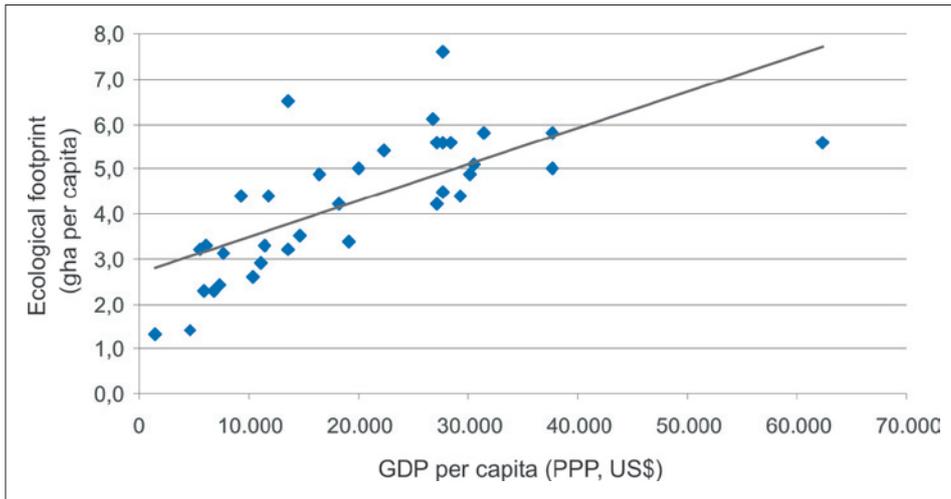


Fig. 4: Relationship between GDP per capita and ecological footprint per capita in European countries, 2003

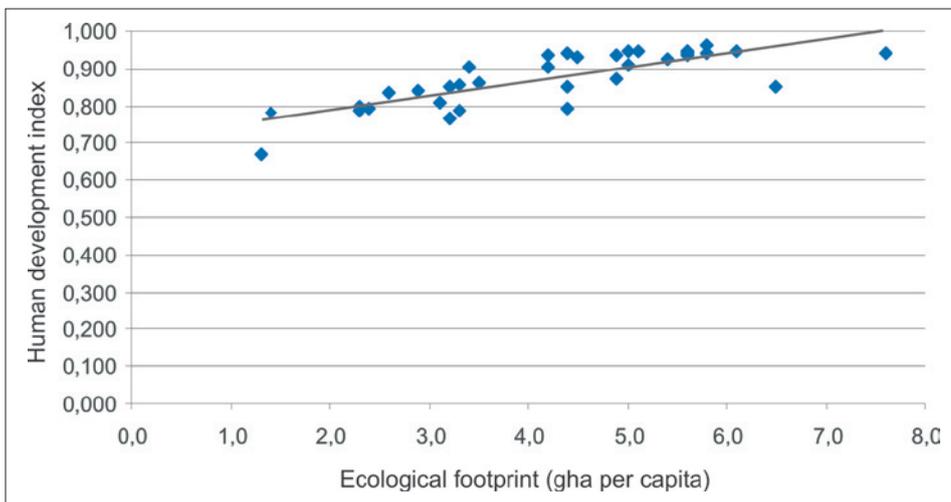


Fig. 5: Relationship between human development index and ecological footprint per capita in European countries, 2003

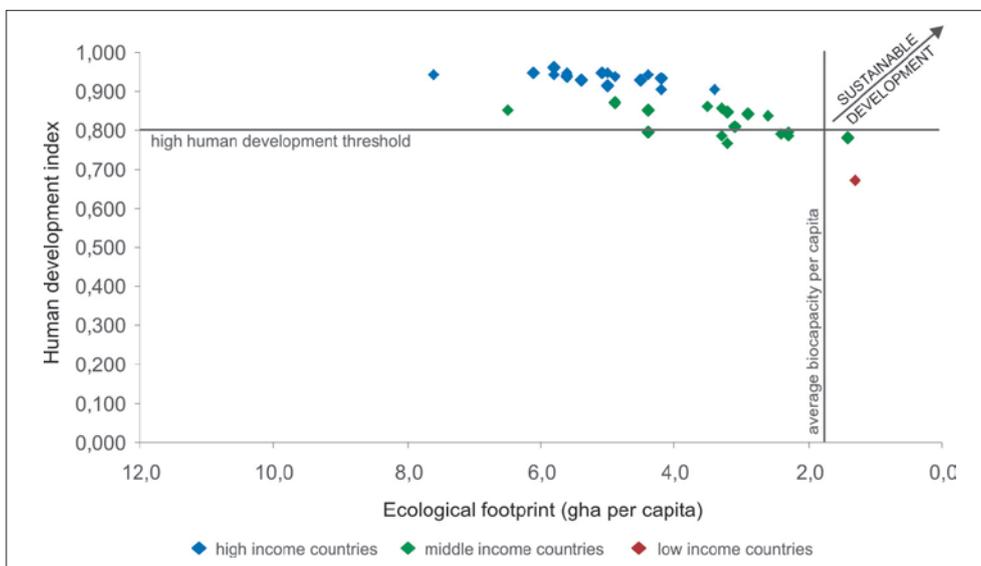


Fig. 6: Human development and ecological footprint, 2003

simple and comprehensive way, in accordance with the sustainable development paradigm. The calculation of the development balance index combines the human development index (representing socio-economic achievements), and the ecological footprint, using the same standardization as proposed by UNDP for the calculation of human development indices.

The human development index is actually a simple average of three dimension indices: life expectancy index, education index, and gross domestic product (GDP) index. Minimum and maximum values or goalposts are chosen for each underlying indicator in order to calculate the performance in each dimension, expressed as a value between 0 and 1. The following general formula is applied (Human Development..., 2005):

$$\text{index} = \frac{x_i - x_{\min}}{x_{\max} - x_{\min}}$$

with x_i being the actual value for the variable, x_{\min} being the minimum value and x_{\max} being the maximum value. Accordingly, the life expectancy index measures the relative achievement of a country in life expectancy at birth, using a formula where the maximum value is 85 years and the minimum value is 25 years. An agreed maximum value for GDP is 40,000 US\$ (PPP) and the minimum value is 100 US\$ (PPP). In the calculation of the GDP index, the logarithm of income is used, because achieving a decent level of human development does not require unlimited income. The education index includes two indices: an index for adult literacy and one for combined gross enrollment. In both cases, the minimum value is 0% and the maximum value is 100%. To calculate the education index, these two indices are combined, with two-thirds weight given to adult literacy and one-third weight to combined gross enrollment. Such standardization with preset minimum and maximum values allows comparisons over time and across countries (Human Development..., 2005; Vintar Mally, 2007).

In order to incorporate the calculations of the ecological footprint into this scheme, the above presented standardization formula has to be adjusted. In contrast to longevity, education, and incomes, increasing values of the ecological footprint or increasing environmental pressures respectively, do not contribute to overall welfare or sustainability. Therefore, the standardization formula applied is (Vintar Mally, 2007):

$$\text{ecological footprint index} = 1 - \frac{x_i - x_{\min}}{x_{\max} - x_{\min}}$$

or shorter:

$$\text{ecological footprint index} = \frac{x_{\max} - x_i}{x_{\max} - x_{\min}}$$

The maximum value used for the ecological footprint index calculation was 10.0 global ha per capita, while a minimum value was rounded up and set at 0.0 global ha per capita, representing (theoretically) minimal possible pressures on the environment. Finally, all indices (GDP index, education index, life expectancy index, and ecological footprint index) can be added up and an average value (i.e., the development balance index) for each country can be calculated. The development balance index does not only upgrade the human development index by environmental dimension (i.e., by ecological footprint), but the two indices differ also in the weight assigned to particular indicators involved. The human development index gives one-third weight to economic dimension (i.e., to GDP index) and two-thirds weight to social dimension (i.e., one-third weight to education index and one-third weight to life expectancy index). The development balance index gives an equal (one-third) weight to common achievements in the economic (GDP per capita), social (life expectancy at birth, literacy rate, combined primary, secondary, and tertiary gross enrollment ratio), and environmental area (ecological footprint per capita). In respect to sustainable development, the development balance index is more appropriate as it requires an equal emphasis on all three areas of development in order to achieve ongoing balanced development (Vintar Mally, 2007):

Development balance index

$$= \frac{1}{3} (\text{GDP index} + \frac{1}{2} (\text{education index} + \text{life expectancy index}) + \text{ecological footprint index})$$

A confrontation between the human development index (Fig. 2) and development balance index calculations (Fig. 7) reveals a strongly modified image of development and general well-being in the world and Europe, respectively. Comparing only 142 countries of the world with all available calculations it becomes obvious that the inclusion of environmental pressures considerably changes the world's ranking list of the overall development. In particular, the high income countries rank worse than 'expected', according to socio-economic indicators. This is the consequence of their disproportionately high demand on the biosphere. On the other hand, some developing countries with a relatively low ecological footprint and good education or health performance, are keeping pace with the best ranked developed countries (for example, Argentina – ranked 1st, Uruguay, Costa Rica, Chile, Colombia, Peru, Thailand etc.). In Europe, the rank of high income western and northern European countries deteriorates by 20 places or more, while there are seven countries where the rank improves by 10 or more (i.e., Albania, Slovenia, Latvia, Italy, Croatia,

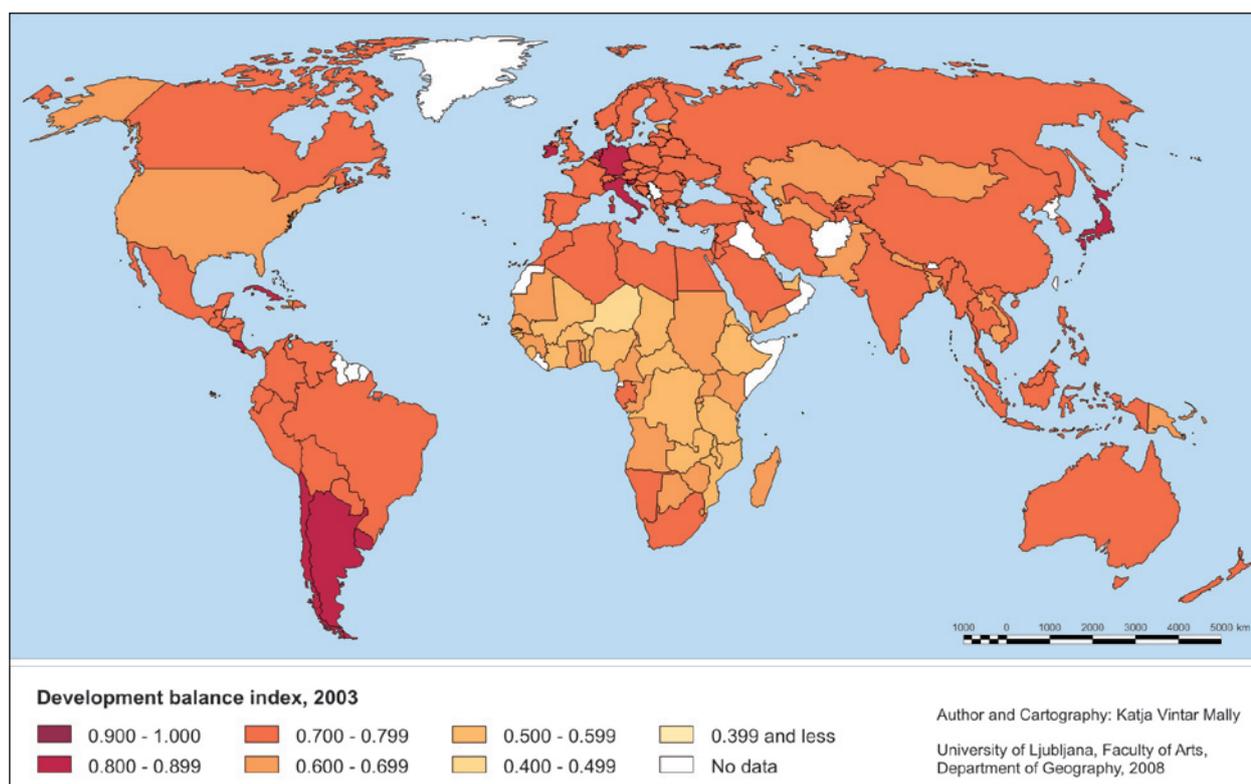


Fig. 7: Development balance index, 2003

Slovakia, and Germany). The most favourable balance of social, economic and environmental development is observed in Slovenia (rank 2), the Netherlands (rank 3), Italy (rank 4), Germany (rank 9), and Ireland (rank 10 - Tab. 1). The most unfavourable conditions can be observed in some countries with very high environmental pressures such as Estonia (rank 95) and Finland (rank 85), or in countries with modest human development gains such as Moldova (rank 89), Russia (rank 84), Ukraine (rank 77), and Belarus (rank 71). Having such diverse combinations of socio-economic and environmental problems, European countries will have to find fresh and different approaches to problem solving in order to achieve the highest possible level of social and economic welfare within their own and global carrying capacities.

4. Conclusions

Europe's consumption of natural resources and ecological services is disproportionately high and causes not only local and regional, but also global environmental problems. The latter is especially due to exceeding the carrying capacities of our planet. Current state and trends are, from the viewpoint of developing countries and future generations, unsustainable and unjust. European and other developed countries should lead the way in finding sustainable solutions for the future. The key task would be to control the ecological footprint, which changes not only with the country's

population size and per capita material consumption (dependent on their purchasing power) but also with the efficiency of energy and material use (dependent on the technologies available).

Since European countries are not expected to experience further population growth, they will have to focus on technology improvement and per capita consumption, particularly avoiding wasteful consumption. Developed countries should facilitate the transfer of technology to developing countries, enabling them to keep human demand on nature low and at the same time to achieve maximum progress in human development.

Among other things, modern development indicators should encompass all dimensions of development. In this context, the development balance index is a tentative example, which could lead to other attempts in the future, improving the calculations and data. The development balance index suffers from the same limitations and deficiencies as indices included in its calculation.

Therefore, it does not include political freedom, social safety and justice, some aspects of resource consumption and waste generation, and some other important factors, which affect the quality of everyday life in the areas studied. The inclusion of these aspects would further correct the above presented development picture and build even more just measures of overall development and human welfare.

However, for the time being, the development balance combines the best available socio-economic and environmental indicators, undoubtedly giving it a certain amount of credibility. Notwithstanding the methods used, the crucial message remains the same: balancing development requirements in economic,

social, and environmental areas is the greatest task of countries all over the world on their way to more sustainable futures. This task sets certain limitations, which should not be perceived as a mission impossible, but rather as a great challenge, fostering further progress.

References:

- Agenda 21. Programme of Action for Sustainable Development, Rio Declaration on Environment and Development (1992). The United Nations Conference on Environment and Development, Rio de Janeiro, 294 pp.
- A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (2001). Commission of the European Communities, Brussels, 17 pp.
- BOSEL, H. (1999): Indicators for Sustainable Development: Theory, Method, Applications. A Report to Balaton Group. The International Institute for Sustainable Development, Winnipeg, 124 pp.
- Compendium: a global directory to indicator initiatives. International Institute for Sustainable Development. (<http://www.iisd.org/measure/compendium>, last access 10-7-2008).
- Environment 2010: Our Future, Our Choice. The Sixth Environment Action Programme (2001). Commission of the European Communities, Brussels, 81 pp.
- 2005 Environmental Sustainability Index (2005). Yale Center for Environmental Law and Policy, New Haven, 408 pp.
- Europe 2005: The ecological footprint (2005). World Wildlife Fund, Brussels, 25 pp.
- HAWKEN, P., LOVINS, A. B. and LOVINS, L. H. (2004): Natural capitalism: the next industrial revolution. Earthscan, London, 396 pp.
- Human Development Report 2005 (2005). United Nations Development Programme, New York, 372 pp.
- Indicators of Sustainable Development: Guidelines and Methodologies (2001). United Nations Commission on Sustainable Development, New York, 310 pp.
- Kako resno Evropska unija obravnava trajnostni razvoj? Vključevanje okoljevarstvenih načel v politiko drugih sektorjev EU (2000). Umanotera – The Slovenian Foundation for Sustainable Development, 36 pp.
- Living Planet Report 2004 (2004). World Wildlife Fund, Gland, 40 pp.
- Living Planet Report 2006 (2006). World Wildlife Fund, Gland, 40 pp.
- Measuring progress towards a more sustainable Europe (2005). Office for Official Publications of the European Communities, Luxembourg, 220 pp.
- Plan of implementation (2002). World Summit on Sustainable development, Johannesburg, 62 pp. (http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POIToc.htm, last access 10-7-2008).
- PLUT, D. (2005): Theoretical and substantive concept of sustainable close-to-nature managed progress. Dela, No. 23, p. 59–113.
- Renewed EU Sustainable Development Strategy (2006). Council of the European Union, Brussels, 29 pp.
- The Treaty of Amsterdam (1997). European Union, Amsterdam, 81 pp.
- VINTAR MALLY, K. (2006a): Advantages and limitations of sustainable development indicators. Dela, No. 27, p. 43–59.
- VINTAR MALLY, K. (2006b): Contradictions between environmental protection and socio-economic development in developing countries: PhD thesis. Department of geography, Faculty of Arts, Ljubljana, 203 pp.
- VINTAR MALLY, K. (2007): Linking socio-economic development and environmental pressures. Dela, No. 28, p. 149–162.
- WHEELER, S. M. (2004). Planning for sustainability: creting livabe, equitable, and ecological communities. Routledge, London, New York, 280 pp.

