

MORAVIAN GEOGRAPHICAL REPORTS



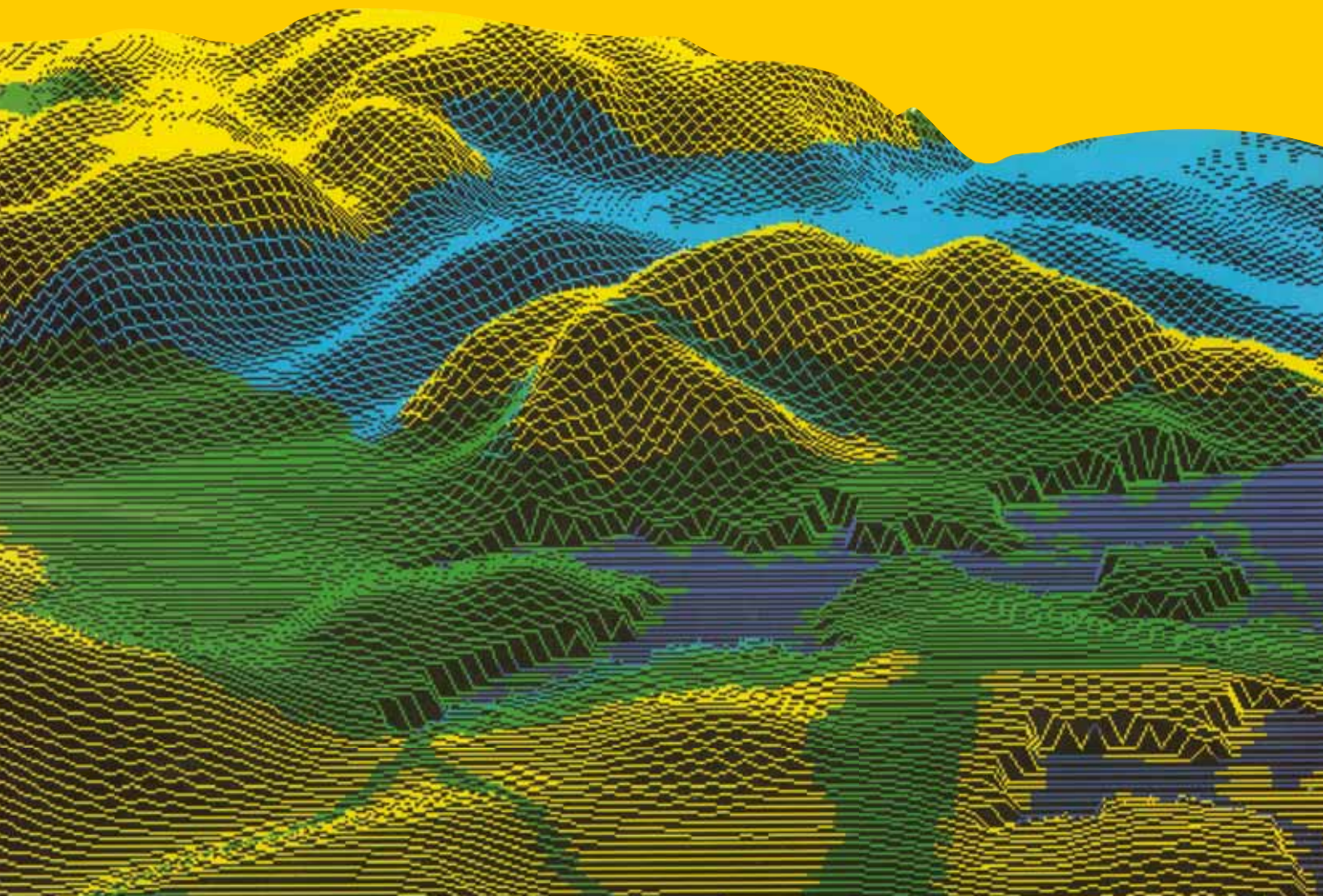
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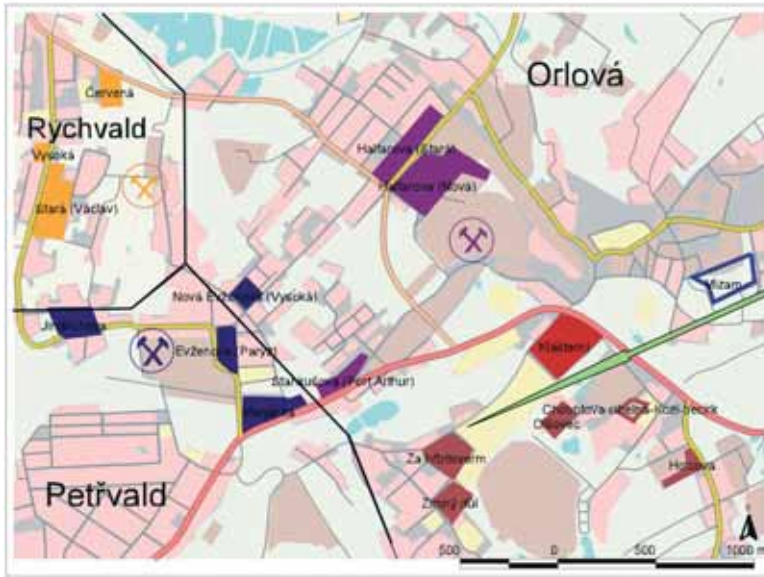
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Plan view of the colony Za hřbitovem (Bílek, 1969)



Areas of mass housing from 1859-1924 (mining and blue-collar colonies)

- a) b) a) Žofie mine (Československý pionýr I, Petřvald II), b) colony belonging to the mine
- a) b) a) Václav mine (Československý pionýr I, Petřvald II), b) colony belonging to the mine
- a) b) a) Evžen mine (Československý pionýr I, Petřvald II), b) colony belonging to the mine
- a) b) a) Hlavní jámy colony (Důl Antonín Zápotocký, Poruba) - a) existing, b) liquidated
- liquidated colonies of the mines Eleonora and Betina (Doubrava mine)
- colony of railway workers of the North Ferdinand railway

Other forms of land use

- service and infrastructure areas
- housing areas
- productive, agricultural, transport and industrial areas
- other urban areas
- other areas outside urban areas

Colony Za hřbitovem (year 2003)



Source: Atlas ortofotomap Česká republika, Geodis 2004

Fig. 7: Detail of selected area of mining and blue-collar colonies in present settlement structure

Illustration to E. Kallabová and J. Bílek's paper

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A FOREWORD

Papers published in this issue are to continue in the presentation of research results from the project “Downsizing of coal mining and its impact on the processes in lithosphere and environment” and from the project of scholarly research “Impact of climatic and anthropogenic factors on living and non-living environment”. In terms of their thematic range the articles link up with papers published in MGR No. 2/2005 and are focused mainly on the socio-economic components of environment in the area under study. Demarcation of the territory in question was made so that the area of mining fields would be encircled by space that forms a certain transition zone between the area affected by coal mining and a broader hinterland of the Ostrava agglomeration with the adverse after-effects of economic activities on landscape and environment – see Fig. 1.

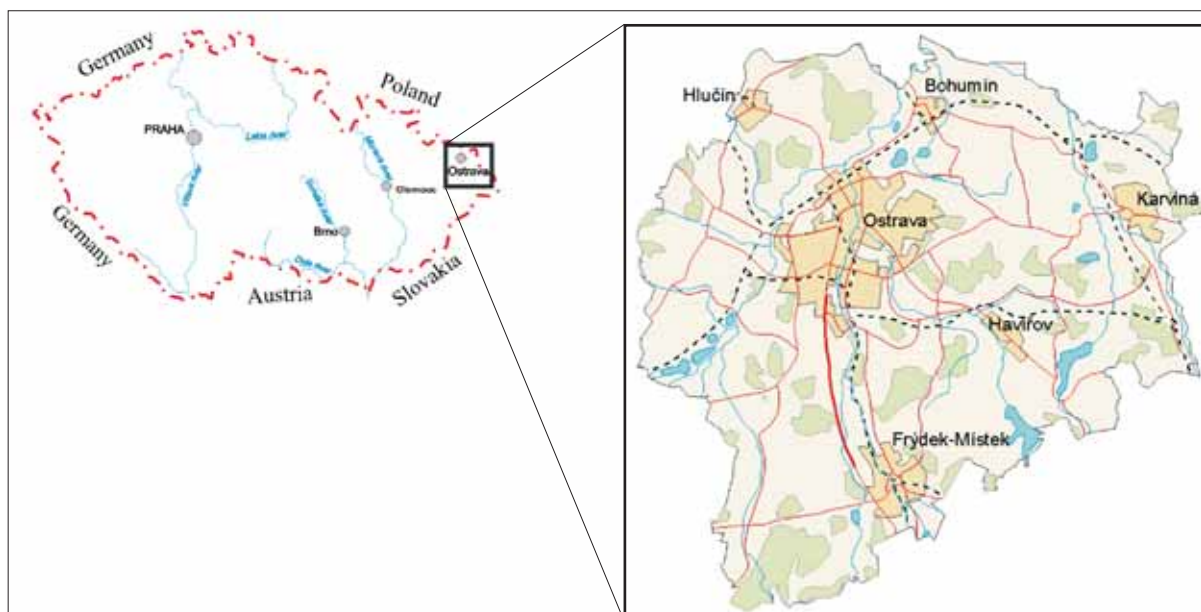


Fig. 1: Area under study

The area of Ostrava is (together with Northern Bohemia) one of territories with the most deteriorated environment and with the most affected structure. The solution of similar problems abroad is illustrated in the paper from the former German Democratic Republic – the region of Leipzig – Halle – Dresden, which experienced the downsizing of coal mining activities, landscape revitalization, solution of social problems and restructuring of manufacturing activities some time ago.

FUNCTIONAL DIFFERENTIATION OF LANDSCAPES IN THE AREA OF DEEP COAL MINING DOWNSIZING IN THE OSTRAVA REGION

Jan LACINA

Abstract

A framework suitable for the classification of anthropogenic changes in the landscape induced by deep mining and related activities is represented by contemporary landscape types (CLT). CLTs are specified to include areas with a certain mode and intensity of anthropogenic impact and its certain consequences in the natural conditions of the given landscape type. Main differentiation characteristics and phenomena include the relief with the bedrock and soils, water formations and particularly the actual vegetation cover. The CLTs defined in this way are frameworks of a certain quality of environment and nature, certain degree of ecological stability, landscape character and functional significance represented by functional type.

The studied territory which is substantially larger than the landscape immediately affected by coal mining was differentiated into a total of 30 CLTs as follows: Urbanized and industrial landscape (6 types), agricultural landscape (11 types), agro-silvicultural landscape (10 types), silvicultural landscape (2 types) and aquatic landscape (1 type). It was shown that the landscape devastated by coal mining (the devastation-recultivation functional type) occupies only a tenth of the studied area, reaching high values in some parameters (biodiversity, attractiveness of landscape pattern). A parallel monitoring of the trend of the coefficient of ecological stability was carried out in 1990 and 2001 within the framework of community cadastral areas. The comparison showed that the relative degree of ecological stability recorded a mild to marked improvement in a half of the cadastral units¹.

Shrnutí

Funkční diferenciacce krajiny v oblasti útlumu hlubinného hornictví na Ostravsku

Vhodným rámcem pro hodnocení antropogenních změn v krajině, včetně změn vyvolaných hlubinným hornictvím a jeho doprovodnými aktivitami, jsou typy současné krajiny (TSK). TSK jsou vymezovány tak, aby zahrnovaly území s určitým způsobem a intenzitou antropogenních vlivů, které mají v přírodních podmínkách daného typu určité důsledky. Hlavními diferenciacními znaky a jevy jsou reliéf s podložím a půdami, vodní útvary a především aktuální vegetační kryt. Takto vymezené TSK jsou rámci určité kvality životního prostředí a přírody, určitého stupně ekologické stability, krajinného rázu a funkčního významu, vyjádřeného funkčním typem.

Zájmové území, které je podstatně širší než vlastní krajina bezprostředně ovlivněná těžbou uhlí, bylo diferencováno celkem do 30 TSK: krajina urbanizovaná a průmyslová (6 typů), krajina zemědělská (11 typů), krajina zemědělsko-lesní (10 typů), krajina lesní (2 typy) a krajina vodní (1 typ). Ukázalo se, že krajina devastovaná těžbou uhlí (devastačně-rekultivační funkční typ) zaujímá pouze desetinu zájmového území a dosahuje v některých parametrech (biodiverzita, atraktivita krajinného rázu) vysokých hodnot. Byl sledován i vývoj koeficientu ekologické stability v rámci katastrů obcí v časových horizontech 1990 a 2001. Z jejich srovnání vyplývá, že relativní stupeň ekologické stability se v polovině katastrů mírně až výrazně zlepšil.

Key words: contemporary landscape types, functional types, landscape pattern, ecological stability

¹ The paper was worked out on the basis of results from the Project of targeted research No. IBS3086005 "Downsizing deep coal mining and its impacts on processes in lithosphere and environment".

1. Introduction

The landscape of the Ostrava-Karviná coal mining district (OKR - Ostravsko-karvinský revír) is typical with its specific features which differ its pattern from wider surroundings at a first sight. It is flat, only mildly undulating, with altitudes mostly ranging from 200-300 m a.s.l., wide depressions of alluvial plains of the Odra, Ostravice, Olše, Opava Rivers and their affluents. The flat Ostrava Basin opening to Poland in the North is a contrast to steeper slopes of the Nízký Jeseník Mts. in the West, and namely to the Podbeskydská pahorkatina (Hilly Land) in the South. Inseparable from the perception of this landscape is a monumental backstage of the Moravian-Silesian Beskids stretching in the South to East. Apart from the relief and water formations (rivers), the landscape's natural pattern is determined by its vegetation cover formed by mixed forests mostly of Vegetation Tier 3 – its specific oak-coniferous variant with beech – and by floodplain forests.

The natural condition of vegetation cover in the Ostrava region recorded significant anthropogenic changes long before the boom of bituminous coal mining, namely due to agricultural activities which gave rise to a cultivated agro-silvicultural landscape with a more or less harmonic distribution of mixed forests, grasslands, fields and smaller human seats. Mining activities did not reflect too much in the landscape pattern even at the beginning of the 1830s, i.e. 50 years since the start of coal mining. *“Small winch pits were rather resembling country fruit drying plants ... Moravská Ostrava was a remote village of no greater importance, known only by its livestock markets“* (Matějček, Klát, Zárický, 2003). It was only the construction of the first iron works and coking plants in the 1830s and the subsequent mass development of industrialization from 1875 that induced such a boom of coal mining and related activities which started to markedly alter the landscape. Most conspicuous was the change of the topography with some conical waste banks rising above the original relief by several tens of meters. The waste bank top at the Trojice Mine (325 m a.s.l.) became for example a main dominant of Ostrava. Apart from the pronounced convex forms, the mining landscape was affected also by numerous concave forms – mud pits, sedimentation basins and very extensive subsidences in particular. The conspicuous terrain relief alterations which are dispersed here across a total area of about 260 km² changed not only the landscape pattern but also the landscape's biodiversity and ecological stability.

Although the mining industry and related activities are dominant in the OKR area, they do not affect the landscape of the whole territory of our interest. Parts of devastated landscape alternate with parts used mainly for agriculture or forestry. The southern part of the studied territory has even a character of

the harmonical cultural landscape with numerous ecologically significant segments with the high diversity of the original biota. This mosaic of segments diversely affected by anthropogenic activities can be well characterized by a differentiation of the territory into contemporary landscape types.

2. Contemporary landscape types (CLT)

The biogeographical differentiation of the contemporary landscape is based on the assessment of links between natural and socio-economic elements. The contemporary landscape types (CLT) are defined to include territories with a certain mode and intensity of anthropogenic impact with certain consequences under natural conditions of the given type (Buček, Lacina, 1989; Lacina, 1997). It follows that such a CLT is not only the framework of a certain relief (with aquatic formations) and of a certain mosaic of actual vegetation formations, but that it is also the framework of a certain landscape pattern with certain ecological and aesthetic values which can express in general terms also a certain standard of environment. The studied territory contains the following 30 CLTs:

1. Urbanized and industrial landscape:
 - 1.1 mainly residential landscape with a low share of permanent vegetation in broad river floodplains
 - 1.2 mainly residential landscape with a low-to-medium share of permanent vegetation in hilly lands and uplands
 - 1.3 residential landscape with mixed forest stands in flat hilly lands
 - 1.4 industrial landscape with ruderal fallow grounds in broad river floodplains
 - 1.5 industrial landscape with ruderal fallow grounds in flat hilly lands
 - 1.6 landscape devastated by coal mining with changed relief (waste banks and subsidences) and with extensive ruderal and wetland fallow grounds in alluvial plains, basins and flat hilly lands
2. Agricultural landscape:
 - 2.1 landscape of grasslands and fields with riparian stands and rural seats in broad river floodplains
 - 2.2 landscape of grasslands with riparian stands and floodplain woods in broad river floodplains
 - 2.3 landscape of ponds and grasslands with riparian stands and floodplain woods in broad river floodplains
 - 2.4 landscape of grasslands and fields with flooded gravel and sand pits in broad river floodplains
 - 2.5 landscape of fields with sporadic grasslands, mixed woods and rural seats in flat hilly lands on glacial sediments

- 2.6 landscape of fields with grasslands, sporadic mixed woods and scattered settlements with gardens and orchards in flat hilly lands on glacial sediments
- 2.7 landscape of grasslands and fields with the dispersed woody vegetation and rural seats in flat hilly lands of basins
- 2.8 landscape of fields and grasslands with sporadic mixed woods and scattered settlements with gardens and orchards in flat flysch hilly lands
- 2.9 landscape of fields with grasslands, sporadic mixed woods in dry valleys of water courses and with scattered settlements with gardens and orchards in broken flysch hilly lands
- 2.10 landscape of fields with sporadic grasslands and dispersed woody vegetation in broken flysch hilly lands
- 2.11 landscape of grasslands and fields with the dispersed woody vegetation and with rural seats in the valleys of water courses in broken hilly lands to uplands
3. Agro-silvicultural landscape
- 3.1 landscape of grasslands and woods with floodplain forests and sporadic fields, riparian stands and rural seats in broad river floodplains
- 3.2 landscape of ponds and woods with floodplain forests and riparian stands in broad river floodplains
- 3.3 landscape of fields and woods with spruce, mixed, oak and exceptionally beech forest stands, with sporadic grasslands and rural seats in flat hilly lands on glacial sediments
- 3.4 landscape of fields and woods with spruce and mixed forest stands, grasslands and scattered settlements with gardens and orchards in flat hilly lands on glacial sediments
- 3.5 landscape of fields and woods with spruce and mixed forest stands, grasslands and at some places with scattered settlements with gardens and orchards in flat flysch hilly lands
- 3.6 landscape of fields and woods with spruce and mixed forest stands, sporadic grasslands and rural seats in broken hilly lands
- 3.7 landscape of fields and woods with mixed forest stands, dispersed woody vegetation, grasslands and scattered settlements with gardens and orchards in broken flysch hilly lands
- 3.8 landscape of fields and woods with spruce and mixed forest stands, grasslands, riparian stands and rural settlements on the slopes of broken hilly lands to uplands, furrowed up with valleys of numerous streams
- 3.9 landscape of grasslands and woods with spruce, mixed and beech forest stands, fields, dispersed woody vegetation and rural seats in broken flysch uplands
- 3.10 landscape of grasslands and woods with spruce and mixed – at some places also beech – forest stands, dispersed woody vegetation and scattered settlements (clearcut farming and recreation) on mountain slopes.
4. Forest landscape
- 4.1 landscape dominated by beech stands in broken uplands and mountains
- 4.2 landscape dominated by spruce stands, at some places with beech remainders (with admixed maple and fir) on mountain slopes
5. Aquatic landscape
- 5.1 landscape of woods, grasslands and water surfaces with mixed stands, fields, dispersed woody vegetation and mainly recreational settlements around water reservoirs in hilly lands.

The representation and distribution of the contemporary landscape types (CLT) indicate that the territory of our interest is divided into roughly three parts, viz. urbanized and industrial landscape (31.6%), agricultural landscape (32.1%), and agro-silvicultural landscape (32.5%). The landscape with continuous forest complexes occupies only a small part (1.5%) in the SW corner of the area, and another small section is represented by the landscape with dominant water formations (the reservoirs of Žermanice and Těrlicko) in the SE corner of the area (2.3%). A typical feature of the territory within the framework of the Czech Republic is the high representation of the urbanized and industrial landscape.

Contemporary landscape types most represented within the respective categories are as follows: 1.2 mainly residential landscape with a low-to-medium share of permanent vegetation in hilly lands to uplands (10.7%); 1.6 landscape devastated by coal-mining with the changed relief (waste banks and subsidences) and with extensive ruderal and wetland fallow grounds in alluvial plains, basins and flat hilly lands (10.5%); 2.5 landscape of fields with sporadic grasslands, mixed woods and rural seats in flat hilly lands on glacial sediments (7.0%), and 3.3 landscape of fields and woods with spruce, mixed, oak and exceptionally beech forest stands, with sporadic grasslands and rural seats in flat hilly lands on glacial sediments (8.9%).

A method chosen for the classification of the natural framework of these contemporary landscape types was geobiocoenological typification, i.e. classification in vegetation tiers, trophic and hydric ranges. A greater part of the area belongs in Vegetation Tier 3 (87%) and a mosaic of its three varieties (3.a Oak-Beech, 3.b Oak-Coniferous with Beech, and 3.c Floodplain). About 9% of the area are occupied by CLTs with a mosaic of

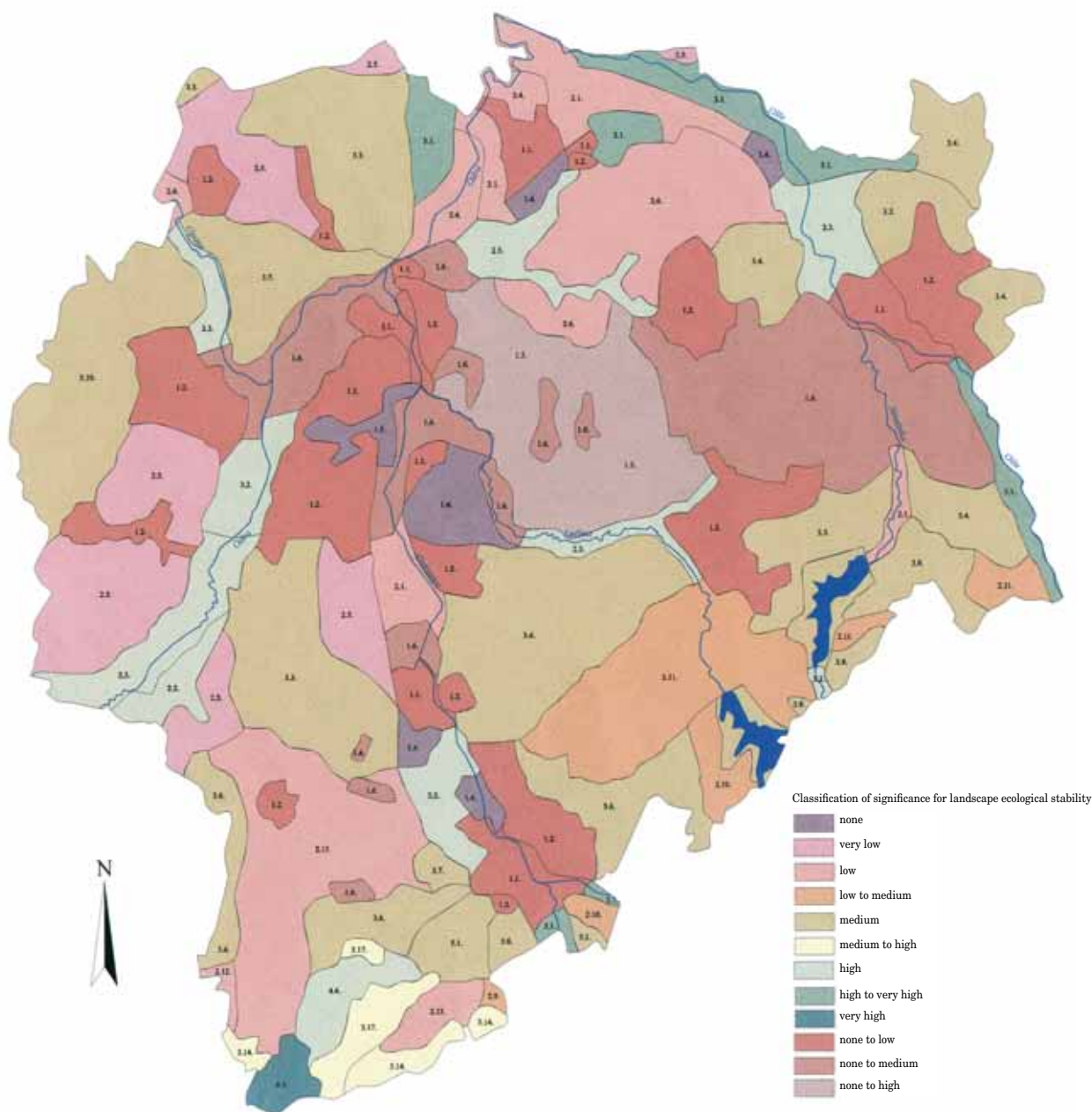


Fig. 1: Contemporary landscape types in the area of deep coal mining in the Ostrava region – a numbers in the figure refer to number in the text above.

the geobiocoenoses of Beech Vegetation Tiers 3 and 4, and the remaining ca. 4% belong in a mosaic of the geobiocoenoses of Beech Vegetation Tier 4 and Fir-Beech Vegetation Tier 5. The representation of trophic ranges and intermediate ranges is very diverse and cannot be expressed more precisely without a detailed mapping; however, a generally prevalent range is B (mesotrophic). An important specific feature of the area under study is the fact that an above-average part of it falls in the water-logged (to wet) hydric series (ca. 25%) and in the transitions between the normal and water-logged ranges (ca. 46%). And it should be expected that the area of CLTs classified at the present time in the water-logged (to wet) hydric ranges will further increase in the future due to the subsidence of undermined surfaces.

Indicators of the current condition of the landscape are intensity of anthropogenic impact, relative degree of ecological stability, biodiversity and landscape pattern attractiveness. The highest degrees of anthropogenic impact (high to very high) are recorded in 43% of the territory; of these only a quarter is affected directly by coal mining and related activities with a greater part of the remainder falling to intensive agriculture and urbanization. In contrast, only 0.6% and 5.7% of the territory are classified by very low and low anthropogenic impact degrees, respectively. Indirectly proportional to the intensity of anthropogenic impact is the relative degree of landscape ecological stability. Landscape types with the very low and low degree of ecological stability occupy more than a half of the

CLT number	representation in %	Geobiocenological typification			Intensity AO	Biodiversity	Degree of ES	Landscape pattern attractiveness	Functional type
		VT	TS	HS					
1.1	3.2	3.c	BC-C	4. (5.)	4	1	1	1	Omp
1.2	10.7	3.a, b	B, BD, BC	3.(4.)	4	1	2	2	Op
1.3	5.0	3.b	AB, B, BD, BC	3.-4.	3	2	2-3	3	Ovp
1.4	1.8	3.c	BC-C	4.(5.)	5	1	0	1	P
1.5	0.4	3.b	B, BD, BC	3.-4.	5	1	0	1	P
1.6	10.5	3.a, b, c	AB, B, BD, BC	(2.) 3.-4. (5.)	5	1(5)	0-3	1-5	Pdere
2.1	2.9	3.c	BC-C	4. (5.)	4	2	2	2	Za
2.2	1.4	3.c	BC-C	4.-5.	3	4	4	3	BO-Zb
2.3	4.6	3.c	BC-C	4.-5.	3	5	4	5	Zc-Bo
2.4	1.2	3.c	BC-C	4.-5.	4	3	2	3	R-Zb
2.5	7.0	3.a, b	B, BD	3.-4.	4	1	1	2	Zb
2.6	4.0	3.a, b	AB, B	3.-4.	3	2	2	2	Zb
2.9	0.1	3.b	AB, B, BC	3.-4.	3	3	3	3	Zb
2.10	0.8	3.a, b	AB, B, BC	3.-4.	3	2	2	2	Zb
2.11	4.8	3.a, b	AB, B, BC, BD	3.-4.	3	3	3	3	Zb
2.12	0.1	3.a	AB, B, BC	3.	4	2	2	3	Zb
2.13	5.2	3.a-4.	AB, B, BC	3. (4.)	4	2	2	3	Zc
3.1	3.0	3.c	BC-C	4.-5.	2	5	4	3	Za-Lb-BO
3.2	0.9	3.c	BC-C	4.-5.	2	5	4	5	Zb-Lb-BO
3.3	8.9	3.a, b	AB, B, BC	3.-4.	3	4	3	4	Zb-Lb
3.4	7.8	3.a, b	AB, B, BC, BD	3.-4.	3	3	3	3	Zb-Lb
3.6	3.5	3.a, b	AB, B, BC	3.-4.	3	3	3	3	Zb-Lb
3.7	2.0	3.a	AB, B, BC	3. (4.)	3	3	3	4	Zb-Lb
3.9	1.2	3.a, b	AB, B, BC	3. (4.)	3	3	3	4	Zb-Lb
3.10	3.7	3.a-4.	AB, B, BC	3.(4.)	3	3	3	4	Zb-Lb
3.14	0.6	4.	AB, B, BC	3.	3	4	4	5	Zc-Lb-BO
3.17	0.9	4.-5.	A, AB, B, BC	3.	2	4	4	5	Zc-Lb-R
4.3	0.6	4.-5.	AB, B, BC	3.	1	5	5	4	Lb-BO
4.4	0.9	4.-5.	AB, B, BC	3.	2	4	4	4	La
5.1	2.3	3.a, b	B, BC, BD	3., 4., 5.	3	4	4	5	V-R

Legend:

Geobiocoenological typification

VT – Vegetation tiers: 3.a – Oak-Beech, 3.b – Oak-Coniferous with Beech, 3.c – Floodplain; TS – Trophic ranges and intermediate trophic ranges: A – oligotrophic, AB – oligotrophico-mesotrophic, B – mesotrophic, BC – mesotrophico-trophilous, BD – mesotrophico-basic, C-nitrophilous; HS – Hydric ranges: 2. restrained, 3. normal, 4. water-logged, 5. wet.

Classification of the intensity of anthropogenic impact, degree of ecological stability, biodiversity and attractiveness of landscape pattern:

Scale 0 – 5 is to express a following value or condition: 0 – none (insignificant), 1 – very low, 2 – low, 3 – medium, 4 – high, 5 – very high

Functional types: O – residential (mp-little favourable, p-favourable, vp-very favourable), P – industrial (dere-devastation-recultivation), Z – agricultural (a-good productivity, b-medium productivity, c-low productivity), L – forest management (a-good productivity, b-medium productivity), BO – biological protection, V – water management, R – recreational.

territory (52.8%). Medium, high and very high ecological stability is shown by 32.0%, 14.6% and only 0.6% of the territory, respectively. A similar situation can be seen in biodiversity with 41%, 35%, 15% and 9% of the territory exhibiting very low and low values, medium, high and very high biodiversity, respectively. The highest degrees of ecological stability and biodiversity are observed not only in the forest landscape with the natural species composition (CLT 4.3), i.e. the nearest-to-nature landscape but also some types of agro-silvicultural and even agricultural landscape occurring mainly in broad river floodplains: 2.3 landscape of ponds and grasslands with riparian stands and floodplain woods; 3.1 landscape of grasslands and woods with floodplain forests and sporadic fields, riparian stands and rural seats, and 3.2 landscape of ponds and woods with floodplain forests, riparian stands and grasslands. This is a good example of the fact that even the landscape developed under the influence of human activities can achieve excellent ecological parameters, which may apply in the future also to the landscape devastated by coal mining.

In effort focused on the best as possible objective evaluation of subjective impressions from the perception of a certain landscape the researchers based the method of landscape pattern attractiveness assessment on the valuation of the diversity of reliefs, water formations and types of actual vegetation in particular in the sense of a higher diversity landscape having a higher value of attractiveness. High and very high attractiveness is in this respect exhibited by landscape parts with a colourful mosaic of diverse vegetation formations in the broken relief (CLTs 3.9, 3.10, 3.14 and 3.17), possibly also in the flat topography with a dominant representation of water formations (CLTs 2.3, 3.2, 3.3 and 5.1). It was found that the territory exhibits very low, low, medium, high and very high attractiveness of the landscape pattern at 5.4%, 25.4%, 32.3%, 17.3% and 9.3%, respectively.

A difficult landscape type for the classification of landscape pattern attractiveness, biodiversity and degree of ecological stability is CLT 1.6 containing the landscape markedly changed to devastated by coal mining (10.5% of the territory). The original flat topography was altered by anthropogenic formations of both convex and concave character, which in a certain sense added to the attractiveness of the relief. The attractiveness of at that

time bare conical waste banks in Ostrava was disclosed as early as in the 1930s by one of the most famous Czech painters Jan Zrzavý and later on by many other artists. With respect to a more general view, however, older waste banks covered by vegetation and subsidences originating earlier are considered more valuable as their biodiversity and the degree of ecological stability are higher. This – in the true sense of the word – landscape of coal mining is a colourful mosaic of landscape parts at different stages of development, and it is therefore classified in the entire range of the chosen scale.

A synthetic indicator is the functional type of the landscape, expressing the significance of a certain CLT by the prevailing function or functions. The mainly residential landscape occupies 18.9% of the territory under study (residential functional type little favourable 3.2%, favourable 10.7% and very favourable 5.0%). The mainly industrial (production) functional type occupies only 2.2% but the devastation-recultivation industrial functional type takes up as much as 10.5% with the complementary functions of biological protection and recreation showing an ever increasing importance. The agricultural production type includes 24.9% of the territory (good-medium- and low productivity at 2.9%, 16.8% and 5.2%, respectively). A great number of CLTs typically exhibit an equal significance of two and even three functions. Most frequent functional type is the agro-silvicultural landscape of medium productivity (27.1%), other 4.5% belong in this combination with the equally important function of bioprotection. The rest of the territory is formed by a mosaic of agro-bioprotective (6.0%), recreation-agricultural (1.2%), silvicultural-bioprotective (0.6%), silvicultural with good productivity (0.9%), agro-silvicultural-recreational (0.9%) and water management-recreational (2.3%) functional types.

