



COMMITTEE OF RURAL AREAS
POLISH GEOGRAPHICAL SOCIETY



STANISLAW LESZCZYCKI
INSTITUTE OF GEOGRAPHY AND SPATIAL ORGANIZATION
POLISH ACADEMY OF SCIENCES

Local and Regional Development – challenges and policy issues

Editor:
Jerzy BAŃSKI



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POLSKIE TOWARZYSTWO GEOGRAFICZNE

INSTYTUT GEOGRAFII I PRZESTRZENNEGO ZAGOSPODAROWANIA
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Contents

Introduction.....	7
Carmen VÁZQUEZ VARELA, José María MARTÍNEZ NAVARRO – – Local development and social capital: findings and insights in Castilla – La Mancha region (Spain).....	9
Konrad Ł. CZAPIEWSKI – Intraregional peripheries of economic development – a case study of Mazovia Region in Poland.....	33
Vilém PECHANEC, Jaroslav BURIAN, Helena KILIANOVÁ, Vít VOŽENÍLEK, Jana SVOBODOVÁ – A participatory approach to spatial and environmental planning in different national perspectives	47
Michael SOFER, Levia APPLEBAUM – Social and economic inequality in the rural space of Israel.....	75
Suman SAO – Policies for the development of tribal stone work industry: case study in eastern India	95
Jaromír KOLEJKA – Post-industrial landscape – return to rural affairs?	113
David LÓPEZ-CARR, Daniel ERVIN – A Geriatric Fountain of Youth in the Caucasus or Spurious Census Data: Spooning through the Yogurt Myth.....	135
Rahman NURKOVIĆ – Socio-economic transformation of Bosnia and Herzegovina.....	149

Introduction

Recent years have witnessed waves of peculiar protest against globalization and its effects – such as copying the same patterns, disintegration, deterritorialization and unification – which has been manifested in the form of spontaneous antiglobalist and alterglobalist social movements that advocate and extol solidarity, humanism and local values. These social movements do not necessarily negate all the globalization processes, but expect these to take on a more human face as well as to take account of diversity in a local dimension, i.e. to be in harmony with the principle: “think globally, act locally”. As a result, there has been recently an increasing interest in local and regional development that, to a larger extent than before, takes into consideration a specific qualities of the said areas .

In summer 2010 Israel hosted the Regional Conference of International Geographical Union under the title *Bridging Diversity in a Global World* where a debate took place related to the subject of local and regional development. A special session of the Local Development Committee was devoted to that subject matter, and it was decided to publish in the current volume the most interesting papers presented there. The array of papers authored by scholars that represent research institutions from Bosnia and Herzegovina, Czech Republic, India, Israel, Poland, Spain and USA offers a variety of insight into the problems revolving around local and regional development. Of particular value here is their multifaceted approach, since they have a social, economic, environmental and cultural dimension.

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Local development and social capital: findings and insights in Castilla – – La Mancha region (Spain)

Abstract: In the context of the deprived rural regions, the potential of exploring the relation between social capital and processes of development seems to be relevant, not necessarily because in the rural territories this relation is clearer or is translated in more efficient results for the development, but because the social capital acquires an unsuspected value due to the deficiency or nonexistence of other factors of territorial competitiveness (economic capital, communication infrastructures, human capital, etc.).

This contribution presents the results of a research project financed and coordinated at regional scale in that we have tried to identify and analyze the social relations of local inhabitants through direct indicators in order to define the framework that features the productive activities in different counties of the Cuenca's province, located within the Castilla-La Mancha region.

Key words: social capital, local development, LEADER Initiative, Cuenca, Castilla-La Mancha.

About the concept of "social capital"

The concept of "social capital" is fashionable and has been installed in government circles, bureaucracy and academics as an important element of discussion and criticism. Undoubtedly, the interest that social capital raises currently lies in its potential contribution to improved performance of economic activity, and hence economic development processes in the territory.

In the field of contemporary sociology it began, during the eighties of last century, the first systematic analysis of the concept of social capital with

the contributions of Pierre Bourdieu (1980, 1983, 1985) in France and James Coleman (1987, 2000, 2001) in England and the United States. Later in the nineties, the concept is extended by the contributions of Putnam (1993a, b, 2000, 2001) within the group of neo-institutionalists, the critical view of Portes (1999), as well as the concerns of international institutions as the World Bank, the Inter-American Development Bank and United Nations Program for Development, which have considered social capital from an economic approach that improves the lives of the poor.

It is possible to address the various meanings of social capital in two dimensions or principal axes. The first one understands it as a specific capacity to mobilize resources from a group, and the second refers to the availability of networks of social relations (Atria and Siles 2003). Thus, the social capital of a social group could be understood as the ability to mobilize effectively, productively and for the benefit of the whole, the associated resources that lie in the different social networks to which the group members gain admittance. Associated resources important to gauge the social capital of a group or community would be the relationship of trust, reciprocity and cooperation.

Underlying these debates is the classical sociological question of whether it is society or community - the broad rules and processes that bring groups and individuals together into an overarching social order, versus the bonds between individuals into smaller groups - which is most important to social and economic development (Storper 2005). Putnam (2000) argues that there are two components of social capital: "bonding" among similar types of persons (based on class, ethnicity, background, interests) and "bridging" between different such groups, or what he terms "people unlike ourselves". Bonding, in other words, is an operational version of community, and bridging that of society. Voluntary participation and civic engagement are strongest where there is a lot of bonding or group membership; but such group membership is strongest in more homogeneous societies, according to Putnam. So, even though he claims that there are two components to social capital, bonding is negatively correlated with bridging, and what he calls "high social capital places" are really just places with a lot of one component, bonding. Meanwhile Coleman (2000) attempted to deal with this issue by distinguishing "primordial" from organized social capital. The value of these two key modifications of Putnam and Coleman emerges most clearly when we consider the relationship between groups and economic development.

On the other hand, following the arguments of Storper (2005), the question must be reframed, in two ways: "One is to hold that bonding and bridging have causes that are partially independent of formal institutional architecture and political opportunity structures, and that they underlie the effectiveness of formal institutions. Another is to see bonding and bridging as in-

teractive, mutually transformative processes” (Storper 2005, p. 42). This author states that we can see that society and community, or more precisely bridging and bonding, have both been argued to make potentially positive contributions to economic development, and groups have also been shown to have strong potentially negative effects. Developmental coalitions emerge from bridging between groups, but what is to be bridged and how bridging affects development is strongly shaped by the underlying patterns of bonding. If bonding enhances the potential for autonomy and builds the capacities of actors to find a place in the economy, bridging tends to limit their potential opportunity and make them more responsible in the exercise of their autonomy. Society and community shape each other, but paradoxically they do so because of their independence from one another; each consists of different kinds of social practices and interactions, constituted at different spatial-temporal scales.

The breadth of the concept of social capital that this brief introduction shows comes from the different conceptions of the functioning of society as well as the different disciplinary perspectives used to analyze it, i.e., from its nature of interdisciplinary paradigm. Also, from the perspective of international institutions it is considered and valued the knowledge of the relationships between economic actors and between their organizations (formal or informal) to explain the efficiency of economic and social activities.

None of this has given rise to a lively theoretical and methodological debate about the concept of social capital (Portes and Landolt 1996, Rothstein and Stolle 2002); in fact, already among the critical foundation of the concept discourse emphasized the vagueness and confusion which had been treated, qualifying as tautology the fact of explaining the social capital as both cause and effect. Among the main analytical alert highlights the expansion of the uses of the concept of social capital from individuals and groups to communities and nations (Portes 1999). Many authors note the existence of inequalities in social capital endowments and their use to maintain their positions of power, for which they take into account the political conflict and internal conflict in communities.

As Bourdieu (1985) already stressed, social capital is not equally distributed in society, which is due to social divisions (education level and socio-economic status), or to differences ascribed (gender and ethnicity) or to geographical contexts (urban-rural) (Sunkel 2003). As also noted by Osti (2000), Putnam’s perspective, which considers the cultural and civic institutions as positive elements, conflicts with Gramsci’s (1971) view that describes them as instruments of class rule, of which one ought to get rid, looking for a more just society. Strikingly, in any event, most of the literature on social capital ignores gender relations and focuses exclusively on male networks without separately analyzing the major differences that occur between male and female

networks, having in mind they have unequal endowments of social capital (Shortall 2008). Problems of continuity of social capital (accumulation through time) are also noted, it discusses whether social capital is a flow (Lechner 2000) or a stock (Gray 2000); it mentions about the factor that makes social capital able to be manipulated through public policies, it warns about the normativity of social capital, its positive uses, but especially the negative ones (Gray 2000). We must not forget that the social capital the literature emphasizes, in general, has positive dimensions, but there are also negative consequences, including exclusion of outsiders, excessive claims on group members, restrictions on individual freedom and downward levelling norms, without forgetting that networks could become rent-seekers depleting the public treasury and inhibiting economic growth. It also discusses the feasibility of generating or rebuilding social capital (Durstun 2000), which points to the distinction between constant capital and variable capital (Salazar 1998), but above all, there are serious difficulties in measuring social capital. Some authors assert that, although it can be measured, only by chance these measures will meet the basic requirements of scientific rigor (Fine 2001); after all we should not forget that social capital has an important qualitative dimension, hardly comprehensible by traditional quantitative measurements.

Despite all the difficulties described, the social capital approach would provide a vantage point to achieve the goal of social equity in development policies. Beyond the theoretical and methodological inaccuracies, the main contribution of the concept of social capital is that it rescues the impact of socio-cultural variables in the development process and highlights the fact that certain norms, values and practices that are part of the local community heritage are resources that can be stimulated to strengthen the social partners and give sustainability to government intervention (Miranda and Monzó 2003), eradicating purely technocratic approaches of social policies and incorporating cultural and historical dimensions of communities, organizations and the subjectivity of social actors.

It seems to be widely accepted that some characteristics of social relations, the social confidence, the institutions, or the social rules accepted by a community will help to explain whether a territory should obtain more or less satisfactory economic results and development dynamics. The practice has demonstrated that the market and its laws alone cannot explain the different processes and economic results in the territories; different factors of social, cultural, and environmental character must be taken into account, having in mind that they are able to exert great influence as the first ones. However, it also must be mentioned that no process trying to increase or enhance the social capital can replace social policies designed to achieve a more integrated society on the basis of a sound economy and the redistribution of resources

(Arriagada 2003). It should be necessary to warn against the risk of moving the weight of effort from the state to the individuals themselves in search of better living conditions (Fine 1999), ignoring the consequences of public policies in place and the possibilities of expanding economic resources and others in achieving the objectives of social and territorial cohesion. In fact, some scholars (Law and Mooney 2006) describe the hegemony of social capital as a veritable panacea for social de-composition from the political left in the work of Pierre Bourdieu to the middling conservatism of US thinkers such as Coleman and Putnam and argue that, under the veneer of making social relations central to public discourse, social capital obscures the extent to which social life is being made to submit to capital accumulation.

If we focus on the context of deprived rural regions, the potential of exploring the relation between social capital and processes of development seems to be still significant, not necessarily because in the rural territories this relation is clearer or is translated in more efficient results for the development, but because the social capital acquires an unsuspected value due to the deficiency or non-existence of other factors of territorial competitiveness (economic capital, communication infrastructures, human capital, etc.).

Moreover, we should remember that social capital has been identified by Putnam with those “features of social organization such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions” (Putnam 1993a, p. 167). On the other side, for the World Bank social capital “refers to the internal social and cultural coherence of society, “the norms and values that govern interactions among people and the institutions in which they are embedded. Social capital is the glue that holds societies together and without which there can be no economic growth or human wellbeing.” (Grootaert and Bastelaer 2001, p. 5). If we accept these premises, this could have implications for the practice of endogenous rural development model, namely, (a) the long time horizon over which social capital is built, if it can be brought about intentionally, and (b) the importance of focusing on social development, norms and networks of civic engagement, rather than the economic benefit and job creation as the basis of economic performance. Nevertheless, other scholars disagree with Putnam and assess that social capital relates to both social inclusion and civic engagement: “social capital refers to dense networks of civic engagement that produce a capacity for trust, reciprocity and co-operation (‘social capital’) which in turn leads to a healthy economy and a healthy democracy” (Shortall 2008, p. 455).

In the last decades the socio-productive systems and the labour relations attached have evolved towards increasingly complex contexts. This contribution presents the results of a research project financed and coordinated at a re-

gional scale in which we have tried to identify and analyze the social relations of local inhabitants through direct indicators in order to define the framework that features the productive activities. For this purpose we have focused on five counties of Castilla-La Mancha region, all belonging to the Cuenca's province. Their differences and similarities within the framework of common development structures will help to highlight how qualitative dimensions play a key role in the evolution and development of territories.

Social capital and endogenous rural development

Endogenous development as a process that contributes to building the resilience of the territories to the broad forces of global competition, fiscal crisis or social exclusion, has been repeatedly discussed in recent academic literature (Ray 1999a, b; Shucksmith 2000). On the other hand, the use of the concept in the framework of the LEADER initiative has been linked to the responsiveness of the whole population understood as a distinct agent of individuals. To achieve this goal rural development policies have tried to improve the skills of the community, encourage new forms of organization, to stimulate new ways of linking groups and public institutions and to provide individuals and organizations to achieve greater flexibility and adaptability to changing situations. In practice this means supporting *rural community development*—understood as an approach to working with and to building the capacity of individuals and groups within their communities. This approach seeks to strengthen communities through enhancing people's confidence, knowledge and skills, and their ability to work together. In the EU, this type of approach has been piloted successfully under the community initiative, LEADER, and it is important that this approach is maintained by DG Agriculture after 2007 under the single rural development fund. In other words, the essence of LEADER could be understood in part as the creation of various forms of social capital that could benefit the whole community.

Following this argument, and as stated by Cohen (1985), the notion of community has enjoyed a long rhetorical significance, a fact that has positive implications but also its risks. The technicians who carry out their work in the interests of rural development may have sought to encourage and develop their symbolic building, in fact, Ray (1999b) argues that this symbolic construction is the essence of the LEADER initiative, but it is vital to recognize and manage actual conflicting interests that exist within these “communities” symbolically built or “cultural territories” because its concealment can contribute to exclusion (Shucksmith 2000).

It is supposed that, from the EU Commission standpoint, the intention of the LEADER Initiative is to activate the capacity-building of local actors through the activation of social capital, therefore local interpreters of the programme should develop a cooperative attitude, a high level of mutual trust, and a shared determination to work on common objectives. In fact, some scholars conceive the LEADER as a programme addressing the issue of rural development through the creation and use of social capital as a public-owned key resource enabling sustainable development (Shucksmith 2000). However, in practice most of the LEADER groups in Europe have pursued the creation of employment and quantifiable economic results while only a minority has focused on “processual” objectives. The truth is that, although “collective” social capital could be considered a framework objective of the LEADER initiative, the national, regional and European institutions did not help it with specific steps. The time scales have been too limited, the monitoring and advising criteria have been financial and tangible results-oriented rather than concerned about the process of building social capital (Árnason et al. 2009).

So far, more frequent analysis of social capital have focused on the characteristics of relations between actors and structures (Hernández and Camarero 2005, Lazkano et al. 2005, Aguirre and Pinto 2006, Galán et al. 2007) and how they generate certain “benefits” (social capital) to the community, group or actor who participates in them. Extensive surveys (Besser 2009, Pérez et al. 2008) and interviews in depth, which seeks information on social networks, levels of trust, and norms and standards of community behaviour, are the most widely methodology used by most scholars of social capital in their approach to different study objects. The World Bank has addressed the measurement of social capital in developing countries (Narayan and Pritchett 1996, Narayan and Cassidy 2001), while in developed countries there have been university scholars who have carried out studies as far away as Australia (Falk and Kilpatrick 2000); Cooke and Clifton (2002) have focused on small and medium enterprises in the UK, Svendsen and Svendsen (2000, 2004) have studied the relationship between social capital and the Danish cooperative movement, the French case and the relation between social capital and rural development has been analysed by Callois (2004) and Callois and Angeon (2006), and Lee et al. (2005) have analyzed the social capital in rural areas of six countries of the European Union within the European project RESTRIM (*Restructuring in Marginal Rural Areas*).

In the RESTRIM project, one of the aspects developed within the research has been the role of social capital and identity in relation to rural development and the relations between the two former. Among their findings researchers underline the fact that not always can be assumed that publicly funded

projects are precursors of “local engagement”, however, the key factor seems to be the strength of existing local democracy. Social capital cannot be thought of as a property of closed and bounded rural communities, which merely perpetuates the myths of rurality as a preserve of old traditions. And yet, on the other hand, it is very much linked to ideas of place and identity. Where social capital brings positive benefits, it is likely to be associated with a plurality of cultural identities, a mixing and interweaving of spatial scales (through, for example, diverse marketing strategies), and strong links to the multiple historical themes that characterise European rural areas (Árnason et al. 2009).

Among the main findings of the research scholars highlight that when a community is poor of social capital, the state should supply a better level of public services in order to create a climate of trust in collective action. It is only within this climate that the community will invest in the building of social capital; and it is only on the basis of high levels of social capital that the local community can plan and implement effective rural policies. Within this framework, the investment on the building of social capital becomes a priority of public action.

We agree with the vision of some scholars who argue that a crucial problem dealing with the measurement of social capital is that most empirical studies have measured it through indirect indicators (such as membership of organizations, voter turnout, crime rates, volunteering, blood donation, etc.) mainly related to the outcome of social capital rather than its core components (Nardone et al. 2010). Contributions trying to offer a suitable method for the measurement of social capital in the context of EU rural policies using direct indicators are still few (Nardone et al. 2010) and need further elaboration using qualitative methods. Moreover, deeper theoretical analysis would be needed of EU rural development programmes that were blamed by Shortall (2008) for misinterpreting the social processes of participation and consequently labelling some groups as socially excluded when they are not. The same author assesses this is partly because of the interchangeable and confused use of the concepts such as social inclusion, social capital and civic engagement, and partly because of the presumption that to participate is the default position.

In the Spanish case empirical contributions (Pérez et al. 2008), made mostly from sociology and economics (Casanueva et al. 2006, García and Parra 2008, Merinero 2008, Rubio and Mazón 2009), are still too few and remarkably focused on the Andalusian case (Morales 2002, Garrido and Moyano 2002, Moyano 2005, 2006), with results very uneven and difficult to extrapolate to other territories, although the first contributions from geography begin to appear on the academic scene devoted to different Spanish regions

like Andalucía, Extremadura, Comunidad Valenciana, Cataluña or Castilla-La Mancha (Pallarés 2003, Casellas and Pallarés 2005, Pitarch 2005, Buciega 2005, Pérez and Monago 2005, Márquez 2006, Márquez and Foronda 2005, García and Aparicio 2007, Martínez and Vázquez 2007, Márquez and Galindo 2009).

The research: aims and design

This contribution presents the first results of a research project¹ financed at regional scale in which we have tried to identify and analyze the social relations that frame the productive activities in order to understand the performance of European community-based initiatives as well as the re-shaping of local socio-productive systems in a new economic context. Facing the lack of empirical studies on the existence and characteristics of social capital in our region, our research proposal provides the collection, elaboration and analysis of quantitative and qualitative data, geo-referred at municipal scale, by means of the withdrawal of the quantitative available information, the accomplishment of surveys and in depth-interviews, and the work-meetings with groups of experts. All this will allow us to generate a system of cartography and final databases that make possible to construct a Knowledge Base and a website of results where any researcher, expert or technician of the administration could consult the relational database, the thematic cartography or the used methodology. In other words, it aspires to be an instrument at the moment of contributing to the design of strategies and policies for the sustainable socio-economic development devoted to rural disadvantaged areas.

For the purpose of this contribution, we have selected one of the five provinces analysed, the province of Cuenca (Figure 1), extending over an area of 17,141 km² and a population density in 2009 of 12.68 inhabitants/km². The study area has been articulated by Five Local Action Groups (Figure 2), totaling 238 *rural municipalities* and about 161,262 *inhabitants*, according to the latest approved municipal census for the year 2009, based on which we have selected a municipal-wide sampling of 565 questionnaires and 50 in-depth interviews with a cross check to ensure the territorial cohesion of results. The Cuenca capital city (55,866 inhabitants in 2009) was excluded from Leader funds.

¹ The research project *INDICASO. Territorial Database of raw data and indicators devoted to social capital. Geo-spatial System of dynamic analysis for Castilla-La Mancha's Rural Habitat*. (Reference: PAI08 – 0103 – 0233) has been funded since 2007 by the Regional Department of Education and Sciences of Castilla-La Mancha Autonomous region.

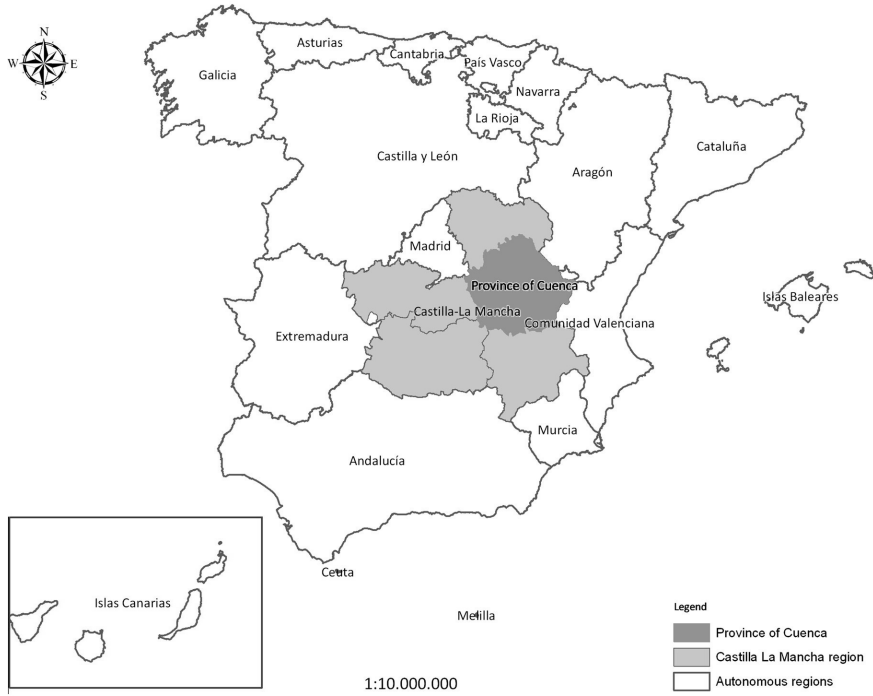


Figure 1. Location of the province of Cuenca in Spain



Figure 2. The five Local Action Groups in the province of Cuenca, including municipal division

Basically, we attempted to identify social capital levels from levels of *trust*, *shared norms*, the *social network characteristics*, and levels of *good citizenship*. After this first identification we sought to establish correlations with the levels of development of each region at micro and medium scales, having in mind other dimensions of “human capital” (population distribution, education levels, socio-economic and labor structure, immigrants), “cultural capital” (cultural heritage as valued and perceived by local population), and “physical capital” (constraints and opportunities, infrastructure development, availability and accessibility of services, and quality/preservation of natural environment).

Research stages accomplished:

- Demographic and socio-economic analysis from the data sources managed in the first part of the research.
- Analysis and classification of Economic Activities.
- Study and treatment of the associative network and elaboration of a Directory of associative and cooperative network for each county.
- Telephone questionnaire on social capital to a representative sample of residents (565 people) proportionally distributed in each and every one of the municipalities of Cuenca province.
- First preliminary results (partly included in this contribution).

Territorial overview

Since the implementation of the LEADER + Initiative, from 2000 up to 2006, Cuenca province was divided into five Local Action Groups (LAG's), even if only four of them fit more or less counties with a clear geographical identity. Two of these LAG's managed LEADER programs (Prodesa and Adiman) and the other three (Ceder Alcarria, Adi Zancara, and Adesiman) did the same with PRODER ones. The *Operational Programme for Development and Economic Diversification* PRODER was a rural development program co-financed by the European Union, designed and implemented in Spain and applied in lagging rural areas not benefiting from the LEADER initiative since the year 1996. The goal was to go for sustainable rural development and territorial multidisciplinary and multisectoral dimension of a large number of territories, following the European Rural Development Conference held in Cork (Ireland) in 1996.

Stopping rural depopulation is the biggest challenge facing Cuenca (Table 1). A large part of the province suffers from problems of depopulation and ageing of population, mainly concentrated in the north side (Ceder Alcarria and Prodesa), due to poor living conditions resulting from few economic

alternatives given the topography, climate or poor infrastructures and facilities, among other causes. The primary sector (agriculture, hunting and forestry) still constitutes the main source for maintaining population and employment in rural areas (Table 2). However, as in all rural economies of Europe, there is a growing importance of non-farm activities with rural and farm households more often engaged in several activities on and off the farm in order to diversify their income, although the share of diversification of economic activity in agricultural households is still low.

The southern half of the province (Adiman, Adi Zánacara and Adesiman) presents economic dynamics rates significantly higher than the northern half. This may be due to both physical reasons (a flat built on a sedimentary basin, greater agrological ability, etc.) and the fact of having a transport infrastructure network reasonably developed, which historically has favoured greater concentrations of population and a much more dynamic and resilient local productive system, mainly in the southeast (Table 2). However, from the standpoint of rural development policies the northern territories (a mid-mountain region in the case of Prodesse, and a county articulated by moors, hills and plains in the case of Ceder Alcarria) were the most favoured by its implementation and continuity, as incorporated during the first phase of the LEADER I Initiative (1991–1994), while the three southernmost only grew from LEADER II (1995–1999).

Findings and discussion

We will try to discuss in this section the social capital found among the local inhabitants of the five counties/local action groups of Cuenca's province at a specific moment (telephone questionnaires were conducted between May and October 2008). The dynamic process of formation of social capital in every county is not addressed. We are aware that some experts blame the perspective of social capital for focusing mainly on the relational and identity repertoires of actors and groups assumed to be static and independent of contingent definitions (Magnani and Struffi 2009), nevertheless we will try to overcome this obstacle by semi-structured in-depth interviews to a "positive strategic sample" and a small sample of local entrepreneurs, followed by focus group discussions, in order to obtain useful information about the socio-economic processes as well as processes related to business network in the five selected counties.

Table 1. Territorial data and demographic structure by county in 2009

Counties/ Local Action Groups	Population evolution by county between 1950 and 2009			Territorial Data			Population structure						
	1950	2009	Evolution 1950– 2009 (1950 = 100)	Number of municipalities	Surface (km ²)	Population density	Total population (2009)	% males	% females	% population <20 years old	% population between 20 and 40 years old	% population between 40 and 60 years old	% population >60 years old
ADIMAN	61,889	42,867	69.3	33	2,603	15.1	42,867	50.8	49.2	21.2	29.1	21.5	28.2
ADI-ZĂNCARA	66,870	46,031	68.8	33	2,773	15.9	46,031	50.3	49.7	20.0	28.3	21.8	29.9
ADESIMAN	73,876	42,452	57.5	56	3,553	10.8	42,452	50.1	49.9	18.9	27.6	21.6	31.8
CEDER-ALCARRIA	42,565	11,487	27.0	42	2,479	4.8	11,487	50.9	49.1	13.6	22.2	19.0	45.2
PRODESE	53,776	17,727	33.0	72	4,702	4.2	17,727	51.7	48.3	14.1	22.9	21.2	41.8

Source: Census Office, 2009.

Table 2. Labour market structure, associations and economic activities by county

Counties/ Local Action Groups	Labor market structure in 2006						Associations and economic activities by number of inhabitants in 2009				
	% employees in primary sector (2006)	% employees in secondary sector (2006)	% employees in tertiary sector (2006)	Total Unemployment rate (2006)	Male unemployment rate	Female unemployment rate	Inhabitants 2009	Associations	Associations/ 100 inhabitants	Number of economic activities	Economic activities /100 inhabitants
ADIMAN	30.2	29.3	40.5	10.5	5.7	4.8	42,867	410	1.0	5,432	12.7
ADI-ZĂNCARA	27.5	30.4	42.0	8.1	4.4	3.7	46,031	467	1.0	4,976	10.8
ADESIMAN	14.9	38.0	47.2	10.0	5.1	4.9	42,452	548	1.3	5,083	12.0
CEDER-ALCARRIA	27.9	27.6	44.5	11.8	7.3	4.5	11,487	309	2.7	1,217	10.6
PRODESE	24.8	31.6	43.6	12.3	6.5	5.8	17,727	440	2.5	2,067	11.7

Source: Census Office, 2009.

The relational dimension: personal trust, institutional trust and generalized trust, reciprocity and solidarity

Assuming that trust, reciprocity and solidarity are basic elements of the relational dimension of social capital, we have tried to measure them in order to assess their role in supporting cooperation and exchange mechanisms. Our first finding is that apparently, trust and reciprocity/solidarity are not necessarily correlated (Table 3). In fact Ceder Alcarria shows the highest levels of generalized, personal, and institutional trust (in the municipal corporation

and the regional government), while trust in the provincial administration is higher in Prodesse, and Adesiman reaches the highest level of trust in the European Union, the Local Action Group and the technical team of the Local Action Group. Both Ceder Alcarria and Prodesse are the most depopulated, ageing and deprived counties of the province, although the EU rural development programs have been implemented here since 1991. Moreover, Adesiman is a county artificially created from municipalities on the boundary of mountain and plain areas to go to rural development programs (PRODER), apparently with success in its aim to benefit from European funds. This situation contrasts with that of Prodesse, where despite having implemented the LEADER initiatives from 1991 to present, confidence both in the Local Action Group and the technical team of the Local Action Group is minimal.