Authors' addresses:

Katja VINTAR MALLY, Ph.D.
 Department of Geography, Faculty of Arts
 Aškerčeva 2, 1000 Ljubljana, Slovenia
e-mail: katja.vintar@ff.uni-lj.si

THE PERCEPTION OF PUBLIC CITY TRANSPORT IN ZLÍN (CZECH REPUBLIC) AS AN ALTERNATIVE TO INDIVIDUAL TRANSPORT BY ITS POTENTIAL USERS ACCORDING TO THE LEVEL OF THEIR INCOME

Oldřich HÁJEK, Tadeusz SIWEK

Abstract

The growth of transport in big cities often leads in extreme cases to jams and gridlock, and this trend is gradually becoming more frequent in smaller cities such as Zlín. Some of possible solutions to these issues involve not only improvement of the technical aspects of infrastructure but also change of human behaviour. A more frequent use of public transport is one of possible solutions. Nevertheless, this will be possible only if city inhabitants have better environment awareness. This article reports on research conducted in Zlín in 2007 and focused on various attitudes of inhabitants in the Zlín agglomeration to public and individual transport. The results do not provide grounds for optimism: most people do not have good environment awareness, their priority being rather their own convenience in the use of the Zlín transport system.

Shrnutí

Vnímání městské hromadné dopravy ve Zlíně (Česká republika) jako alternativy k individuální dopravě z hlediska příjmových skupin jejich potenciálních uživatelů

Rostoucí doprava ve velkých městech vede v extrémních případech ke kolapsu a tento trend se pomalu přesouvá i do menších měst, jakým je např. Zlín. Možné řešení těchto problémů není založeno pouze na technickém zlepšení infrastruktury, nýbrž i na změně v chování lidí. Častější využití hromadné veřejné dopravy je jedním z možných řešení. Ale to bude možné jen při současném zlepšení environmentálního vědomí obyvatel měst. Hlavním tématem tohoto článku je výzkum realizovaný v roce 2007 ve Zlíně, zaměřený na různé přístupy obyvatel aglomerace Zlína k veřejné hromadné a individuální automobilové dopravě. Výsledek není příliš optimistický: většina obyvatel nemyslí ekologicky a při využívání dopravního systému Zlína preferuje vlastní pohodlí.

Key words: transport system, public transport, individual transport, perception of transport services, Zlín agglomeration, Czech Republic

1. Introduction

Almost every big city in the world has to face a problem of providing effective transport service, dependent on its geographical location. With the development of individual transport, this has become a problem even in mid-sized cities. Transport services usually begin to collapse due to ineffective traffic systems, which were developed in the past and based on local geographical conditions. Because traffic did not play such an important role in the past, today's urban areas impose many limitations on the development of traffic infrastructure because of natural conditions and housing areas built before the modern era. Arterial roads lead through urban districts and their capacity no longer meets the today's requirements. This leads to extreme concentration of traffic, congestion and

other negative phenomena on main thoroughfares and at junctions, which in turn slows the development of cities (O'Kelly, Niedzielski, 2008). It also negatively influences the quality of life in cities and their immediate vicinity due to dust, emissions, noise pollution and other factors (Kutz, 2008). The elimination of these negative phenomena is very difficult because of geographical limitations imposed by the built-up parts of agglomerations. Optimization of the transport system – predominantly a public transport network – is the main aim for the big European cities such as Berlin (Reinhold, 2008) and much more for over-crowded Asian mega-cities such as Shanghai (Shen, 2001).

A functional and sustainable urban transport system cannot exist without a long-term development concept, as can be seen e.g. in the case of Warsaw

(Monkiewicz, 2000). Without such a concept, problems can be expected to multiply in the future, leading in extreme cases to the complete collapse of the transport system. One study describes a systemic change in Great Britain, which involved the closer integration of urban planning tools with transport concepts. Nevertheless, despite small-scale successes, the change did not lead to significant qualitative changes in systemic planning with synergic effects (Hull, 2005).

However, the inhabitants of large cities are not concerned with transport systems at a conceptual level. They are users of the system, evaluating its practical usefulness daily. They are most critical of the situation during morning and afternoon peak times, when the transport system tends to be overstretched. On the other hand, they are positive in their evaluation of the afternoon lull in traffic intensity – though this period of downtime tends to be a problem for managers of transport corporations, planners and economists (Hanson, Giuliano, 2004).

In general, an individual has a very little influence on the system, but in larger numbers, individuals can exert some influence. For example, a study was carried out examining working conditions of the parents of school children; it showed that if the working conditions of a statistically significant number of parents change enabling them to accompany their children to school on foot or by bicycle, this has the effect of reducing traffic volumes during the peak times (Mc Donald, 2008).

Traffic is reduced also by the more widespread use of public transport. However, the attitude to public transport is primarily affected by the charged fares. This dependency is so profound that changes in the usage of public transport can be modelled simply by extrapolating from the changing fares tariffs (De Groot, Steg, 2006). The above-cited study was carried out using a questionnaire to determine the level of usage of individual (car) and public transport, and showed clearly that when solving the transport-related problems it is essential to seek solutions, which do not cause the rise of public transport fares. In view of the constantly rising cost of individual transport, public transport can thereby become increasingly attractive for a wider segment of the population.

When optimizing bus transport services, the costs of running a service through an urban area are sometimes found to vary from company to company. These differences are due to more or less optimum choice of the route. An optimum route is the most economical route, and service providers can now take advantage of the increasing availability of GIS-based navigation systems to determine the ideal route (Cubukcu, 2008).

Optimization is thus becoming a major focus of interest for geographers.

This paper is a case study of a typical representative of Czech regional urban centre, the city of Zlín (Fig. 1). The traffic problems affecting Czech cities are hierarchical in their nature. The most serious problems are typically experienced by the two largest and most populous cities – Prague and Brno. These cities' traffic problems are concentrated in their crowded historical centres. Industrialization played a key role in the case of the third biggest Czech city – Ostrava.

This process did not lead to a marked growth of traffic in the Ostrava's relatively small city centre, but rather to the occupation of huge areas by heavy industries, which considerably complicated the city's traffic system. Smaller Czech towns and cities have only begun to encounter traffic problems in recent years. They generally attempt to keep their historical centres free from traffic. Zlín is not a historical town. Nevertheless it has (rather surprisingly) become one of the Czech urban areas experiencing traffic problems in the last two decades. Zlín is the largest city in southeast Moravia. It was spared traffic complications for a long time – partly because it is a relatively small city, with 78,100 inhabitants as of 31 December 2007, making it the 12th largest city in the country (Czech Statistical



Fig. 1: Area under study

Office: Town and Municipal Statistics, 2008). Zlín is a relatively young city. It does not have any historical town centre because it was only founded at the beginning of the 20th century as a consequence of the rapid development of Bata's shoe manufacturing empire.

Construction of the town was carefully planned and took into account future developments. Up to the end of the 1940's, the town grew quickly but systematically.

A large number of public buildings and the traffic system were built. One of the first trolley-bus lines in the former Czechoslovakia was opened in Zlín. After World War II, the town continued to sprawl but Tomas Bata's original strategic plans were dropped due to ideological reasons. Symbol of this political change was even the renaming of the town to Gottwaldov (after the Czechoslovakia's first communist president, Klement Gottwald). Industrial activities and the urban function of the city were further developed over the following 40 years. Any investments in public buildings, including the traffic infrastructure, were on a relatively small scale. Such issues did not seem crucial at the time.

Therefore, the originally planned road along the right bank of Dřevnice River, whose purpose was to improve the movement of through-traffic and which was planned before 1945, was never built during the communist era. The road was to run alongside this rather small river (the length of the river is 40 kilometers; its drainage area is 435 square kilometers), which is an eastern tributary of the Morava River and flows through the centre of the city. Even though this important traffic project was never brought to fruition, the traffic infrastructure built during the first era of the development of Bata company remained more or less adequate until the fall of the communist regime in 1989 (Hájek, 2006).

The city's regaining of its original name symbolized a new era, in which the economy of the whole Zlín agglomeration began to prosper as a result of new economic freedoms. This subsequently led to a sharp growth in the number of cars and an increase in the volume of daily traffic on the main (and only) east-west road I/49. Due to its specific physical and geographical conditions, the Zlín agglomeration has the form of a long thin line strung out along an enclosed valley. I/49 is the only arterial road that leads through the valley. The geographical character of the Zlín agglomeration is the main limiting factor of the development of transport services, as it only allows development within the relatively narrow valley of the Dřevnice R. (Hájek, 2005a; Hájek, 2005b).

The maximum 24-hour car traffic intensity on the main arterial road is over 32,000 cars, as shown by traffic counts on the road and motorway system in 2005. Technical characteristics of I/49 are no longer fit for the purpose. It only has one lane in each direction and therefore it is not able to cater effectively for the above-mentioned traffic volumes. This leads to frequent congestions (Fig. 2 - see cover p. 2). A very intensive process of suburbanization, together with further commercial, congress and university developments in the city centre, places increasing demands on the

traffic system. The need for an integrated traffic system is growing and the public authorities are not able to react flexibly and effectively. The growth of the agglomeration also leads to environmental pollution (Fig. 3 - see cover p. 2).

From its very beginnings, Zlín was conceived by its famous town-planners as a "garden city" with a strong potential for the future. Intensive commercial and residential development is changing the character of the city centre, reducing its originally high quality of life.

2. Objectives and methods

The aim of this article is to report on a study of attitudes towards public transport among Zlín's inhabitants. The question is whether the environmental awareness of the agglomeration's people is stronger than in other cities, or whether economic interests tend to predominate. Environmental awareness that leads to voluntary limitations to one's own requirements with the purpose of maintaining the quality of the environment (see e.g. Banister, 2005; Kutz, 2008) is a very important factor in relieving traffic problems. The implications of the study are clear, and a great advantage of recommendations is that their application does not require any large-scale investments.

The first part of the text outlines the main traffic issues that Zlín has to face today, and classifies these issues according to their importance for the further development of the agglomeration. The second part presents results of a survey conducted among the Zlín inhabitants and visitors to Zlín, revealing their attitude to public transport. This survey was conducted in 2007 and was financed from the grant project WB-32-04 "Transport service and technology", implemented in 2004–2008 at Tomas Bata University in Zlín (Wokoun, 2007).

The goal of the survey was to determine transport habits of inhabitants in the Zlín agglomeration and to assess respondents' evaluation of the local transport situation in relation to the quality of life and the environment within the Zlín urban area. The questionnaire was distributed to 268 respondents, of which 38 gave incomplete or otherwise faulty answers, making it impossible to include them in the final analysis. The questionnaires were anonymous.

The selection of respondents was not random from the territorial point of view. The researchers' intention was to cover the entire territory of the agglomeration, and so the data collection points were carefully chosen. Respondents were selected

at major hubs within the transport network of Zlín and the surrounding area: public transport (bus and trolleybus) stops, pedestrian zones, railway stations and car parks at large shopping centres in the towns of Zlín, Otrokovice and Napajedla.

In terms of structure, the respondents represented a quota sample. The main hypothesis tested was that although the transport habits are influenced by a range of factors, the strongest of these factors is income, and so the sample of respondents was subdivided according to their declared level of income. The hypothesis stated that respondents' preference for individual (car) transport increases in line with the increasing income level – a trend that has been found to exist throughout the world.

The quotas were set roughly according to statistics on average incomes in the Czech Republic. The categories were as follows: up to CZK 10,000 per month (76 respondents), between CZK 10,000 and 20,000 per month (101 respondents), between CZK 20,000 and 30,000 per month (37 respondents), and over CZK 30,000 per month (10 respondents). This categorization was based on respondents' own declaration of their incomes. To avoid complications during the calculation process, the criterion for categorization was each respondent's average monthly income before tax; the number of people in the respondent's household was not taken into account. Age and sex differences were also recorded, but proved not to be relevant.

The respondents were asked 12 questions. Most of them picked out the form of closed questions, where respondents had to choose their answers from a set of options. However, some questions were open, and the respondents could express their opinions freely. Despite the large variability of answers to the open questions, they could be ultimately classified into a few categories only.

The first question (current transport habits) was a closed question, requiring respondents to state how often they used public transport and individual (car) transport per week. Questions 2–7 were open, and were designed to elicit user preferences for individual and public transport. Respondents also answered an open question on what they considered to be the single main problem affecting transport in the Zlín agglomeration. The answers to this question showed a rare degree of agreement, the most problematic aspect being considered existence of the only one road linking Zlín and Otrokovice.

The results of the survey were plotted in graphic form and compared to arrive at conclusions. No sophisticated

mathematical methods were used either in the research itself or for the purposes of this article. Given the number of respondents, it was considered sufficient to rank them according to their income category; the calculation of correlations would probably have yielded the same results. Selected results including their presentation in graphic form are given in the following section.

3. Research Results

The following analysis of results from the survey conducted as a part of the above-mentioned project focuses on the perception of transport services in the Zlín agglomeration by its inhabitants. Combined answers to these 6 questions form the subject of this article. The first question concerned the frequency of using public transport in Zlín; the answers are illustrated in Fig. 4 below.

Fig. 4 shows data on how often public transport is used by particular income categories. Public transport is used most often by citizens with monthly incomes lower than CZK 10,000; the correlation with income is very distinct in this case. Of all categories, it is the second group of respondents – with a monthly income between CZK 10,001 and CZK 20,000 – who most often use public transport “not at all”. There is a lower number of wealthy respondents giving this answer due to the lower absolute number of people in this income bracket. The results prove that people with average incomes are no longer entirely dependent on public transport as they used to be in the past.

To prevent any distortion of data caused by the varying numbers of respondents in different groups, the results have been re-calculated as percentages to express the data in relative terms. The results are presented in Fig. 5. The evidence given in this graph is much more accurate than in Fig. 4. In this case, the correlation between the income and the frequency of using public transport is much clearer.

Fig. 6 shows the frequency of car use. Here too, the correlation is in due proportion with the income of respondents.