3. Coefficient of ecological stability and its development

An auxiliary indicator of landscape ecological stability is the coefficient of ecological stability (KES) expressing the proportion of the area with permanent vegetation formations (woods, permanent grass stands, gardens and orchards) and near-natural water formations to the area of fields and built-up areas (Míchal, 1985).

This is calculated according to the following formula:

$$K_{ES} = \frac{\text{forest land} + \text{fish ponds} + \text{other water surfaces} + \text{grasslands} + \text{pastures} + \text{fruit orchards} + \text{vineyards}}{\text{built-up areas} + \text{arable land} + \text{hop gardens}}$$

An average value of KES ranges around 1 (0.80 – 1.20) as it expresses a relatively balanced proportion of ecologically more and less stable parts of the landscape. KES values below the average are classified as low (0.21 – 0.80), values below 0.20 as very low; KES values above

the average are classified as high (1.21 – 2.00) or very high (> 2.00).

A comparison of KES values for 1990 and 2001 (Fig. 2, Fig. 3) calculated for 131 cadastral areas of the studied

territory brought a lot of interesting information (Fig. 4). In 1990, very low, low, medium, high and very high KES values were recorded in 9, 65, 29, 19 and 9 cadastral areas, respectively. The developing use of land resources in the following decennium led to the fact that the KES value worsened only in a single case – in the cadastral of Zábřeh-Hulváky with a marked increase of built-up area. The situation did not change in 64 cadasters, in 27 cadasters it was slightly improved, and in 39 cadasters the improvement was conspicuous. The changes

positively reflect in the representation of cadasters by KES categories in 2001: 5 cadasters with the very low value (the number was reduced by 4), 49 cadasters with the low value (reduction by 16), 32 cadasters with the medium value (the number was increased by 3), 33 cadasters with the high value (increase by 14) and 12 cadasters with the very high value (increase by 3).

The positive change mirrors the trend identical for a greater part of the Czech territory – a general decrease

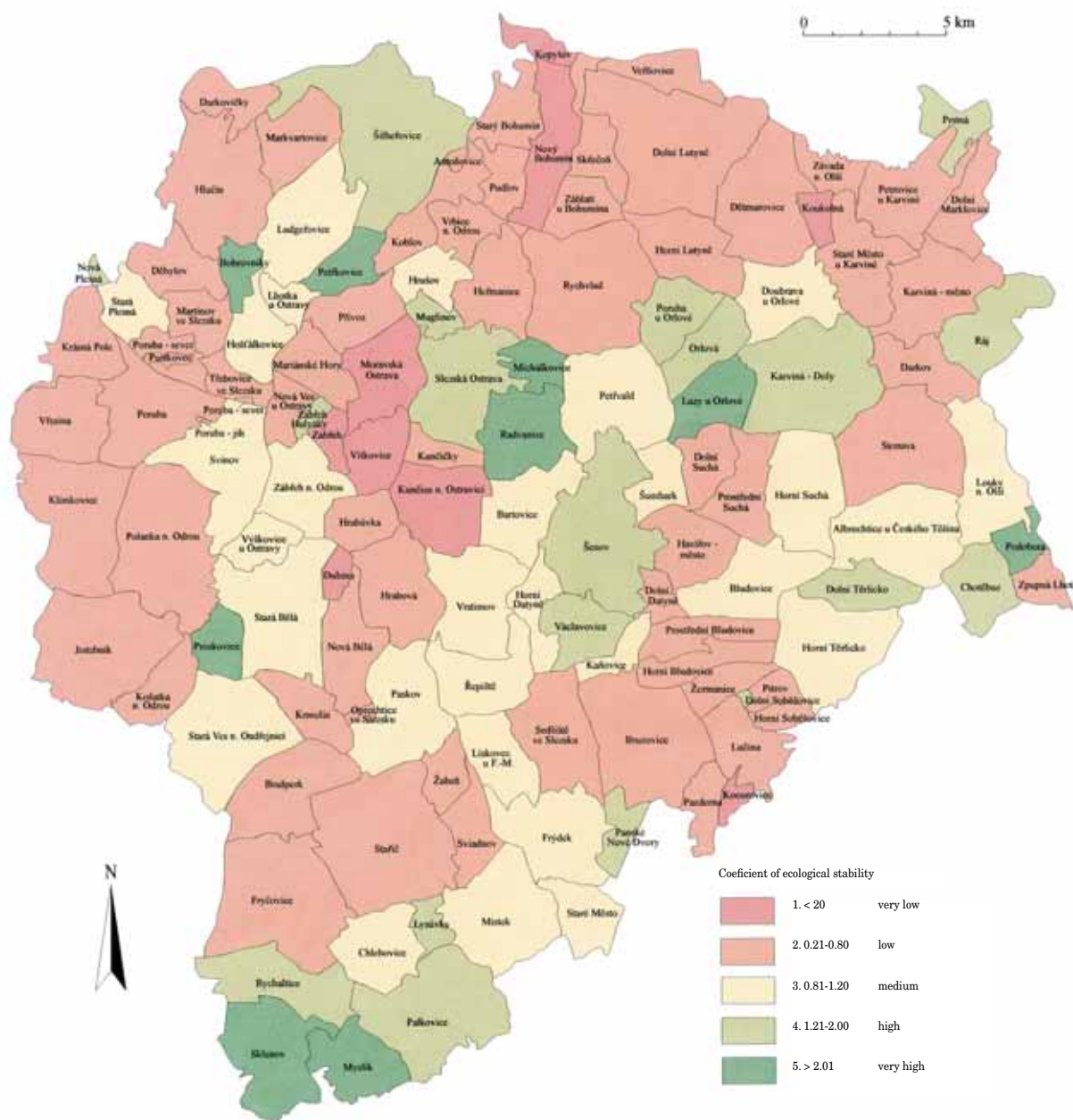


Fig. 2: Coefficient of ecological stability in cadastral areas of municipalities: situation in 1990

of arable land area, and a mild increase of areas with permanent grass stands and forests, exceptionally also water surfaces. It is appreciable that the improvements can be seen also in cadastral areas most affected by coal-mining (e.g. Karviná-Doly) where the share of permanent grass stands and woods was increased thanks to recultivation.

However, the coefficient of ecological stability does not inform precisely enough about actual ecological qualities of individual cadastral areas because the parameter of

permanent vegetation used in its calculation includes all grasslands, pastures and forests regardless of their species composition. With respect to this refined viewpoint, cadasters with the highest ecological stability are those situated in the upland southern part of the territory (with the high proportion of broadleaved woods and herb-rich grasslands and pastures) and some cadasters in the parts of floodplains and basins (with a high proportion of ponds, moist grasslands and floodplain forest remainders).

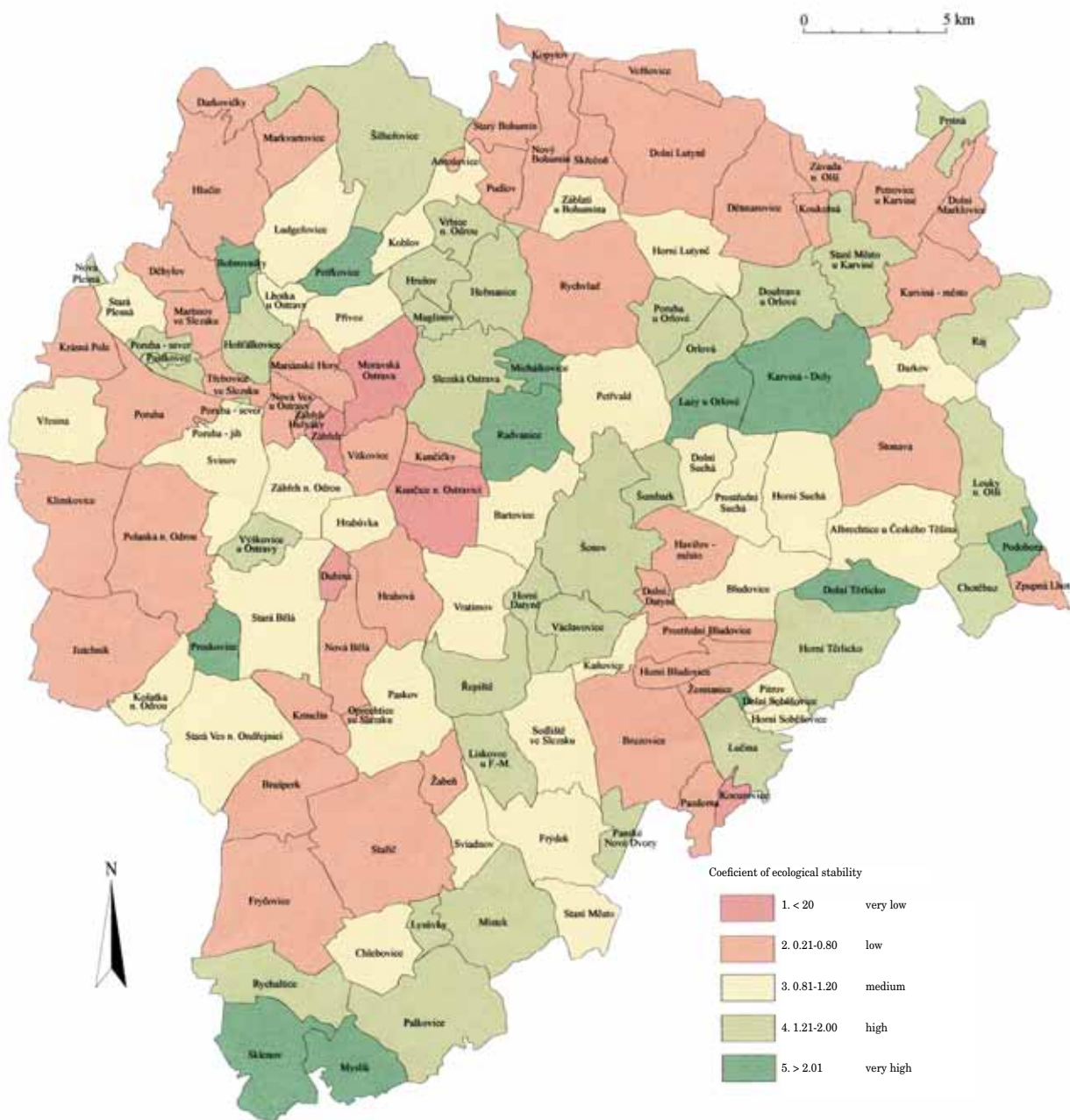


Fig. 3: Coefficient of ecological stability in cadastral areas of municipalities – situation in 2001

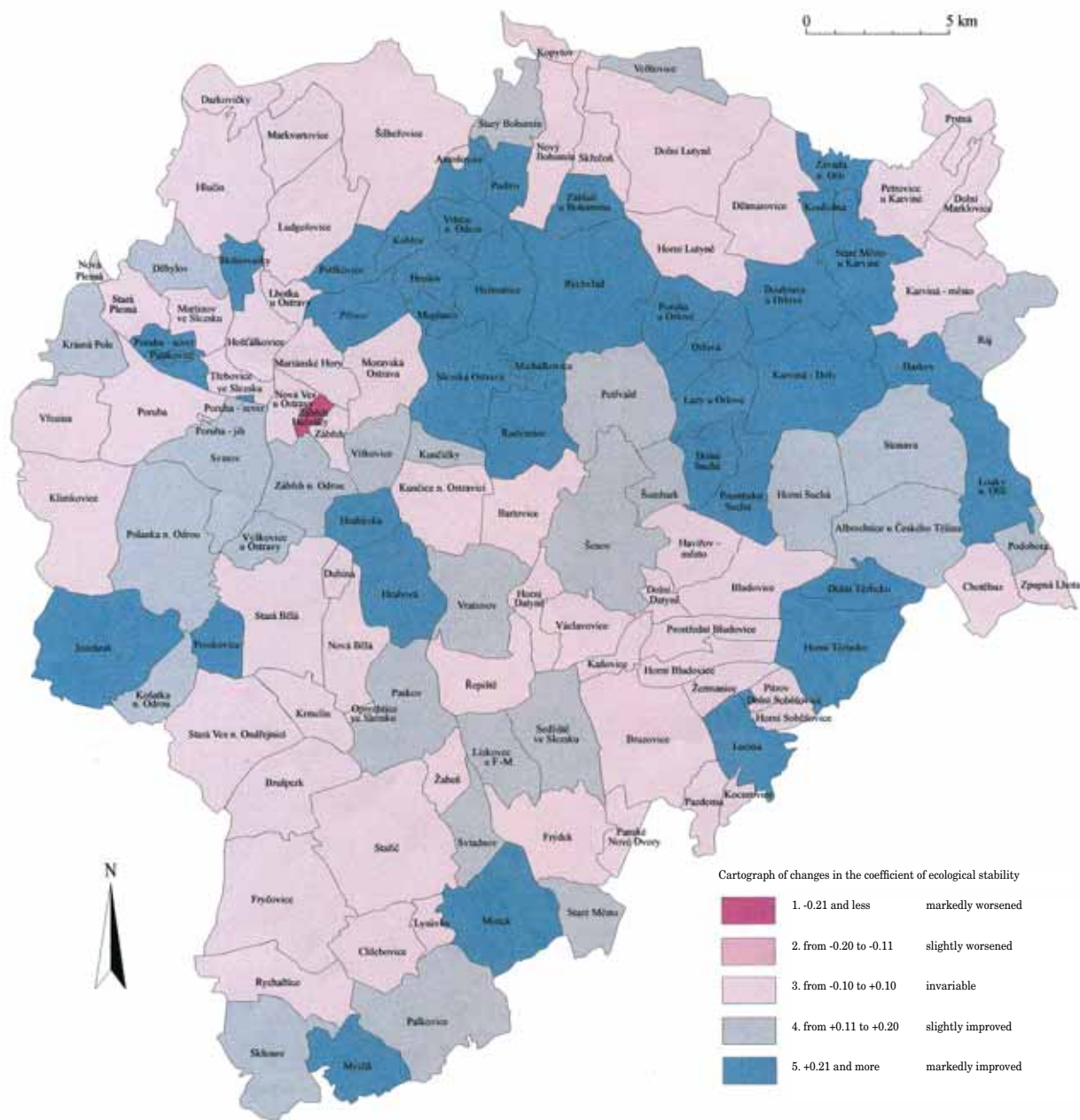


Fig. 4: Cartograph of changes in the coefficient of ecological stability in cadastral areas of municipalities in 1990-2001

Legend: 1. markedly worsened (-0.21 and less); 2. slightly worsened (from -0.20 to -0.11) – not occurring in the area; 3. invariable (from -0.10 to +0.10); 4. slightly improved (from +0.11 to +0.20), 5. markedly improved (+0.21 and more)

DISTRICT cadastral area	K _{ES} 1990	Category	K _{ES} 2001	Category	Difference 1990-2001	Difference category
Albrechtice u Českého Těšína	0.92	3	1.03	3	0.11	4
Antošovice	0.30	2	0.32	2	0.02	3
Bartonice	1.00	3	1.01	3	- 0.01	3
Bludovice	1.04	3	1.10	3	0.06	3
Bobrovníky	4.10	5	4.82	5	0.72	5
Brušperk	0.59	2	0.64	2	0.05	3
Bruzovice	0.68	2	0.66	2	- 0.02	3
Darkov	0.53	2	1.03	3	0.50	5
Darkovičky	0.28	2	0.30	2	0.02	3
Děhylov	0.54	2	0.70	2	0.16	4
Dětmarovice	0.43	2	0.48	2	0.05	3
Dolní Datyně	0.44	2	0.50	2	0.06	3
Dolní Lutyně	0.28	2	0.31	2	0.03	3
Dolní Marklovice	0.62	2	0.70	2	0.08	3
Dolní Soběšovice	1.96	4	2.34	5	0.38	5
Dolní Suchá	0.56	2	0.83	3	0.27	5
Dolní Těrlicko	1.41	4	2.93	5	1.52	5
Doubrava u Orlové	0.86	3	1.21	4	0.35	5
Dubina	0.09	1	0.04	1	- 0.05	3
Fryčovice	0.71	2	0.73	2	0.02	3
Frýdek	1.12	3	1.20	3	0.08	3
Havířov-město	0.69	2	0.78	2	0.09	3
Heřmanice	0.58	2	1.28	4	0.70	5
Hlučín	0.35	2	0.41	2	0.06	3
Horní Bludovice	0.43	2	0.48	2	0.05	3
Horní Datyně	1.16	3	1.25	4	0.09	3
Horní Lutyně	0.76	2	0.81	3	0.05	3
Horní Soběšovice	0.79	2	0.85	3	0.06	3
Horní Suchá	0.89	3	1.04	3	0.15	4
Horní Těrlicko	0.84	3	1.25	4	0.41	5
Hošťálkovic	1.13	3	1.23	4	0.10	3
Hrabová	0.36	2	0.58	2	0.22	5
Hrabůvka	0.61	2	0.99	3	0.38	5
Hrušov	0.81	3	1.39	4	0.58	5
Chlebovice	1.12	3	1.15	3	0.03	3
Chotěbuz	1.22	4	1.27	4	0.05	3
Jistebník	0.34	2	0.70	2	0.36	5
Kaňovice	0.99	3	1.01	3	0.02	3
Karviná-Doly	1.93	4	3.18	5	1.25	5
Karviná-město	0.31	2	0.40	2	0.09	3
Klimkovice	0.28	2	0.31	2	0.03	3
Koblov	0.57	2	1.10	3	0.46	5
Kopytov	0.20	1	0.28	2	0.08	3
Košatka nad Odrou	0.71	2	0.83	3	0.12	4
Koukolná	0.13	1	0.48	2	0.35	5
Krásné Pole	0.42	2	0.54	2	0.12	4

DISTRICT cadastral area	K _{ES} 1990	Category	K _{ES} 2001	Category	Difference 1990-2001	Difference category
Krmelín	0.41	2	0.41	2	0.00	3
Kunčice nad Ostravicí	0.10	1	0.16	1	0.06	3
Kuničky	0.64	2	0.78	2	0.14	4
Lazy u Orlové	2.86	5	3.44	5	0.58	5
Lhotka u Ostravy	0.93	3	1.03	3	0.10	3
Lískovec u Frýdku-Místku	1.12	3	1.25	4	0.13	4
Louky nad Olší	1.20	3	1.69	4	0.49	5
Lučina	0.37	2	1.74	4	1.37	5
Ludgeřovice	0.99	3	0.99	3	0.00	3
Lysůvky	1.50	4	1.52	4	0.02	3
Mariánské Hory	0.53	2	0.63	2	0.10	3
Markvartovice	0.29	2	0.31	2	0.02	3
Martinov ve Sl.	?	?	0.61	2	?	3
Michálkovice	2.83	5	3.12	5	0.29	5
Místek	1.01	3	1.29	4	0.28	5
Moravská Ostrava	0.05	1	0.13	1	0.08	3
Muglínov	1.63	4	1.88	4	0.25	5
Myslík	56.59	5	64.44	5	7.85	5
Nová Bělá	0.56	2	0.54	2	-0.02	3
Nová Plesná	1.29	4	1.34	4	0.05	3
Nová Ves u Ostravy	0.62	2	0.71	2	0.09	3
Nový Bohumín	0.17	1	0.22	2	0.05	3
Oprechtice ve Slezsku	0.31	2	0.32	2	0.01	3
Orlová	1.46	4	1.73	4	0.27	5
Palkovice	1.74	4	1.91	4	0.17	4
Panské Nové Domy	1.64	4	1.76	4	0.09	3
Paskov	0.96	3	1.16	3	0.20	4
Pazderka	0.46	2	0.46	2	0.00	3
Petrovice u Karviné	0.54	2	0.59	2	0.05	3
Petřkovice u Ostravy	2.01	5	2.52	5	0.51	5
Petřvald u Karviné	1.04	3	1.17	3	0.13	4
Pitrov	0.79	2	0.81	3	0.02	3
Podobora	5.86	5	5.98	5	0.12	4
Polanka nad Odrou	0.30	2	0.43	2	0.13	4
Poruba	0.49	2	0.48	2	-0.01	3
Poruba u Orlové	1.36	4	1.59	4	0.23	5
Poruba-Sever	0.64	2	1.47	4	0.83	5
Proskovice	4.86	5	6.49	5	1.63	5
Prostřední Bludovice	0.52	2	0.55	2	0.03	3
Prostřední Suchá	0.56	2	0.90	3	0.34	5
Prstná	1.35	4	1.45	4	0.10	3
Prívóz	0.49	2	0.86	3	0.37	5
Pudlov	0.22	2	0.47	2	0.25	5
Pustkovec	?	?	0.99	3	?	3
Radvanice	2.95	5	3.28	5	0.33	5
Ráj	1.79	4	1.90	4	0.11	4

DISTRICT cadastral area	K _{ES} 1990	Category	K _{ES} 2001	Category	Difference 1990-2001	Difference category
Rychaltice	1.40	4	1.48	4	0.08	3
Rychvald	0.48	2	0.74	2	0.26	5
Řepiště	1.20	3	1.29	4	0.09	3
Sedliště ve Slezsku	0.78	2	0.93	3	0.15	4
Sklenov	3.60	5	3.78	5	0.18	4
Skřečoň	0.40	2	0.48	2	0.08	3
Slezská Ostrava	1.47	4	1.99	4	0.52	5
Stará Bělá	1.08	3	1.14	3	0.06	3
Stará Plesná	0.83	3	0.86	3	0.03	3
Stará Ves nad Ondřejnicí	0.82	3	0.86	3	0.04	3
Staré Město u Frýdku-Místku	0.96	3	1.10	3	0.14	4
Staré Město u Karviné	0.52	2	1.35	4	0.83	5
Starý Bohumín	0.41	2	0.61	2	0.20	4
Staiřč	0.71	2	0.76	2	0.05	3
Stonava	0.35	2	0.50	2	0.15	4
Sviadnov	0.76	2	0.90	3	0.14	4
Svinov	0.89	3	1.09	3	0.20	4
Šenov u Ostravy	1.39	4	1.56	4	0.17	4
Šilheřovice	1.29	4	1.32	4	0.03	3
Šumbark	1.09	3	1.21	4	0.12	4
Václavovice u Frýdku-Místku	1.30	4	1.34	4	0.04	3
Veřňovice	0.54	2	0.65	2	0.11	4
Vítkovice	0.08	1	0.24	2	0.16	4
Vratimov	0.92	3	1.09	3	0.17	4
Vrbice nad Odrou	0.49	2	1.70	4	1.21	5
Vřesina u Bílovce	0.80	2	0.83	3	0.03	3
Výškovice u Ostravy	1.18	3	1.32	4	0.14	4
Záblatí u Bohumína	0.58	2	0.85	3	0.27	5
Zábřeh nad Odrou	0.88	3	1.04	3	0.16	4
Zábřeh-Hulváky	1.77	4	0.47	2	-1.30	1
Zábřeh-VZ	0.11	1	0.17	1	0.06	3
Závada nad Olší	0.49	2	0.77	2	0.28	5
Zpupná Lhota	0.43	2	0.52	2	0.09	3
Žabeň	0.34	2	0.41	2	0.07	3
Žermanice	0.41	2	0.45	2	0.04	3

Tab. 2: Coefficients of ecological stability for cadastral areas in OKD – (Ostravsko-karvinské doly – Ostrava-Karviná Coal Mines) in 1990 and 2001 and their changes

Legend: KES: 1. very low (< 0.20), 2. low (0.21-0.80), 3. medium (0.81-1.20), 4. high (1.21-2.00), 5. very high (> 2.00); KES change category: 1. markedly worsened (-0.21 and less), 2. slightly worsened (-0.20 to -0.11), 3. invariable (-0.10+0.10), 4. slightly improved (+0.11- +0.20), 5. markedly improved (+0.21 and more)

4. Conclusion

The distribution, representation and functional classification of contemporary landscape types in the studied part of the Ostrava region show that it is far from being just a landscape devastated by coal mining and related activities. A colourful mosaic contains both the CLTs severely affected by anthropogenic activities and the near-natural CLTs.

Important is a finding that devastated landscapes can be gradually transformed into more favourable functional types, even into a landscape with recreation and biological protection in the role of main functions. It should be born in mind, however, that the landscape will further

change after the end of coal mining – for example due to the removals of tailings from the waste banks for civic structures and due to extensive subsidences in the undermined areas. Some changes should be expected also outside the areas directly affected by coal-mining that will result from the restructuring of industry and agriculture, possibly also from a new mode of settlement. The Ostrava region will therefore continue to be one of dynamically developing landscapes in which the ensurance of a mosaic with diverse functional landscape types – favourable with respect to environment quality – may be difficult but feasible. Even today, the Ostrava region can be apparently differentiated not only into contemporary landscape types but also into functional units with diverse functions and links to the core area of OKR.

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DEMOGRAPHIC PROGNoses FOR SOME SEATS IN THE OSTRAVA REGION¹

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Abstract

The Ostrava region, situated in the territory of Moravia and Silesia, is an example of an industrial agglomeration based on bituminous coal mining and the development of heavy industries, which resulted in serious consequences for migration, the development of urbanization, the formation of transportation routes and the devastation of the environment. At the present time, this region is undergoing a transformation of its economic base, on the one hand, and also through a transformation from a centrally planned economy to a market economy, on the other hand. In this paper, the impacts of these transformation processes are discussed: for settlement in general in the region, for selected towns of different sizes and for some rural microregions. One can expect settlement diversification and the redistribution of inhabitants within the region to benefit some small towns and rural settlements. It can also be assumed, housing will be separated from other functions within the framework of suburbanization processes. Some possible pitfalls of restructuring are also discussed: the construction of a sterile network of hypermarkets, commercial buildings, parking lots and residential quarters, all of which have no real links to concrete localities.

Shrnutí

Sídelně demografické prognózy vybraných sídel Ostravska

Region Ostravy reprezentuje průmyslovou aglomeraci, která se vyvíjela na bázi těžby černého uhlí a rozvoje těžkého průmyslu. To mělo závažné důsledky pro migraci, vývoj urbanizace, formování dopravních tras, devastaci životního prostředí. V současné době prochází tento region transformací na podmínky tržního hospodářství. Tento přechod je komplikován nutností změny odvětvové základny ekonomiky. Diskutovány jsou otázky vlivů těchto transformací na osídlení regionu, vybraných měst různé velikosti a vybraných venkovských mikroregionů. Lze očekávat diverzifikaci osídlení a redistribuci obyvatel v rámci regionu ve prospěch některých malých měst a vesnických sídel. Je vysloven předpoklad o oddělení bydlení od ostatních funkcí v rámci suburbanizačních procesů. Autor upozorňuje na možná úskalí restrukturalizace, která by mohla spočívat ve výstavbě sterilní sítě hypermarketů, komerčních budov, parkovišť a residenčních čtvrtí bez vztahu ke konkrétním lokalitám.

Keywords: settlement system, economic restructuring, population development, Ostrava region

1. Introduction

The region of Ostrava and the whole Moravian-Silesian Region are considered one of problem regions in Czechia as measured for example by unemployment rate, remoteness from the capital of Prague, reach of economy transformation or level of environmental problems. The problems should theoretically reflect also in the development of settlement. The Ostrava region experienced a very specific development in the last 200 years becoming in a way a laboratory of the man-landscape relation. The region can be characterized as being under permanent economic transformation with

a special flavour of specific ethnic and social population structure and its development.

The present stage of transformation is connected with the general issue of transition from the centrally planned economy to market economy, with the trend of globalization and with the consequences of the admission of the Czech Republic in the European Union as well as with the downsizing of coal mines, restructuring of heavy industries, shift of the economic and political orientation of the country towards German borders and with the consequences of the disintegration of Czechoslovakia. The changes necessarily lead to changes in the landscape and they will definitely lead to the modification of settlement

¹ The paper is a follow-up to the project of the Grant Agency AS CR No. IBS3086005 Downsizing of deep coal mining and its impacts on processes in lithosphere and environment, and a part of the grant project of the Grant Agency AS CR No. IAA3086301 Geography of small towns, and of the sub-project of the scientific plan of the Institute of Geonics AS CR No. AV0Z30860518 Environment in urban and rural regions under the impact of European integration processes.

structure in the future. The objective of this paper is to evaluate the present changes and to attempt at a forecast of possible future trends.

The choice of the Ostrava region for the purposes of this paper is given by the direct context with the restructuring of mines and heavy industries. The centre of attention is therefore focused on the town of Ostrava, onto a greater part of the Karviná district, and on the adjacent parts of Frýdek-Místek, Nový Jičín and Opava districts. Important centers of settlement will include large and medium-size towns (Ostrava, Karviná, Havířov, Orlová, Bohumín, Český Těšín, Frýdek-Místek, Třinec), some small towns (Brušperk, Klimkovice, Rychvald, Frýdlant nad Ostravicí, Frenštát pod Radhoštěm, Hlučín) and non-urban communes in the studied microregions.

2. Settlement in the Ostrava region and its development since 1869

Vaishar (2002a) observed both a rapidly growing population in the entire Ostrava region (with a short break after World War II) and a concentrating population

in the agglomeration core demarcated by the town of Ostrava itself and by the Karviná district. The development copied general demographic trends characteristic for the turn of the 19th and 20th centuries, which were further augmented by the specific structure of industrialization based on bituminous coal mining. Another extreme population increase was observed in 1950-1970 due to political and social preferences given to the region oriented to heavy industries. The period between 1938-1950 recorded a population decrease and a partial population exchange due to war events. The population growth started to slow down after 1970.

With no regard to general trends, the development of population considerably differed in the respective towns under study in dependence on historical specialities, localization of coal pits and factories, and in the socialist era also in dependence on the decision-making of central planning authorities. The characteristics of population development in some towns are based on data excerpted from the publication *Towns in the Czech Republic*. Relevant diagrams are presented in Fig. 1.



Fig. 1: Development of population numbers in some towns of the Ostrava region

200 years ago, the settlement structure did not contain in fact any seat with the population of 10 thousand and more. The largest town of the then Ostrava region was Moravská Ostrava with 6,881 inhabitants. The population of other towns was 6,563 in Frenštát pod Radhoštěm, 5,197 in Místek, 5,170 in Frýdek, 4,620 in Slezská Ostrava, 3,165 in Brušperk and 2,866 in Hlučín. The today's part of Karviná-Doly in the Karviná district had a population of 3,386 persons. Fryštát (the historical core of today's Karviná) had 2,661 inhabitants, Petřvald 2,503 and Rychvald 2,227 inhabitants. Other parts of today's towns had a total population below 2 thousand persons. The town of Havířov did not exist yet.

The population number development in Ostrava corresponds with the population number development in the region as a whole. Leader among the towns with 50 and 100 thousand inhabitants is Havířov which nearly reached the size of a city in 1950 from practically a zero – the chance that will never be repeated again. Karviná is typical with its relatively even population growth but with a greater population loss during the last tens of years. In the group of towns with 20-40 thousand inhabitants, Třinec conspicuously differs with its rapid population growth in the socialist era. Bohumín and Orlová were growing already between the wars with the further growth of Bohumín being later retarded and that of Orlová still continuing. The specific development of Český Tešín was conditioned by a different course of demographic development. A town with the greatest development in the group of towns with the population of about 10 thousand inhabitants is Hlučín although the best starting position was that of Frenštát pod Radhoštěm. The most significant growth in all three cases occurred however in the first half of the socialist era (1950-1960). One of small towns recording a population increase in the period between the wars was Rychvald while the population numbers of Brušperk and Klimkovice have been more or less stable.

The development between the last census of 2001 and the situation to the date of 1 January 2004 was assessed on the basis of population balances. The most recent trends suggest that all towns with the population of 10 thousand and more inhabitants were recording a further population loss. The population loss was greatest in Karviná (2.2%), Frýdek-Místek (1.8%), Orlová (1.6%), Třinec (1.4%). The town of Ostrava lost 1.2% of the population. Towns ranking closely beyond the level of 10 thousand inhabitants lost less than 1% of population in this period of less than three years. It should be pointed out, however, that the statistics apply to permanent residents. It can be expected that especially in Ostrava but also in some other towns the population number is much greater than that of permanent residents as many people work or study in these towns and live there during a greater part of the year, being still registered

as permanent residents in their original abodes due to the fact that they still do not have a permanent address (flat) at the place of their actual economic activity.

The number of residents in small towns of the Ostrava region (with less than 10 thousand inhabitants) exhibits on the other hand a very slow but steadily increasing trend. It is interesting that unlike in a greater part of other small towns in Czech Republic that were industrialized and experienced the construction of panel blocks of flats in the socialist era, small towns in the Ostrava region have in some cases retained the original structure as the industrial and housing developments were concentrated in large industrial seats. This is why the towns provide a relatively high-standard housing environment as compared with the rest of the Ostrava region and apparently become destinations of suburbanization movements of the population.

An analysis of development in selected commune groups of the non-urban settlement in the Ostrava region was made for purposes of a comparison. Non-urban communes of Karviná district (Albrechtice, Stonava, Těrlicko) recorded a population loss of 0.8% in the studied period of time. Communes situated on the western limits of Ostrava in the Opava district (Darkovice, Hať, Ludgeřovice, Markvartovice, Šilheřovice) showed a population increase by 0.2%. Paskov and Staříč – situated in the coal mining and industrial area of Frýdek-Místek district – recorded a population increase by 0.9%. Non-urban communes in the Frýdek-Místek district situated in the direction of the Beskids Mts. recorded a more conspicuous population increase: the group of communes in the valley of Morávka and Mohelnice Rivers (Krásné, Morávka, Pražmo, Raškovice) by 1.3%, the group of communes situated between Frýdek-Místek, Frenštát pod Radhoštěm and Frýdlant nad Ostravicí (Kozlovice, Metylovice, Palkovice) by 3.2%, and the group of communes situated to the south of Frýdlant nad Ostravicí (Čeladná, Ostravice, Pstruží) even by 3.6%.

The present trends in the development of population numbers in the respective types of seats may indicate a future development but a certain caution is advised as the present development is still too much influenced by the fading of the past system. An unknown factor may be for example consequences of the gradual release of the regulation of rental housing which takes up a considerable proportion in larger towns of the Ostrava region.