Table 3. Personal trust, institutional trust

In your opinion, people trust the following groups / individuals / institutions?	ADIMAN		ADI ZÁNCARA		ADESIMAN		CEDER ALCARRIA		PRODESE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Family	3.28	0.51	2.98	0.30	2.95	0.21	3.34	0.48	2.93	0.29
Neighbours of the same town/village	2.99	0.40	2.90	0.37	2.83	0.40	3.00	0.43	2.84	0.36
People living in other towns/villages of the county	2.70	0.46	2.80	0.45	2.51	0.61	3.02	0.24	2.63	0.58
The municipal corporation	2.71	0.59	2.66	0.54	2.73	0.49	2.90	0.46	2.75	0.49
The regional government	2.72	0.57	2.88	0.43	2.83	0.38	3.00	0.30	2.84	0.41
The provincial administration	2.73	0.57	2.90	0.30	2.83	0.38	2.88	0.40	2.91	0.29
The European Union	2.67	0.68	2.78	0.45	2.88	0.33	2.86	0.44	2.74	0.55
The Local Action Group	2.71	0.71	2.64	0.66	2.85	0.36	2.79	0.43	2.15	0.90
The technical team of the Local Action Group	2.70	0.75	2.67	0.69	2.82	0.40	2.79	0.43	2.29	0.76
The Future for the region	2.82	0.60	2.60	0.58	2.56	0.54	2.23	0.66	2.29	0.59

Response categories: 1 = very little, 2 = little, 3 = quite; and 4 = much. SD: Statistical Deviation.

However, “territorial trust” or trust in the future of the region is higher in Adiman, the most dynamic county of the whole province, which in turn distrusts institutions like regional government, provincial administration and the European Union.

If we focus on reciprocity and solidarity that will benefit the whole community, Adiman seems to be the most benefited county, especially when it comes to contribution with time to local projects. On the other hand both Ceder Alcarria and Prodesse appear to be much more reluctant to participate in activities in which people work together to benefit the local community.

From our analysis of the questionnaires it appears that the concept of reciprocity and solidarity has a pragmatic aspect of common interest, more tangible and able to be instrumentalized than the generic concept of trust, which appears to be given more usually for free, except in the case of previous neg-

tive experiences. On the other hand, this is consistent with the social capital theory, which considers the trust index to have an opposite trend to group size and group closeness, not by chance the size of the municipalities/communities in the case of Ceder Alcarria and Prodese are much smaller than in Adiman or Adi Záncara. These same contradictions are present in the various theories on the role of social capital in mountain areas; some scholars stress that mountain regions, compared to other types of rural areas, are still characterised by a system of strong community relationships (Magnani and Struffi 2009), while others say that mountain communities are often “divided societies” (Osti 2000), where the accelerated change brought by modernisation has added to long-standing rivalries among families, with new conflicts between professional categories (farmers, cattle breeders, tourist entrepreneurs) pursuing different and sometimes contrasting economic goals.

The cognitive dimension: values, shared norms, reputation, identity

The cognitive component of social capital seems to play a crucial role in reducing risks connected to the performance of a common project. Examining the results of the questionnaire shared norms and values (Table 4) repeat the pattern above explained for the case of trust, so the highest levels concentrated in Ceder Alcarria and Prodese where most people are ready to assist when needed or behave under proper and shared rules of civility, and of course they said they would open the doors and help any new settler to integrate in the village. We should not forget that in these areas immigration is extremely low. Moreover, we must remember that within these close communities “free rider” behaviour is discouraged, while an expectable and “socially controlled” behaviour is likely to be found.

A meaningful opposite pattern appears when analyzing reputation and identity items. Again inhabitants of Ceder Alcarria award the best reputation to the government and local politicians, but when considering the contribution of local employers to the socioeconomic development of the territory Adiman stands ahead of other counties.

Much more striking are the data on personal, professional and territorial identity (Table 5). Apparently the strongest personal, social and territorial identity belongs to the inhabitants of Adiman, who agree to be the most satisfied with their town/village; Adi Záncara reaches the maximum score in professional sector identity, and Ceder Alcarria in county and provincial identity. If we focus on the issues of territorial identity it seems odd that Adiman stresses the micro (town/village) and macro scales (region and country) while Ceder

Alcarria feels more identified with intermediate scales (county and province). Could we assume a more balanced relationship between bonding and bridging in the case of Adiman? The findings are not solid enough at this research stage, so we will try to study further on this point during the analysis of in-depth interviews.

Table 4. Values, shared norms, and generalized trust

In general, do you agree with the following statements?	ADIMAN		ADI ZÁNCARA		ADESIMAN		CEDER ALCARRIA		PRODESE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Most of the people of this town/village is ready to assist when needed	2.86	0.37	2.89	0.34	2.85	0.36	2.94	0.23	2.79	0.44
In this town/village you have to be alert or anyone can take advantage of you	2.49	0.52	2.18	0.38	2.29	0.45	2.15	0.36	2.11	0.32
In general, the common people behave under proper and shared rules of civility	2.87	0.33	2.95	0.27	2.92	0.28	2.94	0.23	2.93	0.29
You can trust most people	2.78	0.45	2.87	0.33	2.81	0.39	2.96	0.19	2.80	0.40

Response categories: 1 = strongly disagree; 2 = disagree; 3 = agree; and 4 = strongly agree. SD: Statistical Deviation.

If someone has come from outside and settled what was the attitude if,..?	ADIMAN		ADI ZÁNCARA		ADESIMAN		CEDER ALCARRIA		PRODESE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
He/she is Spanish?	3.88	0.38	3.70	0.64	3.78	0.62	3.91	0.29	3.85	0.51
He/she is a foreigner?	3.41	0.65	3.59	0.75	3.74	0.65	3.67	0.58	3.86	0.50

Response categories: 1 = they never consider he/she as one born in the village; 2 = It takes a long time to consider the new settlers as another neighbour; 3 = If they can help they do it but they need to see that the new settlers are good people; and 4 = We open the doors and help them to integrate in the village. SD: Statistical Deviation.

Table 5. Identity

Rate from 1 to 4 how do you think people feel identified with these territories/institutions	ADIMAN		ADI ZÁNCARA		ADESIMAN		CEDER ALCARRIA		PRODESE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
His/Her family roots	3.33	0.53	2.98	0.23	2.97	0.22	3.15	0.36	2.91	0.32
His/Her town/village	3.19	0.42	2.99	0.26	2.96	0.19	3.17	0.38	2.92	0.27
His/Her county	3.00	0.37	2.93	0.27	2.95	0.22	3.08	0.19	2.87	0.37
His/Her professional sector	2.84	0.49	2.91	0.28	2.89	0.31	2.83	0.45	2.78	0.51
His/Her province	2.84	0.59	2.97	0.23	2.97	0.17	2.98	0.24	2.86	0.34
His/Her regional community	3.04	0.38	2.99	0.22	2.93	0.26	3.02	0.24	2.83	0.44
Spain	3.06	0.29	3.00	0.00	2.99	0.17	3.00	0.00	2.95	0.31
The association to which they belong	3.03	0.25	2.80	0.42	2.64	0.68	3.00	0.00	2.44	0.57
	ADIMAN		ADI ZÁNCARA		ADESIMAN		CEDER ALCARRIA		PRODESE	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
In general, do you consider yourself satisfied with your town/village?	3.30	0.65	2.94	0.38	2.91	0.31	3.20	0.45	2.97	0.35

Response categories: 1 = very little, 2 = little, 3 = quite; and 4 = much. SD: Statistical Deviation.

On the other hand, it is surprising that there are poor results of Prodese dealing with social and territorial identity, not by chance it is a territory with a strong personality in terms of physical geography and history, in addition to receiving funds from the LEADER initiative since 1991. Certainly the problems of isolation, depopulation and aging that are added to the lack of innovative proposals for the traditional economic exploitation seem to have generated significant detachment from the majority of the population.

The structural dimension: social relationships, networks, organization and associations

Following most of the scholars, there is no doubt that participation in social activities, or in other words, belonging, is central to social well-being. There seems to be an inherent presumption that the default position is to participate and there is a problem if individuals or groups of individuals do not participate. However, other authors argue that while participation is seen as an indication of social inclusion and social engagement, it is not the case that non-participation equates with social exclusion (Shortall 2008). Nevertheless, the literature is inconclusive about the relationship between associational life and economic development. On the one hand, there are many cases of weakly associational societies that have done well as developers, on the other hand, certain forms of association may hinder economic development.

First of all we must recognize that the number of existing Associations in an area appears to be relatively unimportant; what matters is the intensity of relationships and activities that keep individuals inside. In fact, from the data collected (Table 2) the ratio associations/inhabitants appears to be determined by the municipal size; in other words the association index appears to present an opposite trend to group size and group closeness. In marked contrast, the number of groups, networks or associations to which respondents or any member of their families belong seems to parallel socio-economic dynamism, with the highest punctuations in Adiman followed by Adi Záncara. This would confirm the side hypothesis that knowledgeable (skilled) agents tend therefore to function via selective affinities, within economic communities. If these affinities do not exist at all (i.e., knowledgeable people are either extremely rare so they can match up with nobody, or they are extremely distrustful), knowledge will be wasted, and will have little positive developmental effect.

Other social relationships, not formally organized within networks, like eating or drinking with others are extremely common in the case of Prodese,

where its poor and aged people maybe do not see the point of joining formal networks or associations because they are not motivated by profit or are goal oriented. We should not forget that sometimes social capital perspectives encourage the view that everything in social life of significance can be reduced to the rational and economic dimension, something that we disagree.

Conclusions

The discussion presented in this paper is about the measurement of social capital among rural populations living in deprived territories where EU LEADER programmes have been developed. Moreover, since social capital is conceptualized as a resource inherent in the structure of communities (or groups), we agree it should be studied at that level, that it is why all data were acquired and developed first at the municipal scale and then at county scale. A second contribution is that the measures of social capital employed for this research contain only definitional attributes of social capital without resorting to secondary or distal outcomes as indicators.

First of all, we would mention that “trust” can only be understood in its socio-cultural and territorial context and mutual expectations are the “social glue” that links most of small rural communities. In this respect, and in relation to the socioeconomic development, reciprocity, solidarity and “territorial trust” or trust in the future of the county appear to emerge as much more sensitive indicators than generalized, personal or institutional trust.

Also it is worth remembering that in this process of transfer of skills, knowledge and values, the past (history) and the future of any community/territory play a key role in the transmission of social and cultural norms. The result of learning is a mutual benefit. Through the group practices and behavior the community benefits by stimulating individuals as well as interest and social meanings of verifying his identity, also by contributing to the welfare and/or sustainability of the community. Institutional/professional reputation as well as personal, social, professional and territorial identity at different spatial scales seems to perform as meaningful indicators of polarized territorial dynamics.

In any case, we must recognize that at this stage of research a clearer distinction between the several forms of bonding, bridging and linking relations in not enabled. Such a difference, nevertheless, can be important to extricate the impact on the well-being of the diverse networks and, as a consequence, to draw implications. This is a point for further improvement of the methodology during the next qualitative stage.

Furthermore, the results of the implementation of LEADER programmes yield very different outcomes, the reasons could be the degree of efficiency of technical teams of the Local Action Groups, the excessive length of some of the selected territories (such as Prodese), located in a mountain and disjointed region, and especially the need for converging on the same territorial problem/problems construction by a number of people and/or entities with alternative identities and alliances in relation to the problem at stake; in this framework the network of alliances and the consensus on which it is based is always precarious and context dependent.

As we noted earlier, the cause-effect relationship between social capital and development are far from clear; as some authors argue the definition of social capital should focus more on the sources from which it emerges than on its effects. In short, the differences between different regions as far as development is concerned can be better understood when viewed as a result of historical processes in which there is a certain combination of social and institutional relationships. The existence of a rich social capital is not the only “prerequisite” for development but it would have the dual capacity to be a resource that can mobilize other resources (economic capital, political and cultural capital) to generate or extend economic, cultural, political and social “benefits” always in dialectical relationship. Some scholars argue that recent profound economic and political changes wrought by corporations and governments have affected the attitudes of citizens towards their government and larger society (Portes 1999). However it is possible that government action might not only lead to a decline in social capital, but also to its increase, this is exactly the objective of the rural development programmes which have emanated from the EU or national government.

References

- Aguirre A., Pinto M., 2006, *Asociatividad, Capital Social y Redes Sociales*, Revista Mad: Revista del Magíster en Antropología y Desarrollo, 15. <http://rehue.csociales.uchile.cl/publicaciones/mad/15/aguirre.pdf>
- Árnason A., Shucksmith M., Vergunst J. (eds), 2009, *Comparing Rural Development. Continuity and Change in the Countryside of Western Europe*, Perspectives on rural policy and planning Series, United Kingdom, Ashgate.
- Arriagada I. 2003, *Capital social: potencialidades y limitaciones analíticas de un concepto*, Estudios Sociológicos, 21, 3, 557–584.

- Atria R., Siles M. (eds), 2003, *Capital social y reducción de la pobreza en América Latina y El Caribe, en busca de un nuevo paradigma*, Santiago de Chile, CEPAL.
- Besser T.L., 2009, *Changes in small town social capital and civic engagement*, *Journal of Rural Studies*, 25, 185–193.
- Bourdieu P., 1980, *Le capital social: notes provisoires*, *Actes Recherches: Science Social*, 31 (2), 2–3.
- Bourdieu P., 1983, *Economic capital, cultural capital, social capital*, *Soziale-Welt*, Supplement, 2, 183–198.
- Bourdieu P., 1985, *The Forms of Capital*, [in:] Richardson J. (ed.), *Handbook of Theory and Research for the Sociology of Education*, New York, Greenwood.
- Buciega A., 2005, *Leader II y capital social: la experiencia del grupo La Serranía-Rincón de Ademuz (Valencia)*, *Cuadernos de Geografía*, 78, 277–298.
- Callois J.M., 2004, *Capital social et développement économique local. Pour une application aux espaces ruraux*, *Revue d'économie régionale et urbaine*, 4, 551–578.
- Callois J.M., Angeon V., 2006, *Capital social et dynamiques de développement territorial: l'exemple de deux territoires ruraux français*, *Espaces et sociétés*, 124–125, 54–71.
- Casanueva C., Galán J. L., Castro I., 2006, *Capital social, confianza e innovación. El caso de un sistema productivo local tradicional*, *Revista Madrid*, 36. <http://www.madrimasd.org/revista/revista36/tribuna/tribuna4.asp>
- Casellas A., Pallarés M., 2005, *Capital social como estructura de análisis: validaciones en perspectivas de género y territorio*, *Cuadernos de geografía*, 78, 177–190.
- Cohen A., 1985, *Belonging: identity and social organisation in British rural culture*, Manchester, Manchester University Press.
- Coleman J. S., 1987, *Norms as social capital*, [in:] Radnitzky G., Bernholtz P. (eds), *Economic Imperialism: The Economic Method Applied Outside the Field of Economics*, New York, Paragon House.
- Coleman J. S., 2000, *Social capital*, [in:] Coleman J. (1st edition 1990): *The foundations of social theory*, Belknap Press of Harvard University Press.
- Coleman J. S., 2001, *Capital social y creación de capital humano*, *Zona Abierta*, 94/95, 47–81 (translation from the *American Journal of Sociology*, 1998, 94, 95–120).

- Cooke P., Clifton, 2002, *Social capital and small and medium enterprise performance in the United Kingdom*, Paper prepared for the Workshop on *Entrepreneurship in the Modern Space-Economy: Evolutionary and policy perspectives*, Amsterdam.
- Durston J., 2000, *¿Qué es el capital social comunitario?*, Serie Políticas Sociales 38, Naciones Unidas/CEPAL.
- Falk I. H., Kilpatrick S., 2000, *What is social capital? A study of interaction in a rural community*, *Sociologia Ruralis*, 40 (1), 87–110.
- Fine B., 1999, *The developmental state is dead-long live social capital!*, *Development & Change*, 30, 1–19.
- Fine B., 2001, *Social Capital versus Social Theory: Political Economy and Social Science at the Turn of the Millennium*, London, Routledge.
- Galán J. L., Casanueva C., Castro I., 2007, *Capital Social e Innovación en clusters industriales*, [in:] Ayala J. C. (coord.), *Conocimiento, innovación y emprendedores: camino al futuro*, 2.961–2.977.
- García J. S., Aparicio A. E., 2007, *El papel del capital social en las áreas rurales desfavorecidas. Estudio de caso: La Serranía de Cuenca y Cabañeros (Ciudad Real)*, [in:] *La Geografía en la frontera de los conocimientos, XX Congreso de Geógrafos Españoles*, AGE and Universidad de Sevilla.
- García P. M., Parra G., 2008, *Capital social, conocimiento y resultados en los distritos industriales*, *Boletín económico de ICE, Información Comercial Española*, 2948, 53–67.
- Garrido F.E., Moyano E., 2002, *Capital social y desarrollo en zonas rurales. Un análisis de los programas Leader II y Proder en Andalucía*, *Revista Internacional de Sociología*, 33, 67–96.
- Gramsci, A., 1971, *Selections from the Prison Notebooks*, [in:] Hoare Q., Nowell Smith G. (eds., transl.), New York, International Publishers.
- Gray G., 2000, *Capital social: del boom a la Resaca*, T'inkazos. *Revista Boliviana de Ciencias Sociales*, 6, May.
- Grootaert, C., van Bastelaer, T., 2001, *Understanding and measuring Social Capital: A synthesis of findings and recommendations from the Social Capital Initiative*, Social Capital Initiative, Working Paper n.º. 24, Washington, The World Bank.
- Hernández C., Camarero M^a C., 2005, *Marketing de relaciones y creación de capital social. El caso de las Agencias de Desarrollo Local*, *Ekonomiaz: Revista vasca de economía*, 58, 296–323.
- Law A., Mooney G., 2006, *The maladies of social capital I: the missing 'Capital' in theories of social capital*, *Critique*, 34 (2), 127–143.

- Lazkano A., Ayerbe M., Barandiarán X., Mujika A., Ayerbe O., Plazaola A., 2005, *El capital social de las organizaciones y su entorno: conceptualización teórica, medición e intervención en la generación del capital social*, Ekonomiaz: Revista vasca de economía, 59, 14–47.
- Lechner N., 2000, *Desafíos de un Desarrollo Humano: individualización y capital social*, Instituciones y Desarrollo, November.
- Lee J., Arnason A., Nightingale A., Schucksmith M., 2005, *Networking: Social Capital and Identities in European Rural Development*, Sociologia Ruralis, 45 (4), 269–283.
- Magnani N., Struffi L., 2009, *Translation sociology and social capital in rural development initiatives. A case study from the Italian Alps*, Journal of Rural Studies, 25, 231–238.
- Márquez D., 2006, *Para un desarrollo local sostenible: el capital social*, Norba. Revista de geografía, 11, 69–83.
- Márquez D., Foronda C., 2005, *El capital social eje del desarrollo en espacios rurales*, Cuadernos de Geografía, 78, 155–176.
- Márquez D., Galindo L., 2009, *El capital social: un nuevo elemento del desarrollo*, Lurr@lde, 32. <http://www.ingeba.euskalnet.net/lurralde/>
- Martínez J. M., Vázquez C., 2007, *Sistemas socio-productivos y capital social: hallazgos e intuiciones a partir de dos estudios de caso*, [in:] *La Geografía en la frontera de los conocimientos, XX Congreso de Geógrafos Españoles*, AGE and Universidad de Sevilla.
- Merinero R., 2008, *Micro-cluster turísticos: el papel del capital social en el desarrollo económico local*, Revista de Estudios Empresariales, 2, 67–92.
- Miranda F., Monzó E., 2003, *Capital social: estrategias individuales y colectivas*, Santiago de Chile, CEPAL, Serie Políticas Sociales, 69.
- Morales A. C., 2002, *La construcción de capital social a través de la economía social: el caso andaluz*, REVESCO. Revista de Estudios Cooperativos, 78, 89–119.
- Moyano E., 2005, *Capital Social y Desarrollo en Zona Rurales*, Documentos de trabajo (Instituto de Estudios Sociales Avanzados de Andalucía), 13. <http://www.iesaa.csic.es/archivos/documentostrabajo/2005/13-05.pdf>
- Moyano E., 2006, *El asociacionismo en el sector agroalimentario y su contribución a la generación del capital social*, Documentos de trabajo (Instituto de Estudios Sociales Avanzados de Andalucía), 20. <http://www.iesaa.csic.es/archivos/documentos-trabajo/2006/20-06.pdf>
- Narayan D., Pritchett L., 1996, *Cents and sociability: Household income and social capital in rural Tanzania*, growth@worldbank.org.

- Narayan D., Cassidy M.F., 2001, *A dimensional approach to measuring social capital: Development and validation of a social capital inventory*, *Current Sociology*, 49 (2), 59–102.
- Nardone G., Sisto R., Lopolito A., 2010, *Social Capital in the LEADER Initiative: a methodological approach*, *Journal of Rural Studies*, 26, 63–72.
- Osti G., 2000, *LEADER and partnerships: the case of Italy*, *Sociologia Ruralis*, 40 (2), 172–180.
- Pallarés M., 2003, *Capital social i treball de les dones als Pirineus, el cas de l'Alt Urgell*, Barcelona, Generalitat de Catalunya, Institut Català de la Dona.
- Pérez J. A., Monago F. J., 2005, *Una aproximación al estado del capital social en dos comunidades rurales de Extremadura: Logrosán y Cañamero*, *Cuadernos de Geografía*, 78, 255–276.
- Pérez F., Serrano L., Fernández de Guevara J., 2008, *Estimación del capital social en España: series temporales por territorios*, Documentos de trabajo (Fundación BBVA), 8. http://www.fbbva.es/TLFU/dat/dt_estimacion%20capital_2008web.pdf
- Pitarch M. D., 2005, *Capital social y territorio*, *Cuadernos de Geografía*, 78, 149–154.
- Portes A., 1999, *Capital social: sus orígenes y aplicaciones en la sociología moderna*, [in:] Carpio J., Novacovsky I. (eds), *De igual a igual. El desafío del Estado ante los nuevos problemas sociales*, Buenos Aires, SIEMPRO/FLACSO/Fondo de Cultura Económica de Argentina, 243–266.
- Portes A., Landolt P., 1996, *The downside of social capital*, *The American Prospect*, 94, 18–21.
- Putnam R. D., 1993a, *Making Democracy Work. Civic traditions in modern Italy*, New Jersey, Princeton University Press.
- Putnam R. D., 1993b, *The Prosperous Community: Social Capital and Public Life*, *The American Prospect*, 13.
- Putnam R. D., 2000, *Bowling Alone: The Collapse and Revival of American Community*, New York, Simon and Schuster.
- Putnam R.D., 2001, *Mesure et conséquences du capital social*, *ISUMA, Revue Canadienne de Recherche sur les Politiques*, 2 (1), 47–58.
- Ray C., 1999a, *Endogenous development in the era of reflexive modernity*, *Journal of Rural Studies*, 15 (3), 257–267.
- Ray C., 1999b, *Towards a meta-framework of endogenous development: repertoires, paths, democracy and rights*, *Sociologia Ruralis*, 39 (4), 521–537.
- Rothstein B., Stolle D., 2002, *How Political Institutions Create and Destroy Social Capital: an Institutional Theory of Generalized Trust*, Paper prepared for the 98th meeting of the American Political Science Association in Boston, Ma.

- Rubio M. A., Mazón T. M., 2009, *El capital social como factor coadyuvante de los procesos de desarrollo turístico y socioeconómico de los destinos de interior*, Papers de turisme, 45, 41–56.
- Salazar G., 1998, *De la participación ciudadana: capital social constante y capital social variable. (Explorando senderos trans-liberales)*, Propositiones: sociedad civil, participación y ciudadanía emergente, 28, Santiago, Sur Profesionales.
- Shortall S., 2008, *Are rural development programmes socially inclusive? Social inclusion, civic engagement, participation, and social capital: Exploring the differences*, Journal of Rural Studies, 24, 450–457.
- Shucksmith M., 2000, *Endogenous Development, Social capital and Social inclusion: Perspectives from LEADER in the UK*, Sociologia Ruralis, 40 (2), 209–217.
- Storper M., 2005, *Society, community and economic development*, Studies in comparative international development, 39 (4), 30–57.
- Sunkel G., 2003, *La pobreza en la ciudad: capital social y políticas públicas*, [in:] Atria R., Siles M. (eds), *Capital social y reducción de la pobreza en América Latina y El Caribe, en busca de un nuevo paradigma*, Santiago de Chile, CEPAL, 303–338.
- Svendsen G.L.H., Svendsen G.T., 2000, *Measuring Social Capital: the Danish Co-operative Dairy Movement*, Sociologia Ruralis, 40 (1), 72–86.
- Svendsen G.L.H., Svendsen G.T., 2004, *The Creation and Destruction of Social Capital: Entrepreneurship, cooperative movements and institutions*, Cheltenham, United Kingdom, Edward Elgar Publisher.

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Intraregional peripheries of economic development – a case study of Mazovia Region in Poland

Abstract: The paper concentrates on the issue of functioning of the inner boundaries defining the zones of higher and lower potential of the socio-economic development. First, spatial differentiation of Poland is presented on the example of two questions from the population change and economic-infrastructure domains. Then, detailed analysis has been performed of the economic development level within the capital province of Mazovia. The results obtained, pertaining to spatial differentiation, have been related to the distance from the capital city of Warsaw and from the subregional growth centres.

Key words: regional development, disparities, core - periphery, geographical distance, rural areas, Mazovia, Poland.

Introduction

Intraregional disparities in terms of the level of economic development are getting uncovered in the majority of spatial analyses conducted for individual countries. In the studies carried out for the entire Europe the reference units are either regions (NUTS 2) or sub-regions (NUTS 3), like, for instance, in the studies of ESPON (European Spatial Planning Observation Network). Adoption of the thus large units as to their surface areas brings about their significant internal diversity, reflected, in particular, through the attainment of high values by the variability indicators for the attributes analysed. High degree of heterogeneity of the regions considered causes important loss of information through averaging of the phenomena studied, so that the image obtained does not reflect fully the actual reality.

The intraregional differences are an increasingly significant planning and research issue. Nowadays, more and more often the aspect of metropolization of development is being emphasised, as linked with a much stronger cooperation between the large urban centres than the one between the central place and its region (Gorzela, Smętkowski 2005). Another dilemma is constituted by the choice between the effectiveness of the pro-development undertakings and the evening out of the economic and social differences among the individual parts of the regions. Shall the policy put preference on the development of the most dynamically advancing areas of the country, but, at the same time, insufficiently preventing the increase of development gaps between and within the individual regions? Or would the political priority be the evening out of the development opportunities and countering of the marginalization of the weakly developing areas of the country? (Grosse 2004).

It should, however, be clearly emphasized that the issue of the regional polarization of the country is a universal phenomenon and is in a way natural. Thus, for instance, Ilnicki and Siłka (2001, pp. 301–302), stated when summarizing the results of their studies that *“the analysis of the development attitudes and prerequisites allows for an unambiguous conclusion that there is a strong spatial differentiation of the broadly conceived socio-economic development on the territory of Poland. Such a differentiation is typical for the contemporary and dynamically developing spatial structures, which are characterized by a distinct polarization of the foundations for the socio-economic development as well as the functional linkages across limited areas”*. In this context it is more important to conduct an appropriate development policy for the core and peripheral areas than to attempt complete evening out of the socio-economic differences.

It can be concluded from the studies carried out by Wojnicka et al. (2005) that the regions featuring higher internal differentiation were the ones characterized by more than average GDP per capita, bigger number of growth centres, richer and more quickly developing. These results can be generalized by stating that the higher the level of economic development of a region, the higher the probability of forming distinct differences between the “core” and the “peripheries”, such a conclusion being true at least for Poland.

The objective of the study reported was to analyze the spatial differentiation of the economic potential in the capital province of Mazovia. This region is characterized, on the one hand, by the highest value of the GDP per capita indicator in Poland, and on the other – the biggest internal differentiation. The central city of the region, Warsaw, is surrounded by a vast territory of the agglomeration, having multi-functional character, while the peripheral borderland areas display a mono-functional (agricultural) character, and are much more sparsely populated.

The intraregional peripheries in Polish space

Intraregional boundaries, defining the zones of the weakening influence of the large urban centers. These boundaries coincide to a definite degree with the administrative boundaries of provinces, but their existence is linked with distance, or, more precisely, with spatial accessibility of a given area to the growth centre of the region. The boundaries of this type, rather than being lines, take the form of belts or zones. Two examples, from the domain of demography and the economic-infrastructure domain are provided in order to illustrate the existence of the intraregional boundaries.