All categories of respondents agreed that cost of public transport represents a major advantage when compared with individual car transport (Fig. 7). Nevertheless, a relatively large group of respondents cannot see any advantages of using public transport at all. It is notable that this answer occurs in all income categories, even though it is less frequent in the lower income category and almost half of the respondents giving this answer are in the higher income bracket. Only a very small number of respondents took into

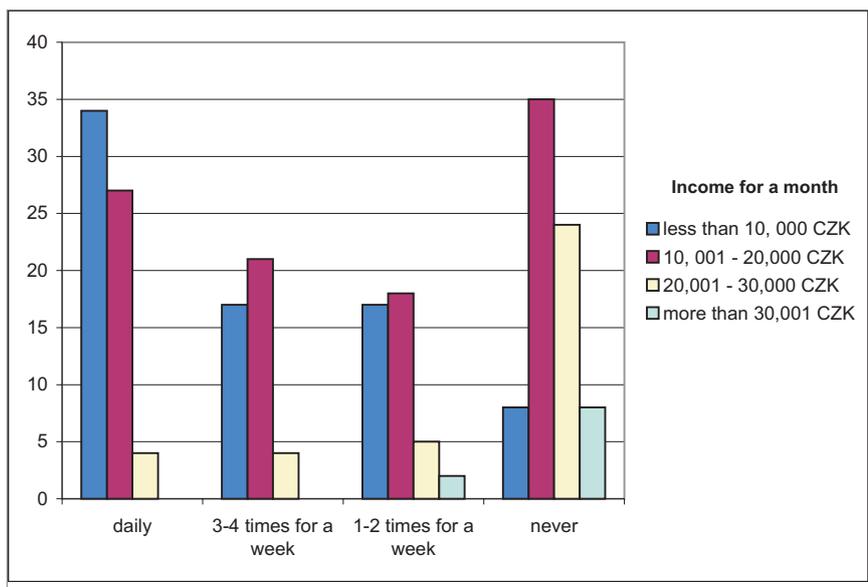


Fig. 4: How often do you use public transport? (absolute; source: Hájek - own research)

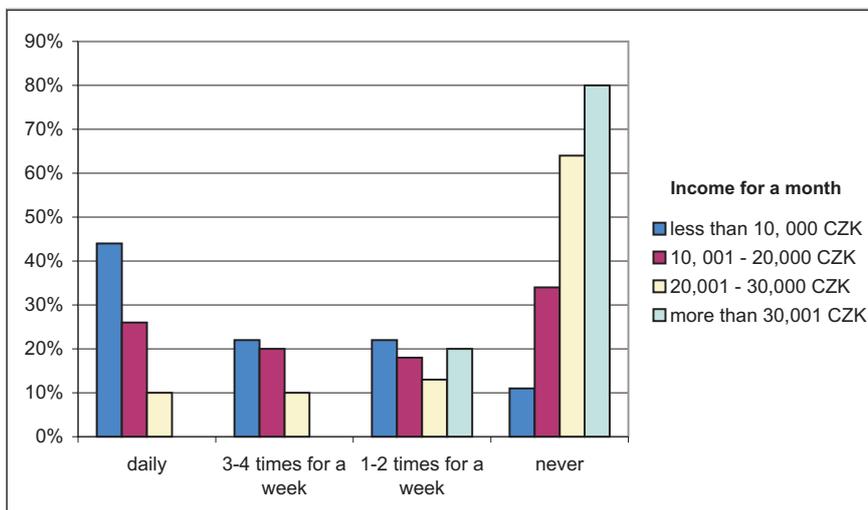


Fig. 5: How often do you use public transport? (relative; source: Hájek - own research)

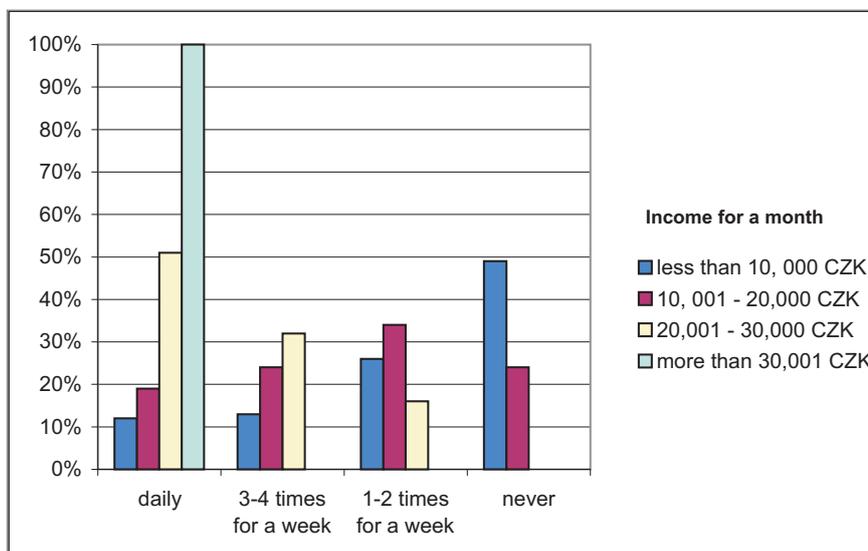


Fig. 6: How often do you drive a car? (source: Hájek - own research)

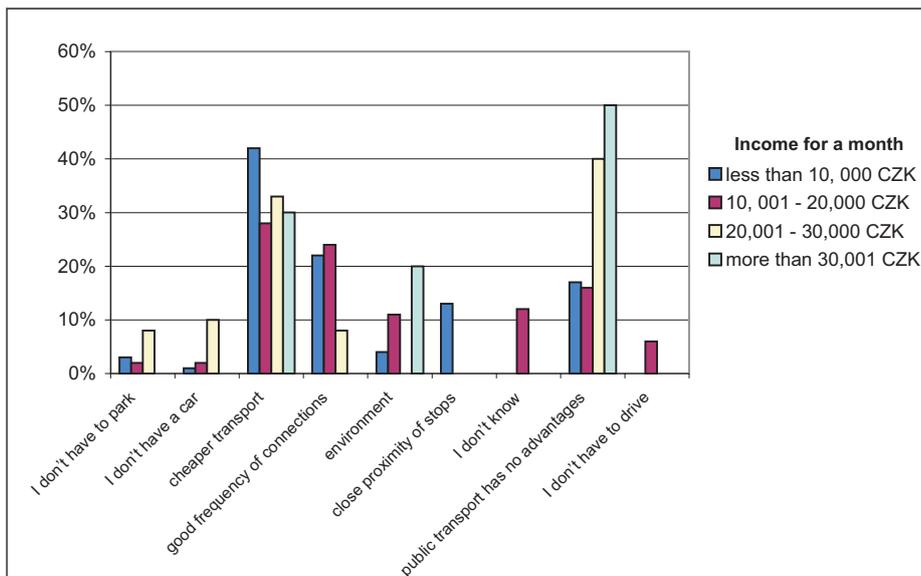


Fig. 7: Where do you see the advantages of public transport? (source: Hájek - own research)

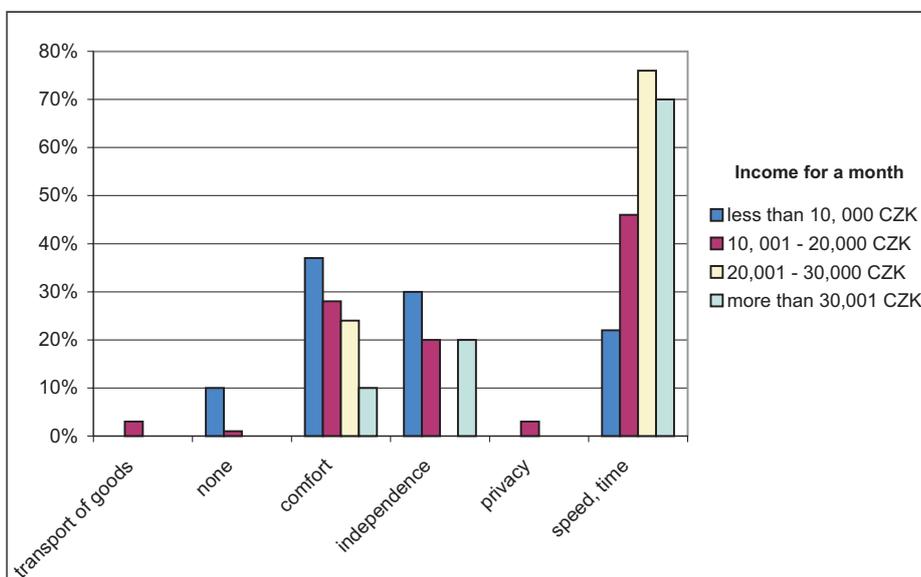


Fig. 8: What are the advantages of driving? (source: Hájek - own research)

account environmental advantages, namely those from the highest income category. It is a pity that the small absolute number in this case (only 10 respondents) reduces the value of this evidence.

Almost all income categories agreed that driving brings independence and comfort, which is exactly which was valued in the early days of car travel in countries all over the world (Fig. 8). Respondents greatly appreciated the reduction of journey times and the speed of travel that a car offers. A small group of respondents in the income category below CZK 10,000 did not see any advantage in travelling by car.

None of the answers given here corresponds with income. Again, most respondents do not see any reason

to swap a car for public transport (Fig. 9). We can judge from this that environmental awareness regarding transport issues is absolutely minimal among the citizens of Zlín.

Among the crucial traffic problems in Zlín identified by respondents, “crowded vehicles” and “low quality of roads” appeared most often. All categories of respondents without exception claimed that congestion was a major traffic problem in Zlín (Fig. 10).

We can summarize the results of the survey as follows:

- Wealthy citizens of Zlín prefer using cars and they do not use public transport. This finding confirms our expectations.

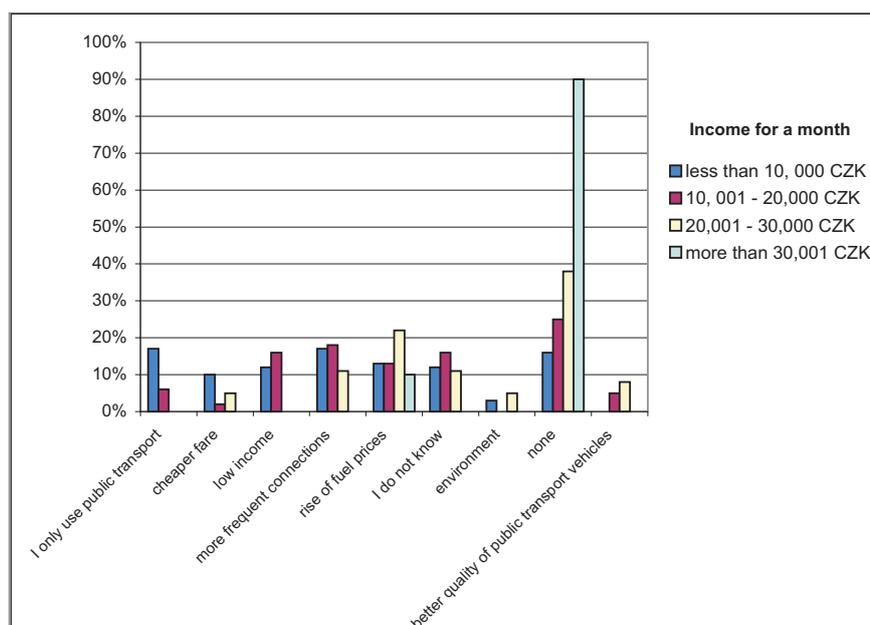


Fig. 9: What would motivate you to swap a car for public transport? (source: Hájek - own research)

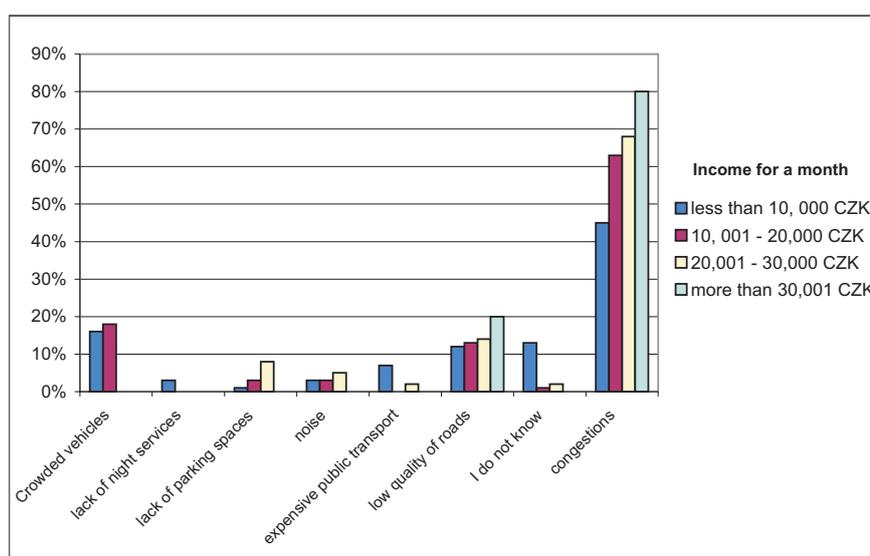


Fig. 10: What do you perceive as the greatest transport problem in the Zlín agglomeration? (source: Hájek - own research)

- People with lower incomes use public transport more often. This is also in accordance with the original hypothesis.

- Swapping public transport for a car is not an exceptional trend even among citizens with average income.

- Congestion is seen as a major problem in the Zlín agglomeration by all inhabitants in all income categories, followed by poor quality of roads in Zlín and its vicinity.

- The cost of fares seems to be a very important factor affecting the popularity of public transport. Many

respondents who perceive public transport negatively consider the low cost to be its only advantage.

- For the majority of respondents, environmental issues do not represent a reason for using public transport.

- The majority of respondents, even regular users of public transport, were not sufficiently motivated to swap their cars for public transport.

- The quality of public transport vehicles was evaluated as negative.

- By contrast, the frequency of services was evaluated as positive.

- Speed, time and comfort are major reasons for travellers to swap public transport for individual transport.

The results of the survey concerning the preferences of inhabitants of the Zlín agglomeration are not very positive. Respondents generally displayed a very pragmatic and materialistic attitude to transportation issues. Their environmental awareness is not very high and appears – unfortunately – to be at the same low level as in other Czech and Central European cities. Even the persistent pre-war image of Zlín as a garden city plays no role in increasing the environmental awareness.

The aim of majority populations in post-communist countries is the same: to catch up with the more economically developed Western Europe. However, Western European countries experienced a marked increase in car transport during the 20th century. Car has become a common part of life, and groups of people can now decide how often to use a car or whether to reduce its use from time to time with the purpose of improving the quality of the environment. Several trends towards the reduction of car traffic have appeared, supporting the idea that car traffic is not in fact progress; on the contrary, it takes us back – “back to the Paleozoic” (Keller, 1998).

These days, many Americans realize that the original freedom of movement provided by car has changed their world. They are forced to use the car even in situations in which it was not needed before. The freedom has turned into a constraint. Therefore, some “enlightened intellectuals” ride a bike to work every day because it is cleaner, healthier and more environment friendly (Tooley, 2000).

This idea seems to have little chance of being adopted in the Czech Republic today. A more likely outcome is the continued spread of the slogan “Show me your car and I will tell you who you are”. A car becomes increasingly a symbol of social status and success, as it used to be in the USA and Western Europe.

The car market in the Czech Republic has not yet reached saturation point, and the country as a whole – including Zlín – can expect further growth in car ownership in the coming years. Only when owning a car becomes a common thing, as it is in Western countries, will the relationship of Czech society to car transport gradually change. Prague has already reached that level and other big cities including Zlín are due to reach it very soon.

At the moment, most people in Zlín prefer individual car transport. They do not have environment issues in

mind and cost is the only reason for which they would choose public transport. Nevertheless, something needs to be done to change the public attitude to car transport. One of possible solutions is to build cycle lanes, a process which is only just beginning in Zlín. It is clear that this will not be suitable for everybody.

However, Zlín is a relatively small city, in which cycling is probably more widespread than in bigger Czech cities. If money for investment were lacking, a mere inclusion of cycle lanes in the city’s urban planning documentation would be sufficient. That would be a good indicator that they are planned for the future, and it might lead to a move away from cars. Knowing the geography of the area, we can assume that cycling would be used frequently in Zlín if there were better conditions than exist today. The maximum distance between most parts of the town is not more than 10 kilometers – an ideal distance for regular cycling.

4. Conclusions

In order to be accounted as adequate, the transport service in the Zlín agglomeration would have to satisfy the needs of city inhabitants. However, the demand of daily commuters (travelling to work, for shopping and other purposes) for a good transport service leads to increasing volumes of rush hour traffic and thus repeated morning and afternoon traffic jams. Additionally, the growing number of visitors from neighbouring regions contributes to the problem as they are invited by the municipal authorities to attend various activities - which is a method of city marketing (Rumpel, 2002). Consequently, the transport system is prone to collapse during the busiest periods. Indications of these problems are now visible during large-scale events such as the Barum Rally car race or the local film festival.

The situation in Zlín can be treated in two ways from the point of view of investors. Hardly any investors would locate their activities in the centre of agglomeration that suffers from the high intensity of traffic (the only exceptions are companies that build and manage shopping centres).