3. Demographic prognoses for the Ostrava region

Total fertility of Czech females in 2004 amounted to 1.23. In spite of the fact that the situation improved as compared with the worst results in 1999, the figure

was still far behind the level of simple reproduction. This characteristic did not show any more pronounced regional variances. Life expectancy at birth is gradually increasing and reached 72.0 and 78.5 years of age in males and females, respectively in 2003. The situation of Moravian-Silesian Region was slightly worse with the respective values reaching 70.7 and 78.0 years of age in males and females, resp. A consequence of this trend is population ageing. In 2003, the age category from 0-14 years was 15.2% (20.6% in 1991) while the age category from 65 years and over represented 13.9% of the population (12.6% in 1991). Evident is a dramatic population decrease in the category of pre-working age that is later reflected also in the category of working age. In the last year, there are indications about a very mildly increased natality of Czech females, which was expected, though. The number of live-born children in the Moravian-Silesian Region increased in the first quarter of 2005 by 3.1 ‰ as compared with the same period of 2004 with the reason being most likely a delayed population wave of the strong 1970s. It is therefore not to be taken for the manifestation of a significant increase of fertility.

Population age structure may vary in the respective towns namely due to the level of immigration after World War II. Mass immigration was observed in the Ostrava region both due to industrialization of the region and to a lesser extent also as a consequence of the post-war ethnic exchange. The younger age base created by the immigration shows a tendency to reproduce in several coming generations. The population age structure in the Ostrava region is therefore very mildly more favourable than the national average with the category of pre-working age is representing 15.9% of the population and the age category of 65 years and more forming 12.7% of the population. Age pyramids of some towns constructed according to results from the 2001 census are presented in Fig. 2.

The age pyramids of selected towns characterize an unfavourable prognosis of their further demographic development that follows out from their shrinking base which signals an ever decreasing number of newly born children in spite of the fact that the reproduction process was entered by the strong population years of the 1970s. At the same time, there are certain variances than can be seen among the respective towns. The town of Orlová

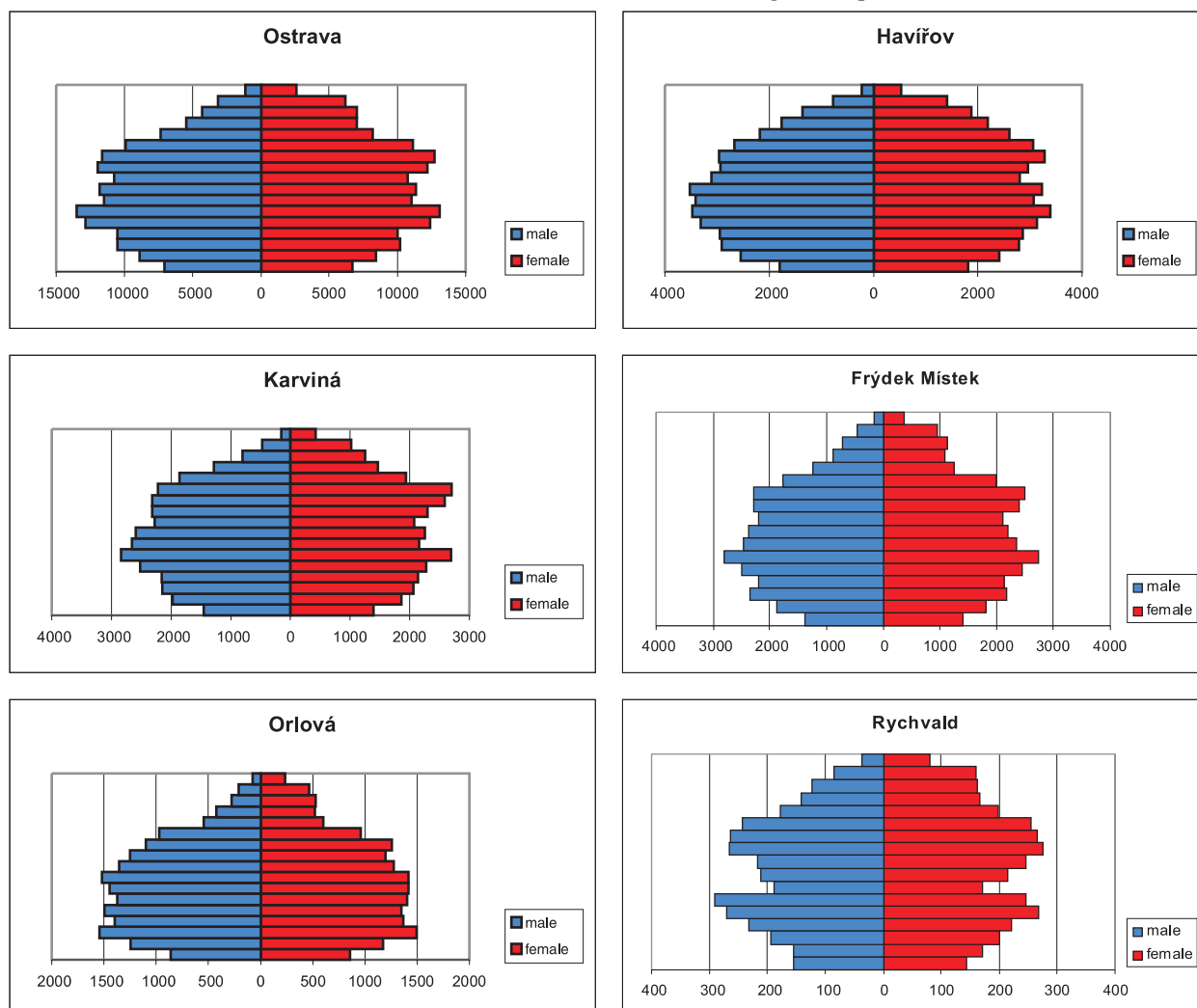


Fig. 2: Age pyramids of some Ostrava region towns in 2001

has the youngest age structure although it exhibits a relatively dramatic decrease in the number of newly born children as well. Relatively young populations can be seen in Frenštát pod Radhoštěm and Frýdek-Místek. On the other hand, Rychvald whose diagram can be hardly called a pyramid is a typical representative of ageing population structure. And there are other small towns (namely Frýdlant nad Ostravicí and Brušperk) that exhibit above-average features of population ageing.

The youngest population age structure in rural regions under study (and also as compared with towns) was recorded in the municipalities of Paskov and Staříč which run their own economic activities. Despite a considerable immigration, the far oldest population (also as compared with towns) can be found in the space of Čeladná – Ostravice – Pstruží.

It follows from the above that the demographic prognosis for the Ostrava region is not favourable – similarly as for a greater part of other European regions. There are of course population projections whose variants forecast a relatively high variability of results whose mutual variance increases with the increasing time length of the prognosis. These projections predict both a decrease and an unimportant growth of the population number in dependence on the variant development of female fertility, life expectancy and migration. National estimates of the Czech Statistic Office for a low/high variant of 2050 differ by two million and three quarters of inhabitants but it appears that – according to the source – the whole country (and all regions) expects a further population decrease whose rate and extent can hardly be predicted.

This paper is however dedicated to considerations about the region's settlement system restructuring which depends not only on the demographic development but primarily on changes in the population distribution that are conditioned by social development but also by the changing functions of individual settlement centers and that reflect in the migration of inhabitants between the respective types of seats.

4. Possible directions of settlement transformations in the Ostrava region

The region of Ostrava is considered one of problematic regions today. It is often mentioned as a region whose peripherality can be expressed by unemployment rate and by negative image in terms of environment. The peripheral character is given by the region's geographical location. The region in question is most remote from Prague and from state borders with advanced neighbouring west-European countries, namely with Germany, whose traffic connection to central regions of the country is more than insufficient. On the other hand, the town with 300,000

inhabitants, which is at the same time a seat of two public universities and a number of quaternary activities and a centre of the second largest housing agglomeration in Czechia cannot be considered peripheral from both the national and the regional point of view.

A question remains to what extent is the high unemployment in the Ostrava region resulting from remoteness of the region and to what extent it results from the reconstruction of economy and the entire sphere of job vacancies including different requirements of work qualifications and labour cost. The Moravian-Silesian Region actually shows (together with the Region of Ústí nad Labem) the highest rate of unemployment in Czechia (15.5% in April 2005), this applying however mainly to the core districts of Karviná and Ostrava-City and to the peripheral district of Bruntál. The rate of unemployment in marginal areas of the agglomeration is only slightly beyond the national average. The Moravian-Silesian Region shows a certain disproportion on the labour market. While the average salary of 15,387 CZK (2003) is the third highest in Czechia after Prague and the Region of Central Bohemia, the generated gross national product per inhabitant of 197,650 CZK (2003) ranks the region only at the fifth place. The disproportion is likely to be leveled in the future, which might be perceived by the local population as a certain detriment. A question remains to what extent the fact can affect their housing preferences, though.

Moving for work has been up to now in Czech conditions usual almost exclusively only at the beginning of economic activity when young and namely educated people often find jobs at the place of their studies, in large towns or in abroad. The migration movement is primarily not considered to be a consequence of high unemployment rate but rather a result of efforts to find self-assertion in society according to their qualifications and interests, sometimes the reason is to join the partner. The movement of working people between districts is not common as it is blocked by excessive regulation of the market with flats. If occurring, it is motivated by family events such as divorce or new partner relations rather than by the situation on the labour market.

However, the age structure of the migrating population can be expected to record some changes. While a usually massive migration was observed in the population at the beginning of their working age, in the future a migration should be considered even in people at the beginning of post-working age. This is a trend in which young pensioners sometimes return to small towns and villages to houses inherited after their parents or to old people's homes. While the immigration was nearly always improving the population's age structure in the past, it may result in its impairment today – with all possible social and economic impacts.

As compared with other Czech regions, the condition of environment in the Ostrava region is not favourable. Nevertheless, the environmental situation has been visibly improving thanks to the downsizing of coal mining activities, restructuring of heavy industries and adoption of some measures to protect environment. It is not likely that people who lived in the region at

the time of most severe devastation of landscape and environment would leave their abodes at the time of improvement. On the other hand, the existing main problem of environment in European cities – traffic load – cannot be considered an extreme with respect to the relatively grandiose traffic solution of the agglomeration as compared with other towns.

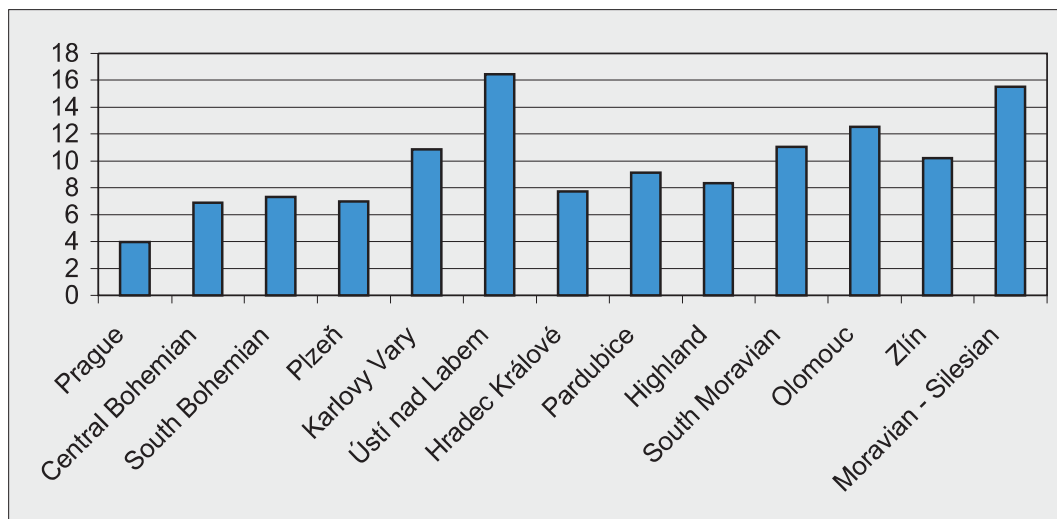


Fig. 3: The rate of unemployment in regions of the Czech Republic in April 2005 (in %)



Fig. 4: The environmental image of Ostrava still remains unfavourable (on the left). The new Ostrava - in this case Poruba (on the right) gives however a quite different impression.

In the sphere of environment quality, there are problems with a high concentration of housing developments of neighbourhood type and some aspects of social environment including the concentration of trouble-makers and/or abandoned industrial premises. However, these phenomena manifest in the concentrated form only in certain localities of the Ostrava region, and may rather lead to population redistribution within the region.

The present trend suggests a general move of inhabitants from large and medium-size towns with their panel blocks of flats and industrial premises to small towns and non-urban settlements. Some differences in development are however existing also between the individual towns and non-urban municipalities. Decisive factors for towns in the future will be – apart from individual and random features – their post-transformation functions and location for the non-urban settlements.

The development of industrial towns in the West was at a general level described for example by Zehner (2001). In western Europe it was the Fordian town – based on quantitative growth – that was developing until the recession in 1967/68 or until the oil crisis of 1973. The pressure of these events resulted in deindustrialization. According to Hall (1998), deindustrialization was the most important economic process affecting big towns of Europe and North America from the 1960s. At a social level, the stratum intermedium of the society were moving in the suburbanized seats while the socially lower classes were not mobile enough, which led to an economic vacuum in cities and to a clear polarization of the population by their income, life style and opportunities. Driving power of economy became services. New industries are focused on computer-aided and communication technologies, virtual reality and biotechnologies, being bound to highly skilled and flexible labour power, innovative

environment, universities and research institutions. The modern urban elite consists of Yuppies (Young Urban Professionals) and Dinks (Double Income, No Kids). Pacione (2001) speaks about a fragmentation of urban forms conditioned by the preference of the tertiary sector, experts in technologies, research and development of advanced information systems.

Le Galés (2002) points out that European industrial towns came to existence not in the highly urbanized regions of Italy and Netherlands but in the rural areas of England and Germany as they were based on local energy raw materials, mainly on coal. A combination developed of coal pits, industries, worker colonies, technical infrastructure, social housing. Bourgeoisie was pushed out to the margin. And this is also the case of the Ostrava region in which the original structure of seats was remodelled to give rise to a mosaic type pattern of settlements and coal-miner colonies, coal pits, industrial plants, colliery and mullock tips and settling pits, facilities of technical infrastructure, etc. Historical and architectonic dominants expressing the identity of respective seats are often missing. Natural attraction zones of settlement centers are not completely formed. Moreover – similarly as everywhere in Europe – certain central functions are taken over by hypermarkets and entertainment complexes that use to be situated near major traffic crossings. All this means that the Ostrava region population can redistribute practically across the entire territory with no regard to centers and their attraction zones. It also means that housing should be separated from other functions of the respective seats. Some seats can develop important central activities but

their population numbers can at the same time decrease because the people running these activities or using them may live at other places of the Ostrava region. It even seems that such a development may become a rule, in other words that the development of other functions may partly force out housing to silence areas in the surroundings of the centers.

A possible development of individual towns in the Ostrava region as depending on the expected development of functions was evaluated by Vaishar (2002b). Industry is not going to be the main economic sector of the region in the future. Although a number of industrial plants including iron-mills will remain in the Ostrava region, vacancies in them will be shrinking due to the required increase of labour productivity. The centre of activities is expected to move to the tertiary sector even in this region, in main centers to the quaternary sector. It can be expected that changes in the settlement structure will occur within the framework of levelling the ratio between cooperation and competition of individual settlement centers.

The city of Ostrava itself is nowadays an important and generally developed centre of settlement. Its central role in the agglomeration is undoubtful and will further increase in the future. And it is exactly Ostrava whose permanent population may record a relatively rapid decrease within the framework of suburbanization processes. In town planning terms, Ostrava is a problematic city – consisting in fact of three spatially separated seats: Ostrava, Poruba and Ostrava-South (Kuta, Kuda, Sedlecký, 2005). The circumstance also



Fig. 5: Karviná (on the left) can be proud of a historical centre of the original small town of Fryštát. In contrast, the historical development of Český Těšín (on the right) originates from the period between the two world wars.

affects the issue of Ostrava town core reconstruction as the core is at the same time a core of the original compact Ostrava and a core of this triplet of towns, which is competed by centers of the other two residential units.

Most developed functions in the Karviná district has the district town (Karviná) – even after the abolishment of district authorities in 2003. In addition to administrative functions, Karviná has a School of Business Administration at the Silesian University, the

functional spa of Darkov with new premises in Hranice, some attempts at an industrial zone in Nové Pole and a border crossing. The town has a historical core in Fryštát, from which a cultural and historical significance as well as town identity can derive. In spite of all these facts, Karviná shows the greatest loss of permanent residents of all towns in the district, which confirms the consideration about the separation of housing from other functions in the agglomeration.

Unlike other towns in the district, Český Těšín was not dominated by heavy industries, being rather a centre of tertiary functions with cultural and education traditions and a busy road border crossing with Poland. Its industrial base is more diversified than other towns of the district and it can successfully compete with the Polish town of Cieszyn, especially after the admission of Czechia and Poland in the European Union.



The future function of Havířov is problematic. Town-forming functions are practically missing, the attraction zone is minimal and even the housing function is not too attractive. Bohumín is an important railway junction but the present development of the town is rather concentrated around road speedways. The most problematic town is apparently Orlová which is – with an exception of the delapidating town core – a clump of



Fig. 6: Orlová (on the left) and its typical appearance of neighbourhood. Třinec (on the right) cannot deny the concentration of heavy industries.

neighbourhoods with no town-forming functions. Rychvald will rather focus on the creation of favourable housing environment as the Silesian type of settlement creates suitable conditions. The negative image of all towns in the Karviná district must be fought with, however.

The centre of the district of identical name – the twin town of Frýdek-Místek – can build on historical traditions, administrative functions, on a somewhat more diversified industrial structure and on a favourable traffic location. Although its attraction zone is restrained by Ostrava in the North, its southern part reaches on the other hand into the exceptionally attractive landscape of the Beskids. In contrast, Třinec is a strictly industrial town with only one giant corporation that was successfully privatized. A certain potential of the town can be seen in its function of a starting point for hikers to the surrounding recreation areas.

The above mentioned towns exhibit a population loss that can be also seen in the largest of small towns – Hlučín and Frenštát pod Radhoštěm, in spite of the fact that the towns in question can boast with relatively well developed secondary and tertiary functions. Frenštát pod Radhoštěm became for example a place where two divisions of Siemens developed their activities with a thousand of job opportunities. The town has an above standard system of secondary education and is a starting point to the region of summer and namely winter recreation and tourism. On the other hand, it has an above-average number of flats in apartment houses.

A greater part of small towns in the Ostrava region retained the original character with a high share of

single-family houses in the housing structure. Most places are pleasant for living although the negative image of Ostrava and Karviná areas can be felt even there. Some of these small towns do not have attraction zones of their own as they are situated within the hinterlands of higher centers. Nevertheless, the number of their population is steadily increasing while the number of inhabitants in more important centers is decreasing. This circumstance, too, provides a good evidence on the presumed separation of housing from supralocal functions. The same applies for Klimkovice that recently acquired a relatively significant function of the spa for which modern premises were established – separately from the core of the proper intravillan, though.

A population analysis of small towns in the neighbouring region of Polish Silesia was made by Zuzana Zysko (2003). Dividing the region into three subregions of Częstochowa, Katowicze and Bielsko-Biała the author found out that the group of small towns with the most favourable population age structure contains namely towns situated in the surroundings of Katowicze, i.e. towns of the region that is comparable with the Ostrava region.

It is to be expected that the future development of non-urban communes will be differentiated. Good preconditions for population growth can be observed in villages situated in pleasant environs on the southern perimeter of the Ostrava region with a favourable traffic location that become a part of suburbanization trends of Ostrava and its satellites. There are of course also rural seats which try to develop own activities such as Čeladná with golf links and related activities.



Fig. 7: The perspective of small towns in the Ostrava region is promising. Frýdland nad Ostravicí (on the left) can boast with a new shopping street, Klimkovice (on the right) has even a new spa area.

Certain general judgments can be made also when using a method of comparison. Not long ago, the same route was passed by industrial agglomerations of post-totalitarian countries on Iberian Peninsula. One of examples can be Bilbao (Rodríguez, Martínez, 2004) where the collapse of large industrial enterprises bound in this case to the local port was only partly compensated for by vacancies in services, technical and managerial work. Unemployment increased in the mid-1990s to 27% and dropped to 16% at the turn of millennia. The space was more diversified. The old industrial harbour quarter was seen to become more stricken with poverty and deprivation while the commercial sector was becoming increasingly wealthy. Deindustrialization markedly affected the landscape by the coming to existence of industrial ruins. A route to overcome the crisis was seen by town authorities in an active approach to area planning, in the adoption of strategic planning and in the support of infrastructural programmes. The planning was focused on the movement from the sector to regional policy and from the isolated town to the region, on the development of public-private-partnership. Although the situation has improved, the old industrial area of Bilbao is still behind the regions of Barcelona or Sevilla.

Similar experience have also some west-European countries (Maier, Beck, 2000) where the first recession occurred already during the world economic crisis in the 1930s. After World War II, the countries followed the route of nationalization (Great Britain), area planning and other instruments but unemployment could not be curbed. A break arrived with the introduction of liberalization (Thatcherism). Liberalization led at its first stage to red numbers of most large industrial corporations and to a dramatic increase of unemployment. Then the situation improved in the 1980s through the development of services and high-tech operations. Nevertheless, the old industrial regions still lag behind the national average.

A similar development can be seen in the Ostrava region and its further continuation can be expected also in the

near future. It will bring more throughs of industrial quarters and worker residential areas, a pronounced space diversification and a further shifting of employment to the tertiary and quaternary sectors. Great changes are to be expected in the landscape. The recent glamour of the Ostrava region as a preferred industrial region is likely not to come back in a foreseeable time, which of course cannot be a reason to resign efforts focused on the improvement of the situation.

Specific features of residential structure development in regions of the above types are mentioned for example by Davy (2002) who points out possibilities of joint planning and building of infrastructure, common care of environment and overcoming of social disparities but who also brings attention to the problem of conservation and enforcement of identity of individual towns in the densely populated polycentric agglomeration space. A certain risk of the revitalization of old industrial agglomerations namely consists in the development of a serial production of hotels, congress centers, hypermarkets, commercial buildings and luxurious residences with no links to the given locality, its history and cultural traditions.

5. Conclusion

The present stage of transforming the residential structure in the Ostrava region is far from being accomplished and there are several reasons for the situation. Firstly, the region's economic transformation has not been completed yet. A part of it can be considered the construction of speedway which is likely to become a main belt for the development of logistics, trade and to a certain extent also the localization of manufacturing facilities. Secondly, the Czech society still has to face a greater part of the transformation of the market with flats that can play a very important role for the development of individual seats. The third factor is a necessary environmental transformation, in other words the creation of a new landscape in areas affected by coal mining.

Together with the general social development on a national and global scale all the above mentioned factors can further significantly affect population changes in the Ostrava region which is as compared with other areas of the country relatively less stable in the sense of the affinity of inhabitants to their concrete place of abode. Suggested were some possible trends of this future development: gradual separation of housing from other functions, suburbanization tendencies oriented into the piedmont of the Beskids, redistribution of the population in dependence on actual local conditions.

It will be certainly interesting to further monitor the situation and to make evaluations and comparisons also in connexion with the development experienced by the residential structure of industrial regions in Germany (Dürr, Gramke, 1993), France, Great Britain (Burdack, 1993) and in other European countries. Regional comparison of actual development will be possible to seek

especially in the transformation of residential structure of the Upper-Silesian industrial region in Poland, Doneck Basin in the eastern Ukraine (Swain, van Zon, 2004) or in the Leipzig/Halle space (Kabisch, 1997), better corresponding to the Ostrava region with its size.

As to the Upper-Silesian industrial agglomeration a question arises to what extent the state border will be a barrier even in the conditions of the European Union (Kłosowski, Prokop, Runge, 2004). Partitioned from the territory of Moravia by relatively high-reaching mountain ranges of the Beskids and the Jeseníky Mts., the Ostrava region opens in the direction of Poland (Szajnowska-Wysocka, 2000), and it is a question of further development to what extent the existing settlement system of Ostrava can interconnect with the settlement system of Upper Silesia in Poland.

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THE HISTORICAL BACKGROUND AND CURRENT SITUATION OF MASS (INDUSTRIAL) FORMS OF HOUSING IN THE OSTRAVA REGION (CZECH REPUBLIC)¹

Eva KALLABOVÁ, Jaroslav BÍLEK

Summary

Some crucial impulses in the development of building mass (industrial) forms of housing (within the boundaries of continental Europe) are recollected and summarized here, so that the merits of their construction, especially in industrial areas, can be substantiated and comprehended. Concrete examples in the Czech Republic occur in the area of the Ostrava region, namely in the town of Havířov. The regional settlement pattern in this area, even in the 21st century, continues to exhibit many industrial types of mass housing forms, originating from the period between the mid-19th century (miner's colonies, settlements) and the 1990s (prefabricated housing areas).

Shrnutí

Historická východiska a současná situace hromadných (industriálních) forem bydlení na Ostravsku

Příspěvek stručně připomíná podstatné impulsy rozvoje budování hromadných forem bydlení (v hranicích kontinentální Evropy) a to tak, aby byla zdůvodněna a pochopena podstata jejich výstavby zejména v průmyslových oblastech. Konkrétní příklady jejich výskytu v České republice jsou situovány do prostoru Ostravska, zejména města Havířov. V sídelním regionálním uspořádání této oblasti se ještě v realitě 21. století setkáváme s mnoha industriálními typy hromadných forem bydlení z období výstavby od poloviny 19. století (hornické kolonie, obytná sídliště) do 90. let minulého století (panelová sídliště).

Keywords: mass forms of housing, miner's colonies, housing estates, Ostrava region, Havířov, Czech Republic

1. Introduction

Genesis (and contents) of the term of settlement itself has inspectionally a close relation to the residential space. The reality of settlements and housing patterns was changing in different periods of development. First settlements are considered to be colonies built in the old Egypt for workers, craftsmen and artists working on the construction of pyramids. Specific settlements were military camps of Roman legions similarly as towns for veterans (Hrůza, 1996). The original parallel between settlement in the sense of colonization and settlement in the sense of colony disappeared in the course of centuries but for example a technical dictionary from 1946 (Váša, Trávníček, 1946)

presents the term of settlement (in Czech "sídliště") as identical with the term of seat (in Czech "sídliisko") as a "place to be settled". The archaeological understanding of the word settlement answers to a place of the permanent settlement of population. Implementation of large settlements (as housing forms) in urban development planning is known from the turn of 19th and 20th centuries in connexion with urbanization and with the coming reform of life style accompanied by requirements of social changes. The 20th century started with working class colonies and continued with the era of so called new housing complexes. This term was replaced in the mid-1980th with a more general term of housing estate² (Musil et al., 1980; Ryšavý, 1983). Later on, there were more authors attempting at

¹ The research projects were carried out within the framework of the "Programme for the Development of Scholarly Research in the Key Areas of Science" No. KSK3046108 – Impact of Climatic and Anthropogenic Factors on Living and Non-living Environment", and "Programme for the Promotion of Targetted Research and Development" No. IBS3086005 – Downsizing of Deep Coal Mining and its Impacts on Processes in Lithosphere and Environment" in 2000-2005.

² Housing estate is an urban district (a group of urban districts) with a new housing pattern (70-100% of permanently inhabited flats built after 1945).

its more technical specification such as Hruža (1996)³ or Bery (1997)⁴ whose simplistic definition is advocated by West European geography. Working definition of any work necessarily contains also some more concrete qualitative and quantitative characteristics of a group of dwelling houses. According to the Ministry for Local Development of Czech Republic (since 1998), housing estate is a “compact group of prefabricated houses with a minimum of 150 flats and at least basic civic amenities. The Austrian Ost- und Südosteuropa-Institut (OSI) works with the definition of housing estate (on a European scale) as with the “housing complex that is a uniform urban complex with a minimum of 2500 flats built after World War II“. This paper dwells on the definition that is not confined only to the prefabricated material of bearing walls.

2. European background of building mass housing forms (until the 20th century)

Housing complexes that can be considered mass forms of housing (housing estates) in a broader sense of the word began to be built in the era of industrialism by entrepreneurs who realized that looking after the living conditions of their employees is necessary. As the idea about improving the condition of whole towns appeared unrealistic, the then factory owners went individually for the construction of so called model colonies (working class estates) located in the close vicinity of their manufacturing facilities⁵. From England where the process of industrialization was launched first, the type of housing started to be spread in the continental Europe, Bohemia and Moravia being no exception. The rise of model colonies in France was bound to railway

corporations and railway stations on newly built tracks. Germany (namely the Ruhr Basin) preferred a combination of blue and white collar estates. Already these model colonies made provisions not only for their dwelling functions but also for their educational, social, recreational roles (the projects included space for schools, shops, children facilities, parks, etc.). They differed in the (ir)regular layout of street pattern. The philosophy of factory owners did not always contain just a clean concern about the well-being of their workers but also ambitions to prevent conflicts with the employees, to influence their activities outside the working process and last but not least to develop a moral pressure. Populistic slogans spoke about the model colonies as about a combination of everything that has been so far brought by modern art and science (Hruža, 1996).

A school-book example of working class estates is Saltaire (near Bradford), enlisted by UNESCO as a monument of the world's cultural heritage (Fig. 1). Factory owner Titus Salt (articles of German silver) let gradually build near his works 850 one-family houses, a public bathhouse, laundry, church and further infrastructure. The Lever company (soap maker) which is known until today established a model housing estate named Porth Sunlight (Fig. 2) at Liverpool and made a thorough use of it in marketing its produce. At the same time, these model worker colonies enriched the ideas of modern urbanism, providing a relatively high standard of living and facilities for that time and markedly improving living conditions of the working class (the inspiratory idea was applied in prefabricated housing estates 150 years later).

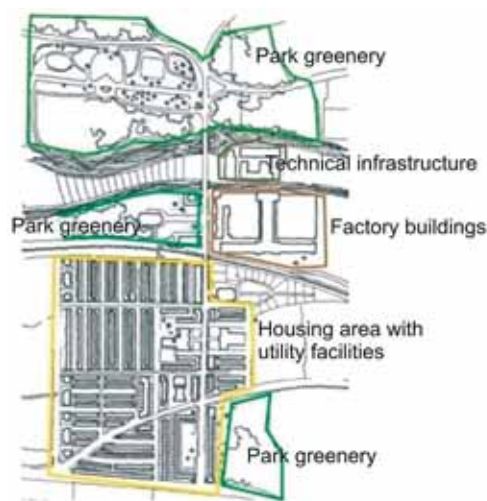


Fig. 1: Saltaire (UK): Industrial working class estate from the 2nd half of the 19th century

Source: www.unesco.org.com

³ Housing estate is a residential unit situated in the town outskirts, consisting of nearly same multi-storeyed dwelling houses with more or less similar flats inside them with uniform ground plan and minimum facilities. A characteristic feature of settlements is the absence of vacant jobs.

⁴ Housing estates (as a manifestation of the communist practice of centrally controlled urban development) are new extensive monofunctional housing areas that have become a dominant of towns in East European countries.

⁵ The first housing estate of this type came to existence near Glasgow in the 1st half of the 19th century at Robert Owen's textile mill in New Lanarc. The style is referred to as utopic idealism or Owen's humanism – enlisted by UNESCO in 2001.



Fig. 2: Lower Road, a block of flats built in 1906, Port Sunlight (UK)
Source: www.unesco.org.com

A somewhat different idea of linear residential formations (end of the 19th century) was based primarily on the required connection of town ruralization and rural area urbanization at a simultaneous observance of condition that traffic would form the general framework of urban ground plans. The urban concept of garden towns was very important for the later mass housing construction. Author of the concept and trendsetter Ebenezer Howard saw the vision as an easiest way to eliminate disadvantages of the residential forms of rural

and urban housing. Garden towns were to be located aside migration pressures (town outskirts). The most successful example of a garden town is Hampstead Garden Suburb in the outskirts of London (Fig. 3) although the impuls for its coming to existence was a campaign for the rescue of natural park. In spite of the fact that the above mentioned theoretical concepts of building urban districts with objects of mass forms of housing are the heritage of the 19th century, they have not been essentially outdone so far (Hrůza, 1996).



Fig. 3: Waterloo Court, a dwelling house built in 1912, Hampstead Garden Suburb (UK)
Source: www.hgs.org.uk

Typical working colonies of Thomas Bata (town Zlín, Czech Republic) represent a combination of model colonies and garden towns. Bata's urban philosophy was based on the combination of English garden towns and German industrial housing estates. He was not fond of tenement houses which were considered by him to be a possible source of social troubles. His colonies of family houses

(namely one-family and quadruplet houses) are referred to as the first mass housing pattern based on the urban concept, with a sensitively sized network of roads. These were the first housing estate formations of brick houses placed in uniform greenery, without fences, creating an unlaboured transition into the nature. The housing estates were coming to existence due to rationalization

motives of the employer to get the settlement closer to manufacture and consequently to enhance the quality of both links of the process. Through the application of perfect organization, logistics and experience from the construction of the factory there were 2,676 houses built first in Zlín, the town of Thomas Bata (from approx. 1915 to 1935 with the construction accelerating after 1920)

(Novák, 1993). The construction works followed a well thought-off system of building design and construction based on standardization and typification (Fig. 4). The procedures were later used not only in other towns of Czech Republic but also in Slovakia, Hungary, Croatia, Slovenia, Poland, Netherlands, England, Italy, Belgium, France, USA, India, etc.



Fig. 4: Zlín (Czech Republic) - Bata's garden working class colony in approx. 1940 historical postcard
Source: own archives

3. Works/miner/working class estates/colonies in the Ostrava region

The specific residential character of colonies in the today's Czech Republic relates primarily⁶ to the development of mining industry and coal fields⁷. So called miner colonies (works housing estates) were emerging on a mass scale especially in the initial stages of industrialization at places where owners of coal mines, smelting and construction plants had to face a problem of the permanent accommodation of their workers-migrants in order to ensure stability of their mining and other operations. For other purely practical reasons such as labour force stabilization, fast return of investment from rentals and from the profit of service operations the colonies were situated in the close vicinity of collieries (attendance distance of 1 to 3 km). They were built with the use of entirely new constructional architectonic elements with a different space economy, new building materials, and with the introduction of a brand new element – typification (contrast to many a time chaotically and spontaneously sprawling towns or to the dispersed housing construction of that time).