The analysis of the phenomenon of population change allows for the determination of several processes of transformation of the spatial structures. The largest loss of the number of inhabitants in the period 1995–2005 took place in the eastern parts of the provinces of Podlaskie and Lubelskie (Figure 1). This is connected with a number of disadvantageous characteristics of these areas – high percentage share of the population in the post-productive age (attaining even more than 30% in some municipalities), high negative net migration balance, and low natural increase indicator. Besides, the areas featuring significant population loss concentrate in the outer zones of the regional peripheries – are situated in the border zones between the provinces. These municipalities are situated at a far distance from the economic centres of the particular provinces, which causes that the development impulses, originating from such centres do not reach the distant areas. In effect, important outflow takes place from these areas, usually to the biggest towns or towards their direct neighbourhoods. It is exactly the suburban areas around the regional capitals that featured the highest population increase and one should expect the continuation of this process in the future. The increase of the population number was also characteristic for the regions of Małopolska and Kaszuby (part of Pomorskie region) – the areas of traditional social structure, featuring relatively high natural increase.

In the 1980s, the rural areas in Poland were still considered less attractive compared to towns. Rural areas were losing their young and educated population that left to seek jobs and residence in towns. However, this situation began to change in the 1990s when the former socialist countries entered the political transition followed by the socio-economic change. The rural area as the place of permanent residence is normally attractive above all for persons whose life had been connected with the life in countryside in the past while the cost of living is also taken into account. However, only settlements with favoured geographical position (position in hinterland of big towns or position in easily accessible and tourist attractive regions) are attractive for migrants.

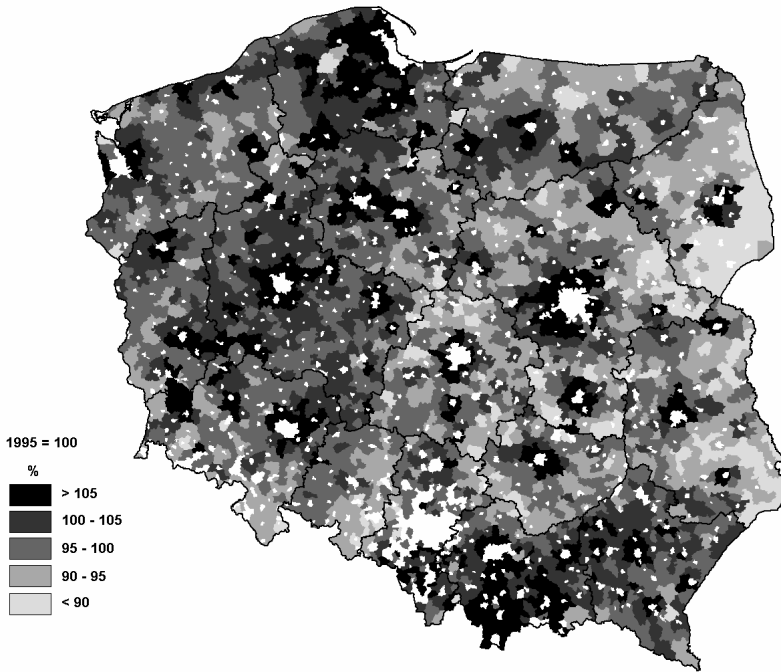


Figure 1. Changes of the population number within rural areas in the years 1995–2005
Source: own calculations based on data from Central Statistical Office.

In Poland, the highest level of economic development is observed in large cities and their respective agglomerations (Warszawa, Poznań, Kraków, Łódź, Tri-City, towns of Upper Silesia). The areas, featuring the highest development indicator values are usually surrounded by a ring of slightly less developed municipalities, and farther away the areas characterised by the lowest level of economic development are situated (Bański 2005).

On the basis of the synthetic indicator of the level of infrastructural and economic development it can be clearly see that the suburban zones of Warszawa, Łódź, Częstochowa, the Upper Silesian conurbation, Kraków, Kielce, Rzeszów, Olsztyn or Szczecin also feature higher values of this indicator (Figure 2). Similarly, around the remaining towns of more than 100,000 inhabitants, concentric zones can be seen with the indicator values of the living standard higher than the national average. On the other hand, the areas with distinctly lower values of the indicator analyzed are constituted by the municipalities from the provinces of Podlaskie, Lubelskie, parts of Świętokrzyskie, Podkarpackie and Warmińsko-Mazurskie provinces, as well as the peripheries of the Mazovian and Łódzkie provinces (Czapiewski 2005). A better situation

in the suburban municipalities corresponds to the frequently determined directions of diffusion of the development impulses in space in Polish conditions. This diffusion, namely, takes primarily place from the West towards the East, from the large urban centres to the surrounding regions, as well as along the main transport routes (Węclawowicz et al. 2006).

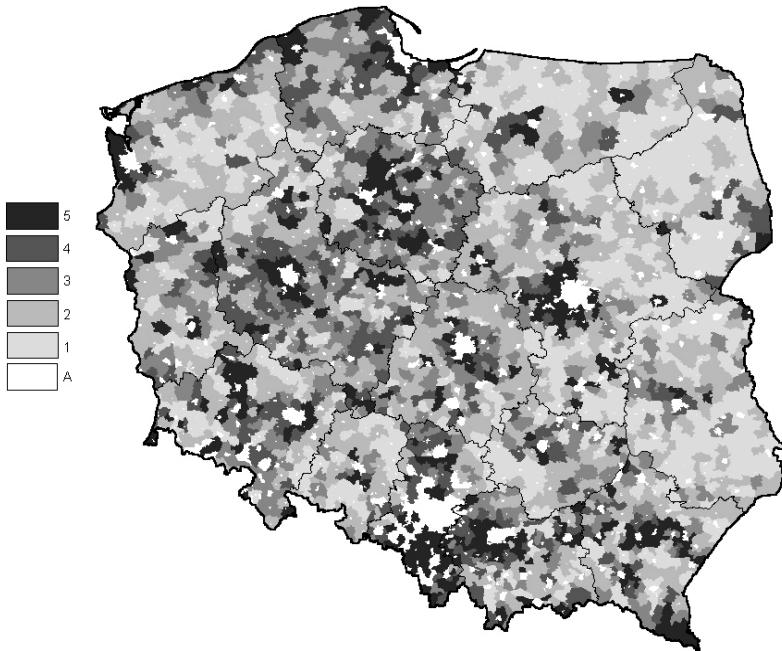


Figure 2. Indicator of the infrastructural-economic development of the Polish municipalities. Indicator value: 5 – very high, 4 – high, 3 – average, 2 – low, 1 – very low; A – cities
Source: own work (Czapiewski 2005).

The intraregional boundaries differentiate a given area between the parts characterized by more and less advantageous demographic-migrational and socio-economic conditioning. These boundaries, though, do not form precisely defined lines, and their distance from the core centre depends upon the phenomenon analyzed. Besides, in many cases the level of development of a commune decisively depends upon the concrete local conditioning, such as the level of activity of the local authorities, or the entrepreneurship of the inhabitants, that is – a number of endogenous development conditions. There are, as well, numerous phenomena, which do not have a spatial aspect, or their appearance depends upon many other variables, such as, for instance, the quality of natural environment. Yet, as one analyses a definite group of is-

sues— especially those associated with the economic sphere – the development of the internal peripheries of development becomes visible. Paying attention to this question is important for three reasons: (1) it is commonly held that the peripheral regions are the ones situated along the national boundaries; (2) the analyses, conducted at the level of large regions neglect the aspect of internal differentiation; (3) the implemented regional policy has to contain appropriate development strategies for the areas from the inner peripheries.

Polarization of the space of Mazovia Province

Indicator of economic development of rural communes (NUTS 5) in Mazovia region was determined with following features: (1) number of registered enterprises per 1000 inhabitants, (2) commune budget incomes per capita, (3) share of investment expenditures in total commune expenditures. The greatest density of enterprises occurs in towns, suburbia and tourist-attractive localities. Local authorities, apart from constant expenditures for education or public administration, have the possibility to invest. The most often they invest in public utilities- the share of funds allotted for that aim confirms the developmental character of these areas. The revenues of the local self-governmental authorities constitute also an evidence for the existing economic potential of the respective areas.

In the period 1995–2005 the number of businesses on rural areas of Mazovia increased almost twofold (from 27 per 1,000 inhabitants in 1995 to 52 in 2005), while the share of investment-oriented expenditures remained at a similar level (roughly 25%), and the evaluation of the budgetary revenues is difficult due to the absolute (nominal) character of the data available. Very interesting changes took place during the period analysed in terms of the spatial differentiation of the values of economic indicator (Figure 3). A distinct concentration occurred of the municipalities featuring the highest values of the indicator around the centre of the region – the city of Warsaw. The “core-periphery” scheme causes the establishment of the metropolitan areas that focus well-educated and enterprising people, are well equipped with infrastructure and are economically attractive. On the other hand, there are marginal and not-fully-subsidized areas where depopulation processes are strong and many unfavourable phenomena occur. Formation of strong centres at the cost of the periphery areas is a serious problem for the policy of regional development. It is important that the town development were accompanied by properly orientated progress in rural areas. On the remaining area of the region of Mazovia there were in 2005 only isolated municipalities characterised by high values of the economic development indicator, while in 1995 the pattern was much more diversified.

The analysis of values of the indicator analysed shows both significant spatial differentiation and important changes over time. This is conditioned both by high dynamics of the transformation processes in the countries of Central-Eastern Europe, including Poland, the qualitative changes taking place on rural areas, and by the hard to assess individual involvement of the local authorities and the inhabitants. All these variables influence and shape the contemporary processes taking place on rural areas. In the case of some analyses, finding of explanation for the phenomena observed would require much deeper insight on a local level.

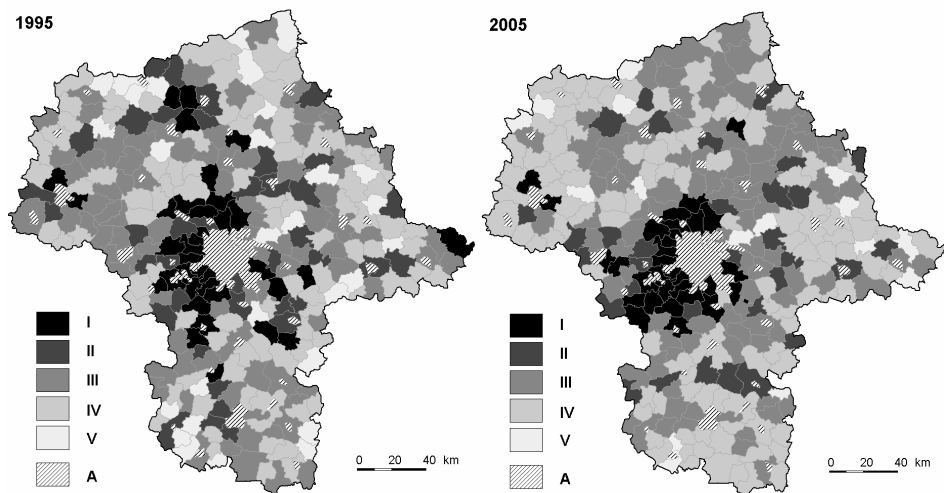


Figure 3. Spatial differentiation of the values of economic indicator on rural areas of Mazovia region in 1995 and 2005.

I – very high, II – high, III – average, IV – low, V – very low, A – towns

Source: own calculations based on data from Central Statistical Office.

The delimited areas with the highest values of economic indicator in Mazovia encompass only 25% of all the municipalities of the province and a similar share of the area (Table 1). Yet, this area is inhabited by more than $\frac{1}{3}$ of the population living on the rural areas of Mazovia, which means that these areas are among the most densely populated in the region. The demographic changes between 1995 and 2005 are also quite characteristic. While during this period the total population number of the province increased by not quite 1%, on the described areas this increase amounted to more than 10%! In the same time the number of inhabitants of the municipalities situated in the areas with the lowest values of economic indicator dropped by 5%.

Table 1. Basic characteristics of delimited rural areas of Mazovia region according to economic indicator in 2005

	Number of communes	Surface (sq. km)	Number of inhabitants 1995	Number of inhabitants 2005	Population density 2005	Percentage of total population 2005	Changes of number of population (1995=100)
Classes I and II – very high and high	75	8,149	587,184	648,311	79.6	33.4%	110.5
Class III – average	88	11,157	632,868	618,892	55.5	31.8%	97.8
Classes IV and V – low and very low	116	14,498	707,872	676,143	46.6	34.8%	95.5
Communes of Mazovia region	279	33,804	1,925,929	1,943,283	57.5	100.0%	100.9

Source: own calculation based on data from Central Statistic Office.

The detailed analyses of the influence exerted by the distance from the growth centers on the value of economic development indicator have been carried out for two spatial levels. The first level referred to the regional scale and the explanatory variable assumed was the distance of the rural municipalities from the capital of the province (and, at the same time, of the country), Warsaw (Figure 4). The second level corresponded to the subregional scale – and the explanatory variable was the distance to one of the subregional centers (Figure 4). In the *Strategy of development of the province of Mazovia* (2006) the zones were determined of influence of Warsaw and of the five subregional centers (Płock, Radom, Siedlce, Ostrołęka and Ciechanów), accounting for the transport connections. As mentioned before, the issue of spatial accessibility is much more important than just the road distance, but in the case of the province of Mazovia these two variables do largely coincide (Pearson linear correlation coefficient between road distance and time accessibility to Warsaw is $r = 0.95$). That is why it was decided to use the distance variable, since it does not change over time, contrary to accessibility, which is subject to variation with, for instance, the road investments made.

The majority of municipalities featuring the highest values of the economic indicator are located within the road distance of 50 km from the downtown Warsaw (Figure 5). Up to this distance the biggest influence of the capital city on the level of economic development of the municipalities is observed. Yet, even at farther distances from Warsaw the regularity of the increasingly frequent appearance of lower values of the indicator analyzed can be noted, while there are practically no municipalities featuring high values of this indi-

cator. Of one hundred communes situated at the distance of more than 100 km from Warsaw – 55% were classified in two lowest classes of the economic development indicator, and 30% in the medium class. This area can be referred to as the outer periphery of the Mazovia province, while, at the same time, it constitutes an internal periphery in Poland. As shown in Figure 1, this area is characterized by an important population loss, which appears mainly owing to the significant out-migration.

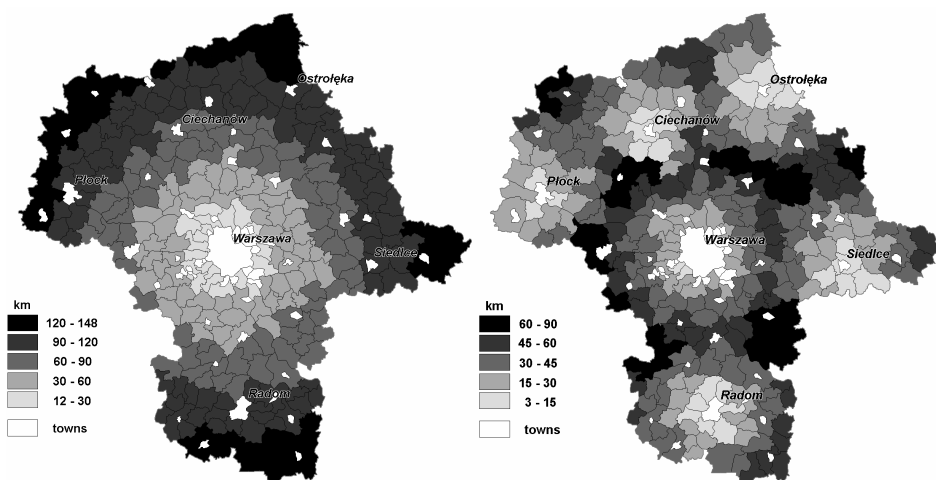


Figure 4. Distances of the rural communes of the province of Mazovia to Warsaw and to the sub-regional centers

Source: own calculations based on road distances.

It is necessary to elaborate for this area – significantly distant from the capital city – the new and effective visions of regional development, which would not be the copies of the strategies for the municipalities located in the suburban zone of Warsaw, but would account for the local assets.

Interesting relations have been demonstrated by the analysis of influence exerted by the distance from the subregional centres on the value of the economic development indicator for the rural communes located within the zones of influence of the particular towns. In the case of the zone of Warsaw an even stronger dependence was observed for the variable of distance than in the case of all the communes of the province (Figure 6). Such a result is strongly linked with the processes of suburbanization and development of the metropolitan area of the capital city.

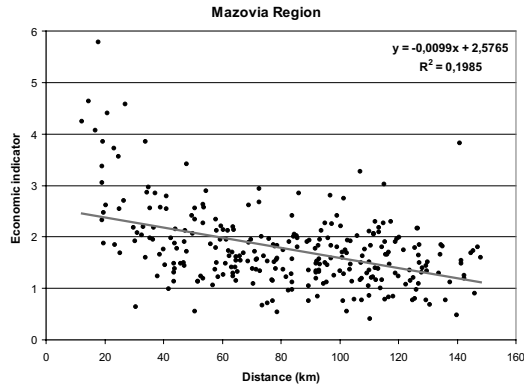


Figure 5. Values of the economic development indicator as depending upon the distance of a municipality from Warsaw (Pearson linear correlation coefficient $r = -0.45$)

High economic activity in the suburban zone results from the fact that it forms a single joint functional system with Warsaw. Hence also the impact of a big and economically dynamic city on its zone of influence is perceptible (in the statistical terms as well). It is worthwhile to quote at this point the results of the study by Bański (2006), namely that at the distance of 20 km from Warsaw there were, in 1999, 215 registered businesses per 1,000 inhabitants, at the distance of 40 km – 114 businesses, and at the distance of 60 km – already only 84 businesses per 1,000 inhabitants. It should be noted, as well, that the influence of Warsaw is bigger in the western part of the zone than in the eastern part. This difference results primarily from the transport conditions and the 19th century development of urbanization in the western direction.

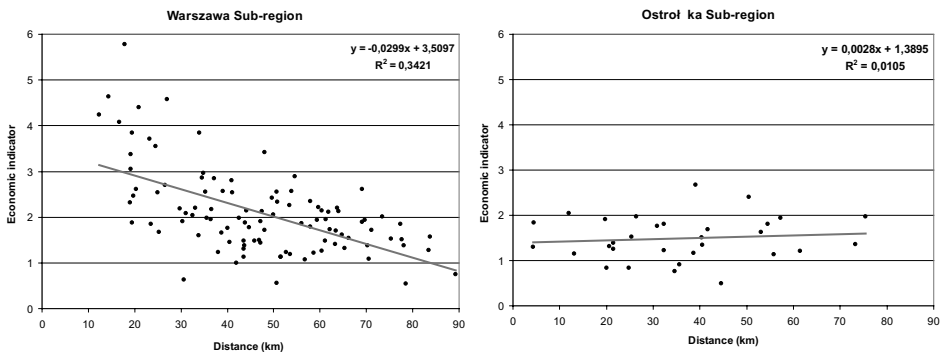


Figure 6. Values of the economic development indicator depending upon the distance of a commune in the zones of influence of Warsaw ($r = -0.58$) and of Ostrolęka ($r = 0.10$)

Completely different results were obtained in the analysis of influence of distance from the five smaller subregional centres on the economic indicators for the communes (Figure 6). Thus, for instance, in the case of Ostrołęka, no interdependence was noted between the two analyzed features, and in the cases of other towns only one or two municipalities, situated in their direct vicinity, represented slightly higher values of the indicator. Towns concentrate nowadays the biggest development potential and fulfil, or rather should fulfil, the exogenous functions for the surrounding areas. Such a situation, though, does not always take place. In the case of large urban agglomerations one can indicate the suburban zones, generated by them, displaying high potential. Yet, smaller units, and first of all towns located in the eastern part of the country, are not strong enough to stimulate growth within the neighbouring areas (Czapiewski, Janc 2006). Even taking into account their size (8 time smaller in the case of Radom and more than 10-times in the case of other subregional centres), their influence on the neighbours communes is not visible.

Conclusions

The province of Mazovia is the wealthiest region in Poland, with the highest values of GDP per capita and the highest rate of the socio-economic growth. Besides, it is the only area in Poland that has the chances for and slowly in fact becomes a significant economic entity on the European scale. Yet, all the respective variable values refer practically uniquely to Warsaw and to the zone, surrounding Warsaw up to the radius of some 50 km (farther out to the West, while less in the East). The remaining areas of the region are characterized by a much lower development potential and in principle do not gain any advantage from the fact of being situated in the province of Mazovia.

High spatial differentiation makes the planners and decision makers face constantly the development dilemma – spatial effectiveness or spatial equity. The former model assumes the increase of regional differentiation, but with emergence of the cores and the centres of growth capable of more effective use of means and more effective competition on the European scale. On the other hand, in the latter model bigger emphasis is placed on the evening out of the development differences and the inflow of bigger means to the less developed regions. Both the results obtained and the course of the contemporary development processes as well as the policies implemented show the domination of effectiveness over equity. That is also why the endogenous conditions appear to be increasingly important development factors on rural areas situated far from large agglomerations and transport corridors.

Functioning of the inner peripheries is an unavoidable phenomenon in a free market economic system. Owing to the regional differences the development takes place, since the differences constitute the stimulating factor of progress. Yet, the differences between the regions cannot take on very big dimensions, since then the transfer of technology and innovation is in practice impossible and the relations between the respective become even more disproportionate. Such a situation exists nowadays in the province of Mazovia – the highest value of the economic development indicator in a commune located close to Warsaw is almost 14 times higher than the lowest value, characterizing a commune situated 140 km from Warsaw. Similarly, the value of the economic development indicator for the tenth decile of the rural municipalities of the province is at 3.44, while the value of the first decile is at mere 0.75, that is, more than 4.5 times lower. The average distance from the capital city of the communes from the tenth decile is 49 km, while for the communes from the first decile – 100 km.

The results obtained motivate the repetition of the proposition formulated earlier, namely that at least in Polish conditions (although the same can be said for the majority of the countries of Central-Eastern Europe) it is necessary to elaborate appropriate development plans and strategies for the areas of inner peripheries, which, being significantly distanced from the centres of the socio-economic development, and characterized to a large extent by the monofunctionality, associated with farming, can rely in their development uniquely on the endogenous factors, these factors, in the majority of cases, remaining at a very low level.

References

- Bański J., 2005, *Sukces gospodarczy na obszarach wiejskich (Economic success on rural areas)*, Studia Obszarów Wiejskich, 8, PTG, IGiPZ PAN, Warszawa, 9–20, (in Polish).
- Bański J., 2006, *Geografia polskiej wsi (Geography of Polish rural areas)*, Warszawa, PWE (in Polish).
- Czapiewski K., 2005, *Living conditions and functional structure of rural communes in Poland*, Geografický Časopis, 57, 1, 23–42.
- Czapiewski K., Janc K., 2006, *Development potential of Polish regions*, Problems of Geography, 1-2, 91–104.
- Gorzela G., Smełkowski M., 2005, *Metropolia i jej region w gospodarce informacyjnej (Metropolitan area and its region in information economy)*, EUROREG, Warszawa, (in Polish).

- Grosse T., 2004, Polskie wyzwania polityki rozwoju regionalnego (Necessities of Polish politics of regional development), *Międzynarodowy Przegląd Polityczny*, 1(6), 188–199 (in Polish).
- Ilnicki D., Siłka T., 2001, *Polska przestrzeń w kontekście nowego podziału administracyjnego (Polish territory in the context of new administrative division)*, [In:] H. Rogacki (ed.), *Koncepcje teoretyczne i metody badań geografii społeczno-ekonomicznej i gospodarki przestrzennej*, Bogucki, Poznań, 293–303 (in Polish).
- Strategy of development of the province of Mazovia* (2006), Mazowieckie Voivodeship, Warszawa.
- Węclawowicz G. et al., 2006, *Przestrzenne zagospodarowanie Polski na początku XXI wieku (Spatial Organization of Poland at the beginning of the 21st century)*, Institute of Geography and Spatial Organization PAS, Warszawa (in Polish).
- Wojnicka E., Tarkowski M., Klimczak P., 2005, *Przestrzenne i regionalne zróżnicowania ośrodków wzrostu. Polaryzacja a wyrównywanie szans rozwojowych. Przestanki dla kształtowania polityki regionalnej państwa (Territorial and regional differences of economy growth centres)*, Ministerstwo Rozwoju Regionalnego), Gdynia-Rzeszów, (in Polish).

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A participatory approach to spatial and environmental planning in different national perspectives

Abstract: The paper describes experiences with Stra.S.S.E. Project (Strategic Spatial Planning and Sustainable Environment) that was aimed at enhancing a participatory approach to spatial and environmental planning. Four teams from three partner countries divided the roles and tasks in the project. The main goals of the project, obtained by participatory processes, were oriented at developing strategic planning methodologies for the project-areas by using, as monitoring tools, a set of environmental, social and economical indicators in order to evaluate the effect of development policies and strategy. Three main outputs – an atlas, editions of thematic GIS projects and a conflict analysis – are based on sophisticated GIS procedures.

Key words: Spatial planning, sustainable development, GIS modelling, thematic cartography.

Introduction

Spatial (geographical) processes are of enormous relevance to the sustainable development of an area. From a geographical point of view spatial development policy must achieve an equal balance between spatial conditions for natural spheres, population, social structures, business and infrastructures with respect to the economical use of land, protection of natural resources and social and geographical cohesion. The Stra.S.S.E. Project (<http://www.geoinformatics.upol.cz/strasse/>) – Strategic Spatial Planning and Sustainable Environment (INNOREF 2005–2007, INTERREG IIIC) – aimed at enhancing a participatory approach to spatial and environmental planning in order to influence new performances in drafting innovative models for regional development, involving stakeholders, local bodies and citizens and by promoting

modern regional knowledge. Four teams from three partner countries divided the roles and tasks in the project. The Italian team from Udine processed spatial planning, the Greek Patras-based team focused on sustainable development, the Czech group from Olomouc contributed spatial modelling, applications and geo-visualisation within GIS (geographic information systems), and the Italian team from Umbria concentrated on methods of developing cooperation. The main results of the project, obtained by these participatory processes, were oriented at developing strategic planning methodologies for the project-areas by using, as monitoring tools, a set of indicators of environmental, social and economic situation in order to evaluate the effect of developing policies and strategy. These indicators were defined and tested during the project, focusing on the needs of each regional area.

GIS in spatial planning

Implementation of GIS into local government is based on joint government, combined information, integrated and seamless services, web accessibility, efficiency savings and other factors. Rapid advances in GIS technology in the recent years have greatly expanded the utility of GIS and the scope of the application of these spatial data management tools (LeGates 2005, Laurini 2001). The strength of modern GIS tools lies in their ability to instantly relate varied information types and sources to concrete, real-world circumstances in combination with powerful tools for analyzing and visualizing the feasibility of what can be imagined. However, many current GIS applications do not exploit the full ability of GIS techniques to facilitate the information needs of top-level management (LeGates 2000). Future GIS is likely to develop additional capabilities in this direction which would build on the large volume of operational spatial data found in many large organizations and governments.

In many foreign countries (USA, Germany, Canada), where GIS implementation has an older history, implementation of GIS tools in urban planning is more extensive. Urban planners use GIS software more commonly and so their results are based on expert analysis. An example is ArcGIS—the Model Builder tool for regional planning around Munich, described by Schaller (2007). Maantay and Ziegler (2007) introduced several examples of the application of GIS analytical tools for the urban environment. Case studies focused on, for example, crime pattern analysis, community-based planning, urban environmental planning or urban services and urban populations described in this publication.

Zwick and Carr (2007) introduced LUCIS (Land-use Conflict Identification Strategy) as a strategy to explore optimal suitability to three broad land-use categories (agriculture, conservation and urban) and compared them to identify where conflicts among them exist. LUCIS is also introduced as a tool with potential for many other applications, including strategic conservation planning, real estate investments, infrastructure planning or general market analysis. The LUCIS model is a good example of the combination of GIS analytical tools into extension, accessible for urban planners. Kumar and Sinha (2006) have shown the free possibility of using GIS analytical tools. Geographic Resource Analysis Support System (GRASS) was used in their research as a tool for urban planning.

Using the ESRI software, our Czech project team applied mapping capabilities, which are fully integrated into computer applications for any business sector that deals with spatial data, including applications accessible via the Internet. Moreover, through creative layering and geo-referencing of all forms of digital data (including text, graphics, spreadsheets, architectural and engineering plans/drawings, aerial photographs, video, environmental data, and map features) the Czech partner applied the powerful analytical, management, and communication tools of GIS. GIS was applied to manage and analyze spatial data related to the Hranicko microregion (the attraction zone of Hranice city as a seat of the municipal office with extended competency), as well as to develop and deploy desktop map applications for the local government sector.