By contrast, in the western part of the agglomeration (Tlumačov, Otrokovice, Napajedla), the traffic system is very advantageous for investors – a situation which is set to improve further due to the future link-up with the nationwide rapid road transport system on the completion of new sections of the R55 road.

The environment suffers because there is only one main road leading through the Zlín urban area. The number of cars passing through the town causes a high

concentration of emissions, noise and higher accident rates on road I/49. Various studies of noise pollution on I/49 show that the set protective limits are being exceeded during both day and night hours.

Due to the high intensity of traffic (more than 32,000 cars per day at the busiest point counted in 2005), the full capacity of Zlín's road network has now been reached. Traffic forecasts indicate that we must expect further growth of traffic intensity at most points that have been measured. This will undoubtedly be an effect of the constantly growing demand for individual car transport, current growth of the Czech economy and gradual improvement of the capacity of main roads (I/49, I/55), which will create ever more traffic. Therefore, it is important to identify transport service inadequacies in the Zlín agglomeration and to look for solutions that will help improve the current situation. An ideal solution is to construct the forgotten right bank road (Hájek, 2006).

We can say that environment awareness among citizens will be radically different in cases when public transport services are inadequate compared to cases when the public transport system works properly. The findings of grant WB 32-04 (Wokoun, 2007) show that public transport in Zlín, though environment friendly, is not able to fulfil its role easily. The shift of many inhabitants from public transport to individual car transport intensifies transport flows in the city and worsens the quality of transport services, meaning that travel times on public transport are longer. That in turn causes fewer people to use the public transport, and the vicious circle closes in on itself. Attempts of municipal authorities to improve public environment awareness could slow down or even stop this negative trend. The city will have to take this course if it does not want to rely entirely on investing huge amounts of money into transport system improvement. The low environment awareness of Zlín's inhabitants confirmed by our research should be a reason to respond to the challenge.

References:

- BANISTER, D. (2005): *Unsustainable Transport. City Transport in the New Century*. London, Spon Press, 304 pp.
- CUBUKCU, K. M. (2008): Examining the cost structure of urban bus transit industry: does urban geography help? *Journal of Transport Geography*, Vol. 16, No. 4, p. 278–291.
- Městská a obecní statistika (2008): Český statistický úřad. [online] available at: <http://vdb.czso.cz/xml/mos.html> (visit 30.11.2008).
- DE GROOT, J., STEG, L. (2006): Impact of transport pricing on quality of life, acceptability, and intentions to reduce car use: An exploratory study in five European countries, *Journal of Transport Geography*, Vol. 14, No. 6, p. 463–470.
- HÁJEK, O. (2005a): Analýza dopravní obslužnosti zlínské aglomerace. In: I. Sborník referátů z odborné konference Dopravní obslužnost a technologie ve vztahu k regionálnímu rozvoji. Zlín, FaME UTB, p. 85–93.
- HÁJEK, O. (2005b): Nejproblémovější úseky silniční dopravy ve zlínské aglomeraci. In: I. Sborník referátů z odborné konference Dopravní obslužnost a technologie ve vztahu k regionálnímu rozvoji. Zlín, FaME UTB, p. 94–100.
- HÁJEK, O. (2006): Environmental Aspects of Transport Provision in the Zlín Urban Area. In: Siwek, T., Baar, V. [eds.]: *Globalisation and its Impact to Society, Regions and States*. Ostrava, Ostravská univerzita, p. 229–234.
- HANSON, S., GIULIANO, G. [eds.] (2004): *The Geography of Urban Transportation*. 3rd edition, New York: Guilford Press, 434 pp.
- HULL, A. (2005): Integrated transport planning in the UK, From concept to reality. *Journal of Transport Geography*, Vol. 13, No. 4, p. 318–328.
- KELLER, J. (1998): *Naše cesta do prvohor*. Praha, Sociologické nakladatelství, 171 pp.
- KUTZ, M. [ed.] (2008): *Environmentally Conscious Transportation*. Hoboken, N.J., Wiley & Sons, 370 pp.
- MC DONALD, N. (2008): Household interactions and children's school travel: the effect of parental work patterns on walking and biking to school. *Journal of Transport Geography*, Vol. 16, No. 5, p. 324–331.
- MONKIEWICZ, S. (2000): Kierunki usprawnienia komunikacji zbiorowej w najbliższych latach w Warszawie. *Transport Miejski*, Vol. 23, No. 2, p. 5–10.
- O'KELLY, M.E., NIEDZIELSKI, M.A. (2008): Efficient spatial interaction: attainable reductions in metropolitan average trip length. *Journal of Transport Geography*, Vol. 16, No. 5, p. 313–323.
- REINHOLD, T. (2008): More Passengers and Reduced Costs: The Optimization of the Berlin Public Transport Network. *Journal of Public Transportation*, Vol. 11, No. 3, p. 57–75.
- RUMPEL, P. (2002): Teritoriální marketing jako koncept územního rozvoje. Ostrava, Ostravská univerzita, 179 pp.

- SHEN, Q. (2001): Urban transportation in Shanghai, China: problems and planning implications. *International Journal of Urban and Regional Research*, Vol. 21, No. 4, p. 589–606.
- TOOLEY, R. [ed.] (2003): *Sustainable Transport: Planning for Walking and Cycling in Urban Environments*. Abington, Woodhead Publishing, 713 pp.
- Výsledky sčítání dopravy na dálniční síti v roce 2000 (2001): Případová studie pro kraj Zlínský. Praha, Ředitelství silnic a dálnic ČR.
- Výsledky sčítání dopravy na dálniční síti v roce 2005 (2006): Případová studie pro kraj Zlínský. Praha, Ředitelství silnic a dálnic ČR.
- WOKOUN, R. et al. (2007): Závěrečné výstupy z grantového projektu WB-32-04: Dopravní obslužnost a dopravní technologie ve vztahu k regionálnímu rozvoji. Zlín, Univerzita Tomáše Bati ve Zlíně.

Authors' addresses:

RNDr. Oldřich HÁJEK, Ph.D.
Tomas Bata University in Zlín, Faculty of Management and Economics,
Department of Regional Development, Public Sector Administration and Law
nám. T. G. Masaryka 5555, 760 01 Zlín, Czech Republic
e-mail: hajek@fame.utb.cz

Doc. RNDr. Tadeusz SIWEK, CSc.
University of Ostrava, Faculty of Science
Department of Human Geography and Regional Development
Chittussiho 10, 710 00 Ostrava - Slezská Ostrava
e-mail: tadeusz.siwek@osu.cz

THE GERMAN LANGUAGE ISLANDS OF BRNO, OLOMOUC AND JIHLAVA DURING GERMAN-AUSTRIAN IRREDENTISM IN THE AUTUMN OF 1918

Richard JAŠŠ, Miloš FŇUKAL

Abstract

German Austria (declared on October 30, 1918) attempted to take control over as many large German-settled areas (of the former Austria-Hungary) as possible. In the Czech lands, its leaders claimed a continuous belt of border areas, but opinions on the affinity of territorially separated German language islands were much more differentiated. This paper deals with the development of the attitudes of German-Austrian political representatives with respect to this issue, which resulted in official claims for “detached language territory” (Einschlussgebiete) around Brno, Olomouc and Jihlava. There were, however, no actual possibilities of exerting sovereignty in these territories.

Shrnutí

Německé jazykové ostrovy Brno, Olomouc a Jihlava v německo-rakouské iredentě na podzim 1918

Třicátého října 1918 vyhlášené Německé Rakousko se snažilo získat pod svou kontrolu co největší část Němci osídlených území rozpadajícího se Rakousko-Uherska. V českých zemích vzneslo jeho vedení nárok na souvislý pás pohraničních území, podstatně diferencovanější byly ale z jeho strany názory na příslušnost územně oddělených německých jazykových ostrovů. Článek se zabývá vývojem postojů německo-rakouské politické reprezentace k této problematice, které vyústily ke vznesení oficiálních nároků na „odloučené jazykové oblasti“ (Einschlussgebiete) kolem Brna, Olomouce a Jihlavy, ovšem bez reálné možnosti skutečně uplatňovat na daném území suverenitu.

Key words: *German Austria, language island, irredentism, German national movement*

1. The role of German language enclaves in Moravia in the territorial concept of German Austria

Breakdown of the Austro-Hungarian Empire at the end of October 1918 and formation of independent Czechoslovakia is a highly significant milestone of the Czech national history of which much has been written. At the same time in the Czech lands a numerous German minority aimed at national emancipation. In historiography, its national movement is traditionally neglected at the expense of the Czechoslovak movement. These efforts of the Sudeten Germans were to be fundamentally reflected in the territorial organization (or rather territorial losses) of Czechoslovakia.

In Czech lands, the newly established German Austria (national state of Germans within the Austro-Hungarian Empire territory) laid claims on 30 October 1918, based on the absolute right to self-determination, not only for the so-called Sudeten, i.e. the borderland, where German nationals formed majority, but also for so-called

“detached language areas” (or *Einschlussgebiete*), i.e. language enclaves (see e.g. Fig. 1 – cover p. 3). Among these were in Bohemia the cities of Prague, Budějovice¹ and Pilsen with their numerous German minorities. In the course of the time, however, the claim for detached areas in Bohemia was completely abandoned mainly due to the influence of Lodgman von Auen. German areas at the Bohemian borderland (the Nová Bystřice, Štoky language enclave and parts of the Hřebečsko region), traditionally called language enclaves, were islands only within the Kingdom of Bohemia. With the exception of the Štoky region, they were contiguous to compact areas in Moravia or Lower Austria and administratively attached to these areas. A different situation prevailed in Moravia where three significant language enclaves (the Jihlava, Brno and Olomouc islands) traditionally played important role in the culture, economy and politics of Moravian Germans.

German radical circles in the language enclaves professed their affinity to the German-Austrian nation state as early as at the beginning of October 1918. For

¹ České Budějovice today. This article uses geographical names as used in the list of municipalities in 1910.

instance the newspapers “Der mährische Grenzbote” published on 6 October 1918 a declaration that Jihlava belonged to the German-Austrian state. On 28 October 1918, the town council of Jihlava demanded that the entire language enclave be joined to German Austria². Similar activities were carried out by nationalistic intellectual and entrepreneurial circles in Brno. In smaller language enclaves (the Vyškov, Brodek-Skřípov islands) and in Olomouc, Germans were in fact politically passive.

The position of German language enclaves in Moravia in the German-Austrian territorial structure changed between the beginning of October 1918 and 22 October 1918, when “the state declaration of territory, borders and relations of state territory of German Austria” was accepted. At first, the state council attempted to establish good relations with neighbours, to delimit the territory of German Austria in the least complicated manner, and to integrate into it only compact language areas. Gradually significant part of deputies in the Provisional national assembly of German Austria started to promote the concept of preservation of a “temporary national cadastre” in Moravia and of asserting sovereignty of its German “stratum”.

Thus not only “Einflussgebiete” but also minorities and German-speaking individuals would be excluded from the Czechoslovak sovereignty, which would in turn confirm the Czechoslovak statehood. According to the state declaration No. 40 on the territory, borders and relations of the state territory of German Austria, there were enclosed language enclaves, towns, villages and hamlets inhabited or administered only or predominantly by Germans, which were to remain “until their political and national rights were secured under the sovereignty of the German Austrian Republic as its national territory”, and these should have also been represented in the Provisional national assembly³. In the bill, these areas in Bohemia and Moravia were the language enclaves of “Brno, Brodek-Skřípov, Budějovice, Jihlava-Štoky, Olomouc and Vyškov”⁴.

When the bill was being discussed, it seemed at first that the protagonists of strictly demanded compact

territory (Lodgman, Seliger, Renner, Bauer ...) would enforce their standpoint at the expense of the “enclave” opposition represented during this phase only by the deputies Gross (Jihlava) and d’Elvert (Brno).

At meetings of the Provisional national assembly on 12 and 14 November 1918, Gross and d’Elvert resolutely refused the creation of a temporal German-Austrian protectorate over islands and minorities in Moravia and demanded attachment of language enclaves to the German-Austrian state territory. In favour of their standpoint, the active “island” deputies initiated their electoral base in the enclaves. At a meeting held on 14 October 1918, two memoranda on joining German-Austria was presented to the Provisional national assembly by two delegations of the German national council from the Jihlava language enclave. The memoranda were completely in accord with the argumentation of “island” deputies and blamed the State council and chancellor Renner for “unwarranted sacrifice of national demands”⁵. A controversial bill was then sent by the Provisional national assembly to the constitutional committee, in which d’Elvert was a president and Gross an expert. After one of the committee members, the deputy von Licht, changed his standpoint, the committee presented at the meeting of Provisional national assembly on 14 November 1918 a bill, which counted on the attachment of the language enclaves of Brno, Olomouc and Jihlava and enclaves in Yugoslavian territories (Kočevoje and Celje language enclaves) to the German-Austrian state territory⁶.

On 19 November 1918, the constitutional committee again rejected Renner’s “compromise” proposal, in which the language islands of Brno, Olomouc and Jihlava were left under the German-Austrian sovereignty until a definitive decision regarding their status (until the peace conference) would be made. During the constitutional committee meeting on 21 November 1918, there was another discussion on the Moravian language enclaves. Von Licht proposed that the large Jihlava language enclaves would be incorporated into the state territory and that the claim for the Brno and Olomouc language enclaves would be abandoned. This compromise was welcomed also by some deputies from Austrian lands as they were

² KRCAL, H.: Der Umsturz im Jahre 1918 in Iglau. Zeitschrift für Geschichte und Landeskunde Mährens, no. 45/1943, pp. 198–203.

³ Act No. from October 22, 1918 on the territory, borders and relations of the state territory of German Austria. In: Staatsgesetzblatt für den Staat Deutschösterreich, 1918, published 28 October, vol. 9.

⁴ ÖStA Wien, AdR, Allgemeine Reihe 1918–1938, Staatserklärung über Umfang, Grenzen und Beziehungen des Staatsgebietes von Deutschösterreich, sign. AT-OeStA/AdR HBbBuT PTV Allg Reihe, carton 231, supplement 3.

⁵ ÖStA Wien, AdR, Allgemeine Reihe 1918–1938, die 4. Sitzung der Provisorischen Nationalversammlung am 14.11. 1918, sign. AT-OeStA/AdR HBbBuT PTV Allg Reihe, carton 35.

⁶ ÖStA Wien, AdR, Staatsratprotokolle 1918–1919, Antrag des Verfassungsausschusses, sign. AT-OeStA/AdR MRang MR 1. Rep StRP, carton 55, supplement 21.

afraid that the original demand would lead to Czechs having a similar demand concerning Czech minorities in Vienna (Favoriten and Floridsdorf quarters) and in Deutschböhmen (Most, Duchcov, Bílina)⁷.

Despite the proposal of the constitutional committee to withdraw the bill on the territory and borders from the programme of the following meeting of the Provisional national assembly, this point was included in the programme of meeting held on 22 November 1918⁸. Debates at this meeting led to the formation of two implacable opinion groups. One called for “securing of significant and important German language possessions” – this group was represented by traditional Sudeten activists Renner, Bauer, Seliger, Teufel and all German nationalists from Bohemia. The other was represented by deputies of language enclaves, German liberals from Vienna, some social democrats (deputy Seitz) and Christian socialists from the Alpine lands, who saw here a parallel with their interests in the Ladin territories in South Tyrol⁹.

Renner, who could not rely on the support of his own party fraction, finally had to retreat. Acts no. 40 and 41 on the “territory, borders and relations of the state territory of German Austria” were finally passed at the meeting of the Provisional national assembly on 22 November 1918. Based on them, German Austria demanded the language enclaves of Brno, Olomouc and Jihlava. Partial satisfaction was granted to Renner in § 3 of the Act No. 40 according to which individual “judicial districts, municipalities and settlements that form state territory, will be designated and announced by the State council”. An item with interesting territorial impact was § 4 of the declaration No. 41, which proposed the creation of a specific territory consisting of the Ostrava coal district and the Bielitz-Biala (Bielsko-Biala) language enclave which would be administered by an international Polish-Czechoslovak-Austrian government.