The housing situation of miners in the Ostrava region of the mid-19th century was resolved by adapting operational buildings, by temporary accommodation in colliery buildings, common lodging houses (barracks) for unmarried workers. First dwelling worker houses of garrison house type were built in the then self-contained communes of Heřmanice, Michálkovice and Moravská Ostrava (today a part of Ostrava) already in 1855. The building exhibited differences in the conception of their architecture. As compared with obsolete forms of enterprise practiced by the former feudal gentry (e.g. Wilczek's and Salm-Reifferscheidt's hard-coal mines in the Ostrava section of the bituminous coal field and heirs to E. Larisch-Mönnich in the Karviná section of the bituminous coal field), the concept of building by locators from amidst the representatives of modern capitalism was much more advanced (e.g. Báňská a hutní společnost, Severní dráha Ferdinandova, Bituminous Coal Mines Orlová-Lazy). Blocks of flats for mine white collars markedly differed from the miner colonies; the flats were larger and better equipped (water conduit, top-fed stove). The housing in colonies was in both cases of the mass housing character, maintaining individual features by the articulation of

⁶ There were also colonies of state railways attendants coming to existence e.g. in Louny, Záběhllice (Kotěra, 1921) and other.

⁷ The process is referred to as a "mining urbanization" (Kolektiv, 2003).

the housing pattern (Ředitelská konference Ostravsko-karvinského kamenouhelného revíru, 1929).

The population in colonies was considerably contributed to by migrants coming to the Ostrava region at two thirds from a circle of about 30 km (the then districts of Moravská Ostrava, Fryštát, Těšín, Opava, Nový Jičín, Bílovec, Příbor). Some 8% of migrants were coming from other Moravian and Silesian districts. An important share of migrants (23%) was from the economically undeveloped Galicia⁸ (districts of Bochnia, Wieliczka, Tarnow, Mielce, Jaroslaw, Brzesko, Pilsno and other). Migration from Slovakia was negligible. The age structure of migrants was very progressive with nearly a third of the population being persons of pre-working age category and the share of persons above 60 years being mere 8% (Bílek, 1968).

With the progressing coal mining in the Ostrava – Orlová – Karviná – Stonava space there were 132 miner colonies gradually built in the Ostrava region in 1850-1930. They were inhabited by about 20 thousand people which corresponds approximately to a half of employed miners of that time. Their building proceeded in uneven stages and its course was faster and more fierce in the Ostrava section than in the Karviná section thanks to a better linkage to traffic infrastructure and a higher concentration of industrial potential (Bílek, 1966; Kolektiv, 2003). The building of colonies was slowed down by the economic crisis of the 1930s. The stages of construction can be divided into the following three time periods:

- A from the beginning of industrialization to 1900
- B 1900 – 1910
- C 1910(18) – 1928

ad A) **The first miner colonies** are stigmatized by the utilitarianism of their founders (rectangular area with a perpendicular pattern of main streets and by-streets of standardized houses with no public spaces). The houses were cramped in a small space at high numbers which often went beyond the hygienic limits (e.g. the Mizam colony built in Orlová in 1859 on an area of 4 hectares was in 1930 inhabited by 690 persons living in 46 houses). Before 1900, the houses were most frequently built as single-storey houses with four housing units (living kitchen, foyer and closet), with no cellar (or with only a partial basement), without any sewerage system and in many a case also with no water supply. Sanitary facilities were as a rule shared by several families. As houses in many colonies were built at an ill aspect, they had hardly any sunlight year-long because their windows were facing only one of cardinal points – north, north-west. Tertiary amenities of larger colonies included special-purpose public buildings

such as bakery, smokehouse, washhouse, barn⁹, health facility (hospital), kindergarten and grocery.

ad B) With the growing political consciousness of miners **at the beginning of the 20th century**, undertakers were forced to modernize the construction of colonies, which consisted in floor space enlargement (one living room was added), improvement of interiors, sheds singled out from the house and in the space hierarchy of the colony. Newly appeared in the housing construction two-storey houses for 8 families or semi-detached houses for 16 families (colonies situated inside urban housing areas – Orlová, Karviná). Flats on the first floor were connected by a wooden gallery.

ad C) **The period after World War I** saw an introduction of new principles of town planning and architecture with the exclusively rectangular ground-plan type being gradually withdrawn. Thanks to enough building space the houses were added small gardens, colonies were newly added public spaces, parks, schools and other facilities. Oldest colonies were additionally connected to sewerage systems. The year 1928 is considered to be an urbanization milestone in the development of miner housing estates in the Ostrava region.

In the period between the wars, the miner colonies cease to be a determining element of the new residential building in the Ostrava region (at the expense of high-rise urban developments). During World War I and during the forced displacement of labour in heavy industries, workers were accommodated in newly built emergency dwelling houses of barrack type.

A greater part of the colonies occurred on undermined and by coal mining affected areas. With respect to the level of maintenance, unsatisfactory housing standards and society development (e.g. building of railways and buried services) some colonies were and still are gradually removed. In the past, most of these old colonies had to make way to mining operations, some were left only as torsa or individual objects, other are falling into disrepair (Fig. 5). Only a few of them have retained their original character (Fig. 6, Fig. 7 – see cover p. 2). Their owner has been since 1957 the Ostrava-Karviná Coal District and its Administration of Housing Estates¹⁰. In 1993-2003, the firm demolished nearly 250 houses at a cost of more than 40 mil. CZK (1.43 mil.). On the undermined area it still has in custody 670 houses (1,300 flats) in seven colonies (among other Karviná-Mexiko, Orlová-Červená, Pogřebjonka, Kopaniny) (Karas, 2003). The maintenance of these housing resources is rather complicated and costly also with respect to their territorial fragmentation.

⁸ now in Poland

⁹ in the Karviná district – was used for straw trashing and storage

¹⁰ Administration of Housing Estates went through several transformation processes. Since 1996 it has been an organizational unit of Ostravsko-karvinské doly, a.s. which owns about 46 thousand flats in 6,400 houses.



Fig. 5: One of dilapidating miner colonies from the turn of the 19/20th centuries in the Karviná district in 2002 (Photo: E. Kallabová)

An impuls for the preservation of colonies unaffected by undermining in the 21st century may be their sale to private owners, which would however not provide for a continual and complex maintenance of the whole space. A model example of the “life” of colonies may be colonies of the Ignát Mine in Ostrava-Mariánské Hory, the Hlubina Mine (typical miner colonies) (Noušová, 1978), colonies of Vítkovice Steel Works (both blue- and white-collar colonies) (Jiřík, 2001), or the mainly artisans’ colony of Krausovec in Moravská Ostrava (Bilová et al., 1981).

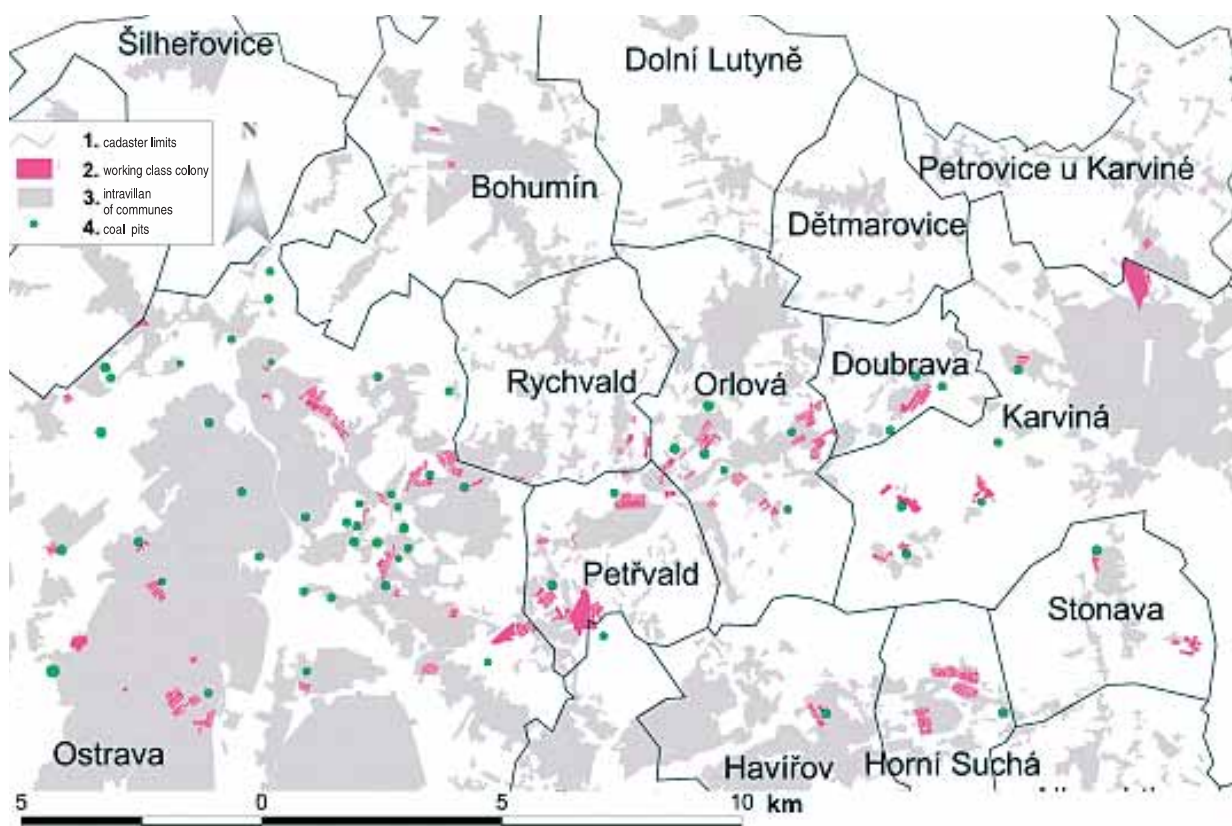


Fig. 6: The linkage of coal pits (1924) with miner and worker colonies in the Ostrava region in the settlement structure of 2002

Source: own research

4. Mass forms of miner housing built after World War II

The restoration of national economy after World War II brought the industry of coal mining to the fore of the all-society concern. Hygienic, technical and capacity reasons became the impuls for the foundation of new miner estates outside the reach of mining activities. An exception could be seen in several hundreds of wooden prefabricated houses imported in the period from 1948–1952 (1956) (Fig. 8) whose advantage consisted in the possibility of their installation even on areas potentially endangered by undermining (e.g. in today's Ostrava-Radvanice, Heřmanice, Muglinov, Michálkovice,

or in Petřvald, Orlová, Doubrava, Horní Suchá and Dolní Suchá). Expected life time of these originally temporary housing estates of so called "**Finnish cottages**" was only 20 years. Although a greater part of these Finnish cottages fall to 3rd and 4th housing unit categories due to poor technical infrastructure, their ever more frequent refurbishments, reconstructions and improvement of the entire dwelling environment of these housing districts are apparent (also thanks to their partial sale to private owners). The houses are becoming popular namely for young families, and it can be stated that they are no longer considered a "bad address" but rather a pleasant housing in greenery.



Fig. 8: The colony of "Finnish cottages" in Horní Suchá in 2002 (Photo: E. Kallabová)

The planning and construction of mass housing forms in the following period of time was based on the conclusions from pre-war congresses of namely functionalistic avant-garde of architects who defended the requirements for a useful and purposeful construction design of not only housing structures so that they could properly serve their purposes (especially as to their operational and material functions) (Hrůza, 1996). The goal of functionalism was to release the open space, and this is why it was necessary to gather inhabitants in high-rise buildings. Their primary role was in functionality = rationality, with aesthetics and arts being entirely suppressed. According to the Athens Charter (1933), the new housing pattern should be split into segregated functional zones, which at the same time imposed increased demands on traffic (accessability of home and work places was worsening). Theses of the Athens Charter were introduced into practice across Europe only after World War II when a great number of flats had to be built or refurbished and so the new schemes of minimum flat size, standardized ground-plans, simple housing construction systems, monofunctional housing complexes, automobile communications instead of streets,

etc. were paying on interest. This immediately related to the typification of such layouts and construction products – whole structural elements. It was assumed that a mass product may have a better design, lower price and higher quality. Large reservoirs did not exceed 5 ha at that time, except for two dam reservoirs in Kužnia Raciborska and Gónra Huta, still used as energy storing reservoirs. Also, small reservoirs appeared in the village of Paproč. After the dissolution of the monastery, new owners paid much attention to the reconstruction and management of the palace park. As a result, three ponds were created with total area of about 3.5 ha.

The first post-war housing estates had at least retained a smaller size, building height, material used (brick), spatial arrangement and artistic design. Under the influence of garden towns there were so called "stand-by housing estates" coming to existence in 1947-1949 (two-year-plan period houses – Fig. 9) that represented a more up-to-date form of the former working class colonies, particularly in the Ostrava¹¹ region. Most of them consisted of three-storeyed blocks of dwelling



Fig. 9: Two-year-plan-period houses in Orlová in 2003 (Photo: E. Kallabová)

houses (still built by private companies), more frequently rather in linear (not continuous) than in internal-block arrangement. Regarding the persisting post-war shortage of flats and precipitate growth of coal mining, many employees of coal mines lived in mass lodging houses built at war times, or in newly built objects located in the immediate vicinity of collieries. The following five-year-plan period (1951-1955) was in the housing construction still stigmatized by unclear general conception, stereotype in area development planning and unrealistic expectations of the future (“a flat is enough for satisfactory dwelling”).

The concept of coal mining development significantly subscribed to the construction development of towns in the Ostrava agglomeration. More complicated conditions of building persisted in the Karviná region which was situated in a close vicinity of the then high performance coal mines. The building of housing estates continued in the 1950s in the spirit of astringence into enclosed blocks of flats (in-blocks) whose layout formed a perpendicular pattern of streets and pseudo-yards partitioned from public activities. Urban interpretation was dominated by grooviness which followed the model of Soviet satellite towns. Their general constructional expression appears to be relatively purposeful until these days, creating an impression of semi-public spaces (there were even some small fenced plots adjacent to max. four-storeyed dwelling houses that were used as gardens). The actual architectonic design of houses (namely along the main streets) can be characterized by many details (Fig. 10)

– stucco façades, decorative motifs of gateways in the spirit of socialist realism above the front doors (elements of rural Renaissance architecture or motifs from the work in collieries), castellated walls imitations, frescoes, outdoor holders of window flower boxes etc. (e.g. in Havířov – SORELA, Ostrava-Poruba, Bohumín-Centre, etc.). Viewed as today, the period of housing estates construction can be considered to be relatively successful as it fulfilled also the aesthetic function in addition to housing functions, facilitating the creation of a certain affinity to the place, orientation by dominants, etc. Service facilities and civic infrastructure were located in the parterres of dwelling houses, which is extremely valuable. The element is felt as a pleasant housing street until these days.

The transition from the brick material used for bearing walls to prefabricated panels meant an essential qualitative move forward in housing construction. From the 1960s, the method of building prefabricated housing estates was fully corresponding to social housing (high government subsidies made it possible to allocate flats in dwelling houses also to socially deprived population) that was no longer accommodated only to the requirements of mining but was rather intended for an absolute majority of the population. The prefab housing estates were rising as complexes usually on a green meadow outside the intravillan with the height of houses reaching four storeys at minimum to follow the advice of Soviet experts preferring multistoreyed buildings and housing districts many times larger. An unfortunate measure was the

¹¹ Searching of spaces for new housing estates and building development were in the undermined area of the Ostrava region complicated by looking for their suitable location outside the reach of undermining. Today they can be found for example in Ostrava (Zábřeh, Bělský les, a part of Poruba), Havířov-Šumbark, Prostřední Suchá and Karviná-Nové Město, Orlová, Bohumín, etc.



*Fig. 10: Front door gateway on one of dwelling houses built in the 1950s
Haviřov – Sorela on the left, Ostrava – Moravská Ostrava on the right (Photo E. Kallabová)*

so called secondary densification of housing estates (Fig. 11) when the so far unbuilt areas (primarily meant for everyday leisure time activities) of brick internal blocks originating from the 1950s were additionally

filled with multistoreyed prefabricated panel houses. Services and retail shops gradually disappeared from the ground-floors of houses and preference was given to so called monofunctional structures of civic infrastructure.



Fig. 11: Filling of the internal space of a brick block-of-flats from the end of the 1950s with a four-storeyed house and a high-rise 12-storeyed prefabricated house (Bohumín – Nový Bohumín, 2001) (Photo: E. Kallabová)

Housing estates originating from the 1970s and 1980s were stigmatized by even greater imperfections than those from earlier times. Incrementally used was the typology of prefab houses with the chaotic layout, improper placement of civic amenities, often combined with a complicated traffic connection to inner town. A separate chapter was the utilitary economic building at a lowest possible quality and the absence of technological discipline. Prefabricated housing estates were lacking proper streets and any generous spatial economy (Fig.

12). Newly adopted was stream-line building which often produced tabular (straight, rarely angular) housing blocks several tens (even hundreds) of meters long and without any passages. The large-scale production of prefabricated constructional parts did not offer too many options to architects¹². The artistic conception consisted in a strongly pronounced grid of joints between the panels with cut-off windows. The complex housing construction was terminated in 1992 (until then the financial means for building a flat could be obtained as

¹² Government authorities established planning, economic and realization indicators for housing construction in compliance with the priority requirement of quantity at a lowest possible level of quality stipulated in binding technical norms. Decead were gradually ca. 14 basic constructional systems, together with regional variants it is possible to speak of approximately 70 building systems of panel technology (Klíma in Zdařilová (ed.), 2004).



Fig. 12: Urbanistic character of the part of the Ostrava-Dubina housing estate built in 1895-1992
Source: Atlas Ortofotomap Česká republika, Geodis 2004

a special-purpose government subsidy). In the following years when the subsidies were no more available it was only the constructional works in progress that were to be finalized. The building in the period from ca. 1988-1992 was already characterized by a higher standard in terms of quality, not in terms of the urbanization concept but rather in terms of the type of used housing elements proper (classical bathroom unit was replaced by brickwork and the like).

The current situation of largest housing estates in the Ostrava region was discussed in a number of published works (Kallabová, 2000, 2001, 2002, 2003, 2004a, 2004b, 2004c, 2004d; Karas, 2003; Kolektiv, 2003; Zdařilová (ed.), 2004, Zdařilová (ed.), 2005 and other). Abstracting from the technical condition and architectonic value of these housing estates, one of their most burning problems is the current demographic situation that reflects deformations from the previous period of time. A greater part of housing resources in prefab housing estates were meant to satisfy needs of immigrants who came to work in towns. Only a smaller part of housing resources were used to resolve the housing problem

of towns as such. It follows that at an initial stage of the existence of most housing estates the demographic structure of their population answered to the then demographic structure of immigrants – mostly young families at the beginning of their economic activity, who either arrived already with children or had children immediately after moving in. The statement can be supported for example by data from Ostrava-Poruba the population of which consisted in 1960 (Statistický lexikon obcí ČSSR, 1965) of inhabitants at the age of 0-14 years at 37%, persons of working age (15-54 resp. 59 years) at 59% and only 4% of persons at post-working age. In the same period of time, one of its newest districts had 55% of inhabitants only in three age categories (0-4, 20-24, 25-29). Opposite to this progressive demographic structure of the population in housing estates in the period after their building were old works (working class, miner) colonies and quarters in which only the people of post-working age remained (Fig. 13).

Although the age structure of population in the oldest housing estates has been brought to a certain balance, another problem to be faced now is population ageing.

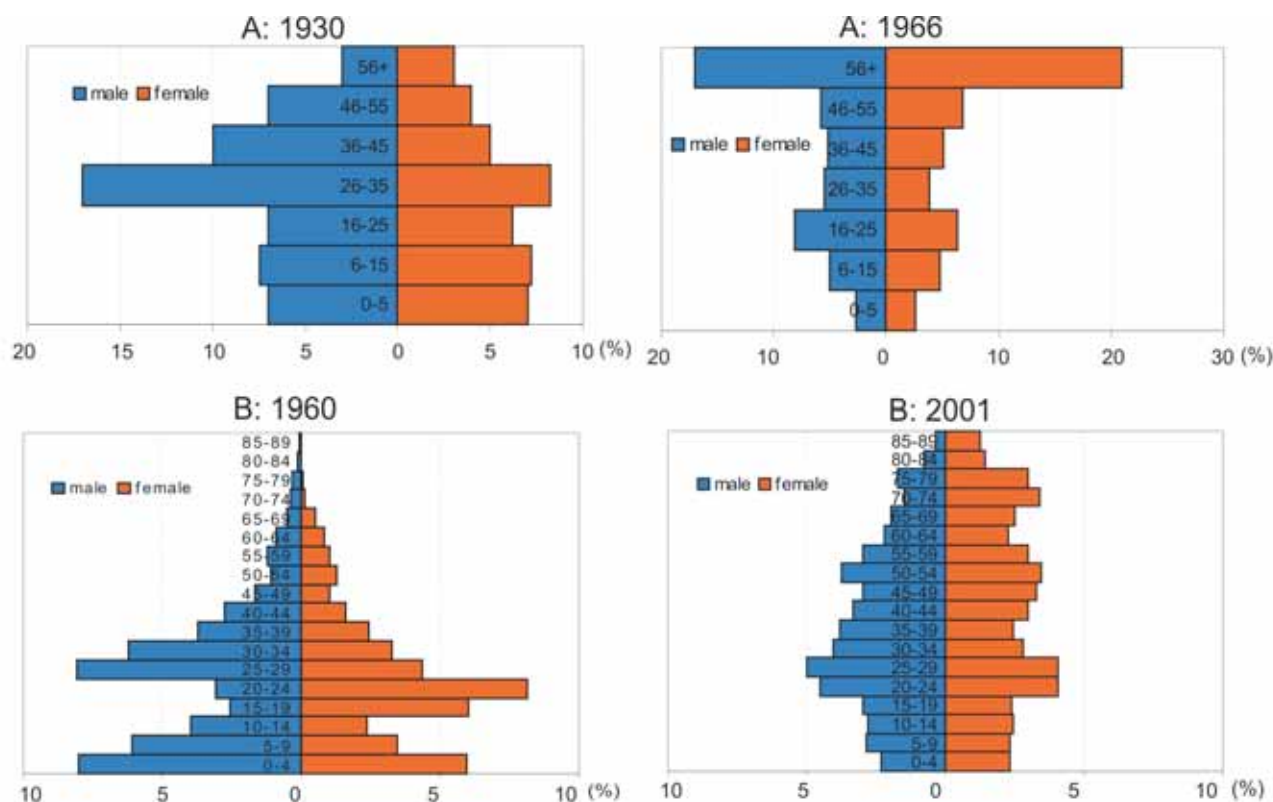


Fig. 13: Change in age structure of the population of mining and blue-collar colonies (A) and 2nd and 3rd phase of building of the Ostrava – Zábřeh housing estate (B) in given years

Source: Bílek 1968, Sčítání lidu, domů a bytů 2001

Even these housing estates exhibit a shortage of flats and hence a forced co-existence of households. In view of the fact that migration in the Czech Republic decreased after 1990, a rapid change in the demographic structure of housing estates is hardly to be expected. The situation is gradually coming back to normal very slowly as a mild population migration occurs even in the conditions of missing vacant flats. In sporadic cases people migrate from the housing estate after having ended their working activities either to the objects of secondary housing or back to areas from which they moved to the housing estate some years ago one of reasons being the fact that the housing estates cannot provide enough instigations for their newly acquired free time. The trend is however in conflict with their realistic considerations concerning the need to be close to health facilities at higher age, whose accessibility is much better from housing estates and from towns in general. A part of the school facilities slowly become redundant; on the other hand, the requirements of tranquility and services for older people are increasing.

5. Havířov

The town that can be a textbook of mass housing (housing estate) construction from the post-war period until 1992 is Havířov¹³ (Fig. 14). A possibility to judge its coming to existence and in many aspects a controversial development provided among other Benatzky et al. (1995), Vaněk et al. (2003) and Prokop et al. (2005). The study of literature was combined with a field inquiry and confronted with views from the Havířov Municipal Office (Mokroš, 1999). Town division into housing estates including designation according to the OSI definition (Fig. 15 – see cover p. 3) is based exactly on the work by Mokroš (1999).

Havířov is one of the youngest towns in the Czech Republic (decreed on 4 Dec. 1955). The whole town was established after World War II. Its history dates back to 1947 when the decision was made about the construction of “new socialist towns“ in the Ostrava region (Prokop et al., 2005). The construction of a new housing estate of Šumbark was launched in the same year. Building on a green meadow and a severe intervention into the

¹³ A similar example can be Meziboří in northern Bohemia or Eisenhüttenstadt in the former GDR, etc.

Town	Housing estate	Population	Flats	Period of construction	Storeys
Bohumín	Nový Bohumín	8,030	3,200	69-83	3-12
Karviná	Nové město	19,368	7,296	51-60	3-5
	Ráj	24,344	8,547	65-80	3 -10
	Mizerov	9,215	3,149	60-70	3 10(5)
Ostrava	Poruba	56,035	22,237	50-80	8-10
	Hrabůvka	35,071	13,601	60-70	4,12-14(16)
	Výškovice	14,035	5,144	65-75	4,8-12 (16)
	Zábřeh	21,581	7,638	55-65	4-5
	Fifejdy	23,268	8,123	70-80	8-12(16)
	Pustkovec	24,277	8,285	70-80	8-12(16)
	Starý Zábřeh	18,664	5,722	85-89	8-12(16)
	Dubina+Bělský Les	18,601	4,982	85-92	12(16)
Orlová	Lutyně	25,720	8,566	63-91	4-12
Havířov	Město - UD 01,02	12,004	4,795	46-71	5-8(5)
	Město - Sorela	11,721	4,644	46-71	4-5
	Město - UD 05,08	14,062	5,251	46-71	4-7
	Bludovice	19,948	7,313	46-81	6-14(8)
	Šumbark I	13,195	4,530	46-91	3-14
Frýdek-Místek	Kolaříkovo	7,100	2,950	70-80	6-12
	Slezská	10,300	3,620	65-93	8-14

Tab. 1: Basic quantitative characteristics of housing estates (with more than 2,500 flats) in the Ostrava region
Source: own research in cooperation with the Ostrava City municipal authorities

residential situation of several original communes, peculiarities and circumstances of its coming to existence resulted in an entirely exceptional position of Havířov ("havíř"=miner) among Czech towns. A rare phenomenon is the share of flats in one-family houses – only 9.1% from the total number of permanently inhabited housing units in the town. The one-family houses are remainders from the original communes that were to be – as advised by Soviet experts in the 1950s – totally eliminated from town development plans. Another expression of

centralization attempts was to concentrate services and retail in large complexes (to the detriment of small shops), to reduce the number of hotel beds, to entrust the construction only to one developer, etc. The housing resources of Havířov were at 83.5% built in 1950-1970. The Law of Czech National Council No. 367/190 Gaz. ranked Havířov with corporate towns although it is an exception in this group of historical towns (as the town was meeting the criterion of the fourfold population increase in the period of twenty years).



Fig. 14: Typical character of habitable built-up area from the 1950s (Havířov – SORELA, 2002) (Photo: E. Kallabová)

Composition of the SORELA housing estate (socialist realism) nears with its urbanization concept to the image of historically developed towns – with streets (broadways = so called avenues of western type) and squares (areas for mass meetings of workers), with a hierarchy of meanings, outlets in-built in the parterres of dwelling houses usually not higher than four floors and forming semi-enclosed blocks. Aesthetic and historical qualities of this housing complex from the 1950s in the centre of Havířov are protected through a decreed historical monument protection zone. Worth mentioning is a miniature archway with shops on Hlavní Street.

Housing estates in Havířov contain dwelling houses of all stages occurring during the construction of housing estates from the so called two-year-plan-period buildings up to high-rise buildings which the era of complex housing construction ended with. The current structure of owners consists of two one-third shares of the Ostravsko-karvinské doly, a.s. and housing cooperatives, respectively, with the town having in its possessions a quarter of all flats. The flats are sold to private owners only sporadically. Havířov was to become a big town with housing functions and this is why there are only few industrial operations and enterprises in it. Although the fact brings about a relatively good environment, inhabitants have to commute for work with the strongest commutation streams leading to Ostrava (40%), Karviná (14%), Orlová and Stonava (8% each).

Havířov is missing a central urban space which is to a certain extent substituted for by the backbone communication of the SORELA housing estate (Fig. 14). Apart from the house of culture and cinema, civic amenities are not singled out in separate objects, which is of an extremely high urbanization value. There is a gymnasium and a small health centre in the housing estate. Topical problems are static traffic and traffic load on the settlement communication axis (1st class road). Short-term proposals channel the load distribution into multiple traffic corridors, long-term vision is the construction of a by-pass road in the NE part of the town. The image of this town section is good and provides to its residents a high-standard dwelling, services and a sufficient space for short-time recreation. It is partitioned from the housing estate Město 05,07,08 by the Stromovka park. All urban districts (UD) of this housing estate are dominated by brick houses arranged in internal blocks (less frequently in the linear pattern), additional development from the 1980s having even some 14-storeyed prefabricated houses in UD 7. The housing estate may include also UD 6 consisting of hospital premises with a health centre (620 beds). There is no cultural centre or secondary schools in this housing estate with basic services and retail shops being located in two smaller separate objects. Behind the housing estate limits in the direction of Suchá there are several

supermarkets built on a green meadow. In general, the housing estate pattern is more open thanks to the period of construction, town streets (in the original, traditional conception) are disappearing, the development in the north-eastern town limits passing into a forest park.

The housing estate Město 01,02 links up with the first housing estate (SORELA) and includes a central space of the town's fundamental urbanization concept – the today's nám. Republiky Square which is a meeting point of four main streets. This central space of the town has not been completed yet (in the past it was felt as a town centre thanks to big department store named Budoucnost – today's Elán) and the southern part of the park has been recently converted into a modern children playground. Newcomers are impressed by the nám. Republiky Square as by a noisy crossing. There are three secondary schooling facilities in the housing estate, a gallery, museum, community centre, cinema, a larger park and a multi-purpose sports facility with an indoor swimming pool and outdoor sports grounds. The civic amenities of UD 02 are situated mostly in the parterres of brick houses arranged in the pattern of internal blocks, which are in UD 1 combined with the prefab houses of stream-line construction. With respect to the friendly height of buildings, some houses were added garret extensions in the 1990s.

The Bludovice housing estate (built in the period from 1950-1980) is situated at a distance of about 2 km from the artificial town centre. The original accumulation of 1,000 housing units in the quarter of Podlesí were interconnected with Město by means of additional developments in the 1970s and 1980s. At the same time, a southern part was erected with chaotically arranged mainly 8-storeyed but also high-rise prefabricated houses. The eastern limit of the housing estate is constituted by a forest park transition to the Bludovický les Forest massif, inside of the housing complex there is a park with the grown-up greenery. Civic amenities of the housing estate include a community centre with an exhibition hall, four secondary schools, cinema, multipurpose sports hall, winter stadium, weightlifting hall, and a separate shopping centre in the southernmost part of the housing estate. In the SW space there are supermarkets built by supranational chains on a green meadow. In spite of the fact that the architectonic and urbanization standard of the housing estate is low, living in it is relatively positively classified thanks to well accessible greenery and sufficient space for leisure time activities.

The lowest housing standard can be found in Šumbark. A disadvantage of this housing estate is seen in its breakaway, isolated location towards the other town quarters, with a 500 m wide barrier of railway corridor on a high-rise bank reinforced by main traffic arteries

(rondels) and buried services. The only direct connection of Šumbark with the town runs through an underpass beneath the railway station yard, whose proportion rather remind a tunnel. The housing estate's distance from the town centre is about 3-4 km with the connection by foot being in fact impossible but not due to the distance itself. Šumbark is a housing complex with a so far unfinished development. Its original core area with brick dwelling houses in linear arrangement (territory of impaired community control) has lost its central function, the new area development plan singles out new plots for the construction of a perimetral housing estate centre. The western part of the housing estate consists of multistoreyed prefabricated houses with a prevailing building height of eight floors but there are also 14-storeyed buildings. The sloping terrain provides for a partial buffering of the adverse visual impression of these high-rise buildings. Odd areas between Šumbark I and II are planned to fulfil housing and service functions. Šumbark I itself has no spare areas and has been already several years actively engaged in the government programme Regeneration of Prefab Housing Estates¹⁴ and Sueuro-Nas¹⁵. The emphasis is put on the adaptation of outdoor housing environment and children playgrounds and outdoor sports grounds for adolescents. Some objects of the former Tesla factory (now Tenas, a.s.) located in the settlement are being let to small firms and manufacturers. Larger shopping centres are two; an important role is played by the concentration of secondary (vocational) schools (5 schooling facilities); apart from an indoor swimming pool, tennis courts and a football playground in the terrain depression on the SE margin of the settlement, sports grounds could be until recently found only attached to schools. With its northern margin the housing estate links up with the Pežgovský les Forest which is intensively used for a short-time recreation.

Nevertheless, within the Ostrava industrial conurbation Havířov keeps the reputation of a town with the relatively clean environment and good recreational hinterland. Its image is dominated by green areas (with enough spaces for ornamental greenery in contrast to other historical towns) and the broken terrain made it possible for architects to use non-traditional forms in the built-up area character and its internal articulation. The concentrated housing patterns of Město and Bludovice is surrounded with park forests in the north and east, and with floodplain forest stands and grasslands in the south-east (the Lučina River valley). Regarding the possibilities of sports and recreation, Havířov has a

favourable linkage to the recreational areas of Těrlická and Žermanická water reservoirs with the Těrlická dam being situated within the reach of town public transport (at a distance of about 8 km from the town centre, Žermanická dam 10 km); another virtue is the convenient distance of the Moravian-Silesian Beskids Mts.

6. Conclusion

With respect to the quantity of mass housing forms it is necessary to pay attention to circumstances and linkings of their historical development. A common feature of miner colonies and prefabricated housing estates is among other things also the fact that a future fate of coal mining (and society) could not be predicted in a long-time horizon at the time of their building. A question remains to ask now "What to do with them?" It appears that the only passable way is a complete repair of the houses and regeneration of the whole environment. The increasing concern in these housing estates indicates a certain sign of attention of those who are important for changes in these parts of towns – elected representatives of local governments and experts to assist to them. Imprudent negative statements publicized in media depreciated these housing areas in the eyes of the society affecting on a national scale at least a quarter of the country's population.