Geographical information systems are technics with very powerful analytical capabilities. By integrating these tools and incorporating mapping functions into spatial planning and decision-making processes, the project enhanced understanding of what is really happening in the Hranicko microregion and further enhanced the municipalities' visions of what can be achieved. The Czech partner maintained GIS capabilities to implement a complete range of services into spatial planning: data input, capture and manipulation; geo-coding of data; data evaluation and auditing; data conversion and standardization; spatial data integration to existing database structures; customized map production; development of database architecture and structure; complete application development with GIS and mapping functionality; complete spatial analytical services; web-enabled mapping and database access; full-colour, large format hard copy output; generation of a variety of digital media formats.

Ideal GIS compatibility for powerful and sufficient project implementation means the same configuration of all GIS components (hardware, software, data, and system structure) which are not strictly required. However, it is required to fit interoperability for all processes, analysis, modelling and

simulation in GIS. Configuration of the Czech GIS approach consisted of a university hardware platform (servers and workstations, peripheral devices – digitizer, scanner, and plotters) and licensed software products (ESRI ArcGIS 9.x, Autodesk Map 3D 2005, Bentley MicroStation V8). The product Kristyna GIS which is free software was also used for distributing outputs from GIS applications. Spatial planning uses GIS capabilities for evaluating business plans and activities in regions. These evaluate questions referring to business plans and human activities: what to introduce or establish; what to support; what to sustain; what to reduce; what to terminate; what to eliminate and not allow to create.

All the above mentioned topics include three basic aspects: spatial (where to locate them), temporal (when to carry them out) and procedural (how to implement them). Within the spatial framework of the GIS implementation the area under investigation was analyzed. The Hranicko microregion consists of 23 municipalities of an area of 262 km² (Friuli Venezia – 89 municipalities of 4,543 km², Western Greece – 72 municipalities of 11,000 km², Corciano – 1 municipality of 64 km²). The spatial analysis had a temporal dimension because the occurrence of a particular object and phenomena describe past, present and/or future.

The application framework of the GIS approach involved setting up a number of spatial applications (participatory processes – given questions), some of which are common for all partners and some of which were peculiar to individuals. To solve problems in the region the all the teams defined indicators of crucial conditions and activities, collected geodata and entered them into GIS, formulated questions (topics) to be answered, processed analysis and modelling procedures, and finally produced many maps and an atlas of development. There is a close relationship between GIS and decision support systems because geographic data is relevant to many types of problems where spatial decisions are used. Many applications in decision support systems use a geographical context for the development of visual interactive techniques.

Data and geodatabases

Current GIS provides a convenient interface to the large volumes of data made available by transaction processing and routine data collection. If spatial data are to be included in such a system, they must be stored in a form that allows spatial relations to be maintained and must employ systems with an interface that allows spatial queries to be generated.

Based on project goals, territory of regions and planned operations, each partner worked with different map scales. The selected map scale determined

data precision and accuracy. Generally, it is recommended to carry out regional analysis at a map scale 1: 25,000. Each country has a mapping agency managing large cartographic data sources with various map scales. To obtain fundamental topographic data in 1: 25,000 map scale is a crucial step of GIS implementation. Other thematic data (e.g. demography, transport, economic, etc.) are then collected at the data provider's map scale and generalized into an "operating scale" of 1: 25,000. Data processing within GIS was managed according to the following steps: collecting basic geodata (for/within GIS); creating a topographic database; defining indicators; collecting application geodata (for/within GIS); generating a data model (indicators as data layers); defining spatial analysis; generating spatial models (within GIS); processing modelling; interpreting results; presenting results (within GIS by maps/atlas).

Various sources were used to capture data. Spatial data, statistical information, municipality plans of all municipalities, output from other INNOREF projects and much other input played important roles into the GIS. GIS managed data from the entire region despite many problems with data integration. GIS data was collected from existing paper maps by digitizing them, which was an extremely time-consuming and labour-intensive process. Alternatively, scanning was used to record selected information on the maps. Information from remote sensing (aerial photography) was also used to extract large amounts of data. Unfortunately, deriving information from photographic images presents problems with the identification of the recorded spatial objects. Data collection for the project was supported by the GPS technique due to easy identification of the location of any point in the region. In the project, GIS was an organization environment to manage information about different types of spatial objects and processes located within the microregion. As not all of these phenomena were relevant to spatial planning, however, they were necessary for the management of interactions between them. The accurate computer processing of networks allowed further managing of the high-quality GIS data. Within GIS, data on specified phenomena were arranged in one large geodatabase as data layers in a vector format. This allows multiple uses of any data in the geodatabase, displaying data by these layers. Some data representing objects were connected into networks, such as roads, pipelines, cables, and railways.

GIS as a basic tool for managing local development

The project used a number of approaches for solving all project aims. The Czech partner was assigned to be responsible for supervising the implementation of GIS (modelling, simulation, data interpretation and map production) into the project. The coordinator understood the “responsibility” for all partners or their GIS representatives, and provided assistance when some phases of the GIS implementation were either too complicated or required unique processing. The Czech partner decided to use GIS technology as the main tool for managing local development at the Hranicko microregion using the widest range of its capabilities. The application is focused on the implementation of brand new methods using the geographical information systems in the sphere of strategic planning with the following main goals:

- detailed mapping of the region and obtaining of data about the domain from the up-to-date ground plans, actual maps
- collecting data of the actual municipality plans in digital form, conversion of this data to the vector form in order to use in GIS, georeferencing, design of the seamless vector municipality plan of the Hranicko microregion
- organization of the set of indicators for sustainable growth for better evaluation of regional development
- spatial analysis, which can uncover collisions in the landscape assimilation and landscape planning with its potential
- spatial analysis, which can show the disproportion in the placement of the actual and planned anthropogenic activities in both the landscape and the urbanized domain.

The strategic spatial planning method was used in this project. This method connects urban planning with strategic planning in GIS. The use of this new method facilitates economic growth, social progress and the improvement of environmental quality in the project area. The final GIS implementation into spatial planning led to the following achievements:

- enlarging and equalizing the spatial information about the domain in order to simplify the decision processes on the local level
- establishing and compiling the thematic data layers using the GIS technologies and their implementation to the GIS system of the Hranicko microregion
- single implementation of GIS and innovation of the IT literacy on the local level, using work from the digital form of the land-use planformation of the seamless vector municipality plan of the Hranicko microregion for the simplification of the decision processes

- reform of the landscape economy, its more efficient use and optimization of the placement of the activities for the improvement of living standards, regeneration and reduction of costs of some activities and an increasing level of awareness.

Strategic spatial planning and sustainable environment

In the last few years we have seen a significant increase in the importance of spatial planning as part of the social process and development in the affected regions in developed countries. It is suitable to use GIS for high-quality strategic planning on the level of municipalities and regions (Batty, Densham, 1996). GIS uses spatial data (especially detailed digital spatial documentation), as the basic input. In order to maintain the landscape and the society in a sustainable balance, we must use GIS and plan its use in an extremely responsible manner that will ensure the balance of physical-geographic characteristics of the land and social needs while taking into account the necessity of joint long-term development.

Unfortunately, spatial planning sometimes strives for the best distribution of human activities at the expense of environmental conditions. It is environmental conditions that should play an essential role in spatial planning. In practice, it often happens that new buildings are built on places that are unsuitable for human activity (floodplains, landslide areas), thus leading to a conflict between physical-geographical conditions and human activity both existing and proposed. If we are able to direct human activity into more suitable areas, we will have better-functioning spatial structures in the whole region and will benefit from positive economic results such as lower costs for infrastructure construction and maintenance and longer usage.

Current users of municipality plans are of the erroneous opinion that the creation and maintenance of municipality plans in GIS is a simple routine task (Waddel 2002). However, to define the data model of the plan, to ensure compatibility of data sets (spatial, attributive and temporal), to develop editing and analytical tools that would lead to corresponding functionalities of the system, and to compile the resulting visual presentation environment of the municipality plan is a demanding and complex task that should only be performed by professional geo-information experts. In the current practice adopted in the partner countries (the Czech Republic, Italy, Greece) there are still no mandatory methodologies that would be able to regulate the creation of unified and high-quality (in terms of geography and geo-information) municipality plans and related spatial (geographical) documents.

Innovation and resource efficiency as driving forces for a sustainable growth (INNOREF project)

The INNOREF project, financed in the framework of the INTERREG IIIC East programme and managed by the Unit for General Affairs and European Policies of the Directorate for Agriculture, Natural Resources, Forestry and Mountain as the lead partner, aims to affect the regional development by improving the use of local resources, by setting up and promoting sustainable product line and by establishing cooperation among different economic and social sectors and suitable regional marketing structures.

INNOREF also aims at the enhancement of bottom-up approaches and at facilitating the dialogue among the various stakeholders. The key strategy is to foster an endogenous development, directly supporting local authorities in capacity building and upgrading. The methodology, implemented, simultaneously in the four Regions involved in this Regional Framework Operation, relies on the participation of the civil society in the debate on how to transform the project area in a model of competitiveness and dynamic economy based on innovation and knowledge.

Spatial planning and sustainable development have been developed as a method in the EU over a long period, and have resulted in the European Spatial Development Perspective (ESDP). This need for a strong connection between spatial planning and sustainable development has been the focus of many international reports. The World Commission on Environment and Development (1987) identified environmental planning as one of the five instruments to 'internalize ... consideration of the environment in development decision-making' (UN 1987: 36).

Another strong recommendation can be found in the UN's Agenda 21: Global Programme for Action on Sustainable Development (1992), which made firm recommendations for strengthening integrated land use planning to resolve increasing conflicts over land use and development.

Stra.S.S.E. project

The project Stra.S.S.E. *Strategic Spatial Planning and Sustainable Environment* was carried out thanks to a close cooperation of the Hranicko micro-region in the Czech Republic, the Italian regions of Friuli Venezia Giulia and Umbria and the region of Dytiki Elada in Western Greece. The teams of Comunita Montana del Torre, Natisone e Collio from Udine, Italy, (Lead Partner), the Greek Industrial System Institute ISI from Patras, Greece, the Italian

Comunita di Corciano, and the Czech Department of Geo-Informatics of the Faculty of Science of Palacký University in Olomouc worked together on the project. Each partner was responsible for specific partial tasks, which were then discussed and debated.

The aim of the project also was to launch a modern system of spatial planning for sustainable development in different parts of Europe. Their intention was to contribute to the improvement of structural planning in the partner countries, with the use of modern information technologies, and the launch of a geo-information system in the area, as well as to improve the development and cooperation of municipalities in the region. The project led to a verification of the unified approach to land-use planning and the monitoring of planning process in various legislative and technological conditions and in different areas in the partner countries.

The most relevant content of the project was:

- a participatory process as a method to achieve the long-term vision of sustainable development;
- the creation of local competence for planning, researching concepts, implementing, resolving conflicts, and utilizing GIS capabilities;
- a diagnosis of the principal territorial trends of the project-areas as well as their difficulties and potentialities;
- a cartographic picture of the major territorial indicators and their intensity, by using GIS applications This process would, if possible, draft a *key diagram* representing the spatial framework of strategic vision for project-areas, identify those areas that need to be protected and enhanced, and further identify the core areas to which growth will be directed.

During the development of applications the core activity of the project, owing to the regional needs and as an output of the participatory processes, was strongly aimed at building up a methodology for strategic planning, with the definition of some integrated tools and appropriate instruments to improve the spatial coordination of land use and sector policies. All of this was aimed at minimizing conflicts over land use by providing more and better information about the subjects of the conflict.

Approach and methodology

The project was aimed at enhancing a participatory approach to spatial and environmental planning in the drafting of new models for regional development and at involving stakeholders, local bodies and citizens by promoting modern regional knowledge. The project was conceived to create an in-

tegrated sector approach in order to draft mid-term scenarios for the development of each regional area. This approach used GIS technologies to design cartographic outputs and several spatial scenarios and, if compatible with regional achievements and needs, a key-diagram (Figure 1).

The project design was driven by technical, participatory and management approaches:

- The technical approach was focused on development by integrating external/internal expertise in strategic spatial planning methodologies, economic modelling, and GIS applications directed to regional partners. The first step was achieved in building up *Guidelines for strategic spatial planning* to deploy a working methodology towards economic and GIS applications.
- The participatory approach was guided by the Umbria partner dealing with the *Guidelines for participatory process* in order to deploy the best methodologies and approaches, respecting the needs of each regional area. The external expert was also involved in sharing and surveying the participatory methods and activities in the regions. The local partners were in charge of the regional workshops involving private/public stakeholders, aiming at defining the main regional problems and opportunities and evaluating the outputs of the project. Another main task for the regional partners concerned the establishment of local partnerships for development (pioneer networks) as stable structures of knowledge, and its dissemination in governance strategies, strategic spatial planning and participatory processes. The enhanced knowledge of these local partnerships permitted the development of a new approach to local governance as a first step towards a new regional approach to competence.
- The management approach was supervised by the Steering Committee, formed by the regional project managers and by a consultant manager, which took care of administrative and financial management. The Committee previously took care of technical activities and shared the achievements of the regional partners, as a Technical Board. It also played an important role in trans-national cooperation.

The involvement of all the partners' stake holders was strongly respected during the project's development. This policy, as a main reference for the regional partners, allowed an understanding that the competences of each partner could be enhanced to reach better results in building up the core issue of the project: the growth of regional knowledge in technical approaches and policies for sustainable development. This could be accomplished by sharing each other's competence and defining a joint methodology in spatial planning and participatory activities. The strong involvement of the partners and the shared methodological results of the project were important factors that required

to permanently take into account the different regional needs, owing to the output of regional networks, the different institutional contexts and the competences of each partner. The partners, during the Technical Board meetings, drafted a common framework in which each partner enhanced its own typical activities, research and final output. In the same way the participatory approach, owing to the common methodological framework designed in the *Guidelines for participatory process*, was aimed both at the regional institutional context and needs.

Table 1. Objectives on regional areas

Partner	Spatial planning	Participatory approach	Final outputs
Comunitá Montana Torre Collio natisone	Spatial impact of strategic visions of mountain regional areas new policies	Involvement of key-actors/stakeholders action planning	Sustainable investments and sustainable transformation central places polycentrism
Industrial Systems Institute of Patras	Development of agricultural and touristic policies on a municipality area	Involvement of local and regional public bodies	Methodology for managing indicators at local scale for a sustainable development
Palacky University Olomouc	Planning activities using GIS scenarios and outputs	Involvement of local and regional public bodies	GIS applications for defining scenarios through sustainability indicators at regional scale
Comune di Corciano	Re-use an renewal of unused industrial areas for social and production activities	Involvement of local and regional public bodies	Re-use of industrial through cooperation between public and private stakeholders

The partners, owing to the different aims, settled, with the help of external experts, upon giving the project the mission of framing regional contributions into a unified context which would enhance the methodological contribution of the project while adhering to regional approaches and demands. The project gave the partners a shared toolbox for analyzing the regional project-areas, a unified methodology to approach the spatial planning capabilities, a set of GIS applications, and a complete set of participatory approaches to enhance the knowledge of regional networks, public bodies and local stakeholders.

THE SHARED OUTPUT

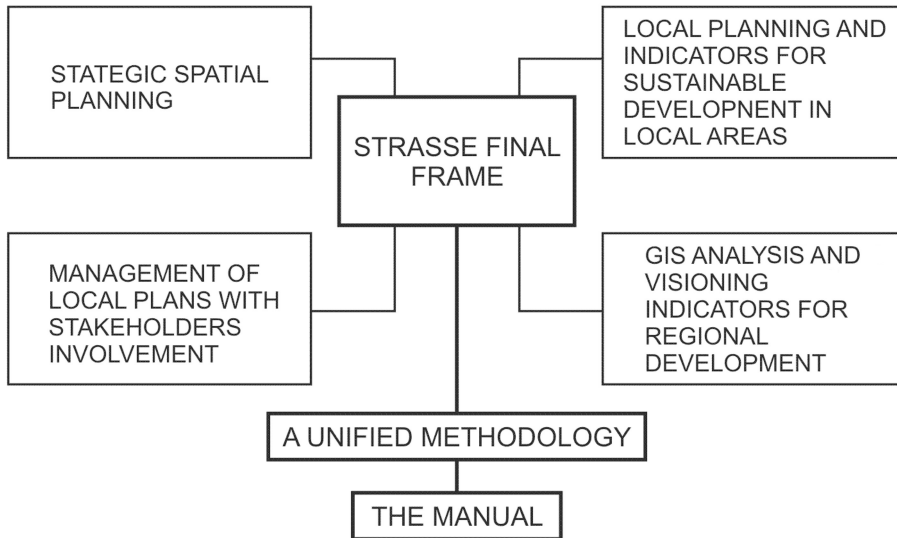


Figure 1. The framework of project Stra.S.S.E.

Source: Marchetta 2007.

The technical outputs of the regions

The research activities developed and each partner reached various outputs.

Friuli Venezia Giulia, Italy (lead partner): Comunità Montana Torre Natisone Collio

The research study was carried out on the regional mountain area as an exploration of strategic planning methods and an investigation on the future of these places. The research answered several significant questions. What spatial dimension must be considered as relevant for strategic planning? Which relations can be defined between spatial scenarios and the visioning process elaborated by local stakeholders? What hierarchical consequences come from small-scale strategic planning to large-scale territorial projects?

Facing these questions, scenario building was used as a research tool to investigate hypotheses and spatial configurations derived from the implications of strategic choices. Scenarios represent a way to approach the future and its uncertainty taking into account that many territorial changes are often determined by external causes with weak controlled by individual choices or fore-

casting. Moreover, certain scenarios explored a range of extreme situations based on “what-ifs” (MVRDV 1999): “what could happen if ...” in relation to economic, social and physical processes, and can therefore be used as a useful medium to involve local communities and support participatory processes.

In the Friuli Venezia Giulia work, scenarios at the regional level were elaborated in order to describe the possible territorial consequences of today’s choices considering the whole region as a strategic framework for the future of the mountain area. Among these possible scenarios some could even be more probable than others. These can be assessed by comparing the extensive scenarios to the strategic visions elaborated by the local communities (Local Action Plan actions carried out by Friuli Venezia Giulia Region) and outlining common features.

Western Greece partner: Industrial Systems Institute of Patras

The Greek partner developed a planning system *Limits of Acceptable Change (LAC)* that helps achieve sustainability. LAC presents a method that recognizes the state of natural resources as the most important question and deals with the repercussions from use and not the use itself. When the conditions approach a minimum acceptable level, then the level of use represents the carrying capacity of the region.

LAC was originally designed to manage recreational uses in wilderness areas, but its utility in the last years extends far beyond this challenge and may be utilized in a more general way in order to address development issues. Thus, it could provide the generic framework for identifying appropriate management actions in an area. It could be utilized in the framework of sustainable development in order to address the issue of how an area should be developed and give answers to questions relevant to the ability of a region to sustain development related to a specific sector of economic activity.

The LAC planning system components include: specification of acceptable and achievable resources and social conditions, defined by a series of measurable parameters; analysis of the relationship between existing conditions and those judged to be acceptable; identification of management actions necessary to achieve these conditions and a program of monitoring and evaluation of management effectiveness.

The Municipality of Amalias in the Region of Western Greece has been chosen for the pilot application of the LAC methodology with reference to two important sectors: the agricultural sector and the tourist sector.



Figure 2. The Municipality of Amalias was the area for the pilot application of the LAC methodology

Source: Marchetta 2007.

Hranicko microregion Czech partner: Palacký University Olomouc

The core activity of the Czech partner was focused on using GIS to reference and analyze spatial data related to the Hranicko microregion, as well as to develop and deploy desktop map applications for the local government sector. The GIS application developed by the Palacký University Olomouc also supported the activities of other partners.

Rapid advances in GIS technology in recent years have greatly expanded the utility of GIS and the scope of the application of these spatial data management tools. The strength of modern GIS tools is their ability to instantly relate varied information types and sources to concrete, real world circumstances in combination with powerful tools for analyzing and visualizing the feasibility of what can be imagined. However, many current GIS applications do not exploit the full ability of GIS techniques to facilitate the information needs of top-level management. Future GIS programs are likely to develop additional capabilities in this direction to build on the large volume of operational spatial data found in many large organizations and governments. The project applied mapping capabilities, which are fully integrated into computer applications for any business sector that deals with spatial data, including applications accessible via the rapidly growing avenue of the Internet. More-

over, through creative layering and geo-referencing of all forms of digital data (including text, graphics, spreadsheets, architectural and engineering plans/drawings, aerial photographs, video, environmental data, and of course any map features) the Czech partner applied the powerful analytical management and communication tools of GIS.

Umbria Region partner: Comune di Corciano

Corciano already defined a strategic vision for its territory, in the framework of the Strategic Plan Perugia, which Corciano refers to. This area includes the regional chief town Perugia and six other municipalities (Corciano, Bastia Umbra, Deruta, Marsciano, Torgiano and Umbertide) which represent the central part of the Umbria Region. Its most important features are high quality of public services and local government, cultural, historical, artistic and environmental richness, high economic development and difficult access to the area.

The Plan represents the strategic context in which Corciano moves. It is the strategic point of reference for Corciano. According to the plan, Corciano is involved in restoring an old industrial area in order to change the use of the land for new residential, social and commercial activities. The micro-region in which the spatial planning activities and the economic analysis are applied is a meaningful part of the municipal territory, the area Ellera–Girasoletto. The planning activities are focused on the project for reuse of an old disused industrial area, named *Ex-Ellesse*.

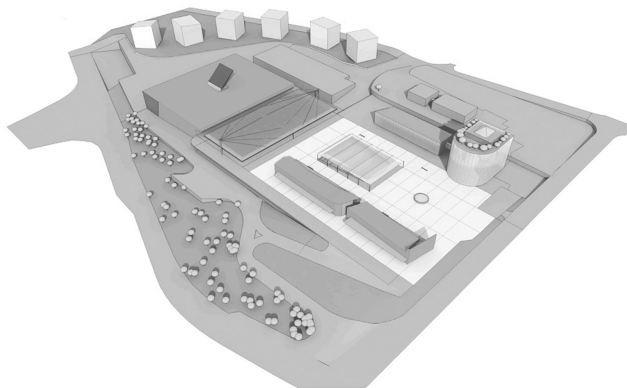


Figure 3. Perspective view on the final project proposal of ex-Ellesse Area

Source: Marchetta 2007.

Towards sustainable development in Hranicko

The Hranicko microregion is situated in the central part of Moravia with good traffic accessibility and a long agricultural and industrial tradition. There are favourable environmental conditions in the microregion, many environmental sites are present – healthy woods, interesting landscape features, various protected areas, etc. Agricultural landscape is suitable for tourism and agrotourism.

Hranicko microregion

The Hranicko microregion consists of 24 municipalities which belong to the administration district of Hranice. Its total area is 269.52 km². The largest municipality is Hranice (49.79 km²). Four municipalities are larger than 10 km² and 7 municipalities are smaller than 5 km². The population of the Hranicko microregion is 32,078 inhabitants. More than 61% live in the town of Hranice. Only three other municipalities have a population higher than 1,000 inhabitants and there are 15 municipalities with a population lower than 500 inhabitants (the smallest municipality, Dolní Těšice, has 36 inhabitants). Population density is 119.22 persons per sq. km. The unemployment rate is 13.1 % (average in January 2011) and varies from 4.3 to 25%. The present economic situation in the Hranicko microregion is greatly impacted by the dominant position of the town, Hranice. Most of the microregion's population lives in Hranice.

Development scenarios in the Hranicko microregion respect available conditions, options and occasions, human sources and aims of society. All conditions of the area focus on a better reuse of renewable energy, the rapid development of tourism and the swift revitalization of the historical centres of the municipalities. There are activities that encourage the improvement of the economic situation in the microregion. It is necessary to take a lot of small steps simultaneously with implementation of these aims. There is close collaboration among the municipalities that is based on joint spatial strategic planning, because some of the activities are still unrestrained and spontaneous. There are not many municipalities with their own infrastructure, services for quality life (good roads, potable water), services for visitors (accommodations, good restaurants, rentals and garages), etc. Lately, municipalities, people and stakeholders are better informed about conditions and opportunities for private enterprise, business, trade and others. Many sources of information are offered via websites, advertising companies and promotional

materials, but the spatial information (i.e. municipality plans, cadastral maps for public body, inhabitants and stakeholders) are still missing. That special information is used to make responsible decisions about the future of the microregion, and about life in this area.

Indicators of environmental, social and economic situation

GIS plays a similar role to executive information systems that are used to provide easy access to large volumes of data which address problems of interest to the general management of organizations or local governments. They can also incorporate external data sources, many of which are spatially related. The importance of spatially related information means that GIS needs to facilitate a spatial query and information retrieval, as well as access to traditional forms of data.

An indicator is a feature of one of the spatial phenomena in the region expressing investigated topics. All indicators were understood as the phenomena's attributes which can be measured and expressed by maps. These indicators are stored in GIS geodatabase as size, length, figure, quality, density, etc. Indicators were classified into three groups – environmental, social and economic.

Table 2. List of indicators

Environmental indicators	Social indicators	Economic indicators
Proportion of area with renewable source of energy	Length of tourist and bike lanes	Number of businessmen in tourism
Rate of protected areas	Urban area without traffic	Number of certificate products
Rate of built-up areas	Inhabitant rate with sewerage plant	Number of multilateral activities
Inhabitant rate exposed to hazard	Inhabitant rate with insertion of drinking water	Unemployment rate
Waste management	Number of pupil at school and nursery school	Number of employment handicapped persons
	Number/ capacity of library	Number of businessmen
	Number of places with internet	Number of working places with social contents

During the integration of regional data a number of problems arose at the stage of data collection. The majority of the information was acquired by time-consuming and laborious digitalization of existing paper maps. A lot of information was also acquired from remote-sensing data (aerial scans), despite problems with identification and the interference with information about spatial objects. Data collection was supported by GPS.

Table 3. List of datasets introduced for GIS implementation in the Hranicko microregion

Basic geodata	Administrative boundaries, rivers, dams, lakes, cadastral maps, built up areas, roads and railways, hypsometry (contour lines and height points), forests
Applied geodata	Indicators of environmental, social and economic situation, alleys, urban plans, archaeological site, protected areas of gas pipelines, biochores, bike pathways, tourist pathways, transport, ecologically important sites, electricity, function areas, geobiocenoses, protected landscapes, sewerage, spas, melioration, municipal reservation, unemployment, NATURA 2000 sites, domestic waste, protected areas of mining, optical cables, heritage sites, hygienic zones, gas pipelines, activities, schools, libraries, internet accessibility, sewage disposal plant, entrepreneurs, renewable energy, landslides, skiing areas, mining sites, undermined areas, water pipelines, botanic sites, momentous tree, floods, agriculture, soils, precipitation, air temperature, wind, snow cover, land use/land cover, plan production fields, animal farms etc.

Municipality plan as a data model for spatial planning

The municipality plans are the most used documents of the public administration in the Czech Republic. Czech municipality plans consist of two parts, the textual part and the cartographical part. The cartographers perceive municipality plans as thematic maps with special cartographical symbology and they think the symbols on these municipality plans should be understandable not only by city planners but also by the city managers and citizens. The trend in cartography is to create digital maps in GIS more than paper maps (eg. Matless 1999, Monmonier 1996). At the same time this saves time and money. But municipality plans in digital format are a problem because Czech municipality plans are lawful only with a certified stamp and the signature of the authors; the stamp and signature on municipality plans on web sites are not approved (Burian, Štávová 2009).

A Geo-information approach adopted to deal with spatial planning unequivocally confirmed the suitability of municipality plans as a source for the proposal of data models of a GIS project oriented at resolving spatial planning and sustainable development tasks. In this case, GIS plays the role of an integrated environment for the management of data about different types of spatial phenomena and processes that take place within a region. A municipality plan represents the source of thematic information about spatial phenomena in the area of interest. Thorough processing of digital data into relational data models enables areas to reach a higher quality of geographical data management and administration. Data was put into an extensive geodatabase in vector layer format. Thanks to this organization multiple uses of data are possible.

The data model was compiled using given methodologies from converted or scanned and vectorized municipality plans of 31 Hranicko municipalities. After testing several software products (ArcView 3.2, ArcGIS 9.2, Microstation V8, Autodesk Map 2005 CZ), AutodeskMap was used for the processing, and ESRI shapefile (shp) was selected as the output format.

Surprisingly, the conversion of digital municipality plans in the CAD formats (including post-processing) was extremely time-consuming; the conversion of one municipality from CAD to GIS took on average 18 hours, which was even more demanding than manual digitizing of analogue municipality plans. The reason for this is that during the manual digitizing high-quality, topologically correct data is created from the very beginning, and it is not necessary to make any further corrections, compared to vector CAD data which is often converted incorrectly.

These digitally created municipality plans in the SHP format were merged geometrically and generalised (merger of attributes) into one seamless vector municipality plan of the whole microregion (Burian, Šťávková 2009). It was discovered that some municipality plans do not connect (errors made by the processor of the municipality plans) and some overlap. All inaccuracies were corrected semi-manually or manually. The final step was the merger of the keys of the individual municipality plans into a unified key.