2. Characteristics of language enclaves in Moravia

2.1 The Brno language enclave

The most important Moravian language enclave was the city of Brno with 10 neighbouring German municipalities (Černovice, Horní Heršpice, Dolní Heršpice, Ivanovice, Kamenný Mlýn, Komárov, Modřice, Moravany, Přízřenice and Žilošice). The Brno island was important for Moravian Germans as an institutional centre and as a centre of German educational institutions, culture and industry. In 1918, Brno was the largest “German” city in the Czech lands. According to the results of the 1910¹⁰ census, the language enclave had 140,346 inhabitants¹¹, of which 92,761 were German-speaking persons (66%). In 1921, the population in the same territory amounted to 155,328 inhabitants, of which 56,481 were Germans (36% – the decline affecting mainly Brno – from 63% to 35%, less suburbs and rural villages of the language enclave – from 82% to 51%)¹².

In this publication the authors use the 1910 census data, which were rather rigidly handled by German leaders in decisions on the size of demanded territory. The mother tongue-based concept of ethnicity used in the census was severely criticised and after foundation of Czechoslovakia it was abandoned (mother tongue and ethnicity were enquired). Data from the 1921 census are provided for comparison. Differences result from not only different methodologies and natural population changes, but also from the change of declared language/ethnicity in language enclaves by a rather abundant bilingual part of population (we can assume that they inclined to the politically dominant ethnicity, i.e. before 1918 to Germans, later to Czechs). However, in contrast with Czechoslovakia, the primordialistic concept of deriving nationality from language had never been abandoned by Austria and 1910 census data were used (in fact, rather abused as a “preferable” clue) even for the delimitation of territory occupied by German nazis in 1938¹³.

⁷ Die 41. Sitzung des Staatsrates am 21.11. 1918, ADÖ. Vlg. für Geschichte u. Politik, Oldenburger Verlag, München, 1993, Vol. 1, pp. 168.

⁸ HAAS, H.: Konflikt při uplatňování nároků na právo sebeurčení ... In: První světová válka a ..., Matice moravská, Brno, 2000, pp. 149.

⁹ Ibid.

¹⁰ Spezialortsrepertorium der österreichischen Länder. bearbeitet auf Grund der Ergebnisse der Volkszählung vom 31. Dezember 1910. X. MÄHREN. K.k. Hof – und Staatsdruckerei, Wien, 1918, 239 pp.

¹¹ Including military persons.

¹² Statistický lexikon obcí na Moravě a ve Slezsku vydán Ministerstvem vnitra a Státním úřadem statistickým na základě výsledků sčítání lidu z 15. února 1921. Státní úřad statistický, Praha, 1924, 219 s.

¹³ Wide criticism and discussion on the relevance of census data from 1910 and 1921, namely in (1973): The Ethnographic Map of the Czech Lands 1880–1970. Academia – nakladatelství Československé akademie věd, Praha, 100 s.

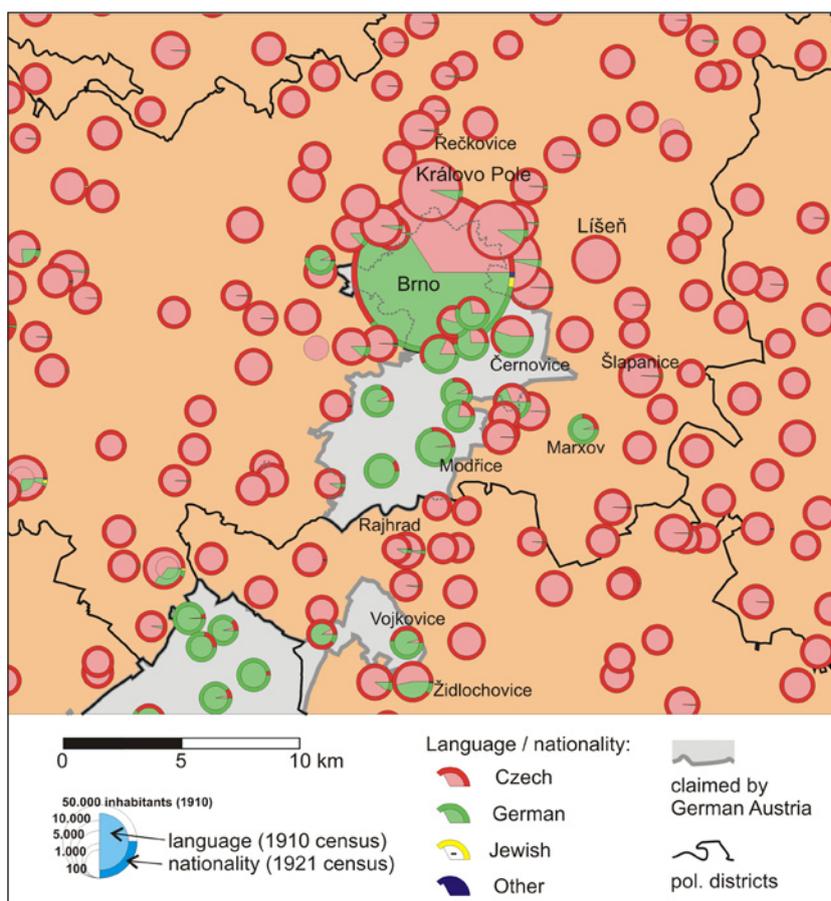


Fig. 2: The German language enclave of Brno in 1918

The Czechs assigned to the city the same importance. They would never agree to its cession to German-Austria. As early as on 29 October 1918, the Czech national committee took control over the city without any organised German resistance. The important circumstance, which complicated the German-Austrian claim for the language enclave, was a high proportion of Czech population in the city, mainly in its suburbs, and on the contrary a small German hinterland of Brno. Despite the vicinity of the German territory – namely the Pohořelice region – and traditional economic relations with Lower Austria and Vienna, supplies for the city were completely dependent on the Czech areas.

German national council for the city of Brno was established on 27 October 1918¹⁴. As early as on 24 October 1918, the representatives of “all German areas in the land (Moravia)” met and objected to the attachment of any German territory to the “Czech state”¹⁵. In order to protect the rights of German minorities in the Moravian inland, the so-called “Nationalrat der Deutschen Mittelmährens” (National council of Germans in central

Moravia) was established on 4 November 1918¹⁶. It was established at the time when no doubt existed that the Czechoslovak state would not allow any irredentist experiment on its territory.

Through a relatively loyal and constructive approach to the Czech government it managed to enforce many a compromise and achieve representation in administrative bodies, e.g. in Brno. During the first half of November 1918, permanent committees of the German national council for central Moravia (for Jihlava, Brno, Vyškov and Olomouc) and for the city of Brno were established in Brno. At the same time, committees of the union of German teacher associations, clerk associations, traders, German military council etc. were created, too. They were seated in the National house in Brno, where they provided information and help to the German population in Moravia.

Jews formed an important community in Brno, traditionally pro-German oriented. Similarly as Germans, they had their meeting centre in the Brno

¹⁴ Zemský archiv Brno, Fond B 33, Národní výbor 1918–1919, carton 1, sign. 780.

¹⁵ SOKA Šumperk, Německá národní rada Šumperk fund, carton 1, inventory no. 2

¹⁶ KRČAL, H.: Der Umsturz im Jahre 1918 in Iglau. Zeitschrift für Geschichte und Landeskunde Mährens. no. 45/1943, pp. 198–203.

Schwechat pub, where they declared at the first meeting of their associations “Landesverbandes der israelitischen Kultusgemeinden Mährens” (Land association of Jewish parishes in Moravian municipalities) and “Der jüdische Volksrat in Brünn” (Jewish national council in Brno) on 6 November 1918 to have welcomed the establishment of the Czechoslovak state and called themselves “its faithful and loyal citizens”¹⁷.

Despite the proclamations and laws, in which Brno was taken as a part of German Austria, the Austrian authorities doubted their claims several times as early as at the beginning of November 1918. For instance they considered the replacement of the German University of Technology outside Brno, first to Linz, where there were however no suitable buildings. The land school council in Opava decided on 11 November 1918 to replace this prestigious university to Šumperk¹⁸ in northern Moravia.

2.2 The Olomouc language enclave

The Olomouc language enclave was formed by the city of Olomouc and by ten other municipalities of the southern suburb (Neředín, Nová Ulice, Povel¹⁹, Novosady, Nový Svět, Nemilany, Kyselov, Slavonín, Hněvotín and Nedvězí). In the Act No. 4/1919 on German-Austrian state territory, the municipality of Pavlovice²⁰ in the northern suburb was not included in the island, although it directly bordered on the language enclave and in which 721 Germans out of 1,247 inhabitants amounted to 58% of population. However, the municipality of Nový Svět, which had a German majority but which did not border on the language enclave, was made part of the island and thus formed the “exclave of the exclave”.

According to the 1910 census, there were 37,443 inhabitants in the language enclave, out of whom 24,628 were German-speaking persons (66%)²¹. The same territory amounted in 1921 to 42,149 inhabitants of whom 17,059 were Germans (40%)²². The island

was situated relatively close to the compact German-speaking area (Šternberk region), but its dependence on the Czech surroundings was indisputable. The overall character of the island was less German than in the case of Brno. This was shown even in its administrative status in the Act No. 4/1919, where the Olomouc region was subordinated to the Jihlava administration.

On 29 October 1918, the local Czech National Committee took control of the city and all its authorities, a situation identical to that in Brno. With the help of so-called Morávek’s company (part of the 13th militia regiment) the city hall was secured. It was mainly through the power of the army (on 2 November, Morávek’s company comprised 900–1,000 armed men) that the nationalistic activity of Germans living in Olomouc was successfully suppressed.

Although the German National Committee for Olomouc and its surroundings, made up of the representatives of German political parties in Olomouc, expressed their consent with the annexation of the language enclave into the German Austria on 1 November 1918, the city was already controlled by the Czechoslovak Committee at that time. The only material act of resistance against the incorporation into Czechoslovakia was the obstruction during the dismissal of existing local boards in German municipalities in the suburbs of Olomouc. For example in the villages of Nový Svět, Novosady and Pavlovice²³, the municipal authorities were forced to resign only on 21 November 1918, and in Nová Ulice even as late as on 2 December 1918²⁴. In Olomouc, the town council resigned on 13 November 1918²⁵ and the town administration was taken over by government commissioner R. Fischer (the hitherto chairman of the Czech National Committee in Olomouc)²⁶.

2.3 The Jihlava language enclave

A centre of the most significant German language enclave in the Czech lands was the city of Jihlava. The enclave was situated both in Bohemia and in Moravia

¹⁷ Zemský archiv Brno, Fond B 13, Moravské místodržitelství – Různé policejní věci 1817 – 1918, karton 1, sign. 1448

¹⁸ SOKA Šumperk, fond Německá národní rada Šumperk, carton 1, inv. no. 21.

¹⁹ Povel today, Povel in German, hereafter Povel.

²⁰ Pavlovičky today, Paulowitz in German, hereafter Pavlovice.

²¹ Spezialortsrepertorium der österreichischen Länder: bearbeitet auf Grund der Ergebnisse der Volkszählung vom 31. Dezember 1910. X. MÄHREN. K.k. Hof – und Staatsdruckerei, Wien, 1918, p. 239.

²² Statistický lexikon obcí na Moravě a ve Slezsku vydán Ministerstvem vnitra a Státním úřadem statistickým na základě výsledků sčítání lidu z 15. února 1921. Státní úřad statistický, Praha, 1924, 219 pp.

²³ URBÁŠEK, P.: Vzpomínky štábního kapitána Vladimíra Tomka na události po 28. říjnu 1918 v Olomouci a na severní Moravě. Zprávy Krajského vlastivědného muzea v Olomouci, no. 256, Olomouc, 1988, pp. 9.

²⁴ Zemský archiv Brno, Fond B 33, Národní výbor 1918 – 1919, carton 2, sign. 2757

²⁵ Zemský archiv Brno, Fond B 33, Národní výbor 1918 – 1919, carton 1, sign. 3154.

²⁶ SOKA Olomouc, Fond M 1-1 AMO – Presidiální registratura 1918, carton 31, inventory no. 75.

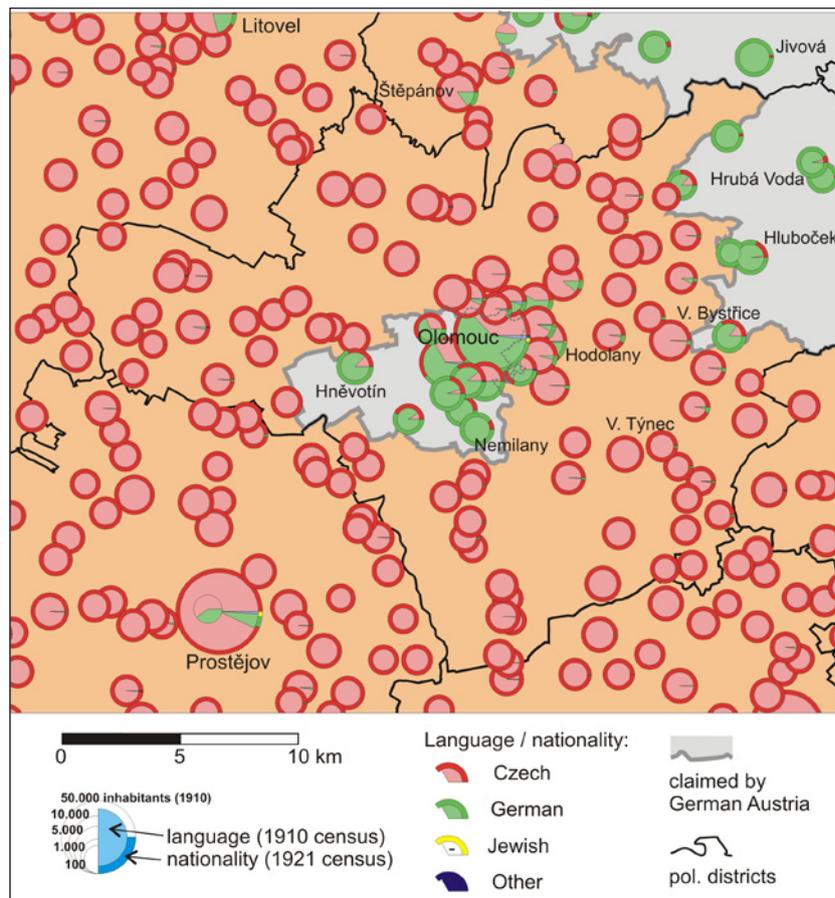


Fig. 3: The German language enclave of Olomouc in 1918

and included altogether 56 German municipalities²⁷. A larger part of the enclave was to be found in the Kingdom of Bohemia, with nearly the whole judicial district of Štoky. This part was characterized by strong Czech minority in many municipalities. In 1910, there were altogether 48,692 inhabitants, of whom 38,528 were German-speaking persons (about 79%)²⁸. In 1921, the population of the same territory amounted to 48,056 inhabitants, of whom 25,742 were Germans (54%)²⁹. Thanks to the extensive agricultural hinterland, the Jihlava region was regarded as economically self-sufficient. Traditional economic ties with the Czech surroundings were, however, unreplaceable.

The Czech national committee, mainly thanks to the Czech 81st militia regiment³⁰, took over the control of Jihlava on 29 October. Despite the German character of the city, there were no conflicts when the new authorities took control of offices and important factories (there were for instance ones of the greatest tobacco companies in the country). They faced difficulties only when they were taking over the Jihlava town hall – the German city council refused to resign for a long time. The pressure of the Moravian vicegerency caused that the council presided by mayor Inderka resigned on 5 December 1918 and control of the city was taken by government commissioner

²⁷ City of Jihlava, out of judicial district Německý Brod the municipalities of Frydnava, Hochtánov, Dlouhá Ves, Bartošov; out of judicial district Pelhřimov settlement of Vestenhof of the municipality Cejl; out of judicial district Štoky all municipalities besides the settlements of Hlavkov, Hubenov; out of judicial district Jihlava the municipalities of Hruškové Dvory, Suchá, Kosov, Handlový Dvory, Vysoká, Dřevěné Mlýny, Hosov, Loučky, Měšín, Prostředkovice, Malá Cerekev, Votín, Pístov, Popice, Beranec, Rancířov, Rosice, Salavice, Stonařov, Vilánek, Kostelec, Čížov. In: Výkonné nařízení Státní rady no. 4 ze dne 3.1. 1919 o německorakouském státním území tvořeném soudními okresy, obcemi a osadami. In: Staatsgesetzblatt für den Staat Deutschösterreich, year 1919, issued 5.1. 1919, vol. 3 – see supplement No. 9.