In the conditions of persisting housing needs, slow progress of social stratification and insufficient regeneration the housing estates and colonies are jeopardized by the deteriorating structure and worsening living conditions of their inhabitants. Active participation in the planning and implementation of regeneration measures may enhance the solidarity of residents with the place, which would have a long-term effect on the preservation of a decent and safe quality of the regenerated environment. The issue of education brings about also the solution of social relations; some data indicate that the share of "non-technical" problems of housing estates amounts up to 70% (Kašpárková, 2000).

The need of housing clearly determines that investment into the improvement of housing environment is necessary because the hitherto development after 1989 and the prognoses of housing needs and housing construction until 2020 indicate that the pace of building after 1989 has been lower than a half of the actual requirements of households.

¹⁴ Additional building of at least basic infrastructure of playgrounds, sportsgrounds and environment humanization in housing estates occurs also in Šumbark II with only 1,500 flats (Bogoczová, Rose in Zdařilová (ed.), 2004).

¹⁵ Sustainable Refurbishment in Europe – New Associate States, Pilot project Šumbark I – Jedlová (Prvá in Zdařilová (ed.), 2005).

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Reviewers' note

The paper is in general very interesting and illustrates the development of mass housing forms. However, the reviewers do not share the authors' views concerning Havířov. Havířov was granted the town statute in 1955 and it was decreed corporate town in 1990.

Opinions about Havířov are dichotomic. Some experts not only from among geographers but also urbanists, architects and politicians still consider Havířov to be a satellite settlement of Ostrava (particularly with respect to the "town's morphological appearance"). Other hold an opinion that Havířov is a full-featured town.

Havířov has at its disposal complete civic amenities, the town is a self-contained registry district, it has a tax office of its own, labour exchange, cadastral office, District Court subsidiary, functional mass city transport etc. In the period after 1990 the town experienced an increase of available jobs, and in the census of 2001 there were 59% of Havířov residents working at the place of their permanent address. According to the administrative division in effect since 1 January 2003, the Havířov Town-Council is a town authority with the extended sphere of action, providing for central functions in 4 neighbouring communes. This shows that the central function of the town is fulfilled. According to the opinion of reviewers, all the above fact evidence that Havířov is a full-featured town.

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SOCIAL CLIMATE IN THE OSTRAVA REGION¹

Barbora KOLIBOVÁ, Oldřich MIKULÍK

Abstract

A summary of findings from sociological surveys in the Ostrava region, carried out in the period 1999-2003, is presented here: results are based on sampled groups of employed and unemployed persons, together with a comparison of members of major representative professional groups – coal miners, metallurgists and chemists. The targeted research was elaborated with additional surveys from the coal mines of Paskov-Staříč, a.s. and ČSM, a.s., as well as from the model area of the Ostrava-Michálkovice town district.

The present project provides a further refinement to knowledge in the area of the changed perceptions of life style by respondents themselves. It is also focused on the acquisition of data about the standard of living, perceptions of environmental quality, value orientations, etc. These projects are a part of long-term research focused on the assessment of regional environmental change in the Ostrava region.

Shrnutí

Sociální klima ostravského regionu

V příspěvku jde o souhrn poznatků ze sociologických výzkumů prováděných v letech 1999 – 2003 na výběrových souborech zaměstnaní – nezaměstnaní, srovnání stěžejních profesních skupin – horníků, hutníků, chemiků. Tento cílený výzkum byl doplněn o výzkum na dolech Paskov – Staříč a.s., ČSM a.s. a v modelovém území městského obvodu Ostrava – Michálkovice.

Tímto výzkumem prohlubujeme poznání v oblasti posunu vnímání životního stylu samotnými respondenty. Rovněž se orientujeme na získání informací o životní úrovni, vnímání kvality životního prostředí, hodnotových orientací apod. Tyto studie jsou součástí dlouhodobého výzkumu zaměřeného na hodnocení regionálních změn životního prostředí ostravského regionu.

Keywords: *coal-mining, downsizing, coal industry restructuring, vertical and horizontal mobility of labour force, unemployment, life style, standard of living, life quality of population in the researched region, Ostrava region, Czech Republic*

1. Introduction

Social, economic, political and property changes after 1990 induced transformation processes that have been remodelling basic relationships among the state – society – man – environment. Transformation of the society and its new structure, conditions of market economy, ownership changes, restructuring of industrial production, changes of life style, new approaches to landscape conservation, introduction of new technologies, process of globalization, barriers

of landscape protection, sustainable development, prosperity of regions, normatives of the European Union, etc. call for a reevaluation of a number of approaches and for a deepening of the process of interactive doing in the environmental system of regions with old burdens with a new quality and quantity of anthropogenic activities in the conditions of market economy. Regional specifics of the development together with the evaluation of existing strategies and projects are a basis for landscape revitalization with the proclamation of sustainable development aimed at the Ostrava region's prosperity.

¹ The research projects were carried out within the framework of the "Programme for the Development of Scholarly Research in the Key Areas of Science" No. KSK3046108 – Impact of Climatic and Anthropogenic Factors on Living and Non-living Environment", and "Programme for the Promotion of Targetted Research and Development" No. IBS3086005 – Downsizing of Deep Coal Mining and its Impacts on Processes in Lithosphere and Environment" in 2000-2005.

The region of Ostrava is not the first region of coal mining and heavy industries that has been undergoing the stage of restructuring. Many European towns and agglomerations have already passed the transition although in different social conditions.

How the Ostrava region looked like before the year 1990? The region was one of industrial areas in which the post-war development of national economy was likely to have reached the highest pace namely after the beginning of socialist building in the 1950s. It was possible to observe here the changes of major character, induced by the process of industrialization since the era of capitalistic enterprise. The landscape space was gradually filled with seats and industries interconnected by a network of roads whose density was rapidly increasing. The expanding recreational space was used at an ever increasing intensity, life styl and social structure of the region were changing.

The standard of living of inhabitants in the studied region depends on the concept of regional policy of the government towards affected regions, on the implementation of proclaimed sustainable development and on the realization of conceptions of industrial structures that are still missing.

The standard of living of unemployed persons in the region where the rate of unemployment oscillated from 15-20% after 1990 is logically lower than in the rest of the gainfully employed population, which reflects a shift in the life style that in some way is to express also the values and interests of an individual, group or community.

2. Orientation of research on social environment

Ostrava used to be called a “steel heart of the Republic” and the self-confidence of people working in the carrier industries was supported by slogans such as “who is miner, who is more” etc. The ideology created from the Ostrava agglomeration a country’s preferred region with respect to house building, supplies, social benefits for preferred professions, above-average income, etc.

The downsizing of coal mining in the Ostrava region evoked a range of problems with a lot of questions also in the social sphere – what to do with the human potential concentrated in this residential regional agglomeration for many tens of years. Since 1990 when the period of Czech economy transformation started we have been struggling with an entirely new for us economic and social phenomenon of increasing unemployment.

The phenomenon resulted exactly from the restricted coal mining and production in many industrial giants.

Due to restructuring, a reduction occurred of traditional professions and new job opportunities began to be created.

Unemployment which is a symptom of the society destabilization is accompanied by other negative social phenomena – growing criminality, misuse of drugs, extreme alcoholism. If we look at a social stratification and social mobility in the society, a question is immediately coming to our minds of how these categories are conditioned by regions and seats. It is a generally known fact that regions in the Czech Republic are characterized by greater or smaller economic, social and demographic differences and own specific features.

The model area that is studied at our workplace in the longitudinal research – the Ostrava region can be classified as a city type. The Ostrava agglomeration was developing during the processes of industrialization approximately since 1870, and its economy was typically rapidly growing in the period of socialism when the accumulation of heavy industries and coal mining led to a high population concentration and increase. Until the present time, the growth of the agglomeration was stimulated both by the industry and by other superstructural branches of national economy. A turning point for the region arrived after 1989 when the coal mining industry recorded the first slow-down and the production in large heavy industry enterprises started to decline.

Life style is a structured complex of life habits, customs, practices or accepted norms. It is assumed that life style expresses in a way also the values and interests of an individual, a group or a society in general.

Styles crystallize around life roles and the roles themselves and their interpretations are an important manifestation of the life style. Life style cannot be unambiguously differentiated from some related categories, namely from the way of living. The main and conceptual differentiation of the terms is the way of living in the conception in which the life style is affected by the culturalist view of individual’s and society’s life while the way of living is affected by the socio-economic aspect. Way of living is sometimes understood as a synonymum to the term of life style. In some other cases, the way of living is characterized as a category of broader meaning with an emphasis on the socio-economic conditions of life (Petrušek, Maříková et al., 1996). Life style and income from work make together an important attribute of the social status.

In many tens of years a lot of time was spent by studying theory and practice of the sociology of the way of living (sociology of life style). Theoretical roots can be found

in the works of M. Weber (1983) - for example in his concept of status groups delimited by their life styles. The sociological research of the way of living often coincide with the research of life quality, leisure time, social stratification, etc. In the conception of Czech sociology the analysis of lifeway – life style has been focused on answering the following 4 questions (Petrušek, Maříková et al., 1996):

1. What an individual, a group, a class or an entire society base their way of livelihood upon?
2. What is the effect at which the differentiated capabilities, prerequisites and sources are valorized? (what types of people can be successful in the given social system)
3. What are the relationships entered by an individual or a social group, ranks, classes in this process of valorization?
4. How the whole process reflects in people's minds, in the choice of strategies for survival, success, etc.?

One of empirical results of these inquiries is a finding that the way of living is characterized by inertia, its concrete form resulting in the periods of dramatic social changes from the symbiosis of the old and the new.

A similar research in the field of life style within the branch of urban sociology was made in the Ostrava region by a team of experts under the leadership of Jiří Musil (Musil, Kotačka, Hrubá, 1967). The research works originate from the mid-1960s. In 1967, there was for example a research on the "Industrial town in the opinions of its inhabitants". The public inquiry was intended to find out attitudes of Ostrava inhabitants concerning their reasons for staying or leaving, popularity of individual urban neighbourhoods in Ostrava. Some questions concerned leisure activities. The groups of questions were thematically very similar to the scope of our research although the engagement of our research work is much broader both in its contents and themes.

If we compare results from the two inquiries whose chronological time span is 30 years, we shall find out that a major difference is in the perception of environment in the Ostrava region. The environment has improved thanks to several reasons, namely by the downsizing of coal mining and by the restructuring of industry in the region. Before 30 years, the main reason to leave Ostrava was dust and air pollution. After changes in 1990, the main reason for dissatisfaction of local inhabitants and their drive to move away from the region is seen in the lacking perspective of self-assertion and in the increasing problems in the region. The shift documents that the originally highly industrial region has become an area of marginal interest in the country.

3. Area under study

The subject of our long-term research (since the 1970s) is the territory of Opava, Nový Jičín, Frýdek-Místek, Karviná and Ostrava City districts. The demarcation was made in such a way that it would make it possible to study and assess effects of the interactive influence of the Ostrava agglomeration on a broader hinterland (Mareš et al. 1975; Mikulík, 1975).

To study the issue of deep coal mining downsizing on the processes in lithosphere and environment the research territory was demarcated so that the area of allotments would encircle the space which forms a certain transitional zone between the area affected by coal mining and a broader hinterland in which after-effects of the adverse economic activity on the landscape and environment may occur (Mikulík, Kolibová, Zapletalová (eds.), 2004).

The area under study is situated with respect to the statistic classification of the European Union within a larger territorial unit (NUTS 3) of "Moravia-Silesia" (Moravskoslezsko). According to the current administrative division of Czech Republic it is situated in the eastern part of the Moravian-Silesian Region and consists of the Ostrava City district, a nearly whole district of Karviná, a quarter of the Frýdek-Místek district, 5 communes from the district of Opava and 3 communes from the district of Nový Jičín. For the purposes of this study the territory has been designated as the Ostrava Region (Ostravsko). This geographical location hides in itself a remarkable localization characteristic – the location on the border with Poland and Slovakia. Cadastres of towns and villages in question total up to nearly 92 thousand hectares, which represents approx. a sixth of the area of the Moravian-Silesian Region and 1.18% of the total area of the Czech Republic. The studied area is formed by 48 municipalities; in more detailed statistic terms by 135 municipal neighbourhoods and 569 primary residential units. The population density of 767 inhabitants/km² ranks the Ostrava region with the most densely populated areas in the Czech Republic.

3.1 A brief geographical characteristic of the area under study

The relief of the area under study is relatively diverse, spatially differentiated and genetically considerably heterogeneous since its geological structure is varied and geodynamic development is complex. The natural morphogenetic diversity of the relief combines with the effects of economic activities that even dominate at some places, and the anthropogenic relief forms, namely the forms of montane genesis, determine characteristic features of the relief in the Ostrava basin.

Similarly as the climate of the whole country, the climate of the area under study is given by the location in central Europe where the effects of oceanic climate meet with the effects of continental climate. The area is situated in a mildly warm climatic zone with long-term average annual temperatures and annual precipitation totals approximately ranging between 7.5 °C–8.5 °C and 770–950 mm, respectively.

The Ostrava region belongs in the Baltic Sea drainage area and is a part of the Odra River catchment. River pattern is relatively dense but rivers are mostly of torrent character with a considerably variable discharge. In order to protect the area from high water and to reach uniform discharge values throughout the year there is a system of dams built in the region in addition to the system of fish ponds.

The biogeographical location of the Ostrava basin and adjacent hilly lands and uplands within the Czech Republic is of singular character with a mutual contact and intermingling of Hercynian and Carpathian species.

At the time of the last census at the turn of February and March 2001, the area under study had a population of 705,698 inhabitants with the share of female component ranging in individual municipalities from 48.1–53.3%. The value of 51.3% characterizing the whole region corresponds to the national average. Married females and males formed 45.3% of the population, single persons 37.1% and widowed persons 7.5% (Mikulík, Kolibová, Zapletalová (eds.), 2004).

Regarding a sufficient amount of available jobs and a good supply in the field of housing the region could boast with a long-term progressive population age structure in the second half of the 20th century. This began to change towards the end of the last century and the present population age structure is 16.7%, 65.8% and 17.5% at pre-productive, productive and post-productive age, respectively. Thus, the age structure of local population is nearly identical with values characterizing the situation in the whole country. Mean age of the region's population was 38 years and precisely a half of the population was gainfully earning.

The structure of local population mirrors the fact that the region in question is a border region. Although a majority of residents claim the Czech nationality (87.4%), there are also Slovak, Polish and Moravian nationalities claimed in the region. Within the Czech Republic, the studied region may be spoken of as a region with average religiousness where a third of the population are believers, 58% are heathens and 8% did not state their relation to religion.

About a third of employed inhabitants of the region (i.e. approx. 90,000 persons) were commuting for work outside the place of their permanent abode. At the time of the last census in 2001, there were about 60,000 inhabitants applying for job, which represented an unemployment rate of 17.3%. This indicates that the rate of unemployment in the Ostrava region was twice as high as the national average.

In spite of the complicated development in the traditional industries the Ostrava region still remains one of the country's most important economic regions with the manufacturing sector being formed namely by the heavy industry based on bituminous coal mining and iron ore processing.

4. Research structure and results

Our long-term research was always missing the social aspect focused on life style, lifeway. Research works in this field are unfortunately only sporadic. This is why we decided to add this part of the research.

In 1998–1999, a conception was developed and research work launched with the first step being an inquiry in the group of unemployed persons registered at Labour Exchange Offices in Ostrava and Karviná (Kolibová et al., 2000). In 1999–2000, another inquiry was made in a group of employees from three Ostrava enterprises representing pivotal and still traditional branches of industry in the region – Ostravsko-karvinské doly, a.s. (Ostrava-Karviná Coal Mines – OKD), Nová huť, a.s. and Moravské chemické závody, a.s. (Moravian Chemical Works – MCHZ) (Kolibová, 2000). A total number of addressed employees in these three enterprises was 1,500. An inquiry into employees of two coal mines – Paskov-Staříč (OKD, a.s.) and ČSM (Českomoravské doly, a.s.) was prepared in 2001 and carried out in 2002 with a total number of workers addressed by means of our questionnaire being 600. The rate of return was very high from the Paskov-Staříč coal mine (503 respondents) and somewhat lower from the ČSM coal mine (330 respondents). The so far last stage of research is an inquiry made with residents in the town district Ostrava-Michálkovice (Kolibová et al., 2003a), made in the mid-2002. The research of social climate in the town district was made through an inquiry network of 600 respondents in cooperation with the Michálkovice town district authority with a return of 50%.

4.1 The unemployed

In 1998–1999, the research conception was prepared and the research launched, whose first step was an inquiry in the group of unemployed persons registered at Labour Exchange Offices in Ostrava and Karviná. A standardized questionnaire was used to gain material

that was processed by a special statistic programme to provide opinions and attitudes of people who happened to be outside the work process. The group of 456 respondents included 17.4% persons from the mining industry. Data collection technique: distributed-collected questionnaire with 52 questions arranged in six thematic ranges (stability and staying of the unemployed in the region, specific questions concerning labour exchange administrative procedures, region's prosperity by the eyes of the unemployed, living standard of the unemployed and their appreciation of environment quality, value system of the unemployed respondents, socio-demographic characteristic of the enquired).

Of the total number of respondents, 75% do not intend to move out of the region because of their families and links to the current housing. Social links to the region are intensified by the fact that nearly a half of all enquired replied that both spouses (partners) had been living in the region continually since their childhood. The main motive in respondents who consider moving out of the region was a poor prospect of their self-assertion and an increasing instability and problems of the region.

A third of the enquired ranked in the group of unemployed over a long time or repeatedly. Termination of employment by mutual agreement as a reason of unemployment was stated by 30% of respondents, 19% were given a notice, 9% terminated the employment with their employer themselves, and 93% of respondents look for a job also outside the offer provided by Labour Exchange, of whom 43% through media, 34.5% relying upon recommendations of their friends and 18.3% by contacting other employment agencies. 61% of respondents would have accepted a job (in 1999) for 5 to 10 thousand CZK (175-355 €), 33% would have imagined a salary ranging from 10 to 15 thousand CZK (355-535 €). About a half (47.3%) of the enquired were prepared to commute for work 5 to 10 km, 34.4% would have been prepared to commute to a distance of 10-20 km and only 15% of respondents would have been willing to travel daily more than 20 km for work.

General situation and future prospects of the region were classified as bad and very bad by 85% of respondents who did not see the possibilities of future region's development in the traditional industries but rather in other kinds of industries, trades and services. 92% of respondents claimed that their standard of living worsened, this applying namely to increased housing costs (84%) where 12% of respondents were even unable to pay the flat rent. Approximately a half of the respondents dwell in municipal flats, a third in cooperative flats, 18.5% own a house, and only 4.7% of respondents live in corporate apartments. Only a quarter of the respondents own a passenger car, 60% of respondents use public transport.

A half of the respondents stated that environment in the region partly improved, another half of them thought that the situation did not change too much as compared with 1990. The situation is understood as nature conservation by 37%, nature protection against the pollution with wastes by 29%, and protection of human health by a third of the enquired. A third of the respondents do not pay attention to the issue at all.

The system of values of unemployed respondents starts with health condition at the first place, followed by the satisfied coexistence of partners, family and friends, satisfaction at work, property, money, and career at the last place.

The highest number of unemployed in this group was at the age of 18-30 years (63%), 46% were singles, 40.3% were skilled workers, 41.2% had completed secondary education with the school-leaving exam, 9.4% had basic education and 5.2% were university graduates.

4.2 The employed

In 1999-2000, an inquiry was made in a group of employees from three Ostrava enterprises representing pivotal and still traditional branches of industry in the region – OKD, a.s., Nová huť, a.s. and MCHZ, a.s. A total number of addressed employees in these three enterprises was 1,500. The return was high with the group of respondents consisting of 1,300 employees. The number of addressed OKD workers was 500 and the return was very high – 486 respondents. Data collection technique: distributed-collected questionnaire with 46 questions in six groups (stability of respondents in the region, social and employment status and assurances arising therefrom, region's prosperity by the eyes of the enquired workers, living standard of the employed and their appreciation of environment quality, value system of the employed respondents, socio-demographic characteristic of the enquired).

Thanks to the fact that the sample file was large enough both as to the number of respondents and structure, the results have a certain informative value for the entire basic group of OKD employees. In their evaluation, we shall follow the above mentioned structure of respective question groups from the questionnaire.

Stabilization and staying of the enquired in the region are relatively high due to a multitude of factors – 86% of respondents would definitely not move outside the region or would rather not intend to move from the region. This is due to the fact that the Ostrava region is a place of birth for two thirds of them and the affinity to the region is further intensified by family relations and housing reasons.



Fig. 1: Nová huť – metalurgical industry, the greatest complex in Ostrava (Photo: O. Mikulík)

Essential changes in the attitude to social guarantees especially in relation to work occurred in the period after 1990. More than a half of the respondents fear to lose their jobs and for 12% of them the loss is realistic. These considerations of the respondents reflect the economic situation and the socio-psychological tuning of the region. A half of the enquired employees are prepared to move for work but the answers are conditioned by many factors such as stability in the region, housing situation, family background and social contacts. Reasons for working in coal mining were skills or technical education in the branch (34%), better pay (22%), better social conditions or flat (26%), and only 10% of the enquired entered the industry from recruitment.

Considering the time aspect, there are no recruitment or sudden employment tides in the industry indicated by the respondents' answers. There were only regular annual recruitment events organized in the period from the 1960s-1990s. And it was exactly in the 1990s that our research results indicate general changes occurring in OKD, i.e. also in the field of personnel policy – illustrated rather by the efflux of labour force.

The change in the overall situation of the Ostrava region is perceived by the respondents in an offered scale rather as to the worse up to definitely to the worse (85%). General future prosperity of the Ostrava region is evaluated by 82% of respondents as rather poor up to very poor. Concrete answers in our questioning about a possible future prosperity in mining, metallurgy, chemical industry and other services were as follows: The least number of respondents see a possible region's

development in chemical industry and metallurgy appeared in the evaluation at about the same level. The OKD workers can see most challenges for the development of their region exactly in coal mining (28%) and the fact may be interpreted as a hidden wish for the stability of their own company and loyalty to the employer. At the same time they assume, however, that the economic development of the region is also possible in other unspecified branches of industry (76%).

As compared with the year 1990, transport connection in the Ostrava region is classified by OKD workers as rather worse or markedly worse (70%). Networks of services and food shops are perceived by 85% of respondents as the greatest improvement as compared with the period before the year 1990 the fact being likely related to the expansion and construction of new types of stores in retail chains – supermarkets and hypermarkets. This is one of the new phenomena of the changing life style positively perceived by the respondents in the period of transformation.

If we look at the satisfaction with the equipment of leisure time facilities such as cinemas, theatres, other cultural and sports facilities, we arrive at a rare evenness in the respondents' valuation of these amenities. Therefore, it is possible to summarize that about a half of respondents are rather satisfied and 25-30% of respondents are rather unsatisfied with the marginal percent occurrences – very satisfied and unsatisfied – ranging around 10%.

Standard of living of the family, household is of a multidimensional character. Individual dimensions are



Fig. 2: Nová huť – metalurgical industry, the greatest complex in Ostrava (Photo: O. Mikulík)

education level, employment status, material conditions (standard of living), life style, etc. that together create a general status. Employees valued the recent living standard of their own families as invariant (37%), slightly improved (19%) and slightly worsened (29%).

One of attributes of the living standard is housing. Inquiring about the forms of housing in the sample group of OKD workers we found out that 23% of respondents live in municipal flats, 25% in corporate apartments and 22% in cooperative flats. Rather surprising was the share of respondents living in family houses – 29%. The fact must be related to the place of permanent abode of people commuting for work from the Ostrava hinterland. In order to have the picture of living standard and life style complete, we enquired about the ownership of summer houses and cottages and about the frequency of their use for recreation. Another aspect which an inquiry of living standard cannot do without is the equipment of households with articles of long-term consumption. One of them is passenger car. In our sample group 70% of respondents have a automobile of their own.

Life style can be characterized also by the regularity and way of spending holidays. Regular winter and summer holidays were reported only by 11% and 57% of miners, respectively.

A specific sub-chapter of the questionnaire concerned environment protection – one of terms that can be heard in the Ostrava region rather frequently. The enhancement namely in the last ten years connects with the downsizing of coal mining, and with the reduced

production and introduction of advanced technologies in some industrial giants. When we asked the OKD workers for their opinion about the improvement of environment in their region, 56% of them stated that the environment was partly improved, 11% were convinced that it was improved completely, and 32% could not see any change to the better.

Our research was to find also the comprehension of environment protection methods. Most respondents perceive environment protection as nature conservation and its protection from devastation (31%); 25% of respondents feel environment protection as a protection of humans and their health. A majority of respondents (86%) take part in environment protection only occasionally or not at all.

The OKD workers were submitted a list of life values of which they were to produce their own list. Hierarchy of values in this sample group was as follows: 1 – health, 2 – satisfactory cohabitation, 3 – satisfaction at work, 4 – family and friends, 5 – career, 6 – money, 7 – property.

Assessing the perception of social climate with respect to negative social phenomena (increased criminality, drugs, extreme alcoholism) by the enquired we found out that most of them (94%) feel endangered by increased criminality.

Socio-demographic characteristics of the OKD sample group were as follows:

- average age 41, 6 years
- gender: 79% males and 21% females

- education: 44.6% secondary (highest rate of occurrence), 27.8% skilled workers, 24.5% university graduates, 2.5% basic education
- marital status: single – 7.5%, married – 80.6%, widowed – 3.5%, divorced – 8.1%
- number of children: 1 – 22.1%, 2 – 63.4%, 3 – 12.1%, 4 and more – 2.4%

Since we had no possibility to gain information on the average values of socio-demographic characteristics for the whole OKD, a.s., we can present only the sample group data with no comparison with the basic data file.

4.3 Model mining areas

An inquiry into the employees of two coal mines – Paskov-Staříč (OKD, a.s.) (Kolibová et al., 2003c) and ČSM (Českomoravské doly, a.s.) (Kolibová et al., 2003b) was prepared in 2001 and carried out in 2002 with a total number of 600 workers addressed by means of our questionnaire. The rate of return was very high from the Paskov-Staříč coal mine (503 respondents) and somewhat lower from the ČSM coal mine (330 respondents). Data collection technique used in both cases was a disseminated-collected questionnaire with 47 questions arranged in seven groups (questions concerning the colliery, employment status, prestige of coal mining profession, standard of living and some of its attributes, leisure time activities and utilization of facilities for spending leisure time in the region,

concern in regional events, prospects of the region and possibilities of changes as seen by respondents including perception of environment, stability and staying of respondents in the region, human relations, value orientation of respondents, socio-demographic characteristic of the enquired).

The choice of the above mentioned two model areas in the Ostrava agglomeration was affected by the intention to enable a comparison of the opinions of the employees from the two coal mines situated in different landscape types. The ČSM mine is dominating the surrounding landscape which was levelled and modelled by its operation (depressions, spoil banks, water surfaces, traffic veins, etc. at different stages of reclamation). The Staříč mine does not form a landscape dominant and a non-expert eye would not see any conspicuous devastation deformations in the landscape. Depressions in the type of rural landscape are not legible and spoil banks are hidden in forested parts of the landscape. We asked the workers of these two coal mines whether they perceive some of these variances in their daily contacts with the landscape.

Evaluating the results and making a comparison between the two collieries, we find out that the opinion level of workers in both coal mines is nearly identical in all question groups. The only exception is the consideration of moving out of the region. Workers from the Paskov-Staříč are decided to stay and work in the region (85%) thanks to the satisfactory environment



Fig. 3: Mining industry: Paskov-Staříč coalmine (Photo: O. Mikulík)

which seemingly does not resemble the traditional landscape devastated by coal mining activities. Mild variances can be observed in the curves of diagrams illustrating enrollment to the coal mines with different policies of human resources. The question of whether the workers are decided to stay working in coal mining for a long period of time was positively answered on both collieries by a surprisingly high number of miners (71% in both cases). This suggests that coal mining is still the stability and assurance on the regional labour market considering the high rate of unemployment. The question of how much they cherish their job was replied by 40% of respondents who realize the unstable labour market and fear to lose their work. As to the prestige of the mining profession, 60-70% of respondents in our sample still perceive their profession of miner on the imaginary scale of public opinion with satisfaction. Transformation changes after 1990 enforced many employees in professional requalification for them to be able to find assertion within the framework of horizontal and vertical mobility. The fact is illustrated also by our sample groups with 40-60% of respondents having passed staff retraining courses.

In another part of the questionnaire where we inquired about the ways of spending leisure time our expectation (based on results from earlier inquiries in this group of workers in coal mining industry) that regular winter vacations are practised only by a very low percentage of the respondents (ca. 15%) was once again proven true. Regular summer vacations are practised by more respondents (ca. 45%). More than a half of respondents stated when enquired about the place of their recreation in 2001 that they did not go for holidays at all due to financial or other reasons. A quarter of the enquired went abroad and the remaining quarter stayed for their holidays in the Czech Republic. Answers of our respondents in the block of questions concerning their leisure time activities and use of recreation facilities were as follows: Approximately 15-20% of employees are fully content with the supply provided by their employer in the field of cultural and sports activities, nearly 50% are partly satisfied. Full or partial satisfaction with the possibilities of health care and rehabilitation at their workplaces was claimed by two thirds of the enquired. The question of whether the respondents have more time for their leisure activities than before the revolution in 1989 was answered negatively by 65%. An interesting finding were answers about their prevailing leisure time activities. Although 93% of respondents in our sample file were males, most of them claimed to use leisure for ensuring the operation of their households, with individual interests and hobbies being only at the second place.

The next group of questions was focused on the concern of respondents in their region from many view angles. Let's start with the satisfaction of respondents with transport connections and means of transport used to travel to

the closest town and to work. A half of the respondents make use of passenger car to go to the nearest town, and 35% use the automobile to get to work. Full satisfaction with the service to work was expressed by about 35% of respondents from both collieries. Two thirds of the enquired admitted to have a car of their own.

The following group of questions immediately related to the interest of respondents in the course of events at the place of their abode or in the region, and their own participation in social and political events. We also investigated the respondents' opinions concerning changes in the region. A third of the respondents are fully interested in social, political and cultural events at the place of their abode and in the region, a half of the respondents only partly. A much smaller part of them exhibit own activity in the events – only 8%. Nearly 90% claim that the situation in the region changed after 1990. Concrete changes desired by the respondents in the future relate to the area of shopping and services. The respondents were given an opportunity to express their wishes about what should be radically changed in the region by means of an open question. The highest rate of occurrence had their wishes of enhanced environment, improved transport infrastructure and increased employment in the region.

Another group of questions topical in the region was the situation concerning environment quality. General improvement of environment quality is fully and partly perceived by 20% and 50% of respondents, respectively. A half of the enquired understand environment conservation as a protection of nature from pollution, another third of them as a reduced nature pollution with wastes. The affinity to their region of employees in the two collieries was studied through a dichotomic question: reasons for their considerations about moving out of the region or staying. This group of questions was introduced by a question whether they ever happened to have the considerations. Here the opinion levels in the respondents of sample files slightly differ. While it was only 15% of workers considering to move out of the region at the Paskov-Staříč colliery, the group of respondents at the ČSM coal mine is larger – ca. 30%. Main reasons stated for leaving the region include missing vacancies, poor environment quality, worsening problems of the region and poor social environment – 10-20% each. On the other hand, the main reason for staying in the region are the family background and housing for about a half of the respondents, and social contacts, friends for a quarter of the respondents.

The last thematic range contained questions concerning the standard of industrial relations and human relations in the community in general. Nearly a half of the respondents feel that the industrial relations have worsened and an ever greater worsening of human relations in the contemporary society in general is felt by nearly 70%. Most criticised in these relations are envy, unfairness and

lack of interest in other individuals. Increased criminality is feared most of negative social phenomena. The list of values produced from the respondents' answers to the provided scale was as follows:

1 – health, 2 – satisfactory coexistence with the partner, 3 – satisfaction at work, 4 – family and friends, 5 – property, 6 – money, 7 – career.

The end of the extensive questionnaire contained two open questions in which the enquired were to think over pros and cons of the contemporary society. About a half of those who were inquired about the pros claimed that they could not see any pros in the contemporary society. A following large group of respondents consider the pros of the contemporary society to be the retrieved freedom of expression and the possibility of travelling. In the case of cons the respondents blazed out much more. According to their answers, most of the cons can be summed up in the field of the moral of our society, i.e. bad human relations, self-interest, envy, unfairness, indolence.

4.4 Social climate in the town district of Michálkovice

The so far last stage of research is a public inquiry in the town district of Ostrava-Michálkovice from the mid-2003 (Kolibová et al., 2003a). In the cooperation with local authorities the research of social climate in the town district addressed a network of 600 respondents with a return of 50%. The questionnaire contained 54 questions formulated in seven thematic ranges: population stability in Michálkovice and in the region, social and employee status and the issue of the downsizing of coal mining, prosperity of the region, standard of living, spending of leisure time, environment perception by residents, value orientation and classification of moral by respondents, socio-demographic characteristics of the enquired).

Results of the opening question in the questionnaire (social-family links to Michálkovice or region in which they live, stability/instability of respondents) is only of informative value and the answers cannot become a solid basis for valid conclusions. Apparently, the respondents only estimated the year since when their families settled down in Michálkovice with the average turning out to be year 1946.

The question about since when the contemporary family has been living in the Ostrava region was answered by 39.7% of respondents that continually since their childhood by both spouses, and nearly the same percentage from the sample group – 40.4% that continually since the childhood of at least one of the spouses. The data must be based on the fact that single persons were represented in the sample file only at 16.5%.

Inquiring about the stability of respondents we asked the following question: “Do you plan to move away from the region in a near future?” More than 2/3 of enquired (68.7%) definitely do not intend to move, a quarter from the sample group (26.1%) would rather not intend to move. It can be assumed from the statistic data that inhabitants of Michálkovice are stabilized and satisfied with the place where they live. If considering to move away from the region, then a main motive is the lack of job opportunities and bad social environment (criminality, conflicts). On the other hand, the most important motives to stay in Michálkovice are the family background and housing reasons (in 50% of the cases). This also connects with another reason of respondents for staying in the region – we do not have any other place to move (nearly 24%). The results illustrate a generally bad housing situation in the country.

The second range of questions included the social status, the employment status and its aspects and the situation on the labour market in the region. Should we create a quantitative sequence of the social status, our sample file contained 41% of employees, 22.7% of old-age pensioners and then groups of persons that have been out of job for a longer period of time (8.6%), retirees (6.8%), females or males on maternity leave (4.3%), entrepreneurs (2.5%), housewives (2.2%). A social status analysis indicates that the questioners did not succeed in providing a representative sample of the Michálkovice population by random sampling.