Taking into account the detail rate of the individual municipality plans in terms of the scale of the original plans (1 : 2,880, 1 : 2,000, 1 : 5,000, 1 : 8,000) the issue of the resulting scale is debatable. The scale of the majority of the municipality plans was 1 : 5,000, and they included map cuts (1 : 2,000), often in the form of “magnified objects”. Despite the above mentioned facts it is possible to determine the scale of the seamless municipality plan of the Hranicko microregion, at 1 : 5,000.

Spatial conflict analysis

To make a geographical assessment of development activities in the microregion, we selected an approach which was easy to implement into GIS that maintains the necessary quality and accuracy of spatial information. The methodologies used for landscape and spatial planning are the most suitable ones for this goal, as they work with particular geographical topics and search for localities where there is conflict between the development activities (social and economical) and environmental conditions.

The observed conflicts were selected on the basis of the extent of the compiled geodatabase. The following phenomena were excluded: phenomena that do not occur in the given area, that are very improbable (earthquake, volcanic activity) or that cannot be fully localised (e.g. hailstorm), that have a scale

too small for the given purpose (meteorological data by the Czech Hydrometeorological Institute), and that cannot be acquired or that do not exist (e.g. valued soil-ecological units, precipitation data, climatic data).

The following were labelled as development activities: areas newly designed in the municipality plan for human activity, e.g. areas intended for utility services, parking spaces, industrial areas, manufacture areas, arable land, and agricultural production premises. The analytical processing also separately included similar existing activities. Data layers of functional areas, built-up areas, areas possible to build on, and transportation areas were used for these purposes. On the basis of calculations over the data model, it was possible to delimit a total of 2,845 ha of land defined as a currently built-up area and 265 ha of land on which it is possible to build.

Particular spatial conflicts were analysed with the use of the “select by attributes” and “select by location” GIS operations which were used to locate the overlay of the given physical-geographic phenomenon with the existing and proposed development activities. Such spatial analyses to discover the overlay of data layers will be referred to as spatial conflict analyses. Spatial conflict refers to the conflict between the environmental conditions and human activity (existing and proposed) in the area. Statistical GIS tools were used to calculate the share of all the affected areas for each conflict.

Spatial conflicts can be divided into three categories according to the degree of seriousness. No publication is known to the authors that would make use of such an analysis of spatial conflicts. The most serious conflicts are placed in Category 1, the least serious in Category 3. Because the opinions of experts on this issue often differ, in some cases the categorization may be debatable. The same can be said about the weight of a conflict of the 1st degree of protective zones of water or with the 2nd degree of the same. A conflict with an active landslide area has much more weight than with a potential landslide area. Analogically, such an example may be found in every category. Therefore, the categorization has to be considered as targeted for the given method.

Category 1 includes conflicts that can have catastrophic impact on the proposed activities but where construction in these natural localities will not have a significant influence on environmental conditions. Category 2 includes conflicts that would mean deterioration of the quality of the environment in the case of human activity. Category 3 includes other conflicts that are rather related to the unsuitability of human activity in the given areas and whose weight is not as large as in the two preceding categories.

Table 4. List of spatial conflicts

1 st degree (very serious)	2 nd degree (less serious)	3 rd degree (least serious)
Flooding areas – estimated flood line, floods in 1997 Landslides - active, passive	Soils of good quality Protected areas of water sources Protected areas of forests Protected areas of mining areas Protected areas of national parks Protected areas of landscape parks NATURA 2000 Water logging areas Ecological important places	Inappropriate insolation Inappropriate slope

Results

The most important aim was reached by putting into practice the “Key Plan” of the strategic goal for the areas of interest and by giving direction to those areas that needed support and patronage in the sphere of economic and social growth, via providing knowledge of strategic planning and development of activities on the local level, improvement in and increase of general awareness, and use of ICT methods and technologies.

There is plenty of new information which was obtained from spatial analysis and findings interpretation. The most relevant achievements have been published in various forms, mainly in guidelines (Marchetta 2007), posters and oral presentations at conferences, papers in scientific journals (Burian et al. 2007, Kilianová et al. 2008, Burian, Štávoá 2009, Pechanec et al. 2011), maps and an atlas (Voženílek et al. 2007). All these output types involve guidelines/methodology/recommendations, new land information, valuable information for local entrepreneurs and investors, strategic information for emergency management, useful information for microregion inhabitants and practical information for visitors.

Hranicko – atlas of microregional development

An Atlas, a collection of maps in various scales, offers many comprehensive spatial and descriptive pieces of information. “Hranicko – atlas of regional development” is a publication compiled within the project to focus on the regional development in the Hranicko microregion. The atlas was designed as a thematic regional atlas in the form of an atlas encyclopaedia in which the maps are the basic information elements. The atlas includes more than 170 maps in 6 chapters and a high proportion of text, photos, tables, graphs or diagrams that increase the information value of the research (Figure 4).

The atlas, whose users are officials, such as the chiefs of municipalities, is a cartographical and visual presentation of the research of the Hranicko spatial development phenomena. It holds themes that influence the present and future development of the area. The contents of each digital map alter according to the view scale and visualization integrates map contents with dynamic technologies. That was the reason to use maps as the fundamental means for project output. Nevertheless, limited map display capabilities are a recognized feature of non-GIS-type applications and such a presentation is seen as reducing information overload. However, the Czech partner's GIS skill gives an outstanding advantage to the Stra.S.S.E. team. The maps forming the Czech part of the project's achievements are one of the most practical tools impacting local management in the Hranicko microregion.

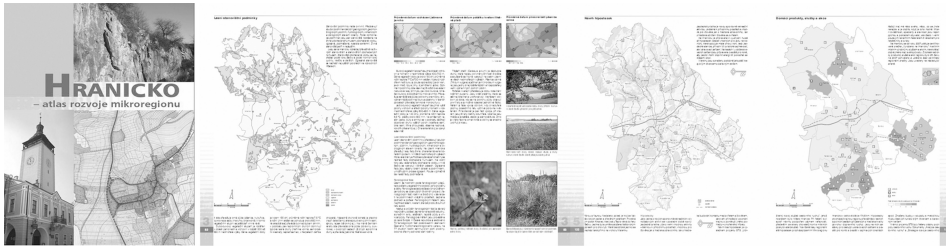


Figure 4. Cover and pages of the Hranicko – atlas of microregion development

Source: Voženilek a kol. 2008.

Three editions of municipality plan

Three editions of the Hranicko microregion digital municipality plan present a large view of the information. The first edition consisted of 31 separate CDs with digital raster or vector municipality plan data, depicting individual municipalities in a user-friendly and simple environment. The second edition contained CDs with vector geo-referential data of municipality plans in the environment of the Kristyna GIS product. Both editions were distributed freely to the Mayors of all the municipalities in the microregion and were enthusiastically welcomed, which contributed to the decision to make Edition 3.

The third edition offers a CD with a “Seamless vector municipality plan of the Hranicko microregion” with three seamless thematic layers of municipality plans for all the municipalities in the microregion. The self-run CD contains spatial data of municipality plans unified into compact thematic layers for the whole microregion. This approach enables the users to get information about the situation, use and intentions of the given areas, as well as prevents

conflicts in planning and use of activities in marginal and border areas of the municipality. Also it supports distribution of information about the neighbours' plans and provides possible solutions to some situations.

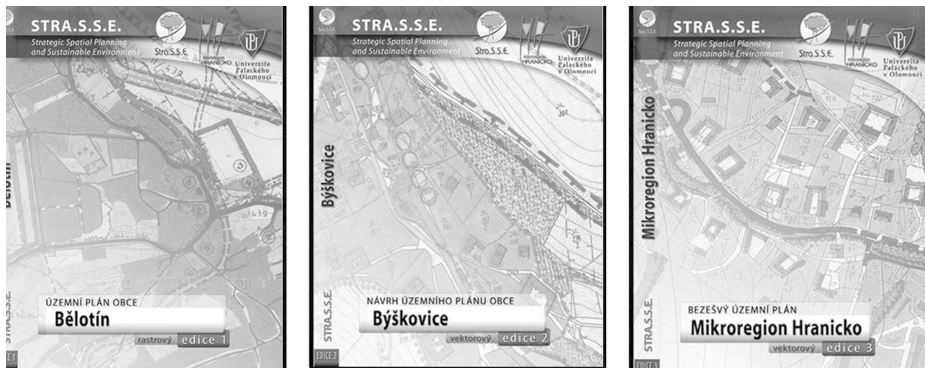


Figure 5. Three editions of urban plan for Hranicko microregion

Source: authors from Department of Geoinformatics, Palacký Univerzity Olomouc.

Spatial conflicts

The Czech team made a contribution by making a detailed analysis of the spatial conflicts in the Hranicko microregion. The results of the analyses of spatial conflicts have shown that society has an insufficient respect towards the environment and its manifestations.

As an example of the results of the spatial conflict analysis we can state the delimitation of conflicting areas with the floodplain Q_{100} . Thanks to the spatial analyses the total of 180.1 ha of currently built-up area (representing 6.3% of the Hranicko area) and 8.23 ha (3.1%) of area possible to build on was delimited. After a detailed analyses of individual areas, we find that there are approximately 2% (6.6 ha) of newly designed residential area, 11% (3.9 ha) of newly designed civic amenities area, 31.5% (22 ha) of designed leisure and sports area, 25% (23.5 ha) of existing leisure and sports area, and 0.5% (0.7 ha) of designed production activities.

In the Czech Republic, flood areas are defined and delineated by major water streams for 60 % of their length. Flood areas are currently intensively used for many human activities, leading to the creation of spatial conflicts (Pechanec et al. 2011). If we make the same calculation with a spatial analysis of the floodplain area (taking the floods in 1997 for reference), the share of currently built-up areas that would be hit increases to 7.1% (202.5 ha) and the areas possible to build on increases to 4.9% (13 ha). Similarly, the share

of designed leisure and sports area will increase to 34.2% (24 ha) and the share of area designed for production activities will increase to 4.3% (5.9 ha). On the other hand, there will be a decrease in the designed residential area (0.5% – 1.6 ha). The total of 6 km of class I roads can be found in the floodplain. At the time of the 1997 floods it was 4.4 km of class I roads.

Despite a number of technical problems related to the compatibility of data sources (borders of individual phenomena had up to hundred-metre differences) the imperfection of spatial planning (in terms of the quality of the digital processing of the municipality plans and in terms of the designation of new activities in unsuitable localities) was remedied thanks to the use of the GIS environment and the use of other geo-information technologies (remote sensing, the GPS navigation and positioning system, CAD, and others).

Conclusions

The Stra.S.S.E. project brought the establishment of a “learning culture” focused on participatory spatial planning activities among public/private bodies, improved ICT methods and technologies and e-government applications. The research in spatial planning has integrated planning strategies based on participatory processes within the GIS application for enhancing capacity building and cooperation among public bodies. Due to the building up of cooperative structures and involving public activists and stakeholders on “micro-regional level” the integrated approach for spatial planning has been introduced into local governmental practice.

The project team oriented the activities at creating new governance models in regional areas: new visions for development, integration with participatory processes, new evaluation standards (how to build up indicators), and new technological approaches by using GIS. It could be deployed towards regional and local public bodies with a new approach to the planning strategy with a particular focus on poorly developed areas and areas in which a huge effort is needed in planning activities for restructuring economies toward sustainable development. In all these areas valuable achievements have been reached.

Four teams from three EU countries focused their activities on different areas (scale dimension, problems, participatory networks, institutional background) and developed a competence in each area (in drafting economic scenarios and indicators, in developing GIS applications using indicators, in enhancing participatory processes applied to spatial problems). They shared the regional planning outputs, as common knowledge and not simply information applied to each regional activity. These outputs can be defined as an extended set of tools to use in different contexts with different aims.

The research also strongly confirmed the great benefits from GIS implementation in spatial planning for local governments. GIS provided a basis for easy building of decision support systems with the integration of additional modelling techniques. Three main outputs – an atlas, editions of thematic GIS projects and a conflict analysis – are based on sophisticated GIS procedures.

References

- Batty M., Densham P. J., 1996, *Decision support, GIS, and urban planning*, London, Centre for Advanced Spatial Analysis, University College London.
- Blažek J., Netrdová P., 2009, *Can development axes be indentified by socio-economic variables?* The case of Czechia, *Geografie*, 114, 4, 245–262.
- Brail R. K., Klostermann R. E., 2001, *Planning Support Systems*, ESRI Press, Redlands.
- Burian J., 2008, *GIS analytical tools for planning and management of urban processes*, Sborník symposia GIS Ostrava 2008, VŠB-TU Ostrava.
- Burian J., Štávová Z., 2009, *Kartografické a geoinformatické chyby v územních plánech. Geografie - Sborník České geografické společnosti, Česká geografická společnost*, 179–191.
- Burian J., Voženílek V., Kilianová H., Štávová Z., 2007, *Digitální územní plán jako nástroj strategického plánování mikroregionu v GIS*, Česká geografie v evropském prostoru: XXI. sjezd České geografické společnosti, 817–823.
- Burian J., Voženílek V., Kilianová H., Kadlčíková J., 2007, *Mapování indikátorů udržitelného rozvoje životního prostředí*, Fyzickogeografický sborník 5 (Fyzická geografie – výzkum, vzdělávání, aplikace), MU Brno.
- Cudlín P., Pechanec V., Matějka K., 2001, *Důsledky povodně v červenci 1997 na změnu vegetace a způsoby využívání krajiny v říčních nivách Dřevnice a přilehlé části Moravy II*, [In:] Patera A., Váška J., Jakubíková A. (eds.), Sborník příspěvků z workshopu 2001 ke grantovému projektu GA ČR „Extrémní hydrologické jevy v povodích“ reg. č. 103/99/1470 Praha, Cicero Ostrava, 217–222.
- Halačka J., 2005, *Povodně a záplavová území v povodí správce drobných vodních toků*. [In:] Měkotová J., Štěrba O. (eds.), Říční krajina 3, Sborník příspěvků z konference, Olomouc 2005, Univerzita Palackého v Olomouci, 91–95.

- Krizové řízení* [online]. c2006, last revision , <<http://www.krizove-rizeni.cz/>>.
- Kilianová H., Kadlčíková J., Burian J., Voženílek V., 2008, *Hranicko - atlas rozvoje mikroregionu*, Aktivity v kartografii 2008, Bratislava.
- Kilianová H., Pechanec V., 2006, *Model říční sítě na území města Olomouce a vliv toku na utváření města*. [In:] Kraft S., Mičková K., Vančura M., Veselá H. (eds.), *Česká geografie v evropském prostoru*, Sborník příspěvků 21. sjezdu ČGS České Budějovice, Jihočeská Univerzita.
- Klostermann R. E., 1999, *What-If? Collaborative Planning Support System*, Environment and Planning B: Planning and Design, 26, London, 393–408.
- Kumar V. R. , Satya A. V. , Sinha P. K., 2006, *Urban Planning with Free and Open Source Geographic Information system*, Geological Survey of India, Southern Region, Hyderabad.
- Laurini R., 2001, *Information Systems for Urban Planning*, Taylor&Francis, London, New York.
- LeGates R. T., 2005, *Think Globally, Act Regionally*, ESRI Press, Redlands.
- LeGates R. T., Stout, F., 2000, *The City Reader*, Routledge, London.
- Maantanay J., Ziegler J., 2007, *GIS for the Urban Environment*, ESRI Press, Redlands.
- Marchetta F., 2007, *Strategic Spatial Planning and Sustainable Environment*, Torre Collio Natisonce, Comunita Montana.
- Matles D., 1999, *The uses of cartographic literacy: mapping, survey and citizenship in twentieth-century Britain*, [In:] D. Cosgrove (eds.), *Mappings*, Reaktion Books, London, 193–212.
- Maier K., 2004, *Územní plánování*, ČVUT Praha.
- Ministerstvo pro místní rozvoj, *Protipovodňová ochrana v územních plánech obcí*. [dokument formátu pdf] publikováno 1999.
- Monmonier M., 1996, *How to Lie with Maps*, 2. vyd., University of Chicago Press, Chicago, London.
- Pečanec V., 2011, *Modelling of surface runoff in the ArcGIS Server*. Conference Proceedings SGEM 2011, 11th International Multidisciplinary Scientific GeoConference STEF92 Technology Ltd., Sofia, Bulgaria, 931–939.
- Pečanec V., Burian J., Kilianová H., Němcová Z., 2011, *Geospatial analysis of the spatial conflicts of flood hazard*, Moravian Geographical Reports INSTITUTE OF GEONICS ASCR, 11–19.
- Povodeň – srpen 2002* [online]. c2002, last revision 2002, <http://www.darius.cz/ag_nikola/cl_povoden.html>.
- Protipovodňová ochrana v územních plánech obcí*, [dokument formátu pdf] publikováno 1999 [cit. 2007-12-06], Ústav územního rozvoje v Brně - Odbor územního plánování Ministerstva pro místní rozvoj.

- Schaller J., 2007, *ArcGIS – ModelBuilder Applications for Regional and Development Planning in the Region of Munich* (Bavaria), 16. konference GIS ESRI a Leica Geosystems v ČR. Arcdata Praha.
- Svobodová J., Burian J., 2009, *Vliv přesnosti DMR na kvalitu územního plánování*, Sborník symposia GIS Ostrava 2008, VŠB-TU Ostrava.
- Voženílek V. a kol., 2008, *Hranicko – Atlas rozvoje mikroregionu*, Olomouc, Univerzita Palackého v Olomouci.
- Voženílek V., 2005, *Cartography for GIS – geovisualization and map communication*, Univerzita Palackého v Olomouci, Olomouc.
- Waddel P., 2002, *UrbanSim: Modeling Urban Development for Land Use, Transportation and Environmental Planning*, Journal of the American Planning Association, 68, 3., 297–314.
- Zwick P., Carr, M., 2007, *Smart Land-Use Analysis*, The LUCIS Model, ESRI Press, Redlands.

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Social and economic inequality in the rural space of Israel

Abstract: This paper explores some recent manifestations of regional inequalities in the rural space of Israel. The Israeli rural space is largely made up of planned settlements, which were originally based on a principle of equal opportunity to all settlers to attain an average predetermined level of income. This principle was applied through an even allocation of agricultural means of production and institutional supporting mechanisms designed to minimize inequalities among farmers and settlements. The changes in government policy towards the rural sector which followed the economic crisis of the mid- 1980s, combined with the weakening of the stabilization mechanisms, exposed farmers and rural settlements to the vagaries of the competitive market. The spatial disparity in economic opportunities, deriving from different locational advantages and constraints, and the diversity of physical and human resources, as well as differential policies of local authorities, resulted in increasing socio-economic inequalities among households and communities. This paper is a preliminary attempt to examine a number of dimensions of inequality that exist in the rural space in Israel, and to identify the underlying factors that may explain these inequalities. The basic spatial unit under consideration is the regional council, and the data analysis produced three distinct clusters of regional councils which exhibit different levels of economic and social development. These differences are explained in part by diverse locational and population characteristics.

Key words: Israel, rural space, inequality, regional council.

Introduction

The last decades have seen a continuous economic and political marginalization of the farm sector in Israel, indicated by its decreasing share in the national economy and diminishing political power and prestige; declining incomes and rising unemployment rates of farm households and urban encroachment on agricultural land. These trends have considerable implications for the rural areas, previously dominated by agriculture as a major source of em-

ployment and income, as farmers, communities, and local governments seek to adjust to the new conditions and adopt various strategies in order to reintegrate into the mainstream of national development. At the same time new actors penetrate the rural areas, with the aim of exploiting the new opportunities for their own economic and social benefit, and competing with farmers and with each other for the use of rural resources. As a result the rural space is changing into a multi-functional, both productive and consumptive, space, but also into a highly heterogeneous one, exhibiting uneven economic development, demographic and welfare disparities, and a growing diversity of organizational patterns and lifestyles.

The issue of uneven development is not new in the rural areas of Israel. A number of studies have shown that regional differences in the agricultural potential and community characteristics, as well as the unavoidable diversity in the performance of family farms, produced over the years considerable income inequalities among farming households (e.g. Gurevich and Gertz 1938, Ministry of Agriculture 1969, Lowe 1972, Nachmias and Sadan 1977, Sadan and Weintraub 1980, Sklanevitz 1983, Shores 1988, Kahanovitz et al. 1999). Following the foundation of the state of Israel in 1948 and the settlement of immigrants from all over the world, uneven development gained a new focus – a difference in performance between veteran (pre-state) and new (post-state) communities, not only in terms of economic disparities but also in terms of social adaptation and adoption of organizational forms (e.g. Shapiro 1971, Weintraub et al. 1971).

A financial crisis which took place in the mid-eighties brought in its wake a major transformation of the rural space, including the proliferation of non-farming occupations and enterprises (Haruvi 1989, Sherman and Keidar 1993, Kimhi 1994, Sofer and Ne'eman 1998, Schwartz 1999), and the penetration of urban populations, industries and businesses into rural communities (Applebaum and Keidar 1992, Sofer and Applebaum 2006). In this new environment every household, community and local government had to make its own adjustment to the changing conditions, exploiting its relative advantages and overcoming its constraints. The cumulative outcome of these adjustment decisions is a restructuring process affecting all rural areas but in different ways, with the overall result of a heterogeneous and uneven rural space.

The emerging mosaic of farming structures, employment patterns, economic activities, social composition and organizational models raises questions about the driving forces behind these patterns. The present study is a preliminary attempt to investigate some of the socio-economic disparities within the rural space of Israel and to identify some of their explanatory factors.

Inequality in the rural space: theoretical aspects

Spatial and inter-group inequality is intrinsic to capitalist economic growth and development. Broadly, it is usually accepted that polarising effects, over space and between social groups, have led to the concentration of developmental impulses and their benefits in specific regions. This pattern of uneven development, commonly titled core-periphery relationships, has sometimes been an explicit part of an explanation, structural or functional, of the dynamics of the development process. Characteristics of this pattern are the uneven flows of capital and labour, differential types of economic activities, contesting interests of various actors and factors related to location, distance and environment, all of which reflect and perpetuate uneven development. Non-spatial factors such as changing features of economic and social structure are also regarded as being significant in their impact on developmental patterns.

There is an ongoing assumption that the main inequality gaps are between town and country, where the major metropolitan areas are the core of the economy and the remote rural areas are a major part of the periphery. Moreover, it is contended that disparities within the rural areas are to some extent less significant in comparison with those between and within urban areas. Such is the case, for instance, for Italy, where an empirical analysis of household incomes supports this hypothesis, i.e. that rural economies exhibit lower internal inequalities than the total national economy (Martino and Perugini 2007). Yet, there is sufficient evidence to indicate that many rural areas in developed market economies exhibit a contrary trend of increasing heterogeneity, reflected in inter-regional and intra-regional inequalities in access to economic opportunities and in economic performance, welfare and socio-political status (Marsden et al. 1987, Beteille 1994, Hoggart et. al 1995, Marsden 1995, Terluin 2003). Many parts of rural Europe have been undergoing processes of restructuring reflected in the loss of jobs and population, largely associated with the rapid decline of agricultural employment (Terluin 2001). At the same time the growth in the amount and diversity of employment in the secondary and tertiary sectors has not been uniformly spread out and for many regions could not compensate for the loss of agricultural jobs.

The impact of these changes on the employment structure is evident also in the welfare of rural residents. In many cases economic inequality is followed by social inequality defined in terms of differential access to social services and decent housing, and general welfare. Furuseth (1998) has shown that social and economic inequalities in the rural areas of the United States, Canada and Britain are widening, and the derived rural deprivation in some marginal areas is on the increase.

According to Bryden (2003) successful rural areas in Europe are those which were able to raise employment rates. Their growth is associated with vigorous local entrepreneurship, both private and public, expressed in sectors such as tourism, recreation and culture, niche product activities, specialised manufacturing, and even health and social care activities. The ability of local actors to exploit local resources and opportunities is attributed to “a sense of local identity, place based marketing, good governance, revitalisation of cultural and environmental assets, strong local entrepreneurship, appropriate and timely external support” (Bryden, *ibid.*). Yet, this is not necessarily the experience of all rural areas, many of which have continued to lose population.

A recent study (Davis et al. 2010) based on data gathered from Asia, Africa, Latin America and Eastern Europe, reveals that the current typical economic structure in most rural areas is based on multiple activities, with the largest share of income stemming from off-farm activities, and the largest share of households depending on diversified sources of income. Greater reliance on non-farm sources of income is associated with a higher degree of welfare and wealthier households. By comparison, poorer households rely largely on agricultural sources of income, including agricultural wage employment. Consequently, non-farm sources of income are associated with increasing income inequality. This is also the case in Romania, where the poorer rural regions are those where rural employment is overwhelmingly agricultural (Turnock 2005). Another explanation is offered in the case of rural Poland relating uneven development to location. The further the rural areas are from the large cities, the more difficult it is for them to achieve economic success disassociated from agricultural activities (Banski 2009, Czapiewski 2010).

In a case-study of the Slovak rural space (Moravcikova and Klimentova 2008) the authors argue that as a result of the economic and social transition between economic regimes there is a growing differentiation among various social groups within the rural space, and that the welfare of rural communities is affected by both their location and social status. The rural-urban fringe communities are usually better off than those located in the periphery, and so are individual households endowed with better economic assets and social capital.

In a study of rural areas in developing countries Reardon et al. (2000) conclude that the evidence as to the effect of non-farm employment on rural income inequality is mixed, and that under different conditions non-farm employment may have either positive or negative effects on rural income distribution. At the same time they argue that while non-farm employment and micro-enterprise programmes may provide opportunities for improving the income level of rural inhabitants, they do not necessarily resolve rural income inequality problems. This situation is attributed mainly to the unequal ac-

cess of different population groups to capital assets required to develop non-farming enterprises.

Altogether, the phenomenon of spatial polarization within the rural space is evident in both market economies and the developing world. It means that economic benefits tend to concentrate within selective rural regions, communities and households, often in the rural-urban fringe of large urban agglomerations, while the opportunities for widespread development in more peripheral or less endowed areas are much smaller. Among the major reasons for this unevenness are the availability of qualified human capital and local entrepreneurial capacity, community networks and tradition, and appropriate infrastructure for non-agricultural development (Bryden and Hart 2001, Banski 2009).

Transformation processes in the rural space of Israel

The rural space in Israel: a planned space

The rural space in Israel is essentially the product of a massive settlement effort which started in the late 19th century and reached its peak in the mid 20th century. The major aim of this venture, led and supported by public institutions and resources, was to contribute towards the rebuilding of the Jewish homeland, but at the same time it was expected to provide a platform for new community structures, based on economic independence, equality and social justice. These aspirations were reflected in both the planning principles and the criteria for resource allocation, which were originally determined through negotiations between the development agency and the ideologically-motivated settlers (Ruppin 1925, Weitz and Rokach 1968, Lapidot et al. 2006, Sofer and Applebaum 2006). Notable among these were the following:

- The rural community was planned on the basis of farming as the dominant source of employment and income for local households;
- The basic unit for resource allocation was the family household;
- Land and capital resources were allocated equally among all farm holdings in the community, reflecting the concept of providing equal economic opportunities for all settlers;
- Initial farm size and structure were planned on the basis of a potential pre-determined target income, which the farm household was expected to obtain by utilizing its resources, including family labour. The basic plan was similar for all farm units in the same community, but differed among communities, taking into account regional variations and the particular local conditions;

- Internal mechanisms of cooperation and mutual aid were established in order to reduce income disparities caused by differential personal capabilities and/or unexpected external factors;
- The development agency, and later on the Government of Israel, provided various equalizing mechanisms to sustain the principle of equal opportunity to obtain the target income, including preservation of the original land allocation, production quotas, subsidies and supporting service systems.

Mechanisms of divergence in the Israeli rural space

Throughout the years of its development the Israeli rural space has been a dynamic space. Rural communities experienced continuous economic, demographic, social and physical changes, stemming from both internal and external processes of adjustment to the changing economic environment, and often incompatible with the original planning principles. One result of these processes was the emergence of a certain degree of differentiation and inequality among farm households and rural communities, which made the original mechanisms of income equalization less effective over time.

In the early stages of rural settlement the incipient economic divergence could be attributed to a large extent to differences in the personal competence and preferences of the farmers themselves and their ability to exploit diverse local conditions and economic opportunities, as well as to the varying capacities of the supporting local and regional organizations. In particular, income levels began to diverge with the growing trend of farm specialization in different agricultural branches and with the varying levels of intensification, reflecting both personal and spatial disparities in economic potential (Sklanevitz 1983, Shoshet 1988).

By the late 1970's the effect of the changing external economic and social environment began to assume greater significance for the growing inequalities within the rural space. In the first place the rising productivity of the farm sector resulted in a continuous decline in the number of active farmers as well as a growing polarization between farmers who chose to run the treadmill and increase the size of their farms, and those who chose to wind down their operations and turn into hobby farmers or exit farming altogether. The declining role of agriculture in the national economy was subsequently accompanied by the weakening of the farm sector political power and public prestige.