²⁸ Spezialortsrepertorium der österreichischen Länder. bearbeitet auf Grund der Ergebnisse der Volkszählung vom 31. Dezember 1910. X. MÁHREN. K.k. Hof – und Staatsdruckerei, Wien, 1918, 239 pp.

²⁹ Statistický lexikon obcí na Moravě a ve Slezsku vydán Ministerstvem vnitra a Státním úřadem statistickým na základě výsledků sčítání lidu z 15. února 1921. Státní úřad statistický, Praha, 1924, 219 s.

³⁰ COUFAL, F.: Osvobození jižní Moravy. Vzpomínky a dokumenty o převratu v roce 1918. Svaz čs. důstojnictva, Praha, 1937, pp. 68.

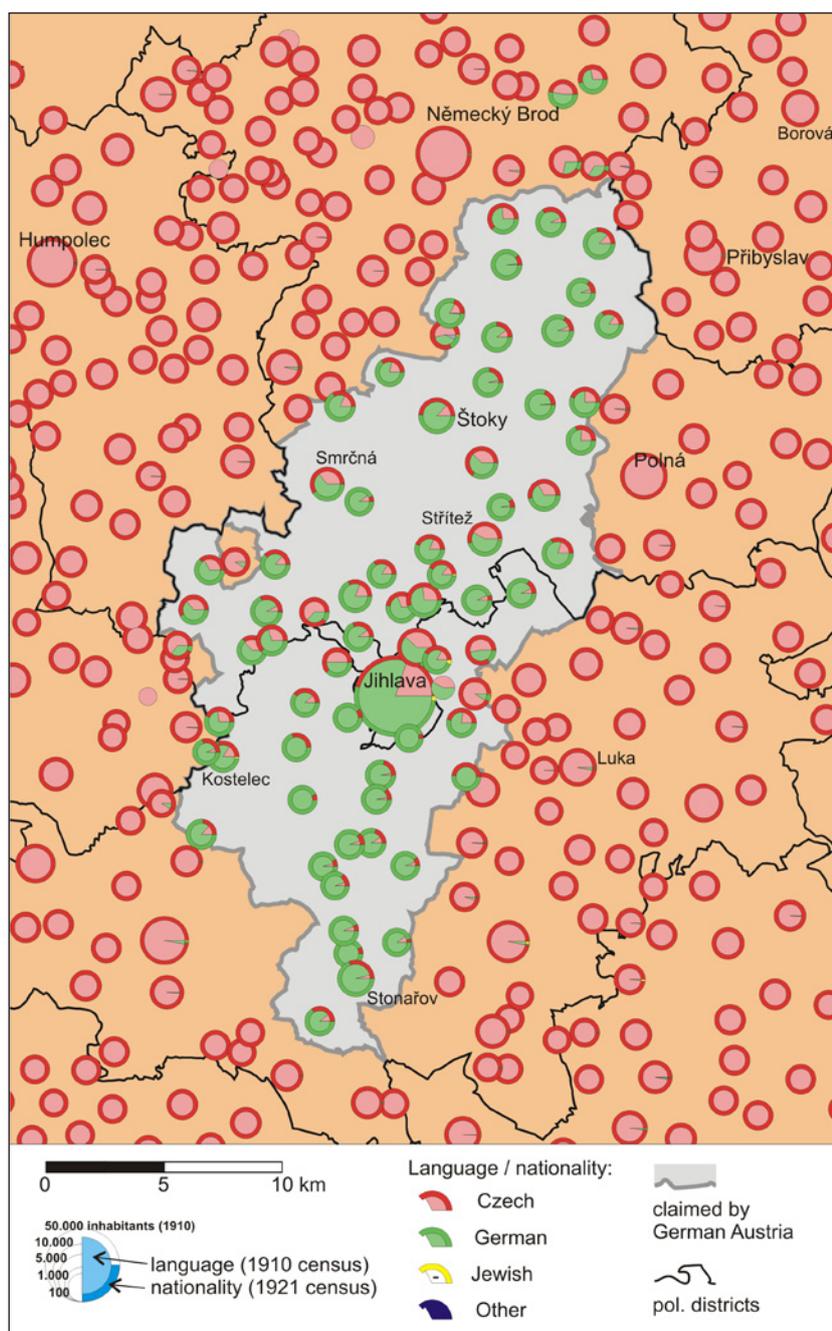


Fig. 4: The German language enclave of Jihlava in 1918

F. Hovůrka and by administrative commission which included 12 Czechs and 12 Germans³¹.

On 3 November 1918, the representatives of “Germans from the Jihlava language enclave” met at the Jihlava town hall and formed a so-called “Volksrat für die Iglauer Sprachinsel” (National council for the Jihlava language enclave). It proclaimed at its “ceremonial” meeting its affiliation to Austrian Germany³².

The German national council initiated several negotiations with the Czech national committee (e.g.

on 9 October 1918), where relations between the two nations in the language enclaves were discussed. The Czech party asserted its claims and did not approve of the German demands for administrative provisional measures and affiliation to German Austria.

3. Conclusion

The Moravian language enclaves became a very specific feature in the territorial claims of German Austria. For instance, after an agitated parliamentary struggle for the attachment of the language enclaves to the state

³¹ Ibid pp. 170.

³² Zemský archiv Brno, Fond B 33, Národní výbor 1918 – 1919, carton 1, sign. 1605.

territory, there were no other steps leading to their full incorporation. The language enclaves were part of the German-Austrian territory only de jure. The Germans accepted tacitly the fact also because the state council never took “financial responsibility for administration of the cities of Brno, Olomouc and Jihlava”, since it would have had to secure the existence of officers in case of the expected failure of German demands. Sudetenland commandant R. Freissler refused to formally take over the city of Olomouc into his administration, since there was no “actual German power”³³. The German national council “Der deutsche Nationalrat für Brünn und Mittelmähren”, which represented the Germans in the so-called central Moravia, proved this state at the beginning of December 1918, when it considered to support the Czechoslovak state until the final decisions brought about by peace negotiations³⁴ were known.

All actual manifestations of resignation concerning the language enclaves were in contrast to the official demand, which lasted until the signing of the peace treaty in 1919. The propaganda (e.g. by propagandistic cards or leaflets “Flugblätter für Deutschösterreichs Recht”) kept proclaiming the affiliation of Moravian language enclaves to German Austria³⁵. The reason to the almost exaggerated emphasis of Austrian

policy concerning the small territories and minorities in Moravia can be found mainly in the system of electoral districts established on the principle of “national cadastre”. According to the electoral act of 26 January 1907, German electoral districts were established even in purely Czech areas in Moravia.

As a result, Germans living outside the compact territory were relatively plentifully represented in the Imperial council. Out of 19 representatives of the Moravian Germans in the Imperial council 14 were delegated for mainly Czech or mixed electoral districts³⁶. These “island” representatives usually promoted a radical nationalistic programme and formed an influential group, which permanently introduced into the meetings of the Provisional national assembly measures for protection of island Germans and supplied the meetings with a number of political-geographical utopias, which could not be defended against the neighbours and which created other conflicts. Their reasons were probably nationalistically but also pragmatically motivated – together with their “German” electoral districts they also defended the legitimacy of their mandates, which in case of the loss of mixed Moravian territories would have not been tenable.

³³ HAAS, H.: Konflikt při uplatňování nároků na právo sebeurčení ... In: První světová válka a ..., Matice moravská, Brno, 2000, pp. 151.

³⁴ MOLISCH, P.: Die sudetendeutsche Freiheitbewegung in den Jahren 1918–1919. Wilhelm Braumüller, Universitäts-Verlagsbuchhandlung, Wien – Leipzig, 1932, pp. 113.

³⁵ BULÍN, H.: Jiskry a plameny. Vzpomínky na dobu zápasů i vítězství. Vlastním nákladem, Brno, 1930, pp. 114.

³⁶ Zákoník říšský pro království a země v Zákoník říšský pro království a země v Zákoník říšský pro království a země v říšské radě zastoupené. volume 9. Issued 30.1. 1907. The act published on 26.1. 1907, which changed §§ 1, 6, 7, 12 and 18 from the 21.12. 1867, Z. Ř. č. 141, also acts of 2.4. 1873, Z. Ř. č. 40, issued 12.11. 1886, Z. Ř. č. 162, and act issued on 14.10. 1896, Z. Ř. č. 168. říšský pro království a země v říšské radě zastoupené. volume 9. Issued 30.1. 1907. The act published on 26.1. 1907, which changed §§ 1, 6, 7, 12 and 18 from the 21.12. 1867, Z. Ř. č. 141, also acts of 2.4. 1873, Z. Ř. č. 40, issued 12.11. 1886, Z. Ř. č. 162, and act issued on 14.10. 1896, Z. Ř. č. 168. říšské radě zastoupené. volume 9. Issued 30.1. 1907. The act published on 26.1. 1907, which changed §§ 1, 6, 7, 12 and 18 from the 21.12. 1867, Z. Ř. č. 141, also acts of 2.4. 1873, Z. Ř. č. 40, issued 12.11. 1886, Z. Ř. č. 162, and act issued on 14.10. 1896, Z. Ř. č. 168.

References and archive sources:

- ALTRICHTER, A. (1924): Dörferbuch der Iglauer Sprachinsel. Zeitschrift des deutschen Vereins für Geschichte Mährens und Schlesiens, Arbeitsgemeinschaft, Iglau, p. 259.
- BULÍN, H. (1930): Jiskry a plameny. Vzpomínky na dobu zápasů i vítězství. Vlastním nákladem, Brno, 170 pp.
- COUFAL, F. (1937): Osvobození jižní Moravy. Vzpomínky a dokumenty o převratu v roce 1918. Svaz čs. důstojnictva, Praha, 298 pp.
- HAAS, H. (2000): Konflikt při uplatňování nároků na právo sebeurčení: od habsburského státu k Československu – Němci v českých zemích v letech 1918 až 1919. In: První světová válka a vztahy mezi Čechy, Slováky a Němci. Matice moravská Brně, Brno, p. 113–178.
- HÄUFLER, V. (1973): The Ethnographic Map of the Czech Lands 1880–1970. Academia, Praha, 100 s.
- Kolektiv (1993): Außenpolitische Dokumente der Republik Österreich 1918–1938. Verlag für Geschichte u. Politik, Oldenburg Verlag, München, Sv. 1, 534 pp.
- KRCAL, H. (1943): Der Umsturz im Jahre 1918 in Iglau. Zeitschrift für Geschichte und Landeskunde Mährens, č. 45, p. 198–203.

- MOLISCH, P. (1932): Die sudetendeutsche Freiheitbewegung in den Jahren 1918–1919. Wilhelm Braumüller, Universitäts-Verlagsbuchhandlung, Wien – Leipzig, 191 pp.
- ÖStA Wien, AdR, Allgemeine Reihe 1918–1938, sign. AT-OeStA/AdR HBbBuT PTV Allg Reihe.
- ÖStA Wien, AdR, Staatsratprotokolle 1918–1919, Antrag des Verfassungsausschusses, sign. AT-OeStA/AdR MRang MR 1. Rep StRP, karton 55.
- SOKA Olomouc, Fond M 1-1 AMO – Presidiální registratura 1918, karton 31.
- SOKA Šumperk, fond Německá národní rada Šumperk, karton 1.
- Spezialortsrepertorium der österreichischen Länder. bearbeitet auf Grund der Ergebnisse der Volkszählung vom 31. Dezember 1910. X. MÄHREN. K.k. Hof – und Staatsdruckerei, Wien, 1918, 239 pp.
- Statistický lexikon obcí na Moravě a ve Slezsku vydán Ministerstvem vnitra a Státním úřadem statistickým na základě výsledků sčítání lidu z 15. února 1921. Státní úřad statistický, Praha, 1924, 219 s.
- The Ethnographic Map of the Czech Lands 1880–1970 (1973). Academia - nakladatelství Československé akademie věd, Praha, 100 s.
- URBÁŠEK, P. (1988): Vzpomínky štábního kapitána Vladimíra Tomka na události po 28. říjnu 1918 v Olomouci a na severní Moravě. Zprávy Krajského vlastivědného muzea v Olomouci, č. 256, Olomouc, pp. 1–16.
- Výkonné nařízení Státní rady no. 4 ze dne 3. 1. 1919 o německo-rakouském státním území, tvořeném soudními okresy, obcemi a osadami. In: Staatsgesetzblatt für den Staat Deutschösterreich, ročník 1918, vydáno 28. 11. 1918, Vol. 9.
- Zákon č. 40 ze dne 22. 11. 1918 o rozsahu, hranicích a vztazích státního území Německého Rakouska. In: Staatsgesetzblatt für den Staat Deutschösterreich, ročník 1918, vydáno 28. 11. 1918, Vol. 9.
- Zemský archiv Brno, Fond B 13, Moravské místodržitelství – Různé policejní věci 1817–1918, karton 1.
- Zemský archiv Brno, Fond B 33, Národní výbor 1918–1919, karton 1 a 2.

Authors' addresses:

Mgr. Richard JAŠŠ,
Department of Geography, Faculty of Science, Masaryk University,
Kotlářská 2, 611 37 Brno, Czech Republic
e-mail: richardjass@seznam.cz

RNDr. Miloš FŇUKAL, Ph.D.,
Department of Geography, Faculty of Science, Palacký University,
třída Svobody 26, 771 46 Olomouc, Czech Republic
e-mail: fnukal@centrum.cz

BLOCK ACCUMULATIONS IN THE WESTERN PART OF THE PODYJÍ NATIONAL PARK (CZECH REPUBLIC): PRELIMINARY ANALYSIS OF THEIR DISTRIBUTION

Lucie KUBALÍKOVÁ

Abstract

The National Park Podyjí in the southern Moravia is one of areas where block accumulations can be found. In this article, the author analyzes some basic facts about the distribution of block accumulations and deals further with some aspects of the distribution (for example exposure, position within the slope etc.). The research forms a part of the author's thesis. The data obtained together with the information about architecture and sedimentological characteristics can be used in a detailed analysis of block accumulations, and the work as a whole can contribute to the protection of this unique ambient.

Shrnutí

Blokové akumulace v západní části národního parku Podyjí (Česká republika): předběžná analýza jejich rozšíření

Národní park Podyjí na jižní Moravě je jednou z oblastí, kde lze najít blokové akumulace. Článek shrnuje některá základní fakta týkající se rozšíření blokových akumulací a rovněž se pokouší analyzovat hlavní faktory rozmístění akumulací (např. expozice svahu, pozice v rámci svahu). Výzkum tvoří součást disertační práce autorky. Získaná data společně s informacemi o architektuře a sedimentologických charakteristikách mohou být použita pro detailní analýzu akumulací. Práce jako celek může rovněž přispět k ochraně tohoto jedinečného území.

Key words: *block accumulation, agents of the distribution, valley of Dyje River, National Park Podyjí, Czech Republic*

1. Introduction

Block accumulations are natural phenomenon that can occur in deep river valleys on the southeastern border of the Bohemian Massif (except in the Dyje River valley, there are some accumulations in the valleys of Svratka R., Loučka R. or Oslava R., too). The aim of this article is to present the natural phenomena of block accumulations in the western part of the Podyjí National Park. The author wants to concentrate her attention on methods of research, on spatial distribution, architecture and possibly on causes of the distribution. Results of this work can be used by other scientists, for example biologists, who focus on the research of fauna and flora relicts or geologists, sedimentologists and many others.

There is a range of opinions for how to define the term "block accumulation". Some authors use the term "slope covers" (Pawelec, 2006) or "rock slopes" (Howard, Selby, 1994). The author uses the term "block accumulation" which seems to be most general. The definition itself of the block accumulation comes out of the specific conditions in the National Park Podyjí: Brzák (2000) defines accumulation as a concentration of rock fragments on an area larger than 10 × 10 m under a condition that the rock fragments cover more than 50% of the surface. The author of this article uses the definition of Brzák (2000) because it fits best to the area studied.