An interesting battery of questions included those that concerned the attitude of enquired to their professions, and the conditions and situation on the labour market were investigated, too. The first question was about a change of job since 1990. More than a half of respondents (53.1%) did not make any change. A third of respondents (33.7%) reported 1 or 2 job changes and 13.2% changed the job 3 and more times. By asking a complementary question we tried to find out whether the change of job was forced by job loss – the fact was approved by 66.9% respondents. A voluntary change was made by a third of respondents (33.1%). We also inquired how the changes are classified by the respondents who split in their answers to nearly identical thirds: 35.2% feel that the job change was “to the better“, 31.2% did not recorded any change, and 33.6% feel the situation worsened due to the change. An important component part of this range of questions concerning the employment status was commuting to work. Respondents working at the place of their abode amounted to 35.7% and the remaining 64.3% commute – mostly to other neighbourhoods in Ostrava. An integral part of this block of questions is the assessment of respondents and their existing prospects on the labour market in the region. 17% of them claim that their employment, business, trade (freelances) is safe, 38% of respondents feel rather unthreatened by

job loss, nearly a third of the population in Michálkovice (29.8%) fear to lose their jobs, and 15.2% feel that the loss of job is very realistic.

A complementary question in this thematic range was to monitor the willingness of respondents to start an enterprise in the case of job loss. As expected, it is only a small portion from the sample group of respondents (23.6%) who would be prepared to start a business/trade. More respondents (33.8%) are prepared to move for work to another region.

The opening question in the range of questions focused on the downsizing of coal mining and reactions of respondents, region prosperity and future prospects was to inquire in what branch of industry the respondents work. Most of them work in other industries than those traditional in the region (85.7%). When asked why they went to work exactly in this industrial branch more than a half of them (61.3%) replied that they are skilled workers or achieved higher education in the specialization. 10.3% went for a better pay and about 8% enrolled from recruitment or for improved social conditions and/or for being given a flat.

The demographic structure of our sample file and the average age of respondents (46.8 years) are precisely copied by the curve of respondents' enrollment in the given industry, i.e. that an average year of enrollment in the industry is in our case the year 1987.

We also asked the inhabitants of this former miner's village if they were affected by measures within the downsizing of coal mining dated from the beginning of the 1990s – 23% of respondents answered "yes", 12.7% were only partly affected by the downsizing of coal mining in the region, and more than a half of respondents (57.4%) claimed that they were not affected at all. Another question asked in Michálkovice was whether they feel a decreasing prestige of the miner's profession. More than a half of them (55%) feel that the reputation of this traditional occupation in the region – coal mining is decreasing. Approximately 17% of respondents feel the decrease only partly, about 11% not at all, and 17% of respondents failed to express their opinion. In this thematic range of questions we touched the respondents' interest in the region from many angles. At the beginning we were interested whether the general situation in the Ostrava region changed since 1990. The group of respondents split into two sub-groups of nearly the same size: 42.3% evaluate the situation in the region as "definitely better" or "rather better", and 48.2% see the situation as "definitely worse" or "rather worse". The outstanding part of respondents (ca. 10%) claim that the situation has not changed.

Evaluation of the Ostrava region's future prosperity closely relates to the preceding question. Expectations are slightly pessimistic: 53.7% of respondents feel that future prospects of the region are "rather bad" up to "very bad", and other 43.7% perceive the future region's prosperity as "rather good". We also specified possibilities of future prosperity. From the offered scale the respondents can see the future prosperity in the following areas: services in general (87.9%), other industrial branches (than historically pivotal) and trades (78.6%), metallurgy (39.7%), chemical industry (25.6%), coal mining (9.2%).

The next thematic block consisted of questions concerning the standard of living and some aspects of life style. We asked about the form of housing: most of respondents live in family houses (53.1%) and in corporate flats (27.1%); 14.1% live in municipal flats and 5.1% in rented rooms or in hostels.

Following to the type of housing we also inquired whether the respondents own a garden, summer house, cottage or another real estate. In this group of respondents 52.3% have a garden, 18.6% own a summer house, 15.1% have a cottage and 14.1% are in the possessions of another type of real estate. The next question to ask these owners was how often they use the real estates: 26.5% use them regularly during weekends, 8.8% once in a fortnight, 47.1% irregularly and 17.6% use them only in summer. One of life style aspects is the way and frequency of spending holidays. As expected, the regular winter holiday is taken only by 7.8% of enquired and the regular summer holiday is reported only by 32.6% of respondents. This question on holidays also relates to another retrieved fact – place of recreation. Answers in this sample file were as follows: in 2001, the respondents spent their holidays abroad (22.5%), in Czech recreation facilities (6.7%), at a summer house of their own, with their relatives or friends (15.4%), and 34.8% had no holiday due to financial reasons. The remaining 20.6% had no holiday due to other unspecified reasons.

This range included also some questions concerning the traffic situation at the place of abode and in the region. The first of them asked about the means of transport used most from Michálkovice to Ostrava or to the nearest bigger town. Nearly 70% (69.4%) of respondents use public transport, 20.9% use a passenger car, 8.6% of respondents combine the means of transport and only 1.1% use other individual transportation means for travelling. The next question asked about the satisfaction of respondents with the transport connection to their work: 58.3% are satisfied, 29.7% are satisfied only partly and 12% are unsatisfied. Ownership of an automobile is one of attributes of the standard of living: 41.4% of respondents own a car and 58.6% do not have a car.

The respondents were inquired about how they perceive their standard of living and to make the classification easier for them, we asked them to value the standard of living in their own family after 1990. About a third of respondents (35.4%) answered that their family's standard of living is more or less the same. Interestingly, for a quarter (24.7%) the situation has slightly improved, and for 18.8% it has improved even markedly. For a comparison, the following question was same but dated into the last five years. Answers were nearly identical with those in the preceding question with the sample file splitting into the same sub-groups.

The final question in this block was to find out about the receipt of social security benefits in 2002 and results of the inquiry were as follows: 13.4% of respondents were receiving childrens allowance, 13% housing allowance, 10.9% had a right of supplement to social security benefit, 9.2% received disability pension (incl. partial), 8.8% were recipients of unemployment benefit, 4.9% social aid, and 3.5% of respondents received child benefit.

Answers in the block of questions concerning leisure activities and use of recreational and sports facilities for the purposes were as follows: The first question whether the respondents have more leisure time than in the period before the year 1989 was positively answered only by 18.7% while 50.2% claimed not to have spare time at all, 13.6% only partly and 17.6% could not judge. We also inquired about the most common way of spending their spare time, offering them a scale of the most common leisure activities. The main spare time activity for 64.7% of respondents is ensurance of household and family functioning, 15.1% watch TV and listen to the radio, 11% go for their hobbies of which most represented are sports, gardening, summer house, PC and reading books. The remaining negligible percentage (4.8%) of respondents splits to those who go for self-education, enhancement of their skills and qualifications, and to those (4.4%) who spend their spare time in pubs with friends.

The question of how the residents in Michálkovice are satisfied with leisure time facilities in their region was answered as follows: nearly a half of our sample group (46.1%) are rather satisfied, about a third (33.9%) are rather unsatisfied, and 15% of respondents are unsatisfied.

The opening question for the range of respondents' social activities at the place of their permanent address and perception of environment after 1989 was inquiring about their interest in social events at the place of their abode: 32% claimed to be interested, 42.3% were partly interested and 25.1% were not interested at all. The next question inquired about the own activity of residents in social events in Michálkovice. As expected, only 9.8% of respondents are actively participating in the solution of problems in their home town district, 14.5% only partly

and 75.7% do not take part at all. Another question was to find out what is considered by respondents an essential change that happened in their region after the year 1990. Most respondents (40.7%) perceive an improvement in the field of environment, other 31.4% feel a progress to the better in the network of outlets and services, and the remaining 28% can see the major improvement in the equipment with the leisure time facilities.

The next "open" question was to give the respondents an unlimited chance to express what should be according to them radically changed in the region. People in Michálkovice can see the major problem in unemployment and this was also one of the main reason for a radical change as this is the problem of the whole region which has been recording one the highest rates of unemployment in Czech Republic for several years the phenomenon relating to the downsizing of coal mining and restructuring of industries in the Ostrava region. Answers to this open question can be divided into two categories as follows:

1. Answers that sum up problems in the town district of Michálkovice – to enhance cultural self-realization, to improve public transport connection with other town districts in Ostrava, playgrounds and children facilities, to open a swimming-pool in Michálkovice, to enhance appearance and cleanliness in the town district, gasification, shopping network, to decrease criminality and alcohol consumption in public.
2. Answers that relate to the region in more general terms – to improve human relations, to change political thinking, to evacuate Romany population, to build a speedway, to enhance security and to improve environment.

The next category contained questions that concerned the situation in changes and perception of environment. For 23.9% of respondents the environment situation in the region improved, for nearly a half (44.9%) the improvement was only partial, for 23.6% the situation was felt to be same, and for 7.6% of respondents the situation even worsened.

The following question was aimed to a greater depth and we asked the respondents how they understand the environment protection. From the submitted scale of answers 40.2% understand it as the protection of nature against devastation, 25.3% as the protection of people and their health, 20.3% as the reduction of nature pollution by wastes, and 14.2% as a use of the nature by humans within the framework of set-up rules.

In the part focused on human relations and value orientation the respondents were asked about their perception of human relations in their locality (town district) at the present time: 11% can see the situation optimistically and human relations improving, 38.1%

can see human relations same as before, 41.6% feel that human relations are worsening and 9.8% of respondents failed to express their opinion. The residents of Michálkovice were then asked a similar question: how they perceive human relations in the entire society at the present time. Being somewhat more critical in their opinions, the respondents answered similarly.

Interpersonal relations were further concretized by the following question: What do you mind in existing human relations in the contemporary society? Respondents' answers can be arranged into a list (by the frequency of occurrence) as follows: unfairness, envy, indolence in other individuals, self-interest – these characteristics of interpersonal relations were approximately at the same level in terms of their rate of occurrence and were most annoying the respondents. The last item from the offered scale was passivity.

Investigated were also negative social relations. The enquired were offered a choice of adverse phenomena occurring most in the community. Results in Michálkovice were as follows: The respondents feel most endangered by increased criminality (70.4% - fully; 20.8% - partly), and by increasing vandalism (57.1% - fully; 29.5% - partly).

The addressed residents in Michálkovice were given a chance to produce a list of values from the provided scale and the result is as follows: 1 – health, 2 – satisfaction at work, 3 – satisfactory coexistence with the partner, 4 – family and friends, 5 – property, 6 – money, 7 – career.

The questionnaire ended with two “open” questions about pros and cons in the contemporary society: Pros and cons were mentioned by 62% and 67% of respondents in the sample file, respectively. About a third of respondents do not perceive any pros in the contemporary society. Another large group represented those who consider pros to be the acquired freedom of speech, possibility to travel and self-assertion. Most cons can be summed-up into the field of moral in our contemporary society – criminality, unfairness, poor interpersonal relations, envy, social insecurity, indolence in “ordinary” citizens. This atmosphere is accompanied by one of most burning problems in the region – unemployment which is considered by the respondents to be the worst con of the contemporary society.

This sociological research was to provide facts about the opinion level of residents in Michálkovice. The results can be considered to be at least partly representative for the whole basic file of all residents in this town district. For the future it would be interesting to make a comparison inquiry in a time series to find out how the social climate in Michálkovice develops and what are opinion shift directions of its residents.

5. Summary

5.1 Respondents' links to the region, perception of changes after 1990

As many as 75% of unemployed respondents do not intend to move away from the region due to the family background and links to the existing housing. Social links to the region are intensified by the fact that nearly a half of all enquired replied that both spouses (partners) had been living in the region continually since their childhood. The main motive of respondents who consider to move out of the region was the lack of prospects for their assertion and the increasing instability and problems in the region. Stabilization of employed persons and their staying in the region are relatively high and affected by multiple factors: 86% would definitely not move or would rather consider not to move away from the region. This is given by the fact that two thirds of respondents were born in the Ostrava region and the link is further reinforced by the family background and housing reasons.

Evaluating the results and making a comparison between the above mentioned coal mines we find the opinion level of employees of the two mines nearly identical in terms of all ranges of questions in the questionnaire. The only exception was the question about the considered moving from the region where the Paskov-Staříč coal mine workers are decided to stay living and working in the region at 85% thanks to satisfactory environment which seemingly does not resemble the traditional landscape devastated by coal mining.

General situation and future prospects of the region were seen by 85% of unemployed respondents as bad and very bad. Possibilities of future development were not seen by them in the traditional industries but rather in other industrial branches, trades and services.

Standard of living was perceived as worsened by 92% of enquired. This particularly related to increased housing costs (84%) with 12% of respondents being even unable to pay for their flats. Approximately a half of respondents live in municipal flats, a third in cooperative flats, 18.5% in a house of their own and only 4.7% live in corporate flats. Only a quarter of the enquired have a car of their own, 60% of respondents use public transport.

In the period after 1990 we can trace essential changes in the attitude to social assurances namely in the relation to work even in the category of employed respondents. More than a half of them fear to lose their job and for 12% of enquired the loss is realistic. These considerations of our respondents mirror the economic situation and the socio-psychological tuning of the region. A half of the workers are willing to move for work but the answers

are conditioned by many factors such as stability in the region, housing, family background and social contacts.

Slight differences can be seen in the curves of enrollment diagrams in the two studied collieries with different personnel policies. Surprising was perhaps the high number of respondents (71% in both coal mines) answering positively our question whether they are prepared to stay in coal mining for a longer time. It can be assumed therefore that coal mining is with respect to the existing high unemployment still considered the stability and assurance on the region's labour market. The question of how much they cherish their job was answered by 40% of respondents who are aware of unstable labour market and fear to lose their job. As to the reputation of the mining profession there are still 60-70% of enquired in our sample file, who perceive their profession satisfactorily on the imaginary scale of public opinion.

5.2 Value orientation, ways of spending leisure time, valuation of moral in the contemporary society

The system of values in unemployed respondents includes health at the first place, followed by the satisfactory coexistence of partners, family and friends, satisfaction at work, property, money and career at the last place.

The change of general situation in the Ostrava region is perceived by employed respondents in the offered

to them scale rather to the worse up to definitely to the worse – 85% of respondents. General prosperity of the Ostrava region in the future is valued by 82% of enquired as rather bad up to very bad. In the concrete inquiring about the possible future prosperity in the region – whether in coal mining, metallurgy, chemical industry or services the answers were as follows: The least number of respondents can see the possible development of the region in the chemical industry and metallurgy appeared at about the same level in the valuation. OKD workers can see most possibilities for the development of their region exactly in coal mining (28%). The fact may be interpreted as a hidden wish that their own company is stable and as a loyalty to their employer. At the same time they assume however that the economic development of the region is feasible also in some other unspecified branches (76%).

Rather interesting was the evaluation concerning the standard of human relations at the workplaces of Paskov-Staříč and ČSM collieries, in model areas and generally in the society. Nearly a half of the respondents feel that interpersonal relations at their workplace worsened. An ever greater general worsening of human relations in the contemporary society is felt by nearly 70% of respondents. Most mentioned in these relations are envy, unfairness and indolence. Of negative social phenomena, the respondents feel most endangered by increased criminality. The list of values produced by the respondents from a scale offered to them was as follows: health, satisfactory coexistence of partners, satisfaction at work, family and friends, property, money and career at the last place.



Fig. 4: Depressed landscape in the Karviná region (Photo: O Mikulík)

When and where the miners from the two collieries spend their holidays could have been assessed from results of the former research in this group of workers in coal mining, and it was once again corroborated that it is only a very small percentage (about 15%) that go for winter holiday; summer holidays were reported by a larger part of respondents – approx. 45%. The question about the place of recreation in 2001 was answered by more than a half of respondents that they did not have any holidays at all due to financial or other reasons. A quarter of respondents went abroad for their holidays and the remaining quarter stayed for their holidays in Czech Republic.

Answers of the respondents in our sample file to the block of questions concerning their leisure time activities and utilization of recreational facilities were as follows: approx. 15-20% of workers are fully satisfied with the employer's supply of cultural and social events, nearly 50% are partly satisfied. Full or partial satisfaction with the possibilities of health and rehabilitation care provided by the employer were expressed by two thirds of respondents. Answers to the question whether the enquired have more spare time

now than before the revolution indicated that 65% of respondents don't after a comparison. An interesting finding were their leisure time activities. Although 93% of our sample file were males, most of the enquired claimed to use their spare time to ensure the operation of their households with other interests and hobbies being at the second place only.

What is the interest of miners in the two collieries in event at the place of their abode and in the region, what is their own activity in social and political events and what are their opinions concerning changes in the region? A third of respondents are fully concerned with social, political and cultural events in their locality and in the region, a half of respondents are concerned only partly. Only a small part (8%) exhibit own activity in the events.

Nearly 90% of respondents claim that the situation in the region changed after 1990. They were asked to think about pros and cons in the contemporary society. About a half of those who addressed themselves to the issue of pros answered that they could not see any positive things in the contemporary society. A large group of respondents



Fig. 5: Traffic sign „Mine influences“ (Photo: O. Mikulík)

claimed that the greatest pros in the contemporary society are regained freedom of speech and the possibility of travelling. In the case of cons the respondents blazed out much more. According to their answers, most of the cons can be summed up in the field of the moral of our society, i.e. bad human relations, self-interest, envy, unfairness, indolence.

The summary of socio-demographic characteristics of the respective inquired groups of respondents:

- The sample file of unemployed persons contained 63% of respondents aged 18-30, 46% of respondents were unmarried, 40.3% respondents were skilled workers, 41.2% were with the secondary education and school-leaving exam, 9.4% had basic education and 5.2% were university graduates.
- The sample file of employed persons was of average age of 41, 58 years, gender – 79% of males, 21% of females, education: 44.6% secondary, 27.8% skilled workers, 24.5% university graduates, 2.5% basic education; marital status: 7.5% single, 80.6% married, 3.5% widowed, 8.1% divorced; children: 22.1% one child, 63.4% two children, 12.1% three children, 2.4% four and more children.

6. Conclusions

The above inquiries can further contribute to the knowledge of the shifting perception of life style by the respondents. The research is also focused on gaining data

about the standard of living, perception of environment quality, value orientations, etc. The studies are carried out within the framework of a long-term research focused on the assessment of regional environment changes in the Ostrava region.

Standard of living of inhabitants in the region under study depends on the concept of regional policy of the government towards affected regions, on the implementation of proclamations of sustainable development and on the implementation of the conceptions of branch industrial structures which are still missing.

Standard of living of unemployed people is logically lower than in the gainfully earning population and this is where the shift in the perception of life style derives from – if we understand the style of living as a “structured entirety of life habits or accepted norms finding their expression in the interaction, in the concrete and material environment. It is believed that life style expresses in a way also the values and interests of individuals, group or society as a whole“.

Unemployment breeds further symptoms of instability in the society – incremental occurrence of negative social phenomena such as growing divorce rate, alcoholism, drug addiction, criminality, etc. All this shows and intensifies exactly in the Ostrava agglomeration with the high cummulation of socio-economic problems.

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DEVELOPMENT OF RAILWAY TRAFFIC AND THE NETWORK OF SIDINGS IN THE OSTRAVA REGION

Jana ZAPLETALOVÁ

Abstract

A characteristic feature of the Ostrava region used to be a very dense network of local railways and siding tracks. Their construction and inactivation are very closely related to the development of coal mining and the linked operations of coking plants, iron mills and power plants. The first proposals for the construction of so-called "coal railroads" appeared at the beginning of the 1850s. The railroads were built narrow-gauged or with a normal gauge (1435 mm); historically, they were of single-track type first, with some of them being later reconstructed to a double-track type. After some time they became single-track again and finally they were closed down.¹

Shrnutí

Vývoj kolejové dopravy a sítě železničních vlečků na Ostravsku

Specifikem území Ostravska byla velmi hustá síť místních drah a železničních vlečků. Jejich výstavba i rušení je velmi úzce svázána s rozvojem těžby uhlí a na ně navazujícími provozovny koksoven, hutí a elektráren. První návrhy na výstavbu tzv. „uhelných drah“ se objevily na počátku padesátých let devatenáctého století. Byly stavěny jako úzkokolejné či s normálním rozchodem (1435 mm); ve své historii byly jednokolejné, poté některé z nich zdvoukolejňovány, časem se staly opět jednokolejnými a posléze byly rušeny.

Key words: railway traffic, mining railway, railway sidings, coal mining, Ostrava region, Czech Republic

Aim of the study

The boom of railway traffic dates back to the second half of the nineteenth century. It was a period of the gradual construction of backbone railway network. Development of railway network went hand in hand with industrialization of regions and whole countries. This process did not, in fact, involve only the construction of national and regional railway networks, but also the construction of local networks and networks of industrial railroads, such as industrial sidings and coal railroads. Particularly these sidings and coal railroads facilitated supplies of raw materials to factories and served as distribution lines for products. In a similar fashion, the coal railroads rendered distribution of extracted coal more efficient and faster.

One of the regions where industrial sidings and the "coal railroad" played an important role in their economic development was also the region of Ostrava. Here, as elsewhere, industrial restructuring and downsizing of coal mining is accompanied by decreasing volumes of traffic; sidings and the coal railroad itself cease to be useful. Step by step, they are being replaced by motor

transport. This article deals with changes of railway network in the Ostrava region.

Introduction

The beginning of coal mining in the Ostrava region goes back to the second half of the 18th century. In that period coal was already mined in the Kladno region (bituminous coal – northwest of Prague) and the Most region (brown coal – North Bohemia). During the 1830s the share of the Ostrava region in the coal mining industry was 12.7% and 36.8% fifty years later (Jiřík, Pitronová, 1967). The boom of coal mining was brought about partly by the importance of coal for iron mills, where it replaced scarce charcoal, and partly by increased possibility of coal distribution and sale via fast growing railway network.

The region of Ostrava and railway

In the context of Czech lands, the region of Ostrava² became connected to railway network very early. A so called "Northern Railway of the Emperor Ferdinand,"

¹ The research work was carried out within the framework of the "Programme for the development of scholastic research in the key areas" No. KSK3046108 – "Impact of climatic and anthropogenic factors in living and non-living environment", and the "Programme for the promotion of targeted research and development" No. IBS3086005 – "Downsizing of deep coal mining and its impacts on the processes in lithosphere and environment in 2000–2005".

to connect Vienna with the then Galicia (Bochnia salt mines) was planned to run through Ostrava. The railroad construction was started in 1837. The first train arrived to Ostrava and Bohumín after ten years of construction – on May 1st, 1847. The railway was extended to Chalupki³ in 1848 by the ensuing construction of another section of the Bohumín – Petrovice u Karviné (1855) railway line that continued to Bochnia in Galicia (salt mines) near Krakow, where the first train from Vienna arrived in 1856. In 1869, the first section (Bohumín – Český Těšín) of the Košice – Bohumín railway was opened. Finally, the railroad line Ostrava – Frýdlant nad Ostravicí was put into service in 1871. The gradually constructed network of railway sidings branched off from and came together with these railway lines.

Beginnings of the construction of railway sidings and their boom in the second half of the 19th century

Railway sidings construction in the Ostrava and Karviná regions is closely associated with the growth of coal mining industry and related metallurgy and engineering in these two regions. Mining history in the region of Ostrava goes back to the 1760s when a smith named Keltička from Ostrava discovered coal in a valley called “Burňa” (in 1763). He became the first to obtain permission to mine and use coal in his blacksmith’s workshop (Biografický slovník Slezska a severní Moravy, 1993). The first coal mine was founded by count Wilczkek, the then owner of the Silesia-Ostrava estate (1776), in Silesian Ostrava (today part of Ostrava). The initial distrust towards this raw material was quickly replaced by intense mining especially after Rudolf’s iron mill (Rudolfova huť) in the neighbouring Vítkovice⁴ (founded in 1828) had started to use coal for fuel instead of charcoal.

In the first decades of coal mining in the Ostrava region traditional horse wagons were used to transport coal. Historical records tell us that coal transportation in the 1850s daily engaged 1,800 horses and 1,200 workers (Štefek, 1999). In this period approximately 60,000 tons were mined annually, which represented one quarter of coal mined in the Czech lands.

After the construction of the Northern Railroad of Emperor Ferdinand had been finished, coal market sales rose sharply. Coal was transported on the railway. Yet, teams of horses kept being used to transport coal to railway stations, which was both expensive and time-consuming; in addition, this means of transport involved a complicated task of reloading. Therefore, several plans for the construction of a coal railroad appeared in the early 1850s.

The first siding was normal-gauged (1,435 mm). It was built in Vítkovice Iron Works and was put into service on August 1st, 1856. The railway track started in the station Ostrava-Přívoz⁵ and ran to Vítkovice blast furnaces with a branching off to the Karolina mine in Moravská Ostrava. Teams of horses were used at the railway siding only to be substituted by steam power in 1858. In 1855 the Northern Railway of the Emperor Ferdinand Company (SDCF) purchased a number of pits and mines in the Ostrava region because they planned to connect them to the recently finished railway from Vienna.

In 1861, the company bought from Vítkovice Iron Works the above-mentioned siding, which lead from Ostrava-Přívoz. The company then constructed a new railroad from Vítkovice (today the Ostrava-Centre railway station) to Michálkovice with connections to individual mines (1863 – length of approximately 18.5 km). The Vítkovice Iron Works management later had

² The region of Ostrava is for the purposes of this article defined in the same way as it is defined in other contributions dealing with the region of Ostrava in this issue and issue 2/2005. It is based on the area demarcation for the study “Downsizing of deep coal mining and its impacts on the processes in lithosphere and environment,” and research development programme in key fields of science in the Academy of Sciences of the Czech Republic (AV ČR) “Impact of climatic and anthropogenic factors on living and non-living environment.” The delimitation of the area of interest corresponds with the mining fields, including a transition area in their surroundings, which constitutes a zone situated between the area affected by mining activity and a larger hinterland. This area can still be affected by the subsiding negative influence of economic activity on the landscape and environment.

³ Today, Chalupki is a part of Poland. It used to be called Annaberg.

⁴ Rudolfova huť – later to become the Vítkovice Iron Works, exists until today: its present name is Vítkovice steel; the municipality of Vítkovice was administratively merged with the city of Ostrava in 1924.

⁵ Architecturally united but independent municipalities of Moravská Ostrava, Přívoz, Vítkovice, Mariánské hory, Zábřeh nad Odrou, Nová Ves, and Hrabůvka were merged into the municipality of Moravská Ostrava on January 1st, 1924. In 1941 the district of Moravská Ostrava incorporated other twelve municipalities. These involved: Slezská Ostrava, Heřmanice, Hrušov, Muglínov, Michálkovice, Radvanice, Kunčice, Kunčičky, Výškovice, Stará Bělá, Nová Bělá, and Hrabová. After the Second World War the municipalities of Výškovice, Hrabová, Stará Bělá, and Nová Bělá became independent. Another series of municipality incorporations occurred in 1957, when the municipalities of Poruba, Pustkovec, Svinov, and Třebovice became merged with Ostrava. Bartovice and Martinov were incorporated in 1960 and Výškovice in 1966. The municipalities of Nová Bělá, Stará Bělá, and Proskovice were incorporated into the city of Ostrava in 1975. The process of merging ended in 1976, when the municipalities of Antošovice, Hošťákovice, Kobl, Krásné Pole, Lhotka, Petřkovice, Plesná, and Polanka nad Odrou were incorporated. The present surface area of Ostrava within its administrative limits covers 214.25 km² and it includes 37 previously independent municipalities merged into 23 town districts.

this siding lengthened from Michálkovice to the Bettina pit (cadastral area of Doubrava – 1870) with branching off to the Eleonora mine and connection to the railway station Doubrava, which was located on the recently finished Košice – Bohumín railway line. In 1886, the year

when the Northern Railway of the Emperor Ferdinand Company purchased the Michálkovice – Doubrava section of the railway, the railway line Ostrava – Michálkovice – Doubrava became the basis of the “coal railroad.”

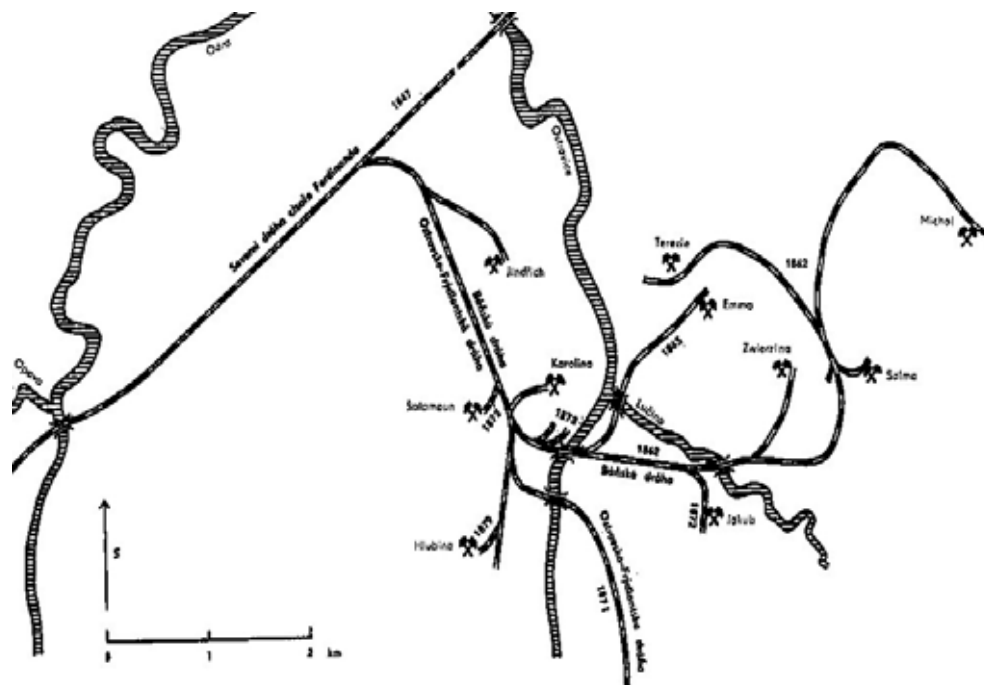


Fig. 1: Railway and siding network in the territory of Ostrava in 1880
Source: Jiřík, Pitronová, 1967

Development of railway sidings until the year 1929

The mining boom was accompanied by the construction of new sidings. It is reported that in 1905 the length of the “coal railroad,” together with 14 branchings to individual coal mines totalled 34.062 km. After the last regional railway line from Kunčice nad Ostravicí (now Ostrava–Kunčice) – Český Těšín had been finished (put into service in 1914), the Suchá section of the coal mining district was connected to this rail line. In 1925, the construction of the railway line, financed by the state, continued from Ludgěřovice and Petřkovice (5 km long), while it was planned to bring the railway to Annaberg (today called Chalupki). However, this railroad extension was never brought into reality. The 1920s saw the construction of only several short sidings. The siding network in 1929 – at the heyday of coal mining prior to the economic crisis – is shown in Fig. 2.

Changes of railway and siding networks in the period between 1930–1949

The year 1949 was a turning point characterized by stabilization of the railway and siding networks after the war, while the build-up of heavy industry dictated by the Soviet Union was not yet in full swing. The period between 1930-1949 was marked by many contradictions. In the early thirties it was the economic crisis, since the late thirties until mid-forties it was the Second World War, and in 1948 the nationalization of industry. All these events were not favourable for the construction and opening of new mines. In the early thirties, mining in the Šalamoun and Jindřich mines in Moravská Ostrava, the Josef mine in Slezská Ostrava, and the Hlavní jáma mine in Orlová was abandoned. Construction of the Viktoria mine in Ostrava-Heřmanice was initiated in 1942. The siding network underwent only minor changes. As far as the public railways network is concerned, the Svinov – Klimkovice railway line (length 7.4 km) was incorporated into the Ostrava tram network (Fig. 3).