Despite the changing conditions the farm sector continued for many years to benefit from the support and protection of national institutions. At the sa-

me time it was also subject to constant regulation regarding its various spheres of activity, such as property transfer rights, farming structures, supporting services and credit provision. This double-edged public intervention helped to maintain the official mechanisms of equalization, creating an illusion of stability, but at the same time it prevented the farmers from recognizing in time the need to make the adjustments required by the external changes (Schwartz 1999, Lapidot et al. 2006), eventually contributing to the severe economic crisis which hit the farm sector in the mid 1980's.

At the core of this crisis lay the huge debts accumulated by most of the farm sector supporting organizations and many individual farmers, which they were unable to serve (Schwartz 1999). By that time, however, the government changed its attitude and was no longer willing to bail out the farm sector and re-finance its debt as it had done several times before. The system of supporting organizations collapsed and the farm sector was exposed to market competition without the long-time protection of equalizing mechanisms.

Following the crisis many farm operators quit farming altogether in favour of alternative sources of employment and income, including wage employment, self-owned non-farming business enterprises or rental of redundant farm premises – land and buildings. Many of these income sources are location sensitive, leading to spatial disparities in potential income levels of farm holders. Such spatial differences are particularly noticeable with regard to rental opportunities, since the demand of external capital for business or residential premises is much higher in the rural-urban fringe than in the distant periphery. A similar spatial effect may be seen in relation to wage employment opportunities and to the potential of establishing specific non-agricultural enterprises within the rural areas.

Another factor which has played a role in the growing spatial differentiation is the entrance of new population groups into rural communities. This trend was facilitated by the government's decision in the early 1990's to alleviate the strain of the financial crisis by allowing new non-farming families to acquire residential lots in rural communities (Applebaum and Keidar 1992). The majority of these newcomers are employed in white-collar occupations with above average incomes, and they also tend to prefer the centrally-located communities over the peripheral ones. The result is an uneven population change – gentrification in the metropolitan rural fringe and geriatrification in peripheral areas. The consequence is a widening gap, not only in rural incomes, but also in the social and demographic composition of the rural population (Sofer and Applebaum 2006).

By 2010 the rural population of Israel¹ numbered about 700,000 inhabitants, about 9% of the national population. The number of rural communities is close to 1,000, the majority of which are registered as cooperative societies of different types², and about 75 percent are still regarded officially as agricultural settlements (CBS 2010). Almost all of them belong to 53 regional councils, which are the municipal authorities of the rural space. These councils vary in area and in number of communities, the smallest incorporating only 3 communities and the largest – 63 communities.

Methodology

In order to enable the examination of internal inequalities within the rural areas of Israel a preliminary list of development indicators has been prepared, including, among others, indicators of human resources and supporting infrastructure such as income, education, dwelling space, population growth, level of public services etc. However, despite the significant impact of the growing socio-economic inequalities on the Israeli rural space, the amount of direct statistical data available for research on the subject is very limited. There is no information at the household level and very little at the rural community level. Therefore the units of analysis used in the present study are the district and the regional council, which are the basic units of statistical data. The final choice of indicators was determined to a large extent by the availability of data, which do not necessarily coincide for both the districts and the regional councils.

There are seven districts in the country, six of which (excluding the Tel-Aviv district) contain rural communities, and 53 regional councils, two of which were excluded from the analysis due to lack of data. The data on the district level refer only to the rural population living within their boundaries, and have been calculated from the data on the regional councils which belong to each particular district. The source of data is the Israeli Central Bureau of Statistics.

The main method of analysis was a comparison of weighted averages of the selected indicators on the district level and cluster analysis on the regional council level. The selected indicators are listed below.

¹ Rural population is defined here as the population residing within the jurisdictions of the regional councils. The figures are slightly higher than those representing the population residing in rural communities (containing less than 2,000 inhabitants) due to the recent amalgamation of small urban communities into the regional councils.

² The most prevalent types are the *Kibbutz* (a collective community) and the *Moshav* (a small-holder cooperative community).

Regional (district) level indicators

Four indicators of the district development level were selected for analysis, two of which point out to the attractiveness of the district to incoming populations and two reflect the welfare of the population. These are:

- Population growth (%)
- Net migration (%)
- Average monthly per capita income (NIS)
- High school graduates eligible for university entrance (%)

Socio-economic indicators for regional councils

In addition to the above listed indicators the data available for the regional councils enabled the inclusion of three additional indicators of population welfare, as follows:

- Workers earning more than double the average monthly wage (%)
- Workers earning less than the minimum wage (%)
- Per capita dwelling space (m²)

Analysis of data

Indicators of inequality at the district level

Population growth

The rural population of Israel has been growing ever since the establishment of the early settlements more than hundred years ago, although its share of the total population is declining and stands today at about 9 percent. The rate of growth, however, varies between districts. Table 1, which is based on data from the latest two censuses, reveals that the peripheral districts – the north and the south – exhibit the lowest growth rates of their rural population. At the same time, the rural fringe of the metropolitan districts of Jerusalem, Haifa and Tel Aviv (Centre district) exhibits rates of growth higher than these districts as a whole, indicating the appeal of the rural-urban fringe to certain groups of population. The remaining district of Judea and Samaria is a relatively new area of settlement, parts of which belong to the rural-urban fringe of Jerusalem and Tel Aviv metropolitan areas.

Table 1. Total and rural population growth by district 1995–2008

District	Total district population '000			District rural population '000		
	1995	2008	Growth rate 1995–2008 (%)	1995	2008	Growth rate 1995–2008 (%)
Jerusalem	675.2	904.1	33.9	24.5	39.7	62.0
North	946.9	1,242.1	31.2	154.8	203.9	31.7
Haifa	743.0	888.3	19.6	32.5	48.8	50.2
Centre	1,216.3	1,770.4	45.6	113.2	167.8	48.2
Tel Aviv	1,142.0	1,258.8	10.2	-	-	-
South	754.7	1,067.4	41.4	83.9	117.4	39.9
Judea/Samaria	134.3	281.1	109.3	43.6	91.1	108.9
Total	5,612.3	7,412.2	32.1	461.1	669.0	45.1

Source: CBS

Internal net migration

The trends of internal migration shown in Table 2 reinforce the conclusions derived from Table 1. At the total population level the table shows a clear division between the Centre and Judea and Samaria districts, which exhibit positive net migration, and the peripheral and other metropolitan districts which exhibit negative migration flows. At the same time rural net migration is positive for all districts except for the southern district in 2004. The data for 2004 indicate a spatial disparity between the centre and the periphery, with the peripheral districts showing the lowest values of net migration. By 2007 the situation has changed significantly, reflecting a change in government policy, which led to increasing migration rates to peripheral rural communities, as well as a political decision to relocate Jewish settlers from the Gaza strip, most of whom resettled in the southern district.

Table 2. Total and rural net migration rates by district (%)

District	District net migration		Rural net migration	
	2004	2007	2004	2007
Jerusalem	-0.53	-0.69	1.59	1.01
North	-0.33	-0.20	0.56	2.00
Haifa	-0.40	-0.17	1.34	1.71
Centre	0.79	0.74	1.76	2.08
Tel Aviv	-0.02	-0.18	-	-
South	-0.44	-0.35	-0.57	1.96
Judea/Samaria	1.53	1.81	1.68	1.68

Source: CBS

Monthly per capita income

Data on per capita income (Figure 1) for three different years (1999, 2003 and 2007) exhibit similar trends of spatial inequality between centre and periphery, with the higher levels present in the metropolitan districts and the lower levels in the North and the South. However, the lowest per capita income throughout the documented period is found in Judea and Samaria. This finding suggests that other factors apart from location may affect income disparities, since this district is characterized by large families and high dependency ratios. This hypothesis is examined in the following section.

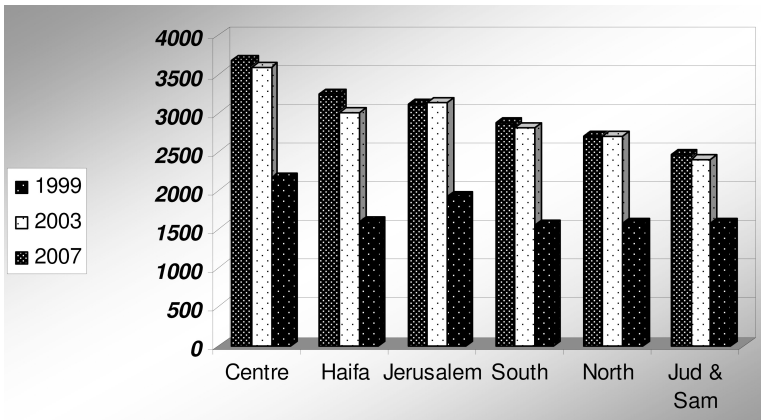


Figure 1. Monthly per capita income (NIS) of the rural population by region 1999, 2003, 2007 (weighted averages)

Eligibility for university entrance

Eligibility for university entrance among high-school students is determined by specific criteria which refer to achievements in certain fields of study. The percentage of eligible students is lower than the percentage of high school graduates because of the higher requirements. As figure 2 reveals, the highest percentage is found in the central district, followed by the Haifa metropolitan district. Unlike previous indicators the lowest values are found in the Jerusalem district. A possible explanation lies in the social composition of the population and its attitudes toward higher education, but there are no data which may support or contradict this assumption.

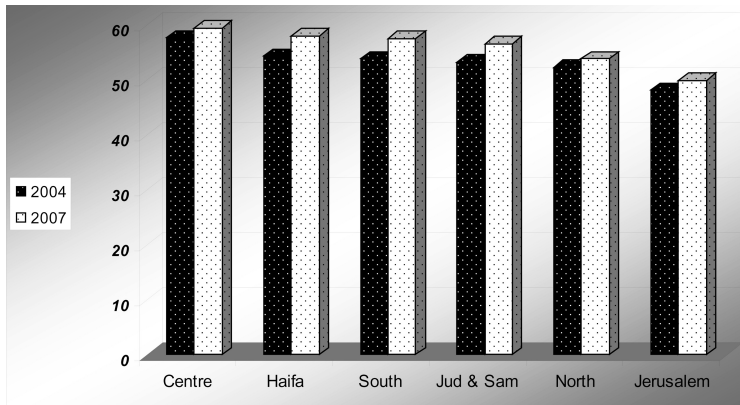


Figure 2. Eligibility for university entrance by region 2004, 2007 (%); (weighted averages)

The above analysis of inequalities within the rural population at the district level indicates that location is an important explanatory factor, but also that there are additional factors which sometime work in other directions, canceling out the spatial effect. In the following section an attempt is made to unravel the relationship between indicators of inequality and explanatory factors, on the basis of the more detailed data.

Indicators of inequality at the regional council level

As explained before, the regional councils are the municipal authorities of the rural area. Before the financial crisis of the mid-1980's these councils had very few duties, since the major responsibility for the day-to-day management of the rural communities was in the hands of the local cooperative associations. The associations handled all the economic activities related to farming and in addition took charge also of the local public services. Following the crisis, the cooperative organizations at all levels lost their power and the regional councils took over not only the municipal duties but also the responsibility for future development of the regions under their jurisdiction (Applebaum and Banin 1992, Schwartz et al. 1994, Applebaum 2002). The increased authority of the councils was accompanied by a greater involvement of the central government in their activities, in terms of both support and regulation. One aspect of this involvement is the request of various government agencies for more statistical data on the councils. Using these data facilitated the analysis presented below.

Table 3 lists the range of values and means of the variables chosen for the analysis, all of which reveal the inequalities existing among the regional

councils. These inequalities refer to population growth and internal migration rates, and selected indicators of income, housing and education. The last variable on the list is the socio-economic index, calculated by the Central Bureau of Statistics for all the local authorities of the country, on the basis of selected social and economic indicators. This index is used to classify the regional councils into ten clusters by rank order and is applied for various administrative purposes, including budget allocation. All these variables are used later on in the analysis of the spatial pattern of inequality.

Table 3. Range of selected socio-economic indicators for regional councils in Israel

Socio-economic Indicators (dependent variables)	Minimum	Maximum	Mean	Std. Deviation
Population growth rate 1995–2007 (%)	-1.05	126.04	40.90	30.21
Net migration (%)	-1.44	20.85	1.90	2.98
Average monthly per capita income (NIS)	1,636.93	6,474.89	3,111.84	766.36
% of employees earning less than the minimum wage	20.67	49.39	35.99	7.08
% of employees earning more than double the average wage	1.49	23.49	8.51	4.56
Dwelling space per capita (m ²)	15.80	53.24	32.71	8.03
% high school graduates eligible for university entrance, 2006/2007	26.10	76.20	56.53	11.30
Socio-economic index, 2006	-1.90	2.96	0.11	0.84

Note: All values in tables 3 and 4 refer to 2007, unless another date is indicated.

Explanation of rural inequalities

The variables listed in Table 4 were selected on the basis of hypotheses which were developed out of the analysis at the district level concerning the possible explanations of socio-economic inequalities in the rural space. These explanatory variables include demographic indicators, the sectoral composition of the population, and spatial indicators referring to distance from the centre of the country (peripherality index) and to distance between the administrative centre of the council and its member communities (internal distance). Table 4 represents the range of values for each one of these variables.

The correlations between the above listed socio-economic indicators and the explanatory variables, shown in Table 5, provide some insights into the reasons for the inequalities in the rural space of Israel. The table reveals the importance of variables such as socio-demographic composition of the population and spatial location in explaining income and welfare disparities among regional councils.

Table 4. Independent variables selected for the explanation of regional inequalities

Explanatory variables	Minimum	Maximum	Mean	Std. Deviation
Dependency ratio	58.00	140.50	87.75	18.43
Average number of children per family eligible for child allowance	1.88	3.13	2.34	0.34
Share of kibbutz population (%)	0.00	100.00	23.43	27.72
Share of minority population (%)	0.00	100.00	7.64	18.44
Peripherality index, 2006	-2.72	2.01	-0.14	0.87
Internal mean distance from council centre (km.), 2004	1.50	46.00	12.95	8.03

Table 5. Correlations of socio-economic indicators and explanatory variables

Indicators Explanatory Variables	Average monthly per capita income (NIS)	% earning less than the minimum wage	% earning more than double the average monthly wage	Per capita dwelling space (m ²)	% eligible for university entrance	Net migration (%)	Population growth rate 1995 – 2007 (%)	Socio-economic index, 2006
Dependency ratio	-.386** (.005)	.295* (.034)		-.464** (.001)		.386** (.005)	.381** (.005)	-.526** (.000)
Number of children per family eligible for child allowance	-.661** (.000)	.632** (.000)		-.632** (.000)	-.393** (.004)	.276* (.047)	.590** (.000)	-.755** (.000)
Share of kibbutz population		-.737** (.000)	-.353* (.010)				-.481** (.000)	
Share of minority population	-.334* (.015)			-.384** (.005)				-.309* (.026)
Peripherality index	.431** (.001)		.698** (.000)	.440** (.001)				.347* (.012)
Mean distance	-.372** (.007)		-.347* (.012)	-.477** (.000)				

*Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Larger families, higher dependency ratios and peripheral location imply lower per capita income levels and smaller per capita dwelling space. Larger households are correlated also with lower eligibility rates for higher education. In another aspect larger households are correlated with relatively high popu-

lation growth, while a high percentage of *Kibbutz* population indicates a negative growth rate, suggesting relatively aging population and some degree of out-migration from *Kibbutz* communities.

Cluster analysis by regional councils

In order to highlight the inequalities among the regional councils and to offer some explanation for these inequalities a cluster analysis was applied to the data. The analysis produced three clusters of unequal size, differing by selected economic, social and spatial characteristics, as shown in Figure 3. Table 6 demonstrates the differences between the clusters by the selected variables.

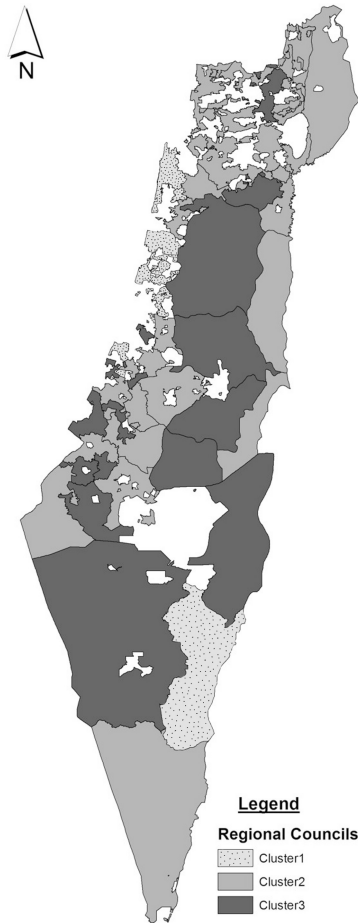


Figure 3. The spatial distribution of the clusters

Table 6. Socio-economic and explanatory variables by cluster

Variable	Cluster 1	Cluster 2	Cluster 3
Population growth rate, 1995-2007 (%)	51.2	29.0	57.0
Net migration (%)	2.0	1.5	2.6
Average per capita income (NIS)	3,948.3	3,165.0	2,344.7
% of employees earning less than the minimum wage	35.6	33.2	41.0
% of employees earning more than double the average wage	13.3	7.7	6.2
Socio-economic index, 2006	1.0	0.2	-0.8
Dependency ratio	77.8	80.7	104.0
Average number of children per eligible family	2.1	2.2	2.7
Share of minority population (%)	0.0	6.6	14.1
Share of kibbutz population (%)	63.5	57.5	50.0
Peripherality index, 2006	0.38	-0.36	-0.22
Mean distance (km.), 2004	7.8	13.4	15.8
Total number of councils per cluster	9	26	16

The main conclusions derived from figure 3 and Table 6 may be summarized as follows:

- There is a clear ranking among the three clusters of regional councils, indicated by most of the listed variables.
- All the regional councils belonging to the first cluster enjoy a relatively high level of population welfare and all (except one) are located along the coastal plain in the centre of the country.
- Regional councils belonging to the third cluster exhibit lower levels of welfare and educational potential, larger families, higher dependency ratios and a certain percentage of minority populations. At the same time they attract new populations, showing the highest net migration ratio. The higher dependency ratio in the councils of Judea and Samaria may be attributed to the existence of a large religious population, a fact that does not appear in the current data but is derived from other sources.
- The councils in the second cluster exhibit middle range values for most variables and a relatively high share of *Kibbutz* population.

Concluding remarks

The rural space of Israel exhibits a significant measure of spatial inequality, expressed by various socio-economic indicators. The above analysis reveals that spatial location plays an important role in explaining these inequalities. In particular, location impacts on population welfare, represented here by income indicators and per capita dwelling space. Both are higher for metropolitan regions than for peripheral regions. This result concurs with the findings reported in other parts of the world. However, in addition the socio-demographic composition of the population emerges as a no less significant explanatory factor, which cuts across the spatial effect. The influence of the socio-demographic composition is reflected in the negative correlation between the number of children per family eligible for child allowance, the dependency ratio, and the share of minority population in the regional council on the one hand, and population welfare indicators on the other hand. Larger families and a smaller share of working population reduce the welfare level of the council's inhabitants, irrespective of its location in the national territory. The interaction between the two explanatory factors allows for the representation of cluster 1 in the most peripheral section of the country (Figure 3), and conversely the location of several councils belonging to cluster 3 in the centre of the country. This spatial mosaic of varying welfare levels reflects the complexity of the rural space in Israel, which contains a mixture of social and ethnic groups and a diversity of natural environments. The internal inequality revealed in this study derives from this varying mixture of human and local resources that is no longer controlled by equalizing mechanisms.

It should be pointed out that the above results refer only to the last decade, or the current situation. The questions whether the disparities within the rural area are increasing or decreasing, and whether the rural areas exhibit larger or smaller unevenness than urban areas, remain at this stage unanswered.

References

- Applebaum L., 2002, *The Regional Council and the Local Committee: Adjustment in a Changing Environment*, Jerusalem, Florsheimer Institute for Policy Studies (Hebrew).
- Applebaum L., Banin T., 1992, *The Impact of Socio-Economic Characteristics of Regional Councils on the Patterns of Their Development Activities*, City and Region, 22, 20–32 (Hebrew).

- Applebaum L., Keidar F., 1992, *The Expansion Program of Moshav Communities: A Follow-Up Study*, Rehovot, Development Study Center (Hebrew).
- Banski J., 2009, *Rural Areas of Economic Success in Poland – Diagnosis and Conditioning*, *Rural Studies*, 20, 69–88.
- Beteille R., 1994, *La Crise Rurale*. Paris, Press Universitaires de France.
- Bryden J.M., 2003, *Rural Development Situation and Challenges in EU-25*, Salzburg, EU Rural Development Conference, November 2003, Key-note Speech.
- Bryden J.M., Hart K., 2001, *Dynamics of Rural Areas: the International Comparison*, University of Aberdeen, The Arkleton Centre for Rural Development Research.
- Central Bureau of Statistics (CBS), different years, *Statistical Abstracts of Israel*, Jerusalem.
- Czapiewski K.L., 2012, *Intraregional peripheries of economic development—a case study of Mazovia Region in Poland*, *Rural Studies*, 27, 31–43 (in this volume).
- Davis B., Winters P., Carletto G., Covarrubias K., Quiñones E.J., Zezza A., Stamoulis K., Carlo Azzarri C., DiGiuseppe S., 2010, *A Cross-Country Comparison of Rural Income Generating Activities*, *World Development*, 38,1, 48–63.
- Furuseth O., 1998, *Service Provision and Social Deprivation*, [in:] B. Ilbery (ed.), *The Geography of Rural Change*, London, Longman, 233–256.
- Gurevich D., Gertz A., 1938, *The Jewish Agricultural Settlement in Eretz Israel*, Jerusalem, The Department of Statistics, The Jewish Agency (Hebrew).
- Haruvi N., 1989, *Trends in the Structure of Agriculture and Employment in Family Farms*, *Horizons in Geography* 27, 25–37 (Hebrew).
- Hoggart K., Buller H., Black R., 1995, *Rural Europe: Identity and Change*, London: Edward Arnold.
- Kahanovitz A. Kislev Y. Kimhi A., 1999, *The Development of Family Farms in Moshavim, 1975–1995*, Discussion Paper 9914, Rehovot, Center for Agricultural Economic Research (Hebrew).
- Kimhi A., 1994, *Participation of Farm Owners in Farm and Off-Farm Work Including the Option of Full-Time Off-Farm Work*, *Journal of Agricultural Economics* 45, 2, 232–239.
- Lapidot A., Applebaum L. Yehudai M., 2000, *From Protection to Competition – The Kibbutz in a Changing Environment*, Ramat Efal, Yad Tabenkin (Hebrew).
- Lowe Y., 1972, *A Study of Family Farms in 1969*, Tel Aviv, Farm Income Research Institute.

- Marsden T., 1995, *Beyond Agriculture? Regulating the New Rural Spaces*, Journal of Rural Studies 11, 3, 285–296.
- Marsden T., Whatmore S. Munton R., 1987, *Uneven Development and the Restructuring Process in British Agriculture: a Preliminary Exploration*, Journal of Rural Studies 3, 4, 297–308.
- Martino G., Perugini C., 2007, *Towards an Interpretation of Economic Inequality in Rural Areas: A Conceptual and Empirical Approach*, Scienze Regionali, 6, 1, 61–90.
- Ministry of Agriculture, 1969, *Survey of Family Farms 1965*, Tel Aviv, Center for Agriculture and Settlement Planning and Development (Hebrew).
- Moravcikova D., Klimentova, K., 2008, *Social Inequalities in Transforming Rural Space: Strategies and Behaviour of Different Social Actors*, Department of Social Science, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Slovakia.
- Nachmias C., Sadan E., 1977, *Individual Modernity, Schooling and Economic Performance of Family Farm Operators in Israel*, International Journal of Comparative Sociology 18, 3–4, 269–279.
- Rearon T., Taylor J.E., Stamoulis K., Lanjouw P., Balisacan A., 2000, *Effects of Non-Farm Employment on Rural Income Inequality in Developing Countries: An Investment Perspective*, Journal of Agricultural Economics, 51, 2, 266–288.
- Ruppin A., 1925, *The Agricultural Settlement of the Zionist Organization in Palestine (1908–1924)*, Tel-Aviv, Dvir (Hebrew).
- Sadan E., Weintraub D. 1980, *Ethnicity, Nativity and Economic Performance of Cooperative Smallholding Farms in Israel*, Economic Development and Cultural Change 28, 3, 487–507.
- Schwartz M., 1999, *The Rise and Decline of the Israeli Moshav Cooperative: a Historical Overview*, Journal of Rural Cooperation 27, 2, 129–166.
- Schwartz M., Applebaum, L., Keidar, F., Banin, T., 1994, *Regional Councils in Times of Change: The Challenge of Development Planning*. Rehovot, Development Study Center (Hebrew).
- Shapiro O. (ed.), 1971, *Rural Settlements of New Immigrants in Israel*, Rehovot, Settlement Study Centre.
- Sherman, N., Keidar, F., 1993, *Non-Agricultural Businesses in Moshav-type Planned Agricultural Settlements*, Rehovot, Development Study Center (Hebrew).
- Shoresh D., 1988, *Economic differentiation in the Moshav Ovdim* (Working paper Series 19). Rehovot, Settlement Study Centre (Hebrew).
- Sklanevitz S., 1983, *The Structure of Agriculture in Moshav Family Farms 1981*, Tel Aviv, Agriculture and Settlement Planning and Development Authority (Hebrew).

- Sofer M., Applebaum L., 2006, *The Rural Space in Israel in Search of Renewed Identity: The Case of the Moshav*, *Journal of Rural Studies* 22, 323–336.
- Sofer M., Ne'eman U., 1998, *Occupational Transformation in Moshav Households on the Fringe of the Tel-Aviv Metropolitan Area: Causes and Trends*, *Horizons in Geography*, 48–49, 59–83 (Hebrew).
- Terluin I.J., 2001, *Rural Regions in the EU: Exploring Differences in Economic Development*, Utrecht/Groningen, Netherlands Geographical Studies 289.
- Terluin I.J., 2003, *Differences in Economic Development in Rural Regions of Advanced Countries: An Overview and Critical Analysis of Theories*, *Journal of Rural Studies* 19, 3, 327–344.
- Turnock D., 2005, *The Poverty Problem in Rural Romania*, *Geographia Polonica*, 78, 2, 53–76.
- Weintraub D. and associates, 1971, *Immigration and Social Change – Agricultural Settlement of New Immigrants in Israel*. Jerusalem, Israel Universities Press.
- Weitz R., Rokach A., 1968, *Agricultural Development – Planning and Implementation*. Dordrecht-Holland, Reidel.

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Policies for the development of tribal stone work industry: case study in eastern India

Abstract: Present study pinpoints the problems and evaluates the potentials of development of stone work industry of tribals of Binspur region of India. Analysis of age, experience and skill of the workers reveal that the sector is still in a position to attract skilled artisans and continue the industry tradition. Economic analysis points out that majority of the units suffered from low productivity, non-availability of credit facility, displayed slow growth and exhibited little diversification in production system. Desired development lies in the attainment of two mutually compatible goals of maximization of productivity of the industrial unit and income of the house hold.

Key words: stone work industry, tribal industrial sector, unorganized industrial sector, informal industrial sector, tribal artisan, India.

Introduction

In the tradition bound tribal society, artisans played a vital role in the process of socio-economic development. In the days gone by, artisans used to furnish specialized services and in return received fixed amount of grains which differed from craft to craft. With the advent of machine age and development of transportation most of the rural areas are exposed to modern means of development which has led to a gradual decay of the symbiotic functional system of the tradition bound rural society. This in turn ruined the economy of tribal crafts, shattered economic integration of the communities and brought a holocaust to their cultural distinctiveness. Besides, overdependence on land forces the agricultural sector to dispel a part of its working population, and other formal sectors are incapable of absorbing this overspill after

meeting their internal demands for absorption of employment. In this conflicting situation the decay of a particular sectors of employment poses a serious problem and the rational solution seems to be to develop the traditional skill based crafts.

Objective

Keeping in view the need for revitalizing the tribal industrial sector, for giving an impetus to the rural economy and upliftment of the tribal artisan community, present study identifies the problems and formulates policies for the development of the stone work industry practiced widely by the Bhumij community of the Binpur police station of Medinipur district of West Bengal, India (Figure 1).