Block accumulations are widely described both in the Czech literature and in the literature from abroad. This phenomenon is mentioned in the context with the periglacial and

cryogenic modelation of the relief. The most prominent authors in the Czech ambient are e.g. Demek (1991, 1996) and Czudek (1957, 1961), who examine block accumulations in the Jeseníky Mts., near the Bílina R. or in other localities in the Czech Republic. Some regional studies of periglacial phenomena were studied by Kanský (1957) or Král (1966), who described some accumulations in the area of České středohoří Mts. Růžička (1998) focused his research on the ecosystem in relation with microclimatic conditions and biota in the block accumulation of České středohoří Mts. and Raška (2007) explains the recent dynamics of scree slopes in the same area. Hartvich (2003) presents some locations in the Městiště area in the Šumava Mts.

The literature that refers to area of Podyjí is also very ample and it has a long tradition. In the end of the 19th century, some scientists from Austria wrote articles about locality of Ledové sluje (Roth, 1863), Jarzs (1882, 1884), and then Koláček (1922) and Vitek (1992) described the same locality (you can see the ridge of Ledové sluje (Ice caves) in Fig. 1 on cover p. 4). During the existence of the iron curtain, there was no possibility of research in that area. Later, Brzák (1996, 2000) carried out a complex geomorphic analysis of the area of Podyjí, Demek et al. (1991) measured the movements of slopes in some localities, Kirchner and Ivan (1993) focused on anthropogenic and other forms of the relief. Brzák and Kirchner (2001) published a summary of the geomorphological investigations. The last work dealing with the block accumulation of the eastern part of Podyjí is Hejkal's diploma thesis (2009) that offers some morfometrical characteristics of the phenomenon.

In the foreign literature the phenomenon of the block accumulation is described by Steijn et al. (2002) who describe the agents of the origin and genesis of block accumulations, Harris and Prick (2000) compare some localities in Scotland and Belgium, Govers and Poesen (1998) examine some localities in Turkey. Otto and Sass (2006) present some methods for the analysis of accumulations architecture.

2. Study area

The Podyjí National Park is located on the south border of Moravia between the towns of Znojmo and Vranov nad Dyjí. The national park was decreed in 1991 and its area is 63 km². In 2000, the Austrian part decreed the Thayatal National Park and an important bilateral area came into being. The axis of the national park is a deep valley of the Dyje (Thaya) River, which is a typical central European phenomenon covered by natural forests. This area is the point where the influences of the Hercynian fauna and flora meet with the fauna and flora coming from the south (influences of the Pannonic area).

Geologically, there are three main units in the study area. The eastern part is formed by the core of the Dyje Massif, mainly of granite. The division between the eastern and western parts provides the Lukov unit formed by phyllite and mica schist, and the Bíteš orthogneiss dominates in the western part (Bátík, 1984).

Geomorphology of the area is very problematic, as mentioned above, the main relief form is the Dyje River valley with meanders, alluvial plains and others typical fluvial landforms. The important feature is also the cryogenic relief with forms such as block accumulations (see Fig. 2 on cover p. 4), rock towers and others. An important feature of the relief are anthropogenic forms such as water-gangs, vineyards (anthropogenic terraces) etc. The highest point of the area is the Býčí hora Mt. (536 m above sea level), the lowest point is the place where the Dyje River leaves the area, near the bridge in Hardegg (270 m), so the absolute difference in altitude is over 250 m. The inclination of slopes varies, most inclined are rocky slopes (e.g. Ledové sluje – more than 50°) but margins of the area feature nearly null inclination.

The study area itself is situated in the western part of the Podyjí National Park: it is a segment of the Dyje River valley and includes valleys of Dyje R. branches approximately between the towns of Vranov and Hardegg on the Austrian side of the border (Fig. 3).

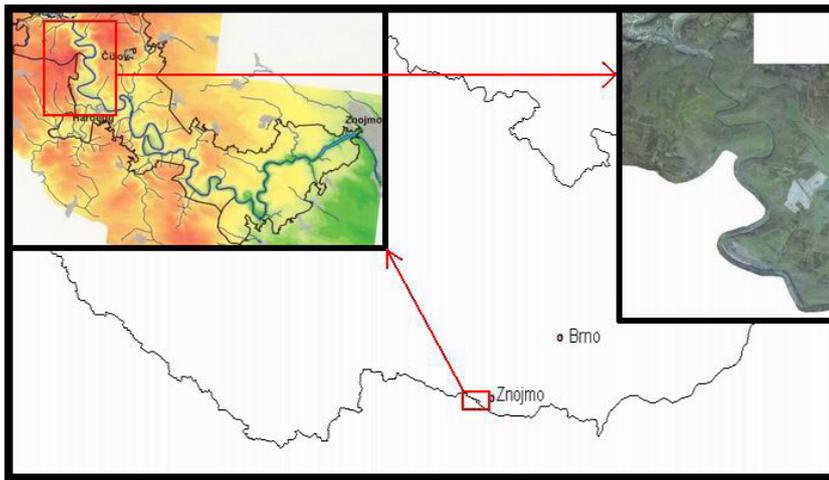


Fig. 3: Localization of the study area within the National Park Podyjí
Source: Podyjí National Park Administration, ČÚZK, author

3. Methods

3.1 Field work methods

Methods that are used in this research can be divided into several groups: Literature study, aerial photos, maps and other resources of information. The author dedicated her attention to the analysis of orthophotos, which was offered by ČÚZK (Czech Office for Surveying, Mapping and Cadastre) so that some block accumulations could be localized. A problem emerged, however, in the analysis of the orthophotos that a part of the accumulation was hidden in vegetation, which made the location of some accumulation impossible. This was one of the reasons why a detailed field research had to be conducted.

Field research: the information on each block accumulation was recorded in a special form. The exact location, selected morphographic and morphometric data, information about the type, dimension and position of the source rock form, information about the material of the block accumulation and eventually vegetation were registered.

The exact location of the accumulation was measured by GPS and plotted in the map (softwares used were gvSIG, ArcView and ArcGIS) on a scale 1: 10 000. The source maps were provided by ČÚZK. There were some problems with the detection of some types of data, e.g. exact dimensions could not be recorded because of a bad accessibility of the accumulations. Now, 84 localities in the Czech part of the area have been mapped. The mapping of the accumulations on the Austrian side of the border is problematic because map sources of an adequate scale are missing (there are only Czech military maps of this area on a scale 1: 25 000). However, some 10 accumulations in the Austrian part of the Fugnitz valley are described, but they are not included in the preliminary analysis.

The preliminary analysis of the distribution lies in the classification of accumulation types and in the analysis of distribution agents (influence of the exposition, lithology and morphology).

3.2 A brief overview of other methods studying the block accumulations

A range of methods exists to detect the internal structure, recent activity and age determination of block accumulations that can be divided into two groups: absolute and relative methods. Among absolute methods, we can mention the measurement by radioactive carbon, measurement of seismic refraction or resistor measurement. Examples of the relative methods are correlations between the accumulations and the Dyje River terraces. Another way of how to find out about the recent activity of the block accumulations is the information about the fall of rock that can be found in the archives of Znojmo and the Vranov Castle (Šmerda, 1999).

The elaboration and interpretation of field research results has several parts: interpretation of factors that influence the distribution of accumulations (exposure, slope, position within the slope, presence of the source rock form, etc.), classification of the accumulations and intention to explicate the development of the accumulations. These methods still have not been used for the analysis of block accumulations, but there is a possibility of its utilization in a further and detailed investigation of block accumulations in the western part of Podyjí within the bounds of the author's doctoral thesis.

4. Results of the preliminary analysis of block accumulations distribution

4.1 Some aspects of the classification of block accumulations

There are many methods of how to classify the block accumulations. The most used one is a classification based on the ground plan shape of block flows, frontal and areal accumulations or the criteria of the position within the slope (position in the upper, middle or lower part of the slope) can be used. Hejkal (2009) proposes a classification system based on chosen morphometric data (percentage of slope coverage with fragments, slope profile, percentage of the accumulation coverage by vegetation, presence or absence of the source rock form) so that each accumulation can be represented by an alphanumeric code. Some other morphometric data could be added as criteria to this classification (e.g. dimensions of the accumulations or slope inclination).

4.2 The influence of lithology on the distribution

It was supposed that lithology plays a significant role in the distribution of accumulations: the most suitable rock for the genesis of accumulations are granitic rocks and their metamorphic equivalents because they don't suffer from fine-grained disintegration. Thus, the Bíteš orthogneiss was assumed a rock appropriate for the formation of accumulations (Fig. 4). On the contrary, the phyllite and the mica schist of the Lukov unit that have the fine-grained disintegration were not supposed to create the accumulations. This quality of these different rocks was observed in the terrain, and the hypothesis as a whole was corroborated; in the area where the Lukov unit rocks dominate, no block accumulations exist.

4.3 The role of slope exposure

Referring to the analysis of main agents in the distribution of accumulations, there was a hypothesis that slope orientation could have an important influence on the distribution of the accumulations. Northern, northwestern and northeastern exposures were considered most appropriate for the genesis of the accumulations thanks to a suitable microclimate. The analysis of exposures where the accumulations are situated showed that slope orientation does not play a very important role in the distribution of accumulations. A majority of the accumulations are situated on the slopes of west (26.5%) and southwest (18.5%) exposure while 32.1% of accumulations are located on the slopes of north (6.8%), northwest (11.7%) and northeast (13.6%) aspects. Complete information about the proportional representation of slope aspects can be seen in Fig. 5. Based on this analysis, the author concludes that slope orientation is a less important agent of the distribution of accumulations in this part of the National Park and that the substantial agent of the distribution is the area morphology.

4.4 Other aspects of distribution

The type of accumulations that dominate as to ground plan shape is the areal accumulation (54.3%), then the flow accumulation (30.9%) and frontal accumulations are represented only at 14.8%. The length/width ratio that was used as a limit between the types was 1:2 (or 2:1).

The dominating vegetation cover of the national park is deciduous forest and this is why the accumulations covered with this type of the vegetation predominate (79.0% of the accumulations). Only 18.5% of the accumulations are covered with the graminaceous



Fig. 4: Accumulation No. 44 on the right bank of the Dyje R. with the source rock form in the background (Bíteš orthogneiss). Photo: author

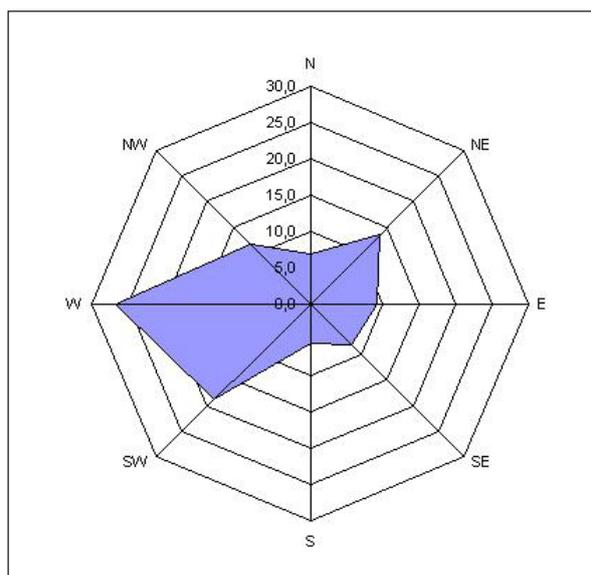


Fig. 5: The distribution of the expositions of the slopes where the accumulations are situated. Source: author

vegetation and the remaining accumulations (2.5%) feature nothing but mosses and lichens. The vegetation cover and the degree of soil formation can provide information about the recent activity of the accumulation or they can help to determine relative age of the accumulation. (The author supposes that the accumulations without vegetation cover or without any traces of soil processes are more active and younger than the accumulations covered by forests, but this is only a speculation that has not been grounded on literature).

During the field works, data on the source rock forms were obtained. Primarily, the presence or absence of the rock form, then the position in the relation to the accumulation was described. There are 63.0% of rock forms situated above the accumulation and 2.5% situated beside the accumulations and in the rest of the cases there are not any rock forms.

Position within the slope is another characteristic that was preliminarily analyzed: the accumulations that lie on the upper part of the slope are represented at 12.5%, on the lower part 29.2% and most common are the accumulations situated in the middle part of the slope (58.3%).

5. Conclusions

Block accumulations in the western part of the Podyjí National Park have not been mapped yet, which makes the fieldwork pivotal for the continuing research. The obtained data can serve as an input for analyzing agents of the distribution of block accumulations.

The preliminary analysis presents main agents of the distribution and their influence on it. Morphology of the area is the basic agent that determines the distribution of accumulations and plays a role that is more important than slope orientation; predominant accumulations are those of western aspect, although it was supposed that northern exposure would play an important role, too. Another significant factor of the distribution is lithology and the geomorphologic value of rocks forming the area; the accumulations are developed especially in the area where the Bíteš orthogneiss dominates. In the area of the Lukov unit, built of phyllite and mica schist, there are not any known accumulations.

The total number of accumulations mapped by the author on the Czech side of the Dyje River until now and used in the preliminary analysis amounts to 84. The mapped area covers approximately 40% of the total area of the National Park. There are many more data about the block accumulations that should be analyzed, e.g. the relation between the length of the slope and the length of the accumulation situated on this slope, the relation between the percentage of slope coverage with the rock fragments and inclination of the slope or between the vegetation cover and exposition. These are, however, beyond the limits of this article.

References:

- BATÍK, P. (1984): Geologická stavba moravika mezi bítešskou rulou a dyjským masivem. *Věstník Ústředního ústavu geologického*, Vol. 59, No. 6, p. 321–330.
- BRZÁK, M. (2000): Balvanové proudy a skalní útvary v údolí Dyje (NP Podyjí). *Acta Mus. Moraviae, Sci. geol.*, Vol. LXXXV, p. 135–150.
- BRZÁK, M., KIRCHNER, K. (2001): Prínos geomorfologického výzkumu v NP Podyjí v období 1991–2001. *Thayensia (Znojmo)*, No. 4, p. 19–25.
- DEMEK, J. (1991): Kvantitativní výzkum pohybu sutí na svazích Hrubého Jeseníku. *Acta Universitatis Palackianae Olomucensis, Facultas Rerum Naturalium, Geographica – Geologica XXX*, Vol. 103, p. 7–26.
- DEMEK, J. (1995): Geomorfologická mapová studie okolí Ledových slují v národním parku Podyjí (listy státní mapy 1: 5 000 Vranov 2–4 a 3–4). *Univerzita Palackého v Olomouci, Přírodovědecká fakulta*, MS, 11 pp.
- DEMEK, J. (1996): Poruchy svahů údolí Dyje u Vranova nad Dyjí: fakta a hypotézy. *Příroda. Sborník prací z ochrany přírody*. Praha, Vol. 3: Výzkum lokality Ledové sluje u Vranova nad Dyjí (NP Podyjí), p. 55–62.
- GOVERS, G. – POESEN, J. (1998): Field experiments on the transport of rock fragments by animal trampling on scree slopes. *Geomorphology*, No. 23, p. 193–203.
- GRUNA, B., REITER, A. [ed.] (1996): *Příroda. Sborník prací z ochrany přírody*, Vol. 3. Výzkum lokality Ledové sluje u Vranova nad Dyjí. Správa NP Podyjí Znojmo a AOPK ČR Praha. 163 pp.
- HARRIS, S. A., PRICK, A. (2000): Conditions of Formation of Stratified Scree, Slims River Valley, Yukon Territory: A Possible Analogue with Some Deposits from Belgium. *Earth Surface Processes and Landforms*, Vol. 25, p. 463–481.
- HARTVICH, F. (2003): Geomorfologické mapování lokality Městiště. In Mentlík, P. [ed.]: *Geomorfologický sborník 2*. Plzeň, ZČU v Plzni, p. 131–140.