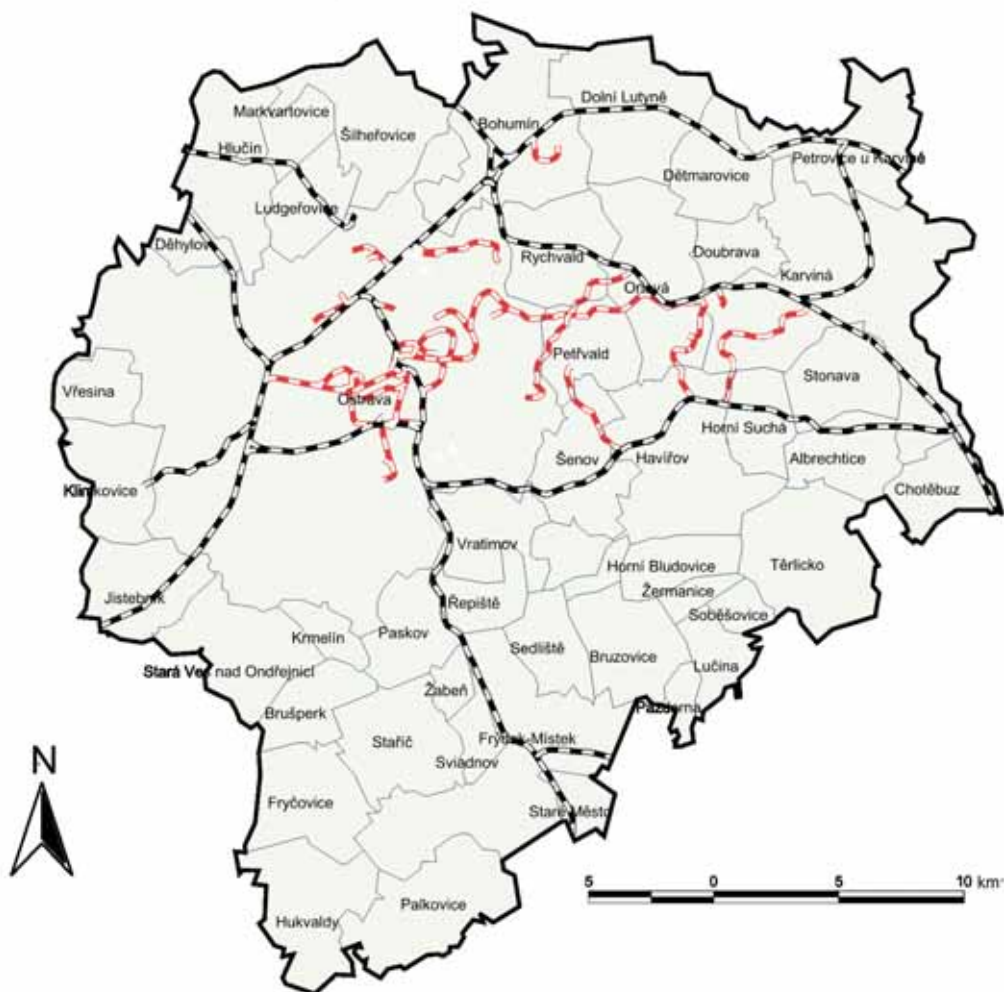


Fig. 2: Situation of railway network and most important sidings in 1929
 Source: Zapletalová, 2004

Legend to figures 2-6:

- boundaries of the area under study
- municipal cadastral area limits
- existing railway
- existing siding
- recently constructed siding
- shut down siding or railway
- railway line transferred to the municipal transport company
- railway line transformed into siding
- recently constructed railway line
- undermined railway line

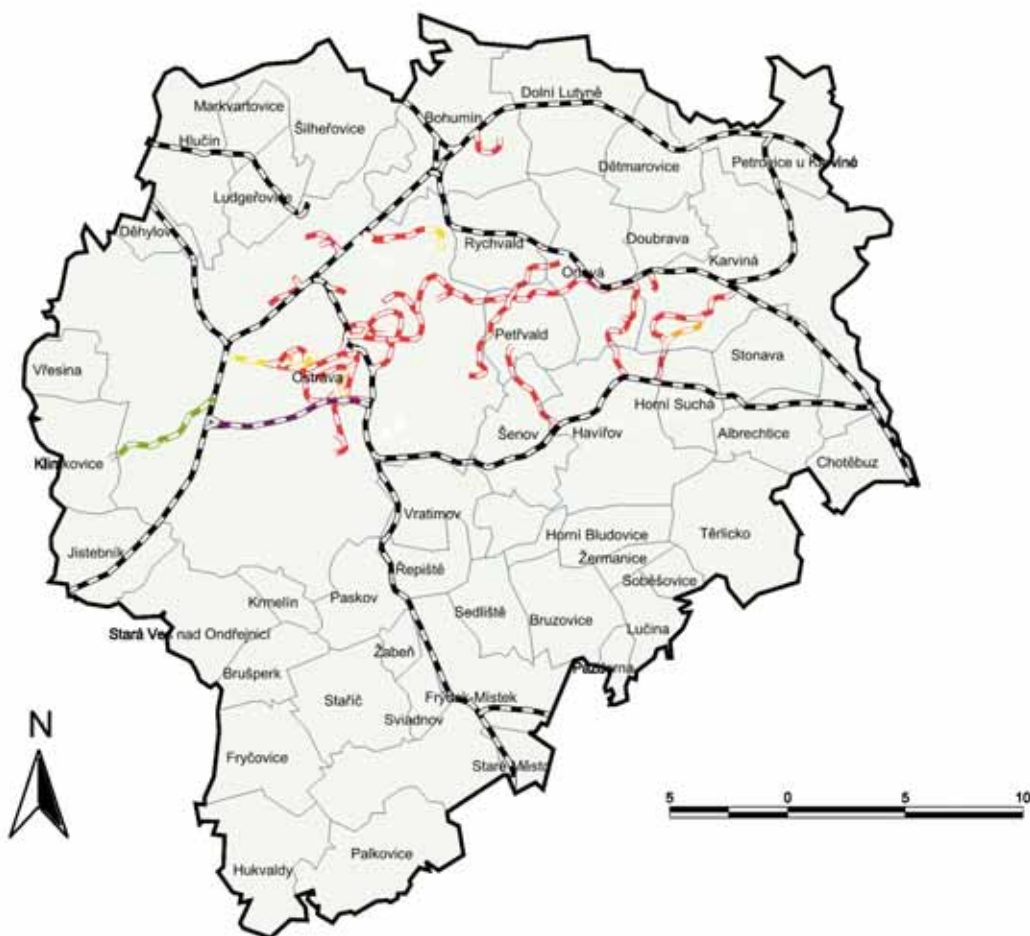


Fig. 3: Changes of railway and siding networks in the period between 1930–1949

Source: Zapletalová, 2004

Changes of railway and siding networks in the period between 1950–1959

This period was marked by sweeping changes in management and in the size of the siding network. Particularly significant was the year 1952, when the former Coal railroad and other mine and coking plant sidings at a construction length of 200 km were handed over to a newly established organization Ostrava-Karviná Mines-Transport (OKD-doprava). Extensive railway yard for Nová Huť in Kunčice was built and new sidings were constructed for the Frýdek-Místek rolling mill. One section of the Ostrava – Frýdlant nad Ostravicí railway line was moved to the south due to enlargement of the premises of the Nová Huť Works.

Several sidings in Hrušov and Slezská Ostrava stopped operation. Unfavourable effects of undermining became visible on the Košice – Bohumín railway in the section of Orlová – Karviná Main Station (today Karviná-Mines). Train speed was often limited to 10 km per hour because of undermining – a speed inadmissible for railroad operation. This led to a decision of the Czechoslovak government (in 1953) to build a new railroad from Louky nad Olší to Dětmarovice (eastern bypass of mining fields). Construction of the new railroad was commenced in 1955. The Hlučín – Petřkovice section on the Opava – Hlučín – Ludgerovice – Petřkovice railway line was transferred from the national railway network to the tram network of the Ostrava Public Transport Company (Fig. 4).

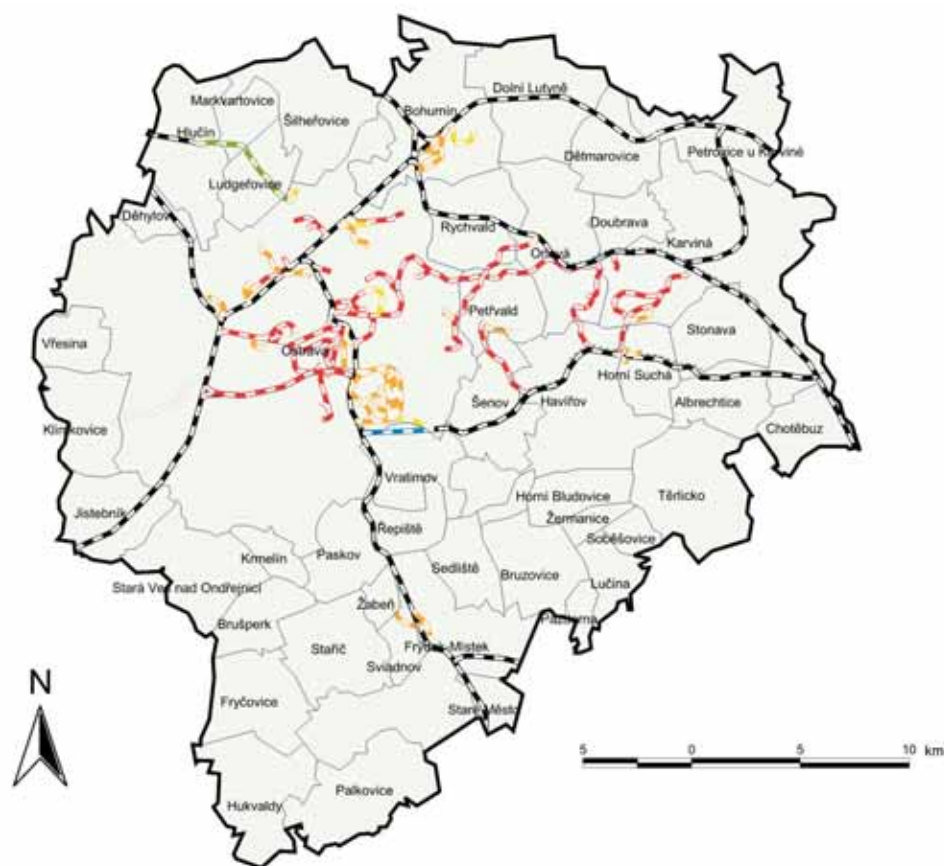


Fig. 4: Changes of railway and siding networks in the period between 1950–1959
Source: Zapletalová, 2004

Changes of railway and siding networks in the period between 1960–1979

Remarkable changes occurred in public railway network of the Czechoslovak Railways (ČSD). The Dětmárovice – Louky nad Olší railway line was finished and opened and, as a consequence, public transport on the Bohumín – Orlová – Louky nad Olší railway line was shut down. Next, the public transport was stopped on the Petrovice u Karviné – Karviná-Town – Karviná Main Station railway line (part of the former Košice – Bohumín railroad) and the railroad was transferred to the lines of the Czech Railways (ČD) with exclusive freight traffic. The Karviná-Town – Karviná – former Main Station section was dismantled. Relocation of the Ostrava-Kunčice – Albrechtice railway line in the Havířov – Horní Suchá section was relocated

and the original railroad became a siding. The so called “Polanecká connection” was completed and put into operation (connection between railway stations Polanka nad Odrou and Ostrava Kunčice). In total, 28 km of new railway lines were put into operation and almost 38 km of undermined railroads were transferred to the siding network. The longest railway yard of the time was in Nová Huť⁶ – 255 km; the railway yard in the Vítkovice Iron Works was 198 km long. Sidings were built which connected the recently accomplished Paskov, Staříč, ČSM and The Ninth of May mines. At the same period power plant Dětmárovice was completed and put into service and sidings were built in these industrial premises (Fig. 5). The total length of siding rails in the examined area was around 900 km (out of which 400 km of sidings were operated by the OKD-Transport).

⁶ At that time it used to be called Nová huť Klementa Gottwalda (New iron mill of Klement Gottwald).

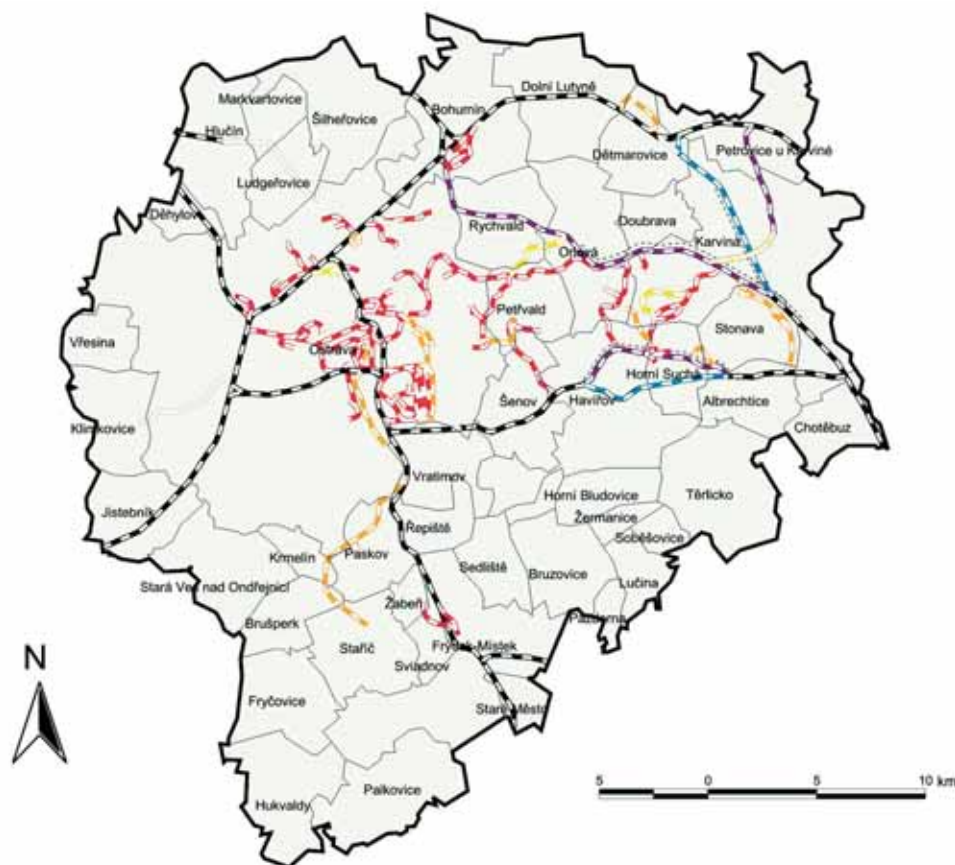


Fig. 5: Changes of railway and sidings networks between 1960–1979
Source: Zapletalová, 2004

Changes of railway network between 1980–2004

One of the last long sidings in this region – the siding to a new pulp- and paper-producing chemical works Biocel Paskov – was constructed in the early 1980s.

The year 1990 constitutes a turning point for the siding network in the examined area. The siding and siding rail networks were gradually reduced as a part of the process of production restructuring and closing of inefficient works after this year. In 2004, the length of sidings and railway yards owned by the Ostrava-Karviná Mines-Transport division, joint stock company, in the whole Ostrava – Karviná coal mining district was 305 km. The length of siding rails operated by the company Ostrava-Karviná Mines-Transport is shown in Tab. 1.

Reduction of siding rails occurs also in big factories: For example, Vítkovice Steel, a.s. reduced the length of railway yards by roughly 50% (from 198 km in the early 1970s to approximately 100 km in November 2003; further tracks are to be closed). Mittal Steel, a.s.,⁷ had at its disposal 215 km of siding rails at the same period

(40 km of siding rails have been dismantled since 1990)⁸. Railway and siding networks in the examined area for the year 2004 are shown in Fig. 6.

Year	Total length of sidings operated by OKD-Transport
1952*	200.0
1955	245.0
1960	290.0
1970	345.5
1980	369.8
1990	418.1
2000	374.4
2004	305.0

Tab. 1: Length of sidings in the Ostrava region operated by the Ostrava-Karviná Mines-Transport (OKD)

*Founding year of the OKD-Transport

⁷ Present name of the works is Nová huť, a.s.

⁸ Next 15 km of siding rails were dismantled until the end of 2005.

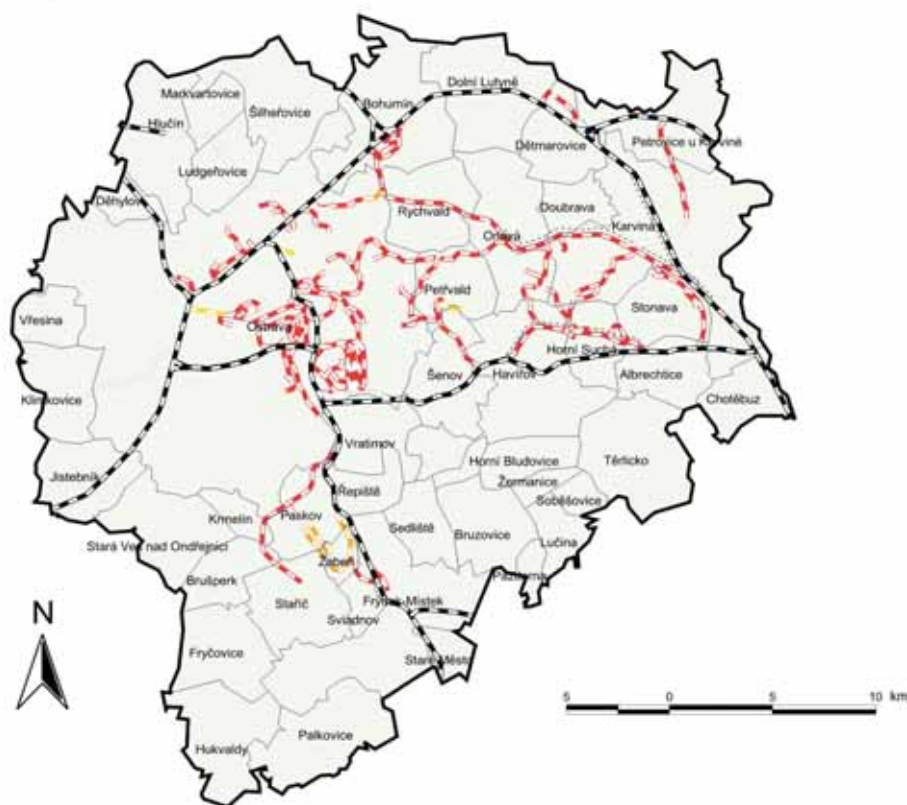


Fig. 6: Changes of railway and siding networks in the examined area between 1980–2004
Source: Zapletalová, 2004

Conclusion

The region of Ostrava is one of the regions where railway traffic has seen dynamic development in the last 150 years. Not only the public railway network (although it was built both by means of private and state investments), but particularly the siding network, which brought railroad to individual mines, into iron mills, coking plants, power plants, and other industrial works using extensive volumes of bulk substrate, underwent extensive growth. Apart from the already mentioned construction of normal-gauged railway lines and sidings (Central European standard is 1,435 mm), there were also narrow-gauged railways which served primarily to transport public and they belonged either to public transport companies (such as in Ostrava or Bohumín), or they ensured public transport between the individual industrial centres and mines of the Ostrava industrial agglomeration (such as the Ostrava – Karviná and Ostrava – Bohumín railway lines). However, they were not used only for public transportation but also for freight traffic. It must be added that some sidings of industrial works (such as the siding leading from Vitkovice Iron Works to Nová huť) were used to transport employees from Ostrava railway stations to factories and it is possible to say that they constituted a kind of the “factory-organized transport of employees” operated by individual industrial works. These services were not accessible to public.

Regarding the fact that these railroads were and are still located in undermined areas with extensive terrain subsidence, it was often necessary to perform ineffective and expensive maintenance of the railroads. While the mines were being closed, the needs for coal and employee transportation disappeared. As a consequence, the operation of these railroads was gradually stopped and the railroads were completely dismantled. At the present time some of them are preserved only on the historical photographs; however, some of these railroads have left marks in the terrain that are still observable today.

Indeed, the railway sidings in the Ostrava region suffered the same fate as industrial railways in other industrial regions of Europe. The efficiency of existing sidings and public railway lines has been decreasing due to the restructuring of production, rapid motorization, and freight traffic transfer from the railway to the faster motor transport. Many of them are facing a threat of being closed down soon.

Nevertheless, railway as such still has its future in the Ostrava region. The examined area is intersected by Czech railway corridors II and III. Railway corridor II, which runs in the south-north direction from Břeclav, through Přerov and Ostrava, to Poland, has been completely renovated and its technical parameters comply with the speed of 160 km per hour. The so called Railway corridor

III, which has equal technical parameters and runs in the west-east direction, will enter the Czech Republic at the German border, then it will pass through the towns of Cheb, Plzeň, Praha, Pardubice, Česká Třebová, Přerov (here it is connected to Railway corridor II), Ostrava, Bohumín, and Český Těšín and then it will continue to

Slovakia. This railway corridor is undergoing a necessary reconstruction at present.

The future of railway (not only in the Ostrava region) lies generally in the construction of railway corridors and high-speed rails, which are capable of competing with the motor transport and in many cases even with the transport by air.

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REHABILITATION AND DEVELOPMENT OF MINING REGIONS IN EASTERN GERMANY – STRATEGIES AND OUTCOMES

Peter WIRTH, Gerd LINTZ

Abstract

Cities and regions suffering a decline in their mining industries face severe ecological and socio-economic problems. Since reunification, the situation of mining areas in eastern Germany has been characterised by two features: the speed and extremely short time-scale of decline and strong state support for rehabilitation and development. This article presents some theoretical considerations on this topic, as well as the geography of eastern German mining regions. An overview of the adopted strategies is given, together with a discussion of the various outcomes which have been achieved. Finally, an assessment is made with respect to the way eastern Germany has coped with its challenges.

Shrnutí

Revitalizace a rozvoj těžebních oblastí ve východním Německu – strategie a výsledky

Města a regiony, ve kterých dochází k útlumu těžebního průmyslu trpí řadou ekologických a socioekonomických problémů. Ve východním Německu je možno po sjednocení země situaci v těžebních oblastech charakterizovat dvěma základními rysy a to rychlostí a extrémně krátkým časovým obdobím útlumu těžby a výraznou státní podporou pro revitalizaci a rozvoj těchto území. Příspěvek se zabývá některými teoretickými úvahami týkajícími se této problematiky a základními geografickými charakteristikami východoněmeckých těžebních oblastí. Je uveden přehled přijatých strategií a diskuse dosažených výsledků. Závěrem je provedeno zhodnocení přístupů přijatých k překlenutí těchto problémů.

Key words: mining regions, structural change, rehabilitation, development, strategies, actors, transition, eastern Germany

1. Introduction

Many European mining cities and regions¹ have suffered from the decline or disappearance of their economic base. The situation is characterised by a fundamental structural crisis with three typical features. Firstly, in most cases mining is associated with an economic monostructure. Decline of mining in a region results in a crisis for the region's entire economic foundation. Attracting new industry and business is difficult, and alternatives such as tourism usually do not generate as much wealth as mining. This leads to a second set of problems: a high level of unemployment with all

related social problems, in turn encouraging a wave of emigration. Final result is a loss of human resources, purchasing power and taxable capacity in the region (Müller, Finka and Lintz, 2005). As a third problem mining has almost everywhere caused a considerable environmental degradation. This includes the remaining surface mining pits, ground surface subsidence, landslides and underground collapses, lowered ground water levels and contaminated sites. Affected regions thus have to tackle a variety of interconnected problems. In summary one can say: the decline of mining initiates a general decline in a region. A big challenge for key actors is to find solutions in such complex situations.

¹ Mining regions are defined here as extensive areas (1) where mining is taking, or has taken place; (2) where the raw materials extracted are, or were, processed; and, (3) where extraction and processing the raw materials has caused widespread environmental damage to areas which are to be, or will have to be, rehabilitated.

A notably dramatic case of the structural change of mining regions is eastern Germany. In 1989 – at the time of political change – the German Democratic Republic (GDR) was the world's biggest brown coal producer (300 million tonnes). This small country also held 3rd place in the extraction of uranium ore. The intensity of mining was a result of political goals to maintain independence in energy supply (brown coal was the only important fossil fuel resource located within the GDR) or the export of uranium ore to the Soviet Union for military reasons.

The situation was changed completely by three events: the opening of the border between the Federal Republic of Germany and the GDR on November 9th 1989, economic and monetary union between the two German states on July 1st 1990 and German reunification on October 3rd 1990. Thus eastern Germany joined the European Union in less than one year. The price for this series of political and economic shocks was a total collapse of the strongest economy of the former COMECON system. The eastern German companies lost their eastern European markets with the introduction of the D-Mark. Products from eastern Germany were not competitive on the Western European market. This structural breakdown also severely hit the mining industry and its associated regions.

To sum up, there are four distinctive features that characterise the structural change of mining regions in eastern Germany since 1989:

- (1) The absence of a “preparation time” for change. Many Western European mining regions introduced lengthy programmes to ease the phasing-out of mining. One example is the Limbourg region in Belgium where the government and the region made agreements as far back as in the 1960s regarding the running down of mining activities in the 1990s (Baeten, Swyngedouw, Albrechts, 1999).
- (2) The extremely short transition time. The conversion from planned to market economy was performed in an exceptionally brief period. In Saxony's basic industrial sector the number of employees was cut by half in 1991 – the year following the political changes. The number of employees in brown coal mining shrank from 139,000 in 1989 to 26,000 by 1995. In uranium mining the workforce decreased from 45,000 in 1989 to 11,000 by 1992. This collapse has forced up the unemployment rate, with 20% to 25% typical in former mining areas. In many cases it has proved hard to attract and develop new economic sectors (manufacturing industry, services) to offset job losses.

- (3) Disparities in regional and town development. Today the problems of mining regions are concentrated in the so-called “developing cities” or “growing cities” of the former GDR² which include many mining cities, e.g. Cottbus, Hoyerswerda, Weißwasser, Lauchhammer and Johanngeorgenstadt. Their booming development in the past led to concentration processes (jobs, housing, inhabitants) which today have lost their economic rationale. Such discrepancies have led to large-scale processes of migration: Hoyerswerda, Weißwasser and Johanngeorgenstadt have lost nearly 40% of their population since 1990 (Fig. 1).
- (4) The catastrophic environmental situation connected with a huge backlog in rehabilitation in the mining areas. Environmental problems are the “lunar landscapes” left after brown coal open pit mining, radiological pollution in areas of uranium mining and the contamination of air, soil and water by industries connected with mining (power production, coking plants, carbon chemistry).

These four features characterise the situation in Eastern German mining regions, and contrast with the situation found both in Western Europe and in the former socialist states of Central and Eastern Europe. The rapidity of the change was tremendous – especially if we consider that the societal changes in the Czech Republic, Hungary and Poland have been classified in some scientific statements as “shock therapy” (e.g. Kirchner, 1999). From this point of view the structural changes in Eastern Germany represent a unique case. What can be learnt from it? What strategies were created to link the rehabilitation of environmentally-damaged mining areas with the development of new economic prospects and creation of acceptable living conditions? How successful were the strategies? The article attempts to propose some initial answers to these questions.

The ideas presented here are one result of the project READY – Rehabilitation and Development of Mining Regions – which is a part of the INTERREG IIIB programme of the European Union (Wirth, Lintz, Mörl, 2005). READY connects 22 partners, including 17 mining towns and regions from 6 countries (Austria, Czech Republic, Germany, Italy, Slovakia, Romania). The project was launched in 2003 and will end in 2006. Scientific monitoring is one element of READY. The authors of this article are responsible for the whole monitoring process of the project and for the investigations in Eastern Germany in particular.³

² Cities with a housing stock of 70% built during the GDR time (1949-1989).

³ The authors thank Mr. Martin Fischer for his committed support of this investigation.



Fig. 1: Johanngeorgenstadt: accommodation built for uranium miners in the 1950s is pulled down (Photo: M. Bose)

2. Rehabilitation and development – a theoretical approach

The decline of certain industries – be it in the context of adaptation within market economies or seismic shifts in the entire economic system – often leads to spatially concentrated problems. This especially holds true for cities and regions which have been dependent on the exploitation of geologically concentrated natural resources (see e.g. Eckart, 2003; Förster, 1999; Schrader, 1993). At least four factors influence how the affected cities and regions can cope with the challenge of a declining mining sector (modified after Lintz, Schmude, 2005).

Firstly, vulnerability towards changes in structural framework conditions, such as shrinking demand for certain goods or emerging competitors from abroad, plays a major role. The bigger the regional share of those industry sectors under pressure, the bigger the pressure placed on the regional economy to adapt, and the worse the prospects of achieving sustainable development. Mining cities and regions in particular tend to be strongly dependent on “their” sector.

Secondly, the success of structural change depends on the ability of the economy to adapt positively. On the one hand this depends on the quality of management in affected and other industries and on the existence of (new) entrepreneurs. On the other hand locational factors influencing the general attractiveness to business play a decisive role: spatial location, supply of labour, infrastructure, operationally usable land, universities and research institutions, an innovative milieu

(cooperation between companies, scientific institutions and municipalities), and last but not least, the quality of the environment and the overall image of the city or region. Mining cities and regions are characterised by a special profile of such factors: they are generally below average, especially with regard to environmental and urban quality.

Many locational factors are influenced by the local (and regional) political-administrative system. Thus a third factor of considerable importance is the ability of the political-administrative system to support structural adaptation (Kunze, 1997). Politicians and the administration personnel from mining cities and regions often display little willingness to accept change, and lack knowledge and experience to mobilise additional capacity. This is especially true in towns and small cities.

Fourthly, support at national level for the rehabilitation and development of affected cities and regions is important. Sustainable local or regional development can be fostered by financial support, supra-regional infrastructure investment and supportive regulations. The effort made at this level very much depends on the economic strength of the country and on the general awareness of the problems of mining cities and regions.

As already pointed out, mining cities and regions often find themselves in an extremely difficult situation. They must urgently remove obstacles to development and use all possible endogenous potentials. Unfortunately there is no automatic mechanism in the market economy to cure environmental and related damage. An immediate

danger to people and properties will be remedied by law, while further measures depend very much on the costs of rehabilitation and land demand. High remediation costs and low demand for land in old industrialised areas lead to a low level of rehabilitation (Ferber, 1995). Therefore there is often an urgent need for public initiatives.

Obviously, the remediation of mining-related damage of the natural and man-made environment provides clear benefits. For example the decontamination of land ensures a healthy environment and obviates the need of greenfields. The refurbishment and reuse of old buildings reduces the environmentally damaging material flow. Another important benefit from land rehabilitation is however an improved socio-economic development. The attractiveness for business and residents is reduced by rundown land and cityscapes (e.g. open cast pits, slagheaps), soil and ground/surface water contamination, vacant and derelict buildings and facilities, and subsidence. Against this, the background rehabilitation should be cleverly managed to serve as a basis for development. In this way, disadvantages can be turned into opportunities: for example dangerous opencast mines can be transformed into attractive lakes, improving the general character of an area and helping to increase tourism.

All feasible endogenous potentials should be utilised in ailing cities and regions, and opportunities arising from the former mining industries should also be explored. While it is relatively clear that the environmental legacy of mining is a particular obstacle to development, potentials that the former mining facilities can offer for development are rarely considered. Refurbished mining-related buildings can be used for example as workshops, retail facilities, for cultural events or to host mining museums. Mining trails on rehabilitated heaps can be used by citizens and tourists alike. Emphasising cultural aspects such as mining traditions, e.g. bands and choirs, can contribute to the identity of the city and its attractiveness. Sometimes the old mine galleries can be used for medical treatments or for the exploitation of thermal water.

The crucial point for a successful structural change is that both the skilful removal of obstacles and the utilization of potentials require special conceptual and implementation capacity which combines rehabilitation and development. Affected mining cities and regions must develop things that they are particularly lacking. Creative conceptual capacity requires people with bold and innovative ideas and the strong backing of new ideas by leading politicians (e.g. mayors). This capacity involves universities and research institutions, citizens, companies, other cities (for regional cooperation), and the right people in high office. A special challenge is to bring together rehabilitation and development experts from different sectors of local and regional policy.

While the local or regional policy capacity can bring results even without any government support, any

government support without a sufficient local capacity is unlikely to succeed. However even with a committed and intelligent local or regional authority using networks etc., the mining cities and regions will need a support from the government: rehabilitation is often very expensive and companies frequently need improvements in location factors and special incentives for investment.

3. Mining regions in eastern Germany – an overview

Six raw materials were (and to a certain degree still are) the basis of mining in Eastern Germany: brown coal (lignite), potash and rock salt, bituminous coal, ferrous ores, uranium and natural gas/petroleum. Rock, stone, and related mineral products are not considered in this paper. Brown coal has economically been the most important natural resource in Eastern Germany since 1850, and was mined mainly in the Central German District (Fig. 2 and Tab. 1, No. 2) around Halle and Leipzig as well as in the Lusatian District (No. 1) around Cottbus. Technological developments in dewatering, excavation and rail transport allowed the creation of large open cast mines and landscapes underwent large scale transformation, with many villages being destroyed and residents resettled. In the GDR brown coal became the main energy source (70% – Bismarck, 2004). The Cottbus administrative district was known as the “energy district” of the GDR, in which brown coal mining, energy recovery and brown coal refinements (briquettes, town gas) were concentrated (Sasse, Schubert, 1989). Brown coal mining has declined drastically since 1990 – only 6 open cast pits are still working. Nevertheless Germany is still the world’s leading brown coal producer.

Eastern German potash and rock salt mining is concentrated on important deposits in the Werra District (No. 5) as well as in the region of Staßfurt/Bernburg (No. 6) and Zielitz (No. 7). In the 1990s mining ceased in the district to the south of the Harz Mountains (Südharz, No. 4). Potash is primarily used in the fertiliser industry, while rocksalt is used in industry, as a de-icing salt and in foods. In 2000, the output was about 3.4 million tons of potash and 15.1 million tonnes of salt.

Former uranium mining sites of the Soviet-German Joint-stock Company (SDAG) Wismut are located in Saxony (Johanngeorgenstadt and Schlema, Western Saxony, No. 10; Königstein, Dresden-Gittersee) and Eastern Thuringia (Ronneburg, No. 11). Within these areas 216,000 tons of uranium ore were exhausted and processed over about 44 years (NEA/IAEA, 1999). Until 1990 the SDAG Wismut was the largest producer of uranium ore of the Eastern Block and was the third largest producer worldwide (Schmidt, 2001). In 1990 the Federal Republic of Germany took over the company and transformed it into Wismut Ltd., responsible for the rehabilitation of environmental damage.

Underground bituminous coal mining in Germany has a long tradition. The biggest deposits are situated in Western Germany (Ruhr District, Saarland). In the eastern part only the districts of Zwickau and Lugau-Oelsnitz (No. 12) were of importance. Excavation started there in 1842 and formed a foundation for the industrial development of the Chemnitz-Zwickau industrial region. Mining was finished in the 1970s.