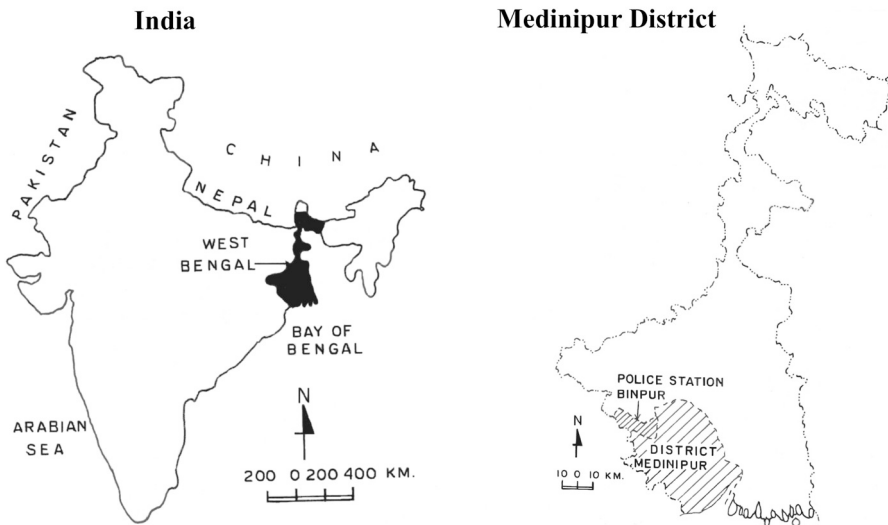


Figure 1. Location of the Study Area

Sampling scheme

The tribal stone work industrial units are operating at household industry level. They are neither registered with District Industry Centre nor with any other governmental organization owing to their specific nature of operation and category of production. Hence complete information on the tribal

stone work industry's number, employment, input, cost, investment, output, income, capital and so forth, were not available for analysis from any secondary source. Present study is thus the outcome of a rigorous field survey. To fulfill the objectives stated earlier it was felt necessary to conduct sample survey for sets of information related to the general and economic performance of the stone work industrial units and households' socio-economic conditions. Thus data was collected through personal interview of the owner of the industrial unit who was usually head of the household, by two sets of questionnaire, i.e. i) Stone work industrial unit survey ii) Household demographic Survey. The villages for survey were selected in consultation with the Tribal Welfare Officer, Industry Officer at block level and members of the Panchayat Samity. After selecting the villages, list of households practicing Stone work industry was prepared with the assistance of Village level workers, members of Village panchayats and knowledgeable local persons. Taking it as the population sample, households were drawn by simple random sampling method without replacement. The sampling has been done with the help of random number table (Random Sampling Number arranged by Tippett). Ultimately eliminating such cases who were neither available at the place in the time of survey nor agreed to respond, the actual size came down to 36 interviewees from 7 villages from Binpur police station of Medinipur district.

Methodology

Methodology for selecting the best set of policies for the development of the said sector is as follows. First the inventory of the tribal stone work sector has been undertaken which provides a concrete ideograph of the subject and identifies problems inhibiting the growth and development of the sector. This leads to the selection of principal objectives that are to be achieved. Formulation and estimation of the model depicting causal relationship among the principal objectives and their determinants which may be policy variables and are exogenous in nature is the subsequent step. Optimization of the principal objectives subject to constraints on policy variables and construction of impact matrix and ranking of projects using multi criteria decision making technique has been done next. Finally, based on the associated optimal set of policy variables, policies for development has been put forward.

Inventory of the tribal stone work sector

Bhumij's are primarily agriculturists but life of the community in Binpur region is intricately interwoven with the production of stone wares (Sinha 1961). Besides engaging themselves for approximately two to three months in agricultural activities Bhumij's remain busy during rest of the year with stone work activities. The different kinds of stone articles (Photo 1) produced by the artisans may be classified under three broad groups based on their functions. The utilitarian objects like plates, dishes, and bowls of various sizes are mainly produced because there is a ready demand for these articles. Decorative cum utilitarian objects produced by the artisans usually comprises of articles like candle stand, ashtray, oil lamps, incense stick stand and flower vas. Decorative objects are the stone articles of better workmanship and of greater artistic effect. Although some of these articles are utilitarian too, they are valued as objects of art and are used as decoration pieces. However demands for these products are extremely low and are usually produced on order.



Photo 1. Utilitarian objects of stone work

Basic industrial statistics and economic indicators

An analysis of the survey data reveals the following characteristic features of the economy of this informal industrial sector (Table 1). The unit of production is family and the employment size varies from 2 to 8, average being 4. Members of the family work in a systematic manner promoting division of labour related to the production procedure so that both quantity and quality are ensured to be the best. Though both men and women are equally efficient to take part in all the phases of production, men folk usually work unaided in the initial stages of production. The second stage of pro-

duction i.e. polishing, is generally done by ladies while in the final stage of operation, i.e. carving, two workers operate together on traditional design marker tool. Out of total workers, male workers account for 64% and the rest are females. About 39% of the units operate without part time workers. 5 to 20 % of the total work has been done by the part time workers in 42% of the units. Average work contribution of part time workers is only 10%. Average age of the owner worker is 38 years with very low C.V. and majority of the owners are in the age group 30-45 years. About half of the full time workers are in the age group 15-30 years. All the part time workers are below 15 years of age.

Categorization of skill has been done based on the experience and participation in production process. No formal training is imparted to the beginners. The skill is passed on from older to younger generation informally. An overwhelming 89% of the total workers are skilled. 50% of the units have 20 to 40% partly skilled workers and about 61% of the units have employed less than 20% workers as unskilled. The sector is characterized by moderately long hours of operation. About 34% of full time workers and a quarter of total workers operate for 8 to 10 hours a day. However this should not be taken as an adverse feature of the sector, for the human beings, defined by Thomas Aquinas as being with brain and hands, enjoy nothing more than to be creatively usefully productively engaged with both his hands and brain. In tribal society's artisans are agreeable productively engaged in his own time at his own pace accompanied by tools, which are designed to serve the human being instead of making him servant of machine (Schumacher 1974). Capacity utilization in terms of labour is moderate. In 44% of the units' capacity utilization of total workers is 90 to 100 percent. Contrary to expectation, capacity utilization of total workers is negatively correlated to value added, income, percentage sale to moneylenders and finance mobilization capability. It may be revealed from the above analysis that the sector is still in a position to attract skilled artisans and continue the industry tradition. On the contrary, if this unorganized sector would have been a depository of exodus labour force from agriculture and/or other sectors due to technical and structural reasons, it would have had mostly unskilled full time workers in their teens or early twenties or workers in higher age group with low experiences.

About 39% of the units procure raw materials from a distance of 4 to 8 km. while about 33% have to obtain the same from mines located beyond 8 km. Artisans usually sell their products once a week in the local periodic market. Though visit to exhibitions organized in distant places during religious functions is also a common practice. 53% of the units cover a distance of 20 to 40 km. to dispose of their finished products.

Table 1. Variables presenting basic economic characteristics of tribal stone work sector

Sl. No	Variables related to stone work sector	Average	C.V. %
1	Size of the unit (worker)	3.97	46.83
2	Part time workers' contribution (%)	10.22	108.22
3	Age of the owner worker (years)	37.61	22.41
4	Age of total worker (years)	26.85	18.10
5	Experience of the owner worker (years)	24.06	35.62
6	Experience of total worker (years)	12.68	84.20
7	Capacity utilization of full time workers (%)	87.98	12.23
8	Capacity utilization of total workers (%)	86.23	10.94
9	Distance covered for collection of raw materials (Km)	6.32	51.74
10	Distance covered for sale (Km)	22.11	17.68
11	Frequency of annual visit to periodical market for sale	47.64	1.93
12	Tools and accessories (Rs) ¹	633.25	36.33
13	Cost of production (Rs)	1,441.38	20.56
14	Output (Rs)	6,409.10	33.93
15	Value added (Rs)	5,967.72	35.82
16	Value added per man day (Rs)	5.45	13.58
17	Value added per unit of fixed capital	22.44	27.63
18	Value added per unit of working capital	11.30	31.33

Apart from on the spot sale to the moneylenders' or middlemen, no sale takes place within 15 km. 98% of the products is sold to middlemen and moneylenders. The sector has weak backward linkages. Major raw material (soapstone) is either acquired free of cost or at the payment of nominal tax. Thus expenditure on repairing of tools forms the major component of cost of production (41%). Investment on fixed assets is low. The sector enjoys fairly high gross profitability as average sale cost ratio is 7.96. Measured in terms of value added per unit of fixed capital and per unit of working capital (22.44 and 11.3 respectively) the sector is also less capital intensive in its present form. 78% of the total income of the artisans' house hold is from stone work industry. However agriculture and animal husbandry is also important with 9% and 8% share in total income respectively. Briefly the results of the analysis seem to pin point that majority of the units covered in the survey suffered from low productivity, displayed slow growth and exhibited little diversification in production system. In fact, the units suffered from non-availability of credit, financed their capital needs including day to day operation from home generated savings and have very little transactions with government or formal sectors.

Problems of development

Analysis done in the previous section has revealed that the sector has bright prospect of development, though it can be considered as one of the most problem ridden sector of the rural economy. The problems are not only numerous but are diverse in their character. Of course, economic and manpower problems are inevitable in any productive activity but in this case, some of the problems are very crucial and unless they are solved with appropriate measures, the industry is bound to limp. Though some of the problems could be tackled with efforts in management and by government supervision, several others need to be solved with care and action, based on the minute examination of the working of the units and an in depth study of the social and entrepreneurial factors governing labour efficiency. These problems can broadly be categorized under three groups, namely, the problems related to production, those related to marketing and those related to labour including entrepreneurship building. The first group includes the problem associated with raw materials, capital and infrastructural inconsistencies while the second group incorporates problems related to the sale of finished product, price of the commodity, location of the market, etc. The third group, however, consists of problems associated with skill, efficiency, training facilities, and entrepreneur abilities, etc. of the labour force.

Difficulty in procurement of raw materials and maintenance of mines. From the description of the artisans about availability of soapstone it may not be apparent that the artisans have to face difficulties in obtaining the main raw material but the problem is quite an acute one. The quarries are neither owned by the individuals or group of artisans. Individual effort for extraction is neither possible nor desirable because of the financial implications as well as the understanding for joint use of the quarry. Extraction of quarries need group effort which is generally absent due to differences among the artisans. The large stone slabs necessary for production of certain articles cannot be obtained by simply picking up from the mines. It requires systematic and scientific operations which are lacking.

Low investment in fixed assets. Mining and production requires various types of equipments which are not owned by all the units. Most of the units operate with mutual understanding sharing tools among themselves. This restricts their volume of production.

Paucity of Working Capital. Paucity of finance is actually the principal problem and many other problems are just corollary to it. It is evident from the previous analysis that savings forms the major source of investment, and after purchasing their items of basic needs the artisans are left with only a pet-

ty cash which can be used for investment. This low investment causes low production and in turn low income. This in effect causes still lower investable surplus. Thus, they are in the clutches of vicious cycle of poverty and it is just impossible for them to get out of it successfully without any substantive financial assistance from outside. A good number of the units are operating below their capacity due to shortage of working capital.

Low returns from investment. Various socio-economic reasons lead to low net returns from investment. This low return is also attributed to less efficient production process, and unfavorable market mechanism. Market is limited from producers' point of view and as a result the finished products fetch extremely low price.

Lack of credit facilities. Lack of financing is also a disconcerting bottleneck. Nevertheless, rarely any organization come forward with financial help and credit for the artisans when they are in dire need of credit. The interest charged by the private moneylenders is exorbitant; as such, the small artisans can ill-afford to go in for credit available from these sources. Sometimes the trader lends money to the artisans in the form of advances. When the finished products are delivered to the dealer, the advances are adjusted against the payment due to them. Although no outward strained relation between the manufacturer and the dealer are marked, the fact remains that the dealers, due to the formers' weak financial position, exploit the artisans.

Poor industrial infrastructure. The poor state of the industrial infrastructure in the tribal rural areas is another inhibiting factor in the path of development of the rural industries. The difficult terrain conditions restrict movement of artisan for the collection and distribution of their products.

Poor living condition of the artisans. It has been observed that most of the artisans live in abject poverty and congestion. The accommodation of the artisans serves both living and working place. This arrangement is not always suitable from production point of view.

Lack of medical assistance to the artisans. The survey reveals that most of the artisans are never able to spare required fund out of their poor earning for their medical care. It is also true that even with the expansion and the extension of community health services, at the village level the service is still poor. Whenever illness attacks a craftsman, it aggravates his misery by reducing the workdays in one hand and necessitating unforeseen expenditure on the other.

Problems related to the transportation of finished products. Transportation of finished products is one of the major problem faced by the artisans. A large quantity of products is marketed through Silda market. Thus finished products have to be transported for 20 to 25 km. partially on cycle or cart and/or by bus. It is very difficult to transport the products especially during rainy season.

Problems associated with marketing mechanism. The marketing structure in the study area operates at different levels for the products. At the lowest level is the artisan who produces and markets the whole of its produce directly from his premises. There are artisans who sell their product visiting different periodic markets, adjoining towns, and hawking in different villages. While majority of the units sell their products to the middleman who purchases to supply to the retailers of the local area and outside the region. These are the class who pockets the lions' share of the profit due to the artisans. Thus widening of market from primary workers point of view is necessary.

Lack of diversification of products. Lack of diversification of the product also accounts for slow growth of the sector. During slack season the artisans are forced to remain idle.

Lack of training facility. Though the artisans are eager to improve their efficiency through training, but there is absolutely no formal training centre available for stone work in the district. In fact there is a dearth of training programmes in general for artisans.

Lack of research and development efforts. Adequate research and development efforts are not being put to increase either production or quality of produce. There is no organization to help to introduce different designs or articles in production process. The units follow age old traditional methods and use implements which have become not only obsolete but are less productive too. This calls for an innovation of intermediate technology in the form of gradual semi-automation.

Model of the mechanism of productivity and income generation

Present analysis determines structural relationship of major objective variables (Y_j 's) e.i. productivity of the industrial unit and income of the household which are endogenous in nature with policy variables (X_i 's) which are exogenous in nature (Dognamaei 1981). Development of the tribal stone work industry is a complicated process in which large numbers of socio-economic and physical operators act and react with each other (Todaro 1979). The analytical functional form of the relationships is assumed to be linear and stochastic in nature. The model characterizes a set of simultaneous equations. Using the data collected from the primary sources the model has been estimated by the technique of two stage least squares (Mishra 1980). Estimated structural parameters obtained from two stage least squares analysis is presented in Figure 2 (Theil 1971). A comprehensive study of the structural relations of the model reveals that productivity is influenced increasingly by stan-

dard man-days, working capital and fixed capital. However impact of man-days worked is most influential. Even if the customers usually pay higher price for most of the products the volume of such sale being meager and expenditure on transportation being high customer sale has a decreasing impact on productivity. In conformity with the hypothesis, employment of skilled workers in a unit is positively influenced by the optimum age structure of the workers and negatively influenced by the higher size of the employment, as number of intermediate jobs can be performed by partly skilled workers. Larger employment can only be significantly supported by higher investment on fixed assets. Finance mobilization has a negative impact on fixed and working capital investment, because the interest charged by the private money lenders is exuberant and artisans are not at ease in dealing with formal institutions. Higher working capital and size of employment induce more work and, in conformity with the hypothesis, have increasing impact on daily operation in absolute term. Both the variables daily operation in absolute terms and share of income from subsidiary occupations, in conformity with the hypothesis, has significantly highly increasing impact on income.

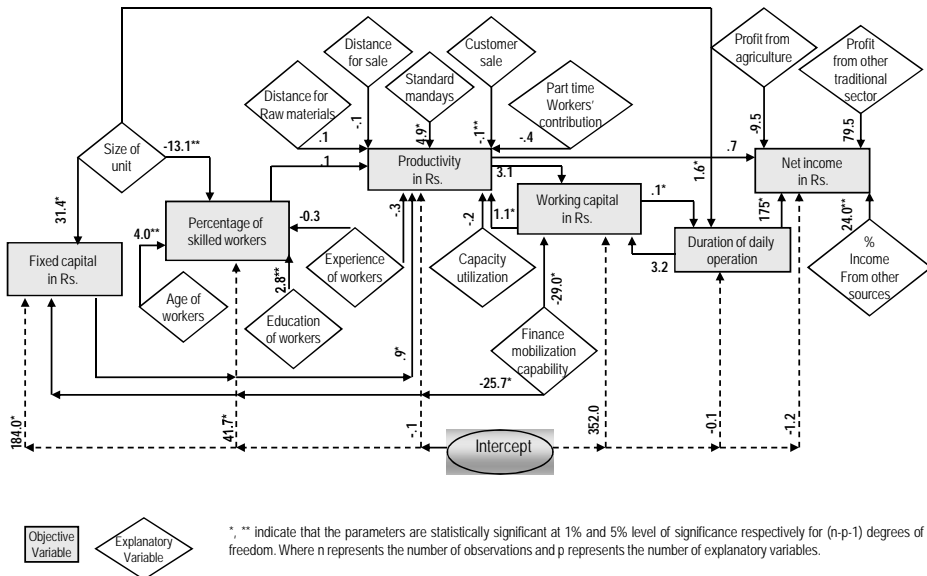


Figure 2. Impact of explanatory variables on objective variables

Optimization of objective variables and evaluation of projects

Impact matrix (Table 2) has been constructed by optimizing i^{th} reduced form equation subject to a set of constraints on policy variables and computing projects (Y_j) by inserting the set of values of policy variables associated with optimal X_i^j in the reduced form equation of Y_j . Optimization has been done by linear interval programming technique (Mishra 1984). All the Y_j has been maximized. The objective of the evaluation is to rank in a decreasing order of preference the project that seems to be the best or predict incomparability among those studied. Fuzzy outranking relations based on γ operators has been used here (Singh 1983). The result of the calculations is presented in Table 3. It is evident from the analysis that maximization of fixed capital and/or maximization of working capital of the units should be the most preferred project.

Table 2. Project Impact Matrix

Projects Impact on	1	2	3 / 4	5	6	Weight Vector	Sign Vector
	Productivity	% skilled workers	Fixed capital / Working capital	Hours of operation	Net Income		
Productivity	6,537.50	5,750.48	6,459.80	5,761.22	5,763.80	0.35	1
% skilled workers	8.17	44.83	30.87	44.68	44.82	0.09	1
Fixed capital	311.83	248.54	324.18	248.55	248.98	0.05	1
Working capital	683.76	434.08	727.16	433.39	434.66	0.04	1
Hours of operation	29.97	31.77	30.13	31.88	31.85	0.06	1
Net Income	6,891.58	7,227.23	7,208.58	7,339.29	7,242.93	0.41	1

Table 3. Fuzzy outranking relations based on γ operators

Project no.	Outranks Project no.	With Credibility
3 & 4	1	0.80
3 & 4	2	0.28
3 & 4	5	0.27
3 & 4	6	0.26
6	1	0.50
6	2	0.95
6	5	0.96
5	1	0.50
5	2	0.67
2	1	0.50

Policies for development

At the outset it is quite clear that contraction of this sector is out of question as presently the sector is satisfying the need of the rural local consumers and also caters to the need of urban consumers to a limited extent. Besides in its present form the sector is conducive to decentralization of industry, compatible to the rules of ecology and gentle in its use of resources and thus fulfills the conditions of sustainable development. Maximization of fixed capital and/or working capital of the units are the most appropriate decision. It is in perfect conformity with the needs of the artisans as the paucity of finance in majority of the units restricts severally investment in fixed and working capital which through circular effects finally culminates into low productivity. For the realization of the best project following policy measures would be necessary. These recommendations can be taken as guidelines by the entrepreneurs and imperatives by other development agencies for the overall growth of the sector.

Policy recommendations based on the artisans felt needs and opinions.

As artisans are the direct stakeholders and their contribution will ultimately be responsible for the success or otherwise of the improvement schemes hence their opinion and suggestions should be given utmost importance. They are mainly concerned with easy access to credit facilities, ease in procurement of soapstone and maintenance of mines and have strong group feeling for formation of cooperative. These can be presented in following form:

Finance mobilisation. Since lack of finance is the major problem, it is recommended that along with the state government, nationalized commercial banks, central cooperative bank, gramin bank and other financial organization should come forward to finance the artisans with short, medium and long-term loans. Commercial bank and gramin bank should provide short-term loan for the purchase of raw material and servicing of tools. Modernization of tools and equipment in the future would be taken up as a centrally sponsored scheme on 50:50 bases. Proper step should be taken to popularize the loan schemes. Supervision of credit distribution and realization by the extension staff is sincerely needed to maintain a financial discipline. In the case, if artisans need any margin money that should be provided as a grant to artisan in general, where criterion for identification of target group should be based solely on economic condition of the artisans and not necessarily on the ethnic background.

Formation of cooperatives. There is an immediate need for the organization of cooperative societies on the sound footing so that they give a lead in the manufacture of the quality and standard products (Bhattacharya 1980).

These cooperative societies may take up the issue of supply of raw materials, purchase of finished goods from artisans, marketing and provision of credits. For this purpose, the cooperative societies should be given adequate financial assistance by the State Government.

Systematic mining and maintenance of mines. Mines should be directly brought under ownership of stone work cooperatives. Artisans can directly pay the requisite tax to the cooperatives. For systematic and scientific extraction of mines cooperatives should be assisted by the industry's department. Financial burden can also be partly shouldered by the tribal welfare department. Facility of shades should be provided near the mines so that workers can finish the initial jobs there itself and need not carry the unprocessed slabs to their residences.

Policy recommendations based on the values of the exogenous variables. This group of strategy is based on the values of the policy/exogenous variables used for the formulation of the most preferred project and are directly concluded from the direction of the exogenous variables of reduced form equations. With regards to the planning implications reduced form equations are of great importance as they could be used for estimating the over all response of an objective variable to changes in exogenous variables due to planning decisions. The operational limits of exogenous variables have been decided on several considerations mainly pertaining to the physical factors, social factors and entrepreneurial ability of the artisans. The present stage of development together with the feasible level of development that might be attained in the planned programme has also been considered in deciding these limits. This group has been given second ranking as technically they are necessary for the realization of the course of development envisaged.

Size and employment characteristics. It can be gleaned from the reduced form equation that the size of the unit influence decreasingly hence lower limit has been considered suitable. Where as annual man days worked per unit have an increasing impact hence the upper limits has been considered. Optimum size of the unit thus should be 4 and optimum annual man days per unit should be 1080. There is a tendency to employ children as part time workers hence no part time workers should be employed. Extraction in mines and transportation of large slabs is a strenuous work so at least one worker in optimum age group 18 to 35 should be employed. With access to credit facilities it should be feasible to achieve the optimum capacity utilization of 86% for total workers. High formal educational attainment though directly does not contribute to the development of the industrial activities in a significant way, will indirectly help the artisans in acquiring the ability and confidence to correspond effectively with various organizations. Hence Programmes of adult formal education should be introduced.

Subsidiary occupation. Tribal artisans are multi-occupational communities and this practice should not be discouraged. Following the present trend approximately 5% of the income should continue to be from other traditional occupations.

Policy recommendations based on the authors' understanding of the sector. Though the recommendations included in this section are partly subjective in their approach but are based on the profound observation of the functioning of the units through survey and are considered crucial for improvement of the sector. These are listed as follows:

Distribution of inputs and marketing of finished products. For balanced and controlled access to other raw materials it is recommended that part of the input requirements should be met by introducing organized sale either by forest department or through government organization at controlled prices. For marketing of the finished products an acute need is felt to organize statutory government organization so that tribals are not forced either to mortgage or sell their products for marginal profits. Such organization should be a no-profit no-loss body and should operate through hierarchical distribution cum collection centres located within 20 kms. from the artisans work place. Direct sale in periodic markets is a common practice in the region from time immemorial. These market places also cater to the social needs of the tribals thus sale in periodic markets should not be discouraged. Government agencies may organizing various large-scale events and coordinate their activities with other agencies, arranging the participation of local industries and create new marketing channels.

Modernization of production technology. If capital investment is within the limits of tribal units and skill requirements could be met by training the tribals, it is advisable to go for semi-automation for higher and quality production. It is expected that this sort of technological improvement will fully contribute in achieving balance among the objectives of maximization of production for increasing income, diversification of product to meet various consumer's preferences and widening the scope for employment generation. However one should be careful that while giving opportunities for higher production, the intermediate technology should not create an environment in the household where tribals are not free to work informally in consonance with their way of life (Schumacher 1974).

Diversification of products. Apart from traditional products new non traditional goods should be introduced after examining the consumer's preference, market orientation and type of skill available. No doubt production of traditional utilitarian consumer items should be continued as there is a demand for them but at the same time diversification of products will help in increasing value added. The sector offers a great scope for the production of variety of artistic items if skill can be slightly upgraded.

Skill formation and training. In order to meet the demand for enhanced skill, which will be essential for modernization of production technology, the basic recommendation is the improvement of skill through training of the artisans. Thus appropriate training programmes should be introduced. Training centres should be well distributed over space and should impart both beginners and advanced courses. Mere up gradation of the skill of the artisans will not help the industry to prosper. It may so happen that even after receiving advanced training the artisan will follow the old production process and produce only traditional items because of non-availability of required raw materials and uncertainty of market demand. This necessitates drawing suitable follow-up programmes including supply of improved appliances, procurement of raw materials which are not available in local markets, marketing of the new items including popularization of new items of production. Follow up programmes should also include the annual inspection of the industrial units set up by the artisans after training (Bogaert et al. 1984). These visits will provide valuable information which could be fed back into the training of the new batches. Entrepreneur guidance cell (Bogaert et al. 1980) should be introduced at block level and this should consist of officials of the industry department, bankers and technicians including some successful entrepreneurs. This cell may meet every three to four months and artisans should be invited to these meetings to relate their difficulties. They can obtain on the spot advice from whole battery of experts.

Extension of employment opportunities during slack season. It has been observed that during the slack season, the artisans are without continuous employment. It is suggested that state government emporium and the cooperative marketing agencies should get most popular items produced for their stocks during the slack season so as to provide regular employment to the artisans.

Implementation of welfare schemes. Provision should be made through government for the introduction of medical insurance in a very soft term especially for the critical illness. These systems could be helpful in liberating the artisans from the clutches of the money lenders and local traders. As money for the medical expense are usually credited by these agencies. The District Industry Centre needs to implement various welfare schemes with central assistance for the benefit of the artisans judiciously.

Master plan study. The overall development policy formulation needs a comprehensive study covering a wide range of research activities and analysis including data collection on its production and marketing aspects. The study should include implementation of various pilot projects to verify applica-

bility of the proposed development methodologies and approaches and how much the proposed strategies could contribute to the achievement of the specific development goals. Without such a master plan study, formulation of a clear future vision and policy would be a difficult task.

Conclusion

The set of policies outlined above is not an exhaustive one. In fact these policies are subject to change with changing time, environment and the specific community. It goes without saying that implementation of optimum plan and realization of policies will need very efficient and committed functionaries. Since the artisans are in the hands of stereo type machinery it may be necessary that the entire programme for the development may be marshaled through various governmental institution.

Note:

1 Rs. – Indian currency rupees

References

- Bhattacharya S.N., 1980, *Rural Industrialization in India – Its nature and problems*, B. R. Publishing Corporation, Delhi, 186–190.
- Bogaert M.V.D., Bara D., Sinha A.K., 1984, *Development of village entrepreneurs in a tribal area - a case description*, Xavier Institute of Social Services, Ranchi, 6–10.
- Bogaert M.V.D., Sinha A.K., Bhowmik M., Bara D., 1980, *Training village entrepreneurs – Guidelines for development workers*, Xavier Institute of Social Services, Ranchi, 82–96.
- Dognamaei A., 1981, *Productivity analysis - a range of perspectives*, Martinus Nijhoff publishing, USA, 2–15.
- Mishra S.K. 1984, *Evaluation of Public Policies for Agricultural Development in Less Developed Regions*, Indian Institute of Technology, Kharagpur, 241–242.
- Mishra S.K., 1980, *Simultaneous Equation Models in Regional Analysis*, Indian Journal of Regional Science, 12, 2, 143–165.
- Schumache E.F., 1974, *Small is beautiful*, Abacus edition, Sphere book Ltd, London, 126–129.
- Ibid 155–158.
- Singh D., 1983, *Multi criteria decision making preference modelling using fuzzy sets*, Unpublished Ph.D. thesis, Deptt. of Mathematics, I.I.T, Kharagpur, 167–179.

- Sinha S., 1961, *Handicraft survey monograph on stone wares*, Census of India, 16, 7A (iii), 3–10.
- Theil H., 1971, *Principles of econometrics*, John Wiley and Sons, New York.
- Todaro M.P., 1979, *Economics for a developing world*, Longman group Ltd., London, 49–55.

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Post-industrial landscape – return to rural affairs?

Abstract: The post-industrial landscape is the legacy of the period of industrialization. Industry has changed the landscape through active relief shapes, production, transport and residential facilities through changes in water regime, air quality and other impacts of industrial activities. Such products are fossil in post-industrial landscapes. Industrial heritage buildings and areas, regardless of the character of their relation to preceding industrial activities, help to fabricate the aesthetics of this type of landscape. This paper aims to demonstrate the methods of identification, classification and post-industrial landscape typology on a topical level. A specifically constructed land use map, a regular square grid and GIS technology were implemented for this purpose. The representation ratio of relevant buildings and areas in squares determines the degree of a given area's post-industrial character. One-, two-, three- or four-word denomination are then used to classify the post-industrial landscape type. The most possibly varied areas are ideal for modeling scenarios of future development.

Key words: post-industrial landscape, identification, classification, typology, local level, Rošice area.