- HEJKAL, Z. (2009): Balvanové proudy v údolí Dyje (NP Podyjí). Diplomová práce. Geografický ústav PŘF MU Brno, 68 pp.
- HOWARD, A. D., SELBY, M. J. (1994): Rock Slopes. *Geomorphology of Desert Environments*. London, p. 123-172.
- JARZ, K. (1882): Ledové jeskyně u Vranova na Moravě (Die Eishöhlen bei Frein in Mähren). *Petermanns Mittheilungen* No. 28, p. 170 – 176.
- JARZ, K. (1884): Vranovská ledová stráň. *Oesterreichische Touristen – Zeitung*, Vol. IV, No. 22.
- KIRCHNER, K., IVAN, A. (1993): Geomorfologická inventarizace vybraných tvarů reliéfu v Národním parku Podyjí. Dílčí zpráva za rok 1993 o plnění 1. etapy projektu „Geomorfologická inventarizace vybraných tvarů reliéfu v Národním parku Podyjí“ v rámci Programu péče o životní prostředí MŽP České republiky. Akademie věd ČR, Ústav geoniky – pobočka Brno. 18 pp.
- KIRCHNER, K., IVAN, A. (1998): Reliéf NP Podyjí a jeho okolí jako styčné soustavy oblasti Českého masivu a karpatské soustavy. *Thayensia (Znojmo)*, No. 1, p. 29–52.
- KOLÁČEK, F. (1922): Zanikající paledové sluje u Vranova n Dyjí. *Sborník České společnosti zeměpisné*, č. 38, 1922, p. 153–155.
- KRÁL, V. (1966): Geomorfologie střední části Českého středohoří. *Rozpravy Československé akademie věd, řada matematických a přírodních věd*, Vol. 76, No. 5, Academia, Praha, 60 pp.
- KUBALÍKOVÁ, L. (2008): Block accumulations in the western part of Podyjí National Park. In: *GeoScape. Ústí nad Labem, Department of Geography, UJEP*, p. 15–18.
- KUNSKÝ, J. (1950): *Kras a jeskyně*. Přírodovědecké nakladatelství Praha, 200 pp.
- KUNSKÝ, J. (1957): Typy pseudokrasových tvarů v Československu. *Československý kras*, Vol. 10, No. 3, p. 108–125.
- OTTO, J. C., SASS, O. (2006): Comparing geophysical methods for talus slope investigations in the Turtmann valley (Swiss Alps). *Geomorphology*, Vol. 76, p. 257–272.
- PAWELEC, H. (2006): Origin and palaeoclimatic significance of the Pleistocene slope covers in the Cracow Upland, southern Poland. *Geomorphology*, Vol. 74, p. 50–69.
- RAŠKA, P. (2007): Comments on the recent dynamics of scree slopes in the Czech Middle Mountains. *Geomorphologia Slovaca et Bohemica, Bratislava: Asociácia slovenských geomorfologov pri SAV*, Vol. 1, p. 43–49.
- ROTH, A. (1863): Ledové jeskyně u Vranova na Moravě (Die Eishöhlen bei Frein in Mähren). *Geologicko-fyzikální črta. Programm des k.k. Gymnasius zu Znaim am Schlusse des Schuljahres*, p. 3–17.
- RŮŽIČKA, V. (1998): Podzemní led v kamenných sutích. *Ostrávky severské přírody s chladnomilnými rostlinami a živočichy v České republice*. *Vesmír*, Vol. 77, p. 397–399.
- STEIN, H., BOELHOUWERS, J., HARTUS, S. HÉTU, B. (2002): Recent research on the nature, origin and climatic relations of blocky and stratified slope deposits. *Progress in Physical Geography*, Vol. 26, No. 4, p. 551–575.
- ŠMERDA, J. (1999): Datovaná říčení skal v Podyjí. *Pseudokrasový sborník (pseudokarst reports)*, Vol. 1, Česká speleologická společnost, Praha, p. 31–39.
- VÍTEK, J. (1992): Skalní výchozy v údolí Dyje. *Geologický průzkum* No. 11, p. 344–345.

Authors' address:

Mgr. Lucie KUBALÍKOVÁ

Institute of Geography, Faculty of Science, Masaryk University
Kotlářská 2, 611 37 Brno, Czech Republic

e-mail: luciekubalikova@seznam.cz

REVIEW

Milan KONEČNÝ

TOUŠEK, V., FŇUKAL, M., KLADIVO, P., LÉTAL, A., JUREK, M. (2008): Vysočina Region. Thematic atlas. Publisher: Regional Authority of the Vysočina Region and Palacký University Olomouc; Jihlava, 36 p. ISBN: 978-80-254-2080-5 + attached map on Administrative units of the Vysočina Region 1:300 000, ISBN 978-80-254-2081-2

At the latest annual conference of the Czech Geographic Society, the first place in the best poster competition was held by an exhibit called “Vysočina Region”, which presented selected map sheets from an atlas published by the Vysočina Region in cooperation with Palacký University Olomouc. The atlas was elaborated at the Department of Geography by the team led by Moravian social geographer Václav Toušek, who is well known also for his previous cartographic publications, especially two atlases that were the first to be produced with using the DIGIKART automatic cartographic system within the range of research projects he led in the 1980’s. These two atlases were the “Atlas of population and housing census 1980” published in 1984 and the “Atlas of population of Czechoslovakia”.

The reviewed thematic atlas of the Vysočina region consists of 30 map sheets with the following topics: nature, population, economy, transport, education, health care and social care, culture and tourism, housing and construction, and elections to the Chamber of Deputies of the Czech Republic in 2006. The atlas also includes a list of region’s attractions in the form of “Did you know...?” articles. The atlas is accompanied by a map with the administrative division of the region down to the level of the neighbourhoods of municipalities. The map has its own ISBN.

As far as the content is concerned, the published atlas is comparable to other regional atlases in the Czech Republic published in recent years mostly by Kartografie Prague. Advantages of the Vysočina Region atlas include its price and wide possibilities of its immediate utilization by users, especially at schools. While the atlas of the Central Bohemia Region was distributed to secondary schools managed by the regional authority, the Vysočina Region atlas is distributed not only to public secondary schools, but also to private schools and primary schools. The regional authority in Jihlava delivered 90 per cent of the prints to schools and only one tenth was reserved for public administration use. Therefore, the thematic atlas of the Vysočina Region has a significant practical impact on geography lessons taught on regional and local levels, which is a fact that has to be appreciated in the context of publication and utilization of similar publications.

As far as the evaluation of individual sections of the Vysočina Region thematic atlas is concerned, the reviewer believes that a map of voluntary unions of municipalities should have been included in the “basic information” section. The section of “nature” contains basic maps of physical geography and also the necessary maps of environment. The most extensive section is that of “population”; its movement and structure are described on nine pages. I also positively evaluate the development of the individual components of demographic movement (natality, mortality and migration) in three separate time periods (1991–1995, 1996–2000, 2001–2006).

The authors also deal with age, literacy, religious, and nationality structures of inhabitants in the region. The level of religious beliefs and the issue of native inhabitants are also included. The “economy” section contains the maps of agriculture, forestry and mining, and manufacturing industry; it also focuses on direct foreign investments and pays special attention to development of the labour force market. While only one map sheet (“Main transport routes, intensity of road traffic, and road maintenance”) is dedicated to the “transport” section, the section of “education, health care and social care” is covered by three map sheets. When studying the atlas, reader’s attention is attracted by the very interesting map on the “Emergency and rescue system of the Vysočina Region”. The reviewer has so far not seen such a map in any

Czech regional atlas; such map is rare even in foreign atlases. I believe, that the section on “culture and tourism” is undersized (only one map sheet), considering the importance of tourism for the regional development. The Section of “housing and construction” uses data from the latest census with the development of housing construction being followed up until 2006. Inclusion of the “elections” section can be accepted, even though the presented results are of a strongly limited validity.

The overall impression of the atlas is positive, its informative value is high and also the cartographic workmanship is of high quality. The reviewer believes that both specialists and the general public are provided with an important and – in a way – exemplary cartographic publication, that will certainly motivate other cartographic works in other regions of the Czech Republic and central Europe.

INSTRUCTIONS FOR AUTHORS

Moravian Geographical Reports publishes the following types of papers:

Original scientific papers are the backbone of individual issues of the journal. These theoretical, methodological and empirical contributions from Geography, as well as regionally-oriented results of empirical research from various disciplines, usually will have a theoretical and a methodological section, and should be anchored in the international literature. We recommend following the classical structure of a paper: introduction, including objectives and the title and other details of a grant project, when applicable; theoretical and methodological bases; empirical part of the work; evaluation of results; and discussion, conclusions and references. Scientific papers will also include an abstract (up to 500 characters) and 3 to 8 keywords (of these a maximum of 5 general and 3 regional in nature). With the exception of purely theoretical papers, it is desirable that each contribution has attached colour graphic enclosures, such as photographs, diagrams, maps, etc., some of which may be placed on the second, third or fourth cover pages. Papers on regional issues should contain a simple map indicating the geographical location of the study area. The maximum text size is 40 thousand characters, plus a maximum of 3 pages of enclosures. The number of graphic enclosures can be increased by one page provided the text is shortened by 4 thousand characters.

All scientific papers are subject to a peer review process, with two anonymous independent reviewers (one of whom preferably would be from outside the Czech Republic) appointed by the Editorial Board. The criteria for the review process include the following: an evaluation of the topicality and originality of the research problem; level of theoretical and methodological understanding of the problem; the methods used; the relevance of sources and references to the literature; and contribution to the development of the scientific area under study.

Scientific communications are meant to inform the public about current research projects, scientific hypotheses or findings. The section is also used for discussion of scientific debates or refining scientific opinions. Some contributions may be reviewed at the discretion of the Editorial Board. The maximum text length of a scientific communication is 12 thousand characters.

Scientific announcements present information about scientific conferences, events and international cooperation, about journals with geographical and related issues, and about the activities of geographical and related scientific workplaces. The scientific announcements preferably will be published with colour photographs. Contributions to jubilees or obituaries of prominent scientific personalities are supplied exclusively by request from the Editorial Board. The maximum text length of a scientific announcement is 5 thousand characters.

Moravian Geographical Reports also publishes reviews of major studies in Geography and other related disciplines, published as books or atlases. The review must contain a complete citation of the reviewed work and its maximum text is 3.5 thousand characters. Normally, graphics are not included.

More detailed instructions can be found at <http://www.geonika.cz/EN/research/ENMgr.html>

The journal Moravian Geographical Reports is monitored in the SCOPUS database. Information about the journal can also be found on other web sites, such as the site of the American Geographical Society Library (<http://www.uwm.edu/Library/AGSL/>) or the site of the University of Colorado at Boulder (<http://www.colorado.edu/geography/virtdept/resources/journal/journals.htm>).

Articles in this issue were reviewed by:

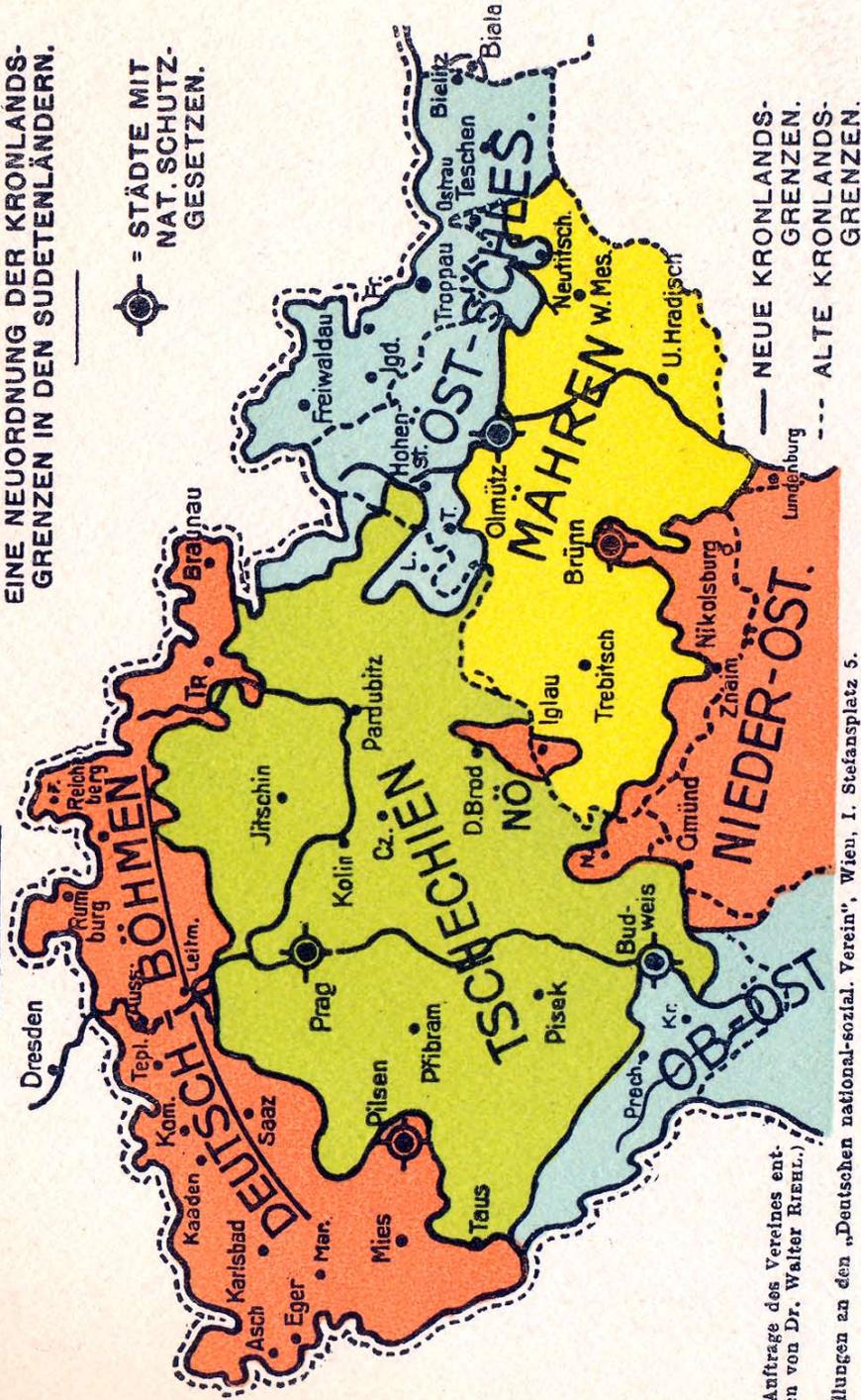
Prof. RNDr. Vladimír BAAR, CSc., Prof. Brynn GREER-WOOTEN, RNDr. Leoš JELEČEK, CSc., RNDr. Karel KIRCHNER, CSc., RNDr. Miroslav MARADA, Ph.D., RNDr. Pavel PTÁČEK, Ph.D., Assoc. Prof. Ing. arch. PhDr. Karel SCHMEIDLER, CSc., RNDr. Ivan ŠOTKOVSKÝ, Ph.D., Ing. Zbyněk ULČÁK, Ph.D.

Einzelpreis 20 Heller.

2. AUFLAGE!

DIE PROVINZ DEUTSCHBÖHMEN UND
EINE NEUORDNUNG DER KRONLANDS-
GRENZEN IN DEN SUDETENLÄNDERN.

☉ = STÄDTE MIT
NAT. SCHUTZ-
GESETZEN.



(Im Auftrage des Vereines ent-
worfen von Dr. Walter RREHL.)

Bestellungen an den „Deutschen national-sozial. Verein“, Wien, I. Stefansplatz 5.

Fig. 1: Promotion postcard issued in the autumn of 1918 by the Association of German National Socialists illustrates the ideas of supreme German political circles about the division of Czech lands into new unilingual countries within Austria-Hungary. The concept was soon given up upon the vision of creating independent national states of Czechoslovakia and German Austria. However, the land division and the claim for German language enclaves persisted. Territorial claims recorded here are much greater than as they were applied later (included were Czechspeaking areas in the regions of Pilsen, Budějovice, Olomouc and Brno). Source: BULÍN, H.: *Jiskry a plameny*. Own edition, Brno, 1930, 170 pp.

Illustrations related to the paper by R. Jašš et M. Fňukal



Fig. 1: Dyje River valley in the western corner of the Podyjí National Park. The frost-riven cliff „Na Vyhlídce“ in the front, the ridge of Ledové sluje (Ice caves) in the background. (Photo L. Kubalíková)



Fig. 2: Block accumulation on the right bank of Dyje River not far from the state border under the Býčí Hora Mt., Locality 58. An example of exposed accumulation. (Photo L. Kubalíková)

Illustrations related to the paper by L. Kubalíková