From the Middle Ages to the reunification ore was mined in the Eastern German low mountain ranges. The most

important area was around the city of Freiberg in the Saxon Ore Mountains (No. 13), where the Freiberg University of Mining and Technology was founded in 1765. Exhaustion of ore in Freiberg ended mining in the 1960s, and smelting shifted to secondary raw materials (Menninger et al., 2003). Mining continued in other areas until 1990 (for example tin at Altenberg and Ehrenfriedersdorf). Ore mining as the oldest form of mining played a crucial role in shaping the cultural landscape in the region of the Ore Mountains. In GDR times the Mansfeld and Sangerhausen District (No. 8)

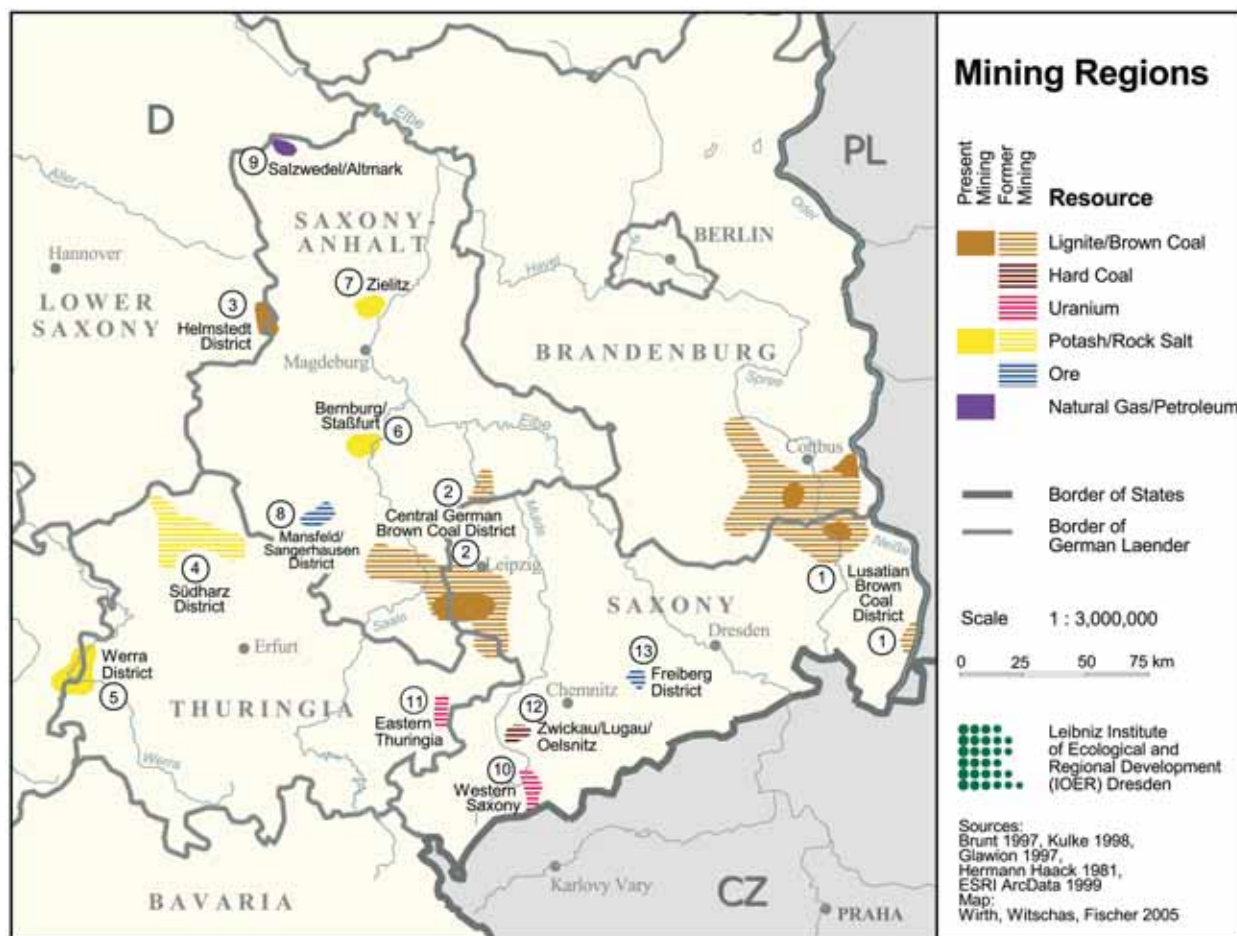


Fig. 2: Mining areas in Eastern Germany
Source: IOER

also gained some importance, where primarily copper slate was mined in the 20th century (2.6 million tonnes copper in total, and also 14,000 tonnes silver). Low profits put an end to the mining in 1990.

In the lowlands of Northern Germany there are a number of natural gas deposits located in different areas and with long-term supplies. In Eastern Germany the only gas deposit discovered so far is in the north of Altmark (No. 9), opened in the 1960s.

From the above we can see that mining played such an important role in Eastern Germany up to 1989, both

economically and ecologically, that regional problems arising from the decline of this industry had to be tackled as soon as possible. In order to get an overview of the contents and extent of the tasks, rehabilitation and development concepts were prepared directly after the German reunification for six regions, e.g. for the brown coal and chemical region Leipzig/ Bitterfeld/ Halle/ Merseburg and for the Energy Region Lusatia (Belitz et al., 1995). Many programmes were prepared and a lot of measures were adopted. Main approaches to rehabilitation and development that arose from the initial concepts and considerations to tackle the problems are described in chapter 4.

4. Strategies for tackling the problems of mining regions in eastern Germany

4.1 Basic considerations

In Germany the problems that mining regions have to face are taken very seriously. Strategies for the rehabilitation and development of mining legacies, such as ecologically contaminated sites and devastated landscapes, can be justified by at least two arguments. On the one hand it is in general necessary to remove

ecological damage from the environmental point of view, especially considering the high population density in Germany. A sustainable land use policy is proclaimed in the Federal Regional Planning Act (ROG): the reuse of brown fields shall be given priority over the development of green fields.

On the other hand another important aim in Germany is to ensure equal living conditions in all regions. This aim has a constitutional support and is specified in the Federal Regional Planning Act. It has also been

No	Name	Size (sq. km, approx.)	Resource	Former/current mining
1	Lusatian District	670 mining sites in 1995	brown coal	now greatly reduced (industrial use since 1850)
2	Central German District	500	brown coal	now greatly reduced (since 1850)
3	Helmstedt District	about 60	brown coal	(since 1848)
4	Südharz District	150	potash and rock salt	1900-1990
5	Werra District	100	potash and rock salt	still active (since 1890)
6	Bernburg/Staßfurt	70	potash and rock salt	still active (since 1852)
7	Zielitz	70	potash and rock salt	still active (since 1963)
8	Mansfeld and Sangerhausen District	150	copper, silver	silver: 1200-1990; copper: 1895-1990
9	Salzwedel/Altmark	200	petroleum, gas	still active (since 1968)
10	Western Saxony (Aue/Schlema and Johanngeorgenstadt)	40	uranium	1946-1990
11	Eastern Thuringia (Ronneburg)	14	uranium	1950-1991
12	Zwickau and Lugau-Oelsnitz districts	60	bituminous coal	1842-1978
13	Freiberg District (Ore Mountains)	15 (core district)	ore	1185-1969 ⁴

Tab. 1: Mining areas in Eastern Germany (compiled by the authors; the consecutive numbers correspond with the numbers in Fig. 2)

considered in the unification treaty which, in regard to Eastern Germany, stipulates that a uniformity of ecological living conditions shall be achieved (Belitz et al., 1995). This generates a public duty to support the efforts of rehabilitation and development in cities and regions suffering from the ecological and socioeconomic crisis due to the declining mining sector.

A financial compensation mechanism (fiscal equalisation) exists at two levels to transfer money to federal lands and municipalities that are financially unable to fulfil tasks given to them. Furthermore, a whole range of legal

provisions and development programmes are in place which have a more direct effect on the development of mining cities and regions. They can be seen as elements of an (at least implicit) strategy. In the following, the most important elements will be presented. It is necessary to distinguish between general and special legal regulations on the one hand and various strategies to support or initiate rehabilitation and development on the other. Geotechnical aspects are not considered in the following chapters. For a detailed information see Genske (2003).

⁴ In Altenberg and Ehrenfriedersdorf (ore Mountains) tin was mined until 1990.

4.2 General legal regulations in Germany and special regulations for the East

The most important regulation of German environmental policy is the polluter pays principle. It is seen as the most suitable and efficient principle to avoid and to remove environmental pollution. The scope of responsibility determined by the polluter pays principle may vary, as well as the possibilities of implementation. This also applies in the context of rehabilitating the former mining areas.

The central legislation governing mining is the Federal Mining Act (*Bundesberggesetz*). It guarantees an efficient, soil friendly raw material supply, labour safety, precautions against injury to third parties and compensation for damages. The responsibility of mining companies for rehabilitation is comprehensive. The law obliges companies both for the reparation of incurred damage due to mining as well as for the rehabilitation of land in affected areas. Thereby, public concern is taken into consideration. For mining companies the obligations end only with the completion of rehabilitation.

Companies closely linked to mining (coking plants, chemical plants etc.) are also regulated by several environmental and area planning laws. Most important of them is the Federal Soil Protection Act (*Bundesbodenschutzgesetz*). It obliges the originator to clean up contaminated sites (Wolf, 2001). If there a remedy is required, the polluter is responsible for the preparation of rehabilitation analyses and a rehabilitation plan.

Even though the aforementioned laws and various other acts of legislation (Water Act, Immission Control Act, etc.) regulate the rehabilitation of mining sites, they have not been enforceable in the most important Eastern German mining areas since 1990. Former mining operators could generally not be identified, and even when found and held liable, a huge backlog in reclamation hindered the rehabilitation task. Thus it became necessary to shape specific solutions for the east of Germany. Most important of these are, firstly, the state-controlled rehabilitation of brown coal and uranium mining, and secondly, major ecological projects and the exemption of investors from the risks of contaminated sites. These primary legal solutions for the rehabilitation and development of mining regions in Eastern Germany are discussed below.

Rehabilitation by state-owned enterprises

After the German reunification in 1990, there was an urgent need for the rehabilitation of brown coal and uranium mining areas. Rehabilitation in the GDR was highly neglected. Although GDR mining enterprises were legally obliged to rehabilitate devastated areas, the

legal requirements were insufficiently implemented in practical life. An exception is the Lake Senftenberg in the Lusatian brown coal district. In the 1970s the open cast pit near Senftenberg was turned into a leisure centre with beaches and watersport attractions.

After the political changes only a small part of the large-scale brown coal mining could be profitably taken over by private enterprises. Uranium mining ceased entirely. Facing the enormous dimensions of the task, the Federal Government took control of the decommissioned brown coal and uranium mining and assumed the rehabilitation obligations.

Brown coal rehabilitation began as an initiative of the employment promotion policy directly after the German reunification. The closed brown coal mining, now called "rehabilitation mining", was legally and spatially separated from the active mining and transferred to the state-owned Lausitz and Central German Mining Administration Company (*Lausitzer und Mitteldeutsche Bergbau-Verwaltungsgesellschaft – LMBV*). Since 1993 the rehabilitation has been managed on the basis of three administrative agreements between the Federal Government of Germany and Eastern German Federal States with brown coal mining (Saxony, Saxony-Anhalt, Thuringia, Brandenburg), thereby regulating the financing of measures until 2007. The Federal Government assumes 75% of the rehabilitation costs with the remainder being borne by the respective federal state. A fourth administrative agreement will regulate the remaining work as of 2008. A total cost of brown coal rehabilitation in Germany is 9.2 billion euros (Bismarck, 2004). In 2004 the reclamation of former mining sites was implemented up to a level of 80% (Bundesregierung, 2004).

LMBV acts as property owner and project executing organisation in the four affected federal states and contracts rehabilitation companies and other contractors with rehabilitation tasks for landscaping. In the framework of rehabilitation mining, According to §§ 55 to 57 of the Federal Mining Act, LMBV is legally obliged to remove dangerous hazards and to implement land reclamation. This applies to the rehabilitation of land and to the regulation of water balance in the areas of lowered groundwater table. LMBV is even responsible for the planning and implementation of measures that are not postulated in the mining law (*Braunkohleausschuss des Landes Brandenburg, 1998*). These so-called 2b-measures (named after the numbering of the administration contract) include, among other things, measures to increase standards of use according to the objectives of regional planning. The provisions of regional planning are different in the individual federal states. In Saxony the rules of procedure are defined in the state planning act. They stipulate that for every open cast pit a plan determining the further development of

the mining site must be drawn up. After decommissioning a rehabilitation plan has to be created (in detail see Berkner, Thieme, 2005). As these tasks affect the interests of the Federal States, regional advisory committees for rehabilitation have been created (Bismarck, 2004). In general, LMBV rehabilitates with the objective of making use of the old mining land. In doing so, jobs should be created and a contribution made to build up competitive economic structures (Benthaus, Gatzweiler, Thie, 2001). LMBV owns two subsidiary companies for the purpose of developing decommissioned mining areas.

Whereas some brown coal mining continued after the political changes, the uranium mining stopped entirely. The uranium mining enterprise Soviet-German Joint-stock Company (SDAG) Wismut was transformed into a federal government-owned limited liability company (Ltd.). The rehabilitation of uranium ore mining is financed entirely by the Federal Government. The legal basis is formed by the Wismut Act (1991). 4.2 billion euros have already been invested in the uranium mining rehabilitation. Two thirds of the tasks have been completed so far (Bundesregierung, 2004). Similarly as LMBV, Wismut Ltd. (GmbH) is an executive organisation subject to the Federal Mining Act (Benthaus, Gatzweiler, Thie, 2001). The affected areas in the State of Saxony and Thuringia are considerably smaller than those for brown coal rehabilitation, although the environmental hazards caused by sites contaminated with radioactive materials are much higher. According to the Wismut Act, the organisation is responsible for the closure of mines, for the rehabilitation and reclamation of contaminated sites as well as for the return of the areas to original owners. Progress indicator is the reduction of radioactive and chemical contaminants to comply with legal requirements. Operation plans and rehabilitation concepts of Wismut Ltd. are characterised by a balance between rehabilitation costs and ecological benefits (TMLNU, 1999). Furthermore, the rehabilitation concepts must comply with the requirements of the federal state administration and should be discussed with municipalities. Wismut Ltd. carries out rehabilitation on the basis of an open dialogue with affected municipalities, environmental groups and citizens.

In summary, the main task of LMBV and Wismut is the rehabilitation of mining legacies and land reclamation even if there is no immediate after use. Both companies cooperate with local and regional planning groups and interests, within the framework of the company's legal and financial possibilities. Though both companies are keen to cooperate closely with other actors, the scope for negotiation is not great. Many communities characterise the state-owned rehabilitation areas as complicated partners which are reluctant to diverge from their guidelines.

Despite these far-reaching regulations, not all mining sites were covered by state rehabilitation projects.

Land affected by uranium mining, which was given back to municipalities before 1963, was excluded from the rehabilitation. The region of Johanngeorgenstadt in the southwest of Saxony was affected by this issue. A separate agreement between the Federal Government and Saxony to support rehabilitation in these areas could only be reached in 2003. However this agreement is not as comprehensive as in the other uranium mining areas. Other areas lacking state rehabilitation are the former bituminous coal mining districts of Zwickau and Lugau-Oelsnitz, the Freiberg Ore Mining District, the Mansfeld-Sangerhausen Copper Slate District and other mining regions where mining ended long before 1990. State activities in these regions are confined to measures aimed at an ensurance of the removal of dangerous hazards (Schmidt, 2001).

Major ecological projects and exemption of investors from risks

In the 1990s, there were 21 rehabilitation projects that were awarded the status of major ecological projects, each having a financial volume of at least 50 million euros. They are financed at 75% by the federal government with the remaining 25% coming from the Federal State (Bundesregierung, 2004). Examples of these major projects are a site formerly used by chemical industries linked to brown coal mining, and a former uranium processing site which is not covered by the responsibility of the Wismut Ltd. (Franke, 2004).

In addition to the already named cases of rehabilitation the economic development of Eastern Germany was severely hampered by a large number of brownfields which lay outside the scope of governmental rehabilitation measures. Urgently needed developers were warried of using old buildings, equipment and former mining and industrial premises because of possible rehabilitation costs. By adopting the Environmental Framework Law (Umweltrahmengesetz, today: Hemmnisbeseitigungsgesetz) in 1990, an arrangement was made which exempts investors from the liability of rehabilitating the contaminated sites. It applies to pollution and damage incurred before 1st July 1990. In the case of an exemption the government pays the costs of required monitoring and rehabilitation measures (in terms of removing dangerous hazards) on the land of the exempted company. Costs are split between the Federal Government and the Federal States at a ratio of 60% to 40% (Mayr, Taubmann, 2000). Federal States are responsible for implementing and executing the exemption regulation (Freistellungsregelung).

4.3 Support for rehabilitation and development

Even with the multiplicity of supportive legal regulations, the rehabilitation of sites does not occur automatically.

Moreover, rehabilitation does not necessarily entail any subsequent development. Since rehabilitation and development in old mining and industrial regions are seen as important, a wide range of support programmes and activities have been introduced at all administrative levels. After the German reunification Eastern Germany could immediately use the Structural Funds of the European Union. Also regional, environmental and labour market policy at the national level could contribute to rehabilitation and development (see Lintz, Schmude, 2005; Süßkraut, Visser, Burgers, 2001).

Although the EU and the Federal Government are indispensable in solving local and regional problems, this paper will concentrate on activities and support programmes at the level of federal states, regions and municipalities as these are particularly responsible for the creative implementation of EU and federal programmes, and give actual shape to rehabilitation and development with their own concepts. Their initiative and commitment is urgently needed. In the following, the most important activities of rehabilitation and development at the federal state, regional and local levels in Eastern Germany are presented.

Federal state level

All affected German federal states promote the rehabilitation and development of mining cities and regions by general or specific measures. Eastern Germany was able to make use of the experience of Western German states. North Rhine-Westphalia, in which the Ruhr Coal District is located, is the forerunner in handling the problems of a declining mining sector. The focus of activities there has shifted over time from the expansion of infrastructure (highways, universities), to regionalised structural policy, and finally to the support of innovative networks, environmental quality and culture (Heinze, Hilbert et al., 1996). Almost all these measures have been similarly applied in Eastern Germany. One particular instrument, the International Building Exhibition, will be outlined here as a good example of the transfer of experience from the west to the east.

The International Building Exhibition (IBA) Emscher Park, organised by the federal state of Northrhine-Westphalia from 1989 to 1999, raised international interest as a new way of dealing with regional policy and planning. The spatial focus was on the centre of the Ruhr District, this being the area most affected by the decline of coal mining and steel production. With a cash flow of about 2.5 billion euros (Klapperich, Azzam, 2001) the IBA was groundbreaking at an institutional level and in respect of its activities. In order to realize innovations in an environment which lacked innovative talent (Ganser, Siebel, Sieverts, 1993; Häußermann, Siebel, 1994) the IBA was planned as a project to

attract publicity. With the IBA Planning Association, the government placed a new actor in the region. 120 projects, selected by competition, were implemented by decentralised, project-orientated initiators and networks. The restructuring of abandoned industrial sites was infused by the vision of interlinking economic, ecological and socio-cultural goals. IBA projects dealt, for example, with the creation of a landscape park, regulation of the Emscher river, establishment of industrial and technology centres (located within the park), urban and social impulses for development districts, refurbishment and new construction of residential areas, industrial culture, tourism and art (BBR, 1999).

The IBA Emscher Park was so successful that the basic approach was applied twice more, albeit with significantly lower budgets. Firstly, the EXPO 2000 Corresponding Region Saxony-Anhalt covered the devastated brown coal, power and industrial chemical area of Dessau – Bitterfeld/Wolfen – Wittenberg. The large-scale project was connected to the World Exposition 2000 in Hannover and ran from 1995 to 2000. This less densely populated area was infamous as an Eastern German area of ecological disaster. A total of 34 projects helped to transform the region. A special factor in the success was the involvement of the Bauhaus Dessau.

Secondly, the current IBA Fürst Pückler Land in Brandenburg and Saxony (2000-2010) is contributing to the restructuring of the former brown coal and energy district of Lusatia. IBA supports rehabilitation and development in this sparsely populated region with 24 projects, mainly in the fields of tourism, recreation and culture. The projects include an industrial park, refurbishment of a garden city, a show mine with gigantic conveyor bridge, the Fürst Pückler Park and a route linking energy monuments. One of the most significant projects is a so-called Lake District Lusatia. With the rehabilitation and flooding of 15 former opencast pits and connection of nine lakes by means of navigable canals, a landscape of lakes is being created in Europe's biggest landscape construction site (Seifert, 2004). The end result will be a new holiday and recreation area (Fig. 3).

Apart from IBAs there are also some other interesting mining-related initiatives and programmes to be mentioned. With the State Development Company (LEG), the federal state of Thuringia has created an actor for development and a motor for the conversion of abandoned industrial and military sites. The LEG primarily uses general public funds (e.g. from regional policy or employment promotion legislation) to work as a classical actor for development under the direction of respective municipalities. The rehabilitation and development measures are paid for by selling off the rehabilitated areas.

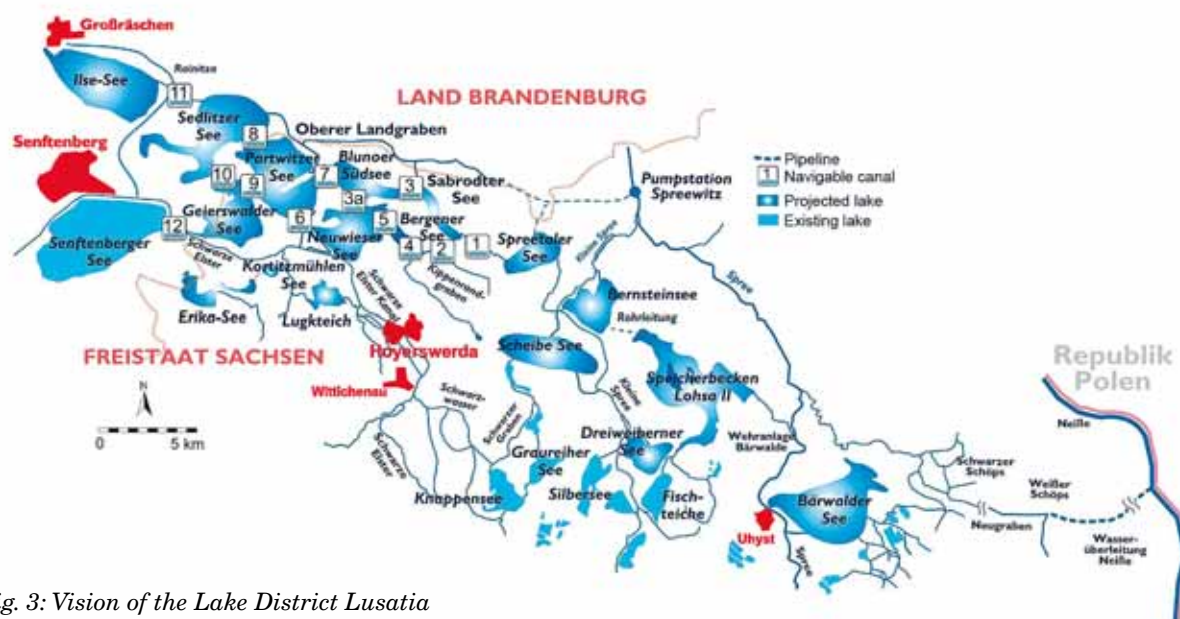


Fig. 3: Vision of the Lake District Lusatia
source: LMBV; modified by the authors

The federal planning instrument of Rehabilitation and Development Areas is significant, particularly from the perspective of regional planning. By national law the federal states are permitted to zone areas requiring a large degree of rehabilitation and development. The state of Saxony uses this instrument for its mining regions. A good example is the “Re-development Area of Uranium Mining” around Johanngeorgenstadt in the south west of Saxony which is not subject to the rehabilitation projects of Wismut Ltd. This zoning allows the state government – in cooperation with the affected municipalities – to deal with local problems in a comprehensive way (Wirth, Müller, Rathmann, 2003).

Independent of this, the federal state of Saxony has introduced a Programme to Develop Disadvantaged Urban Districts and Brownfields, based on an integrative approach. This flexible instrument to support the redevelopment activities of municipalities and private owners/investors is financed at 75% from EU structural funds.

Regional level

On the one hand, there are initiatives such as IBA (International Building Exhibition), primarily forming regions using a top-down approach. On the other hand, an increasing number of regions are being constituted by freely cooperating municipalities. Municipalities can in this way increase their potentials and their scope for action. The region of Leipzig (Saxony) provides a good example. Previously this area suffered a lack of recreational space due to the mining activities of the Central-German Brown-Coal-District. Under the name Green Belt of Leipzig, the surrounding municipalities and two counties work together with the city authorities

in Leipzig, in an only lightly formalised institutional framework, to significantly improve the quality of the landscape (Leimbrock, Lintz, 2003). For example the south of the city is being transformed into an attractive lake district containing the Eastern Germany’s biggest leisure park. Many organisations, associations, clubs and individual citizens from the region are involved in this concept. The Southern Space of Leipzig (Südraum Leipzig) focuses on the whole southern area of the city. Here a landscape formed by water, parks and technologies is coming into being. Seven major development projects were formulated for this area, including the reuse of a briquette factory, creation of a technology centre and redevelopment of villages. A special-purpose federation of municipalities and an economic association together established a limited company as an implementing instrument for ideas and projects. The collaboration in the Green Belt and in the Südraum Leipzig is promoted by a regional cooperation programme of the state of Saxony.

Another example of successful regional cooperation is the Ferropolis project in Gräfenhainichen (the Central-German Brown-Coal-District in Saxony-Anhalt) which, in the framework of EXPO 2000 Corresponding Region Saxony-Anhalt (Kegler, 2005; Fig. 4), was supported by a multiplicity of actors including the town of Gräfenhainichen and the county of Wittenberg.

Local level

Local authorities play a key role in the rehabilitation and development of abandoned mining sites. Firstly, the requirements for revitalisation are best known on site. Secondly, local authorities can determine basic conditions on their own, e.g. by town development



Fig. 4: Ferropolis – the “city of iron”. A former brown coal mining area near Leipzig (Photo: Ferropolis Ltd.)

concepts or by urban land-use planning (preparatory land-use plans, binding land-use plans). In the end the solution of problems depends on the initiative of municipalities: they have to develop ideas and bring together different financial sources also taking in stimuli from higher political and administrative levels. A key factor for success is the ability of the municipalities to marry private and public actors at relevant levels (e.g. administrative units, companies, private individuals, associations). Finally the municipalities have to manage the implementation of the measures. Environmental, urban and socio-economic development should be linked in this process.

With favourable initial conditions, towns and cities may be able to boast outstanding achievements, such as displayed by the Saxon horticultural show 1999 in Zittau and Olbersdorf. A new recreation area was constructed on the site of an open cast pit. Another good example is provided by the municipality of Bad Schlema (Saxony). After the devastation of the town and its surroundings by uranium mining, it has been able to rebuild on its former success as a radium spa. The rehabilitation measures by the state-owned company Wismut Ltd. included decontamination of devastated land to aid restructuring of the entire land- and townscape of the new spa centre (Fig. 5). The former uranium mining city of Ronneburg (Thuringia) is currently preparing to host the German Horticultural Show in 2007. This will provide the region with a new identity. The image Ronneburg intends to create is of a small town, surrounded by a lush countryside, located beside the higher-order centre of Gera, with a heterogeneous economic structure and a friendly residential environment. Both Schlema and Ronneburg were involved in so-called decentralised

projects for rehabilitation at the EXPO 2000 in Hannover (Wirth, 2005). These examples also indicate the importance of large-scale projects as a stimulus for urban and regional development (Leimbrock, Lintz, 2003).

5. The Eastern German way – a conclusion

Mining and basic industry played an important role in the late socialist period of Eastern Germany. These sectors were central to economic policy and – as we know today – the impact on the environment was destructive. The political changes of 1989 brought with them a greatly reduced emphasis on mining and related industries. Two conspicuous features characterise this change: an extremely short time of transition and enormous efforts made by the state to slow-down the decline. This combination of “supershock” plus “strong state support” describes the Eastern German path of structural change in mining regions. Symbolic for the path chosen are the rehabilitation and development approaches in the areas of former brown coal and uranium ore mining. In both cases state programmes costing billions of euros introduced rehabilitation measures and helped to form new economic perspectives. State owned companies were founded to manage the long-term tasks. What are the results in Eastern Germany after 15 years of implementation?

In most of the affected regions specific strategies have been created to tackle the socio-economic and ecological problems. After 40 years of uranium mining a radium spa has been rebuilt in Bad Schlema. Ronneburg – the main town of another uranium mining area – will host



Fig. 5: Newly built spa gardens in Bad Schlemka. Slag-heaps left after uranium mining can be seen in the background (Photo: M. Bose)

the German horticultural show in 2007. In Brandenburg and Saxony an International Building Exhibition “Fürst Pückler Land” was launched in 2000 and will run until 2010. The former Lusatian Brown Coal District is nicknamed the biggest landscape construction site in Europe. The flooding of former open pits is helping to form lake districts in Lusatia and in the south of Leipzig. The town of Gräfenhainichen, aptly named “Ferropolis”, or “city of iron”, has found a role as an event and creative centre in the former brown coal area. However, despite many positive examples of structural change, the problems of mining regions are far from being solved. Key investments in the affected regions are rare, unemployment rate is above average (in some mining regions amounting to 25%), the rate of migration is high, many people and political stakeholders have become resigned and lethargic. What does this mean? After 15 years of structural change there has been substantial progress in environmental conditions. The rehabilitation of mining sites is at an advanced stage. Many federal, regional and local initiatives are in place to strengthen the situation in the mining regions. Yet despite these efforts, the decline of most of the former mining sites has not been reversed, let alone stopped.

What can generally be seen is that under equal framework conditions the results of development processes may be very different. To make the differences clearer two extreme development paths can be described (Wirth, 2005). On the one hand we can pinpoint regions with highly motivated actors. In an early phase of change they created development concepts. They looked

for strong partners (private and public) to implement the concepts. As a rule they used endogenous regional potentials, often adapting the mining-related potentials to create socio-economic alternatives. The result is a slowing down of the decline. As the region is active, innovative and creative, it becomes attractive in a new way. On the other hand we can point to towns and regions with low initiatives, waiting for a “big investor” or a state initiative to come along. Development concepts do not identify the specific potentials and the stakeholders are not able to implement their ideas. In these cases the decline continues apace.

All things considered, what can we learn from the “Eastern German way” of structural change in mining regions? Firstly, we can see that the large mining regions in former socialist states are not able to manage the structural change by themselves. An intensive government support is necessary to overcome the legacies of mining and to remove obstacles to new development. Where this help is not forthcoming it will scarcely be possible to arrest the decline. Secondly, even where the strong government support assumes responsibility for rehabilitation on a big scale, new development approaches do not automatically emerge. A further condition is the close cooperation between government institutions and regions/municipalities. Thirdly, the success of development programmes depends significantly on local and regional stakeholders, on the networks of actors and developmental institutions. Regions with creative networks generally do better than those without. Some municipalities in Eastern

Germany have been relatively successful without large state benefits. Despite their small budgets they have tried to implement small projects using endogenous potentials. Where financial assistance is scarce, they show alternative solutions to tackle the decline.

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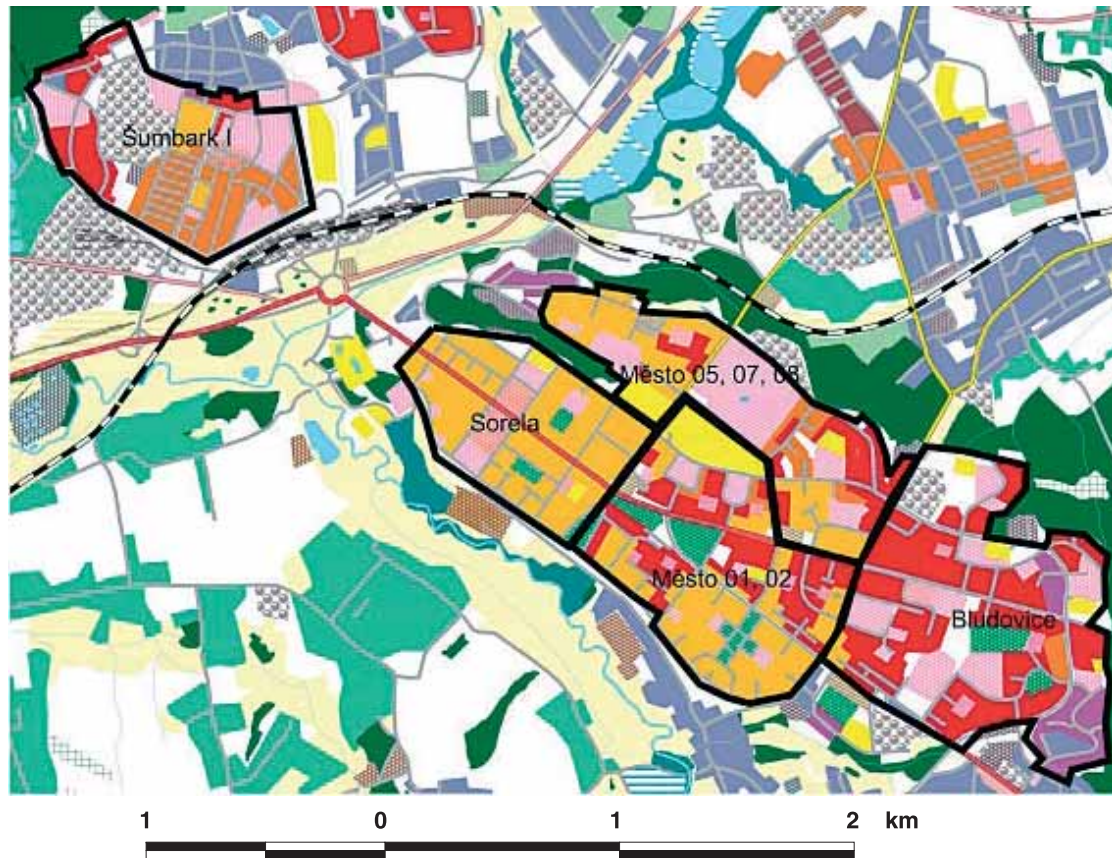
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Habitable areas

- prefab housing estates of five and more storeys
- prefab housing estates of max. four storeys
- linear brick housing estates of dwelling houses
- linear development of brick dwelling houses arranged in internal blocks
- mixed pattern of habitable estates
- habitable estates of (mainly) villa character
- habitable estates of villa character - new
- working class colonies
- dispersion pattern

Areas of services

- core
- community services
- retail and services
- sports grounds
- urban greenery
- garages
- summer houses
- infrastructure
- military objects
- industrial and traffic operations, business areas
- other intravillan

Areas with vegetation

- forest
- floodplain forest
- orchards and gardens
- meadow
- field
- woody barrens
- herbaceous barrens on dumps
- barrens in place of fields and meadows
- wet and water-logged barrens
- barrens without vegetation
- newly shed dumps without vegetation
- mixed forest-park recultivation
- forest recultivation
- thickets and clearcuts

Traffic and other lines

- railways
- 1st class roads
- 2nd class roads
- 3rd class roads
- rail track
- local roads
- housing estate limits

*Fig. 15: Categorization of Havířov areas in current use
Source: Mokoř, 1999 and own field research 2002*

Illustration to E. Kallabová et J. Bílek's paper



Fig. 5: Workers' colony in the outskirts of Olová – situation until 2004 (Photo O. Mikulík)



Fig. 6: The same space in the outskirts of Orlová after the workers' colony demolition (cp. Fig. 5) – situation in 2005 (Photo O. Mikulík)

Illustration to J. Lacina's paper