Introduction

Mass produced goods have become an essential part of modern society. To date, no other form of production has been capable of creating cheap and mass produced goods available for the widest possible circle of users. Seen from the perspective of areas, both industrial (co-created by industry) and post-industrial (abandoned by industry) landscapes represent an indisputable legacy of the industrial revolution. Starting with mid-19th century, industry became a prominent force in forming the cultural landscape, although in exceptional cases industrial mining and production (albeit not small trades) had affected vast areas prior to this time (particularly in the form of building materials, precious metals and precious stones mining). Radical changes in the economy, particularly in the primary sphere, have led to intense and profound

changes in the shape and function of landscapes. Czech landscapes have been subject to several such changes, each of them followed by reconstructing the landscape's functional mosaic. Industrialization represented such change and it took a mere 100 years, usually even less than that, to fundamentally transform many areas. The area of the Czech Republic thus ranks among traditional industrial areas of the European continent.

Industrial revolution in the 19th century brought about rapid development both in production facilities and housing for numerous workers, as well as expansion of mining sites which jointly formed the "industrial landscape". Starting with the 1930s, extensive industrialization resulted in unprecedented areal expansion of industrial landscape. Moreover, the situation was made more complicated by strong preference of heavy industry and other types of production which were high in energy and raw material consumption in the 1950s. Starting with the 1970s, a contrary trend may be traced in these industrial agglomerations – de-industrialization in the sense of reducing production characterized by high energy and raw material consumption while intensifying transition towards technologically advanced industries requiring highly qualified workforce and modern technologies or employing people in the service industry. Delayed and usually not very successful heavy industry privatization resulted in bankruptcies of a number of major mining, metal and processing companies and job losses were only partially substituted. Massive or even small-scale investments were rarely directed to services related to new (different) landscape uses. Sadly, owing to lack of patriotism a number of valuable industrial buildings as well as entire abandoned industrial landscapes were lost forever at that time.

Technological, social, economic and political changes in the second half of the 20th century then led to radical changes in the distribution of individual industrial activities and their impact on the landscape. Whenever possible, new industrial investment projects in the form of technology parks "colonize" new vast areas on the outskirts of towns, usually in places which are conveniently situated and accessible by transport. Today, industrial landscapes characterized by a number of specific attributes which were created and then abandoned by industry represent relicts of the past and are seen as "post-industrial landscapes". The general public display highly differentiated attitudes towards them. Developed countries tend to redevelop most of them to a more "inhabitable" state or other special-purpose usage. At the same time, they strive to conserve at least their part (even if only outwardly) as examples of former industrial impact on the landscape and the environment while eliminating its extreme negative manifestations.

The theoretical notion that all abandoned industrial sites need to be reclaimed into a form of a “useful” landscape, including re-naturalization, prevails in the Czech Republic (post-industrial landscape as such is considered obsolete). Brownfields abandoned by (not only industrial) production have become a virtually standard component of the landscape (Novosák, Szczyrba 2004). The collapse of once massively state-supported giant companies which together with related operations and productions strongly affected the formation of industrial landscape led to a loss of interest in the future of large industrially affected areas. On the one hand, the state supports remediation measures in the aforementioned areas to rectify old damages while environmental organizations along with local stakeholder groups campaign to put a stop to the old type of industrial activities. On the other hand, expert groups are becoming professionally interested in preserving representative examples of Czech post-industrial landscape as valuable cultural and partly also natural heritage, as this natural environment was specifically transformed by human activities. Generally speaking, expert knowledge in this field is still in its infancy in the Czech Republic, which tends to confuse decisions about future development of post-industrial landscapes. As a result, strongly negative approaches to its future existence abound.

Present level of understanding

The industrial and post-industrial landscapes are defined by characteristic physiognomic, structural and functional features. These parameters are “recent” in the industrial landscape whereas the post-industrial landscape sees them as “fossil”. As a whole, both landscapes can be described by a list of elements (Table 1).

Inventory of theoretical approaches and practical experience of how to treat these neglected types of landscape sensibly, as well as recording individual types of industrial and post-industrial landscapes, their mapping and, for selected representative types, also active engagement in the process of creating planning documentation by offering landscape plans which take into account the geographic, environmental, historical and technical aspects of “industrial” and “post-industrial” landscapes both on local and state levels still seem to be insufficient. Modern times offer sophisticated geo-information technology which enables to provide the decision makers as well as the general public with numerous alternative solutions to protect such landscapes and make them useful and interesting for the future in the same way as various types of rural cultural landscape are attempted to be conserved within large-scale protected areas.

A number of institutions focus on research of industrial heritage both on national level and as well as on the international scene (see e.g. Výzkumné centrum průmyslového dědictví at Czech Technical University in Prague, Czech Republic, Cuffley Industrial Heritage Society in England, the Scottish Industrial Heritage Society, Association for Industrial Archeology, Canadian Industrial Heritage Centre, the Industrial Heritage Archives of Chicago's Calumet Region, the International Committee for the Conservation of the Industrial Heritage, European Route of Industrial Heritage - ERIH) (England - <http://industrious.icserver26.de/index.php?pageId=1>, Scotland - <http://www.sih.co.uk/index.htm>, Ireland - <http://www.industrialheritageireland.info/>, Canada - <http://www.canadianindustrialheritage.org/index.html>, Latvia - <http://www.i-mantojums.lv/eng/frames/sakumlapa.htm>, Czech Republic - <http://www.brownfieldy.cz>, and in some regions of Germany, U.S.A, The Netherlands, Japan and elsewhere). A particular attention at international level is paid by architects and historians both at home and abroad. Many industrial cities have chosen to redevelop originally industrial areas and the surrounding housing estates to create modern residential and service areas characterized by high standard facilities (e.g. Ostrava in Czech Republic - Novosák 2005). In the course of classification, the architectural and aesthetic value of such areas was considered essential. The primary objective of all related activities is to draw attention to the irreplaceable values of industrial heritage and the need to protect it in a sensible degree and form.

The wider relations between industrial heritage and the landscape are still subject to less intensive studies but interest in this issue is growing promisingly. A broad perspective of the industrial landscape is provided by B. Hayes (2006), who distinguishes areas formed directly by industrial activities (mining, power engineering) as well as by hydraulic engineering works, road, railway, water and air transport. He also distinguishes industrial landscapes formed by "industrial agriculture", i.e. modern large-scale mechanized farming (both in fields and stables) which is closely dependent on a series of relations with the traditional industries and all types of transport. Needless to say that initiative abroad still primarily comes from architects (e.g. the newly established department of Landscape Architecture and Industrial Landscape at the Munich University of Technology in 2009). Initial papers and monographs on the subject of post-industrial landscape have already been published (see Kirkwood 2001, Kirk 2003, Keil 2005, Jarczewski ed. 2009, etc.). In the Czech contemporary publications, only relatively few papers about (post) industrial landscape have appeared (Fragner 2005, Kolejka 2006, Vráblíková and Vráblík 2007) so far although a certain link can be traced in connection to the work of the Institute of Ecology of Industrial Landscape of the Czechoslovak Academy of Sciences which operated in Ostrava in the 1970s and 1980s.

Yet, the expert community deals with a number of aspects associated with the post-industrial landscape. Traditionally, architectural (Cashen 2006), economic (Shahid and Nabeshima 2005, Dunham-Jones 2007) and social aspects (Kirkwood 2001, Kirk 2003, Hansen and Winther 2006) of this type of landscape have been the dominant focus of their attention (in the geographic context). Landscape science deals with its ecological aspects, particularly in relation to the occurrence of biotic communities and species, possibly also with environmental ones (soil and water remediation – Kirkwood 2001 and Keil 2005). Most authors dealing with industrial heritage use the term “brown fields” (segments of a given area previously used for industrial purposes, then contaminated and abandoned) as an objectively primary indicator of land or landscape abandoned by industry (<http://www.merriam-webster.com/dictionary/brownfield>, cit. October 28, 2010). Only later (e.g. thanks to definitions provided by American EPA), virtually all areas abandoned by economic activities, with the exception of arable and forest land, were included in this category. One of the tangible results of the existing research has been the designation of a post-industrial landscape covering 39 km² in the vicinity of a town Blaenavon in southeast Wales, as a World Heritage Site in 2000 (Rogers 2006). Globally seen, the issue of post-industrial landscape tends to be mostly elaborated descriptively in case studies of individual areas. Yet, the well-developed descriptive aspect of research is vital, as it turned out necessary in cases of conservation and integration of remaining industrial landscape heritage into territorial planning documents. The methodology aspects of research and assessment, classification and typology outline for this type of landscape are still in their infancy.

Challenges of post-industrial landscape study

Definition and identification of post-industrial landscape

The industrial and post-industrial landscapes are characterized by a number of typical attributes (Table 1).

Post-industrial landscape mapping

Creation of cartographic documentation on post-industrial landscape conditions the consequent success of follow-up studies which draw on its spatial aspects. Generally speaking, there are several solutions developing different methods:

Table 1. The indicators of the industrial and post-industrial landscapes

Landscape factor	Industrial landscape	Post-industrial landscape
Natural structure - components		
Geological environment	active exploitation of mineral, rock and soil deposits, deposition of mining waste, landfills of all kinds of waste	abandoned mining sites, non-reclaimed waste deposits, deposits of material subject to recycling and processing
Relief	industrial, communication, settlement, military relief shapes fulfilling economic functions	anthropogenic relief shapes subject to natural destruction, division or reshaping
Atmosphere	gas and dust pollution, production and transport noise, heat pollution	dust and smell pollution, radioactive and uncontrolled chemical contamination
Water facilities	man-made water reservoirs, channels, sedimentation basins, surface and groundwater pollution, heat pollution, runoff changes in areas with paved surface	abandoned and unmaintained hydraulic engineering facilities with residual contamination
Soils	soil removal, soil coverage, soil contamination, anthropogenic soils	primitive soils at initial stage of regeneration
Biota	partial or total removal of original vegetation, increased ratio of invasive or non-native species, native fauna displaced by non-native species	pioneer natural seeding tree vegetation, ruderal and segetal vegetation on non-natural ground
Energy	release of energy in the course of burning in industrial production, transport, housing, etc., domination of artificial surfaces creates heat islands in the atmosphere, water and soil	passive energy impact of degenerating and dilapidating man-made objects and surfaces
Economic structure - components		
Industrial buildings and sites	factory halls, heating plants, warehouses, administration buildings, handling areas	abandoned and unused industrial facilities or converted for non-production purposes
Transport facilities and areas	paved roads, railroads, railway stations, transfer areas, cableways, pipelines, container belts, storage tracks, high voltage lines, garages	abandoned transport facilities and areas, including those converted for non-transport purposes
Housing facilities and areas	housing colonies for workers, housing estates, terraced houses for workers and clerical staff, residential areas designed for senior management surrounded by gardens and parks	abandoned buildings, squatters and homeless quarters, shelters of illegal immigrants or criminals
Service facilities	shops, shopping malls, workshops and other business premises	abandoned service facilities, including those converted for other purposes
Agricultural facilities	glasshouses, plastic greenhouses, cowsheds, piggeries, poultry farms, large-scale beehives	abandoned agricultural facilities and areas, including those converted for non-farming purposes
Military facilities and areas	barracks, parade grounds, warehouses, field kitchens, parking lots, lay-bys, training areas	abandoned military facilities and areas, including those converted for non-military purposes
Water management facilities	dams, dikes, weirs, consumption devices, pumping and compression devices, pools, settlement tanks, sewage centres, sewers	abandoned, non-operating, unmaintained and derelict water management facilities
Mining facilities and sites	active open mining sites, transport belts, preparation plants, permanent or temporary waste dumps	abandoned and for other purposes converted mining facilities, unused and abandoned waste dumps

Social structure - components		
Cult buildings	churches and other types of shrines, cemeteries	abandoned and (un)maintained cult buildings and cemeteries
Cultural facilities	theatres, cinemas, music halls, radio and TV stations, protected historical buildings	cultural facilities built in times of industrial heyday, now used by different range of clients
Educational facilities	schools, libraries, children homes, student halls of residence and dormitories	educational facilities built in times of industrial heyday
Public administration facilities	administrative buildings, court houses, prisons, correctional facilities, security service residences	administrative facilities built in times of industrial heyday
Sports, leisure, entertainment and catering facilities and areas	athletic fields, playgrounds, stadiums, swimming pools, sports halls, gyms, shooting ranges, clubs, parade grounds, restaurants, canteens, refectories, pubs, bars, roadhouses, hotels, hostels, boarding houses	sports, leisure, entertainment and catering facilities built in times of industrial heyday
Healthcare facilities	hospitals, polyclinics, spas, sanatoriums	healthcare facilities built in times of industrial heyday
Protected buildings and nature areas	nature reserves and monuments, water protection zones, protected mineral deposits	protected industrial heritage
Spiritual structure - components		
Positively perceived buildings and areas	valuable industrial production facilities, technical monuments and museums, memorials, birthplaces and houses of inventors and production managers, places commemorating conflicts between workers and their suppressors	positively perceived buildings and areas coming from or commemorating the heyday and development of industry and industrial society
Negatively perceived buildings and areas	sources of pollution, unsafe places displaying technology or human risks, buildings and areas which are not perceived aesthetically, sites of repression, infamous places	derelict buildings and areas with bad reputation which date back to or commemorate the heyday and development of industry and industrial society

a) Field mapping which takes into account knowledge on the studied area and focuses on the period of Industrial Revolution, industrial society and the conversion period towards the present post-industrial society.

b) Utilization of good-quality land use maps and their purpose oriented interpretation to differentiate industrial heritage buildings and areas related to the past industrial development directly or indirectly.

c) Utilization of chronological sequence of historical land use maps which reveal when individual buildings and areas were formed and how they were related to the given area's industrial development.

The process of mapping and other related operations was demonstrated on the Rosice-Oslavany model site, a formerly used coal basin in the South Moravian Region situated some 20 km west of Brno (Figure 1). Over the past 250 years, this area has undergone several industrialization stages as well as local industry decline, particularly of the iron and steel and mining industries. The original coal basin was represented by a belt of Perm-Carboniferous coal-

bearing layers stretching from the Říčany municipality in the north to Nová Ves in the south and covering approximately 14 km in length and 1 km in width. Even before coal mining was launched, the area had been virtually deforested and subject to intensive farming. A settlement network surrounded by open landscape with fields and meadows and several larger stretches of woodland was created in the belt of fertile soils.

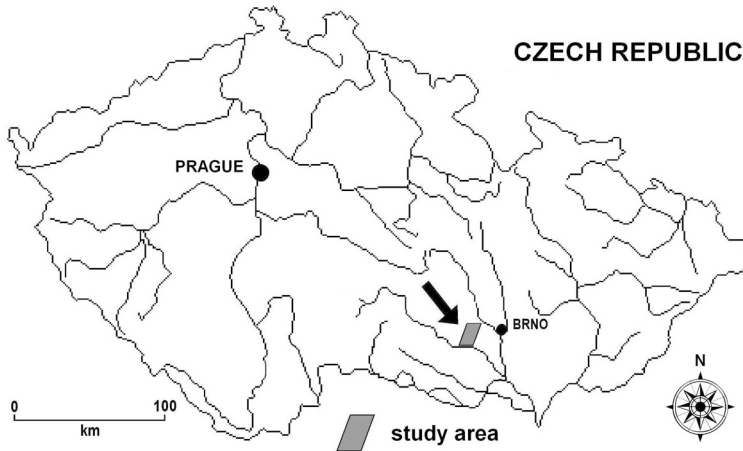


Figure 1. Position of the Rosice-Oslavany study area within the Czech Republic

In 1760 coal was discovered in the vicinity of Padochov (Figure 2). Mining in the vicinity of Oslavany was launched already in 1783 but did not reach an industrial scale until the early 19th century north of Zbýšov. Between the present towns of Zastávka and Oslavany a total of eight deep mines were dug. Over the course of the 19th century, miner colonies appeared in older settlements, while the town of Zastávka was built from scratch in 1840 as a smelting and iron and steel industry centre. More iron and steel industry developed in Oslavany. At the same time, the area of arable land (at the expense of the last remnants of forests) and orchard farmland (on originally arable land) increased, while the extent of permanent grassland decreased (ploughed up) and fishponds were completely eliminated. Starting with the mid-19th century the mining area became connected to potential markets in the developing industrial town of Brno via railway. Part of coal was burned in the Oslavany power station built in 1913. After World War I coal mining continued to thrive despite declines in times of economic crises (1919–20, 1929–32). The towns of Oslavany, Zbýšov and Rosice expanded to include miners' housing estates.

After World War II a five-kilometer-long overhead freight cableway running from the Jindřich Mine across Padochov and past the František Mine

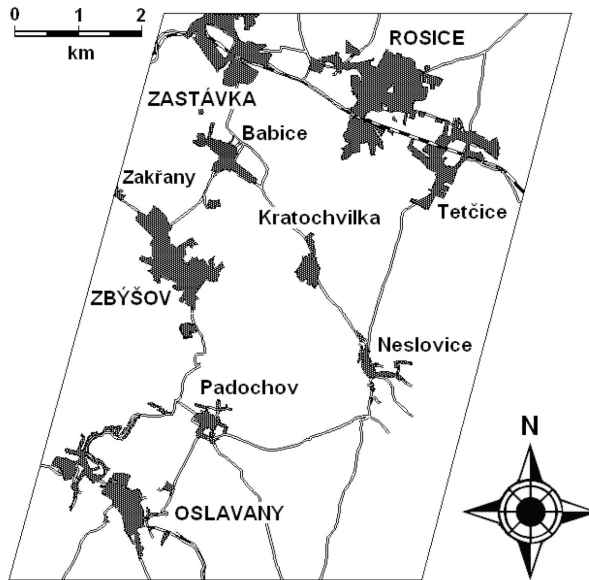


Figure 2. Towns and villages of the Rosice-Oslavany post-industrial study area

to the Oslavany power station was built. In the meantime ironworks in Zastávka had closed down and had partially been replaced by engineering production. The same happened to sugar refineries in Rosice and Oslavany. In the northern part of the coal-mining district several railway sections were dismantled. Starting with the 1960s, coal mining was gradually reduced to be completely shut down in the late 1980s. The Oslavany power station closed down in 1993 and was dismantled shortly afterwards. Some mining facilities were converted to small production halls or warehouses, particularly after the political and economic changes in 1989. Other facilities were pulled down, shafts were filled up and only some buildings were conserved as technical monuments. In the 1990s a number of buildings were abandoned and became derelict, while the mining, communication and industrial relief shapes became gradually disrupted. The former industrial landscape view was dramatically changed into the rural one, regardless existing post-industrial relicts.

In the course of a detailed topical landscape research of scale 1 : 10,000, mapping of the secondary landscape structure, or land use, was conducted in 2009 (Figure 3). It distinguishes not only traditional landuse/landcover elements, but also inherited special "post-industrial" objects and areas are included for the better understanding of the term "post-industrial landscape", a transitional landscape type between urban and rural territories.

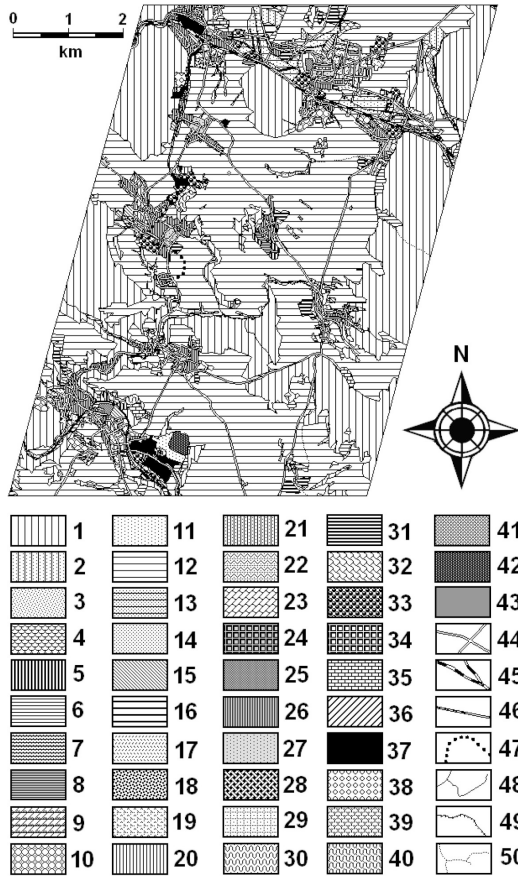


Figure 3. Land use within the Rosice-Oslavany area in 2009

1 – forest (in traditional location on forest land), 2 – newly established forests on farmland, 3 – water bodies (fishponds), 4 – wetlands, 5 – shrubs, 6 – meadows, 7 – meadows established on bottoms of drained fishponds, 8 – agricultural terraces, 9 – concentration of hedgerows, 10 – orchards, 11 – fallow land, 12 – arable land, 13 – arable land on bottoms of drained fishponds, 14 – cemeteries, 15 – sports facilities, 16 – cottage colonies, 17 – traditional single-family homes, 18 – individually built single-family homes, 19 – commercially built standardized single-family homes, 20 – socialist large-scale housing development (block houses), 21 – commercial housing estate developments, 22 – school, 23 – supermarkets, 24 – warehouse, 25 – chateau, 26 – worker colony, 27 – preserved pre-industrial settlement core zones, 28 – communal water treatment plants, 29 – water tanks, 30 – swimming pools, 31 – farming facilities, 32 – petrol stations, 33 – operating industrial facilities, 34 – modern industrial production facilities, 35 – former mines used for special purposes, 36 – railway stations, 37 – brownfields, 38 – mullock tips with tree cover, 39 – mullock tips with shrub cover, 40 – bare mullock tips, 41 – waste dumps, 42 – waste land (settling pit), 43 – park lots, 44 – roads and streets, 45 – passenger and freight railroads, 46 – freight railways, 47 – dismantled railroads, 48 – preserved close-to-nature sections of water courses, 49 – canalized sections of water courses, 50 – water course sections in underground pipeline)

From its onset the mapping was conducted in a way which differentiated sites which had either direct or indirect relation to industrial heritage (Figure 4). These sites established a special post-industrial zone layer (Figure 5). The studied facilities and areas were differentiated both from older and newer ones through comparison with available historical land use maps depicting the situation prior to the area’s industrialization as well as according to their appearance, preserved archive descriptions and old photographs.

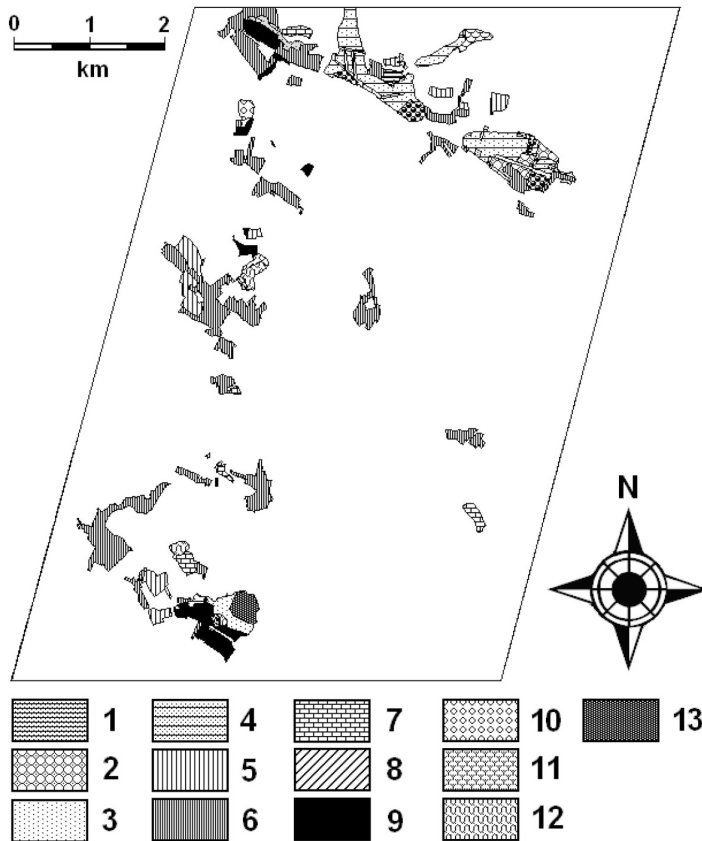


Figure 4. The areas selected as industrial heritage in the Rosice-Oslavany area in 2009

1 – meadows established on bottoms of drained fishponds, 2 – orchards established on bottoms of drained fishponds, 3 – fallow land, 4 – arable land on bottoms of drained fishponds, 5 – socialist large-scale housing development, 6 – worker colony, 7 – former mines used for special purposes, 8 – railway stations established on bottoms of drained fishponds, 9 – brownfields, 10 – mullock tips with tree cover, 11 – mullock tips with shrub cover, 12 – bare mullock tips, 13 - waste land (settling pit))

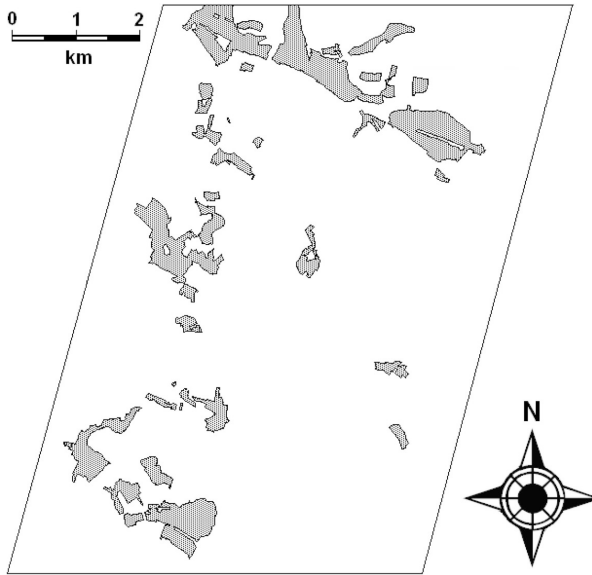


Figure 5. The unified areas of industrial heritage of the Rosice-Oslavany area in 2009

Through comparison with a historical land use map from 1825 (based on indication sketches of the stable cadastre) settlement core zones were separated, which allowed us to differentiate an increase in built-up areas following the onset of industrialization (Kolejka 1979a). Areas of fishponds drained in order to prevent water seepage into the mines were also identified despite the fact that other buildings have been erected in these sites. Industrialization outcomes were taken from a land use map from 1875 which drew on mid-1870s cadastral maps (Kolejka 1979b). Further increase in industrial areas as well as directly and indirectly related transport, residential, recreational and urban farming was identified through comparison with a land use map from 1978 which was a result of field mapping (Kolejka 1979c). The newly created land use map from 2009 and an extract in the form of a map of post-industrial building and areas which derived from it served as basis for testing the procedure of industrial heritage landscape typology.

Post-industrial landscape classification and typology

The criteria of post-industrial landscape classification and typology logically draw on the knowledge of buildings and areas designated as industrial heritage which currently do not serve their original purpose as well as on their

territorial extent, i.e. their size or representation in a given area. This means that the classification must draw on knowledge on the cultural landscape secondary structure. The reference area may be represented by natural landscape units (on a given differentiation level), administrative units of a given level or geometric elements (regular geometric grids).

In this particular case the post-industrial landscape classification is demonstrated on topical level in relation to a regular square grid. Geometric element dimensions of 500 x 500 m proved to be ideal for the topical level as they are easier to use than the original map scale of 1 : 10,000 (Figure 6). The square grid itself was constructed with the help the tool Create Vector Grid used in the Hawth's Analysis Tools extension for ArcGIS software of ESRI.

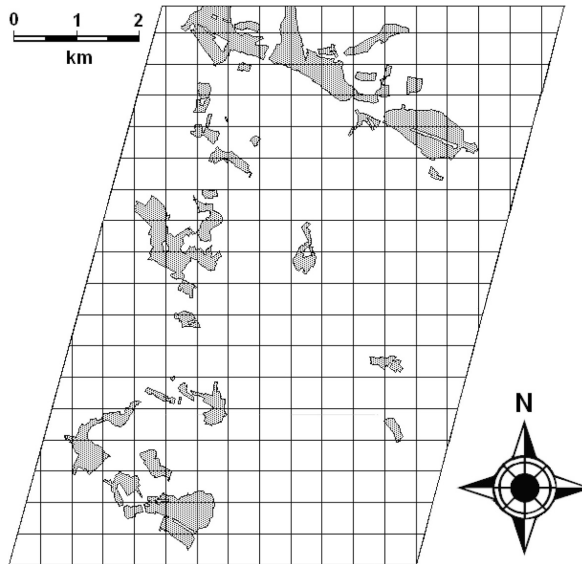


Figure 6. The unified areas of industrial heritage covered by the 500 x 500 m square grid as referential units

For each of the squares, whether complete or incomplete with respect to the shape of the study area, the post-industrial land ratio on the surface area of the relevant square was calculated. The obtained % values for square areas data were then related to their gravity points. The percentage data were reclassified according to the scheme of contemporary landscape typology (Kolejka et al. 2000) where the minimum % distribution indicates how many word denomination would be used to describe the contemporary landscape type in a given square (purely on the basis of the secondary landscape structure and regardless of other structures) on condition that at least one of the words in the denomination referred to “post-industrial” landscape (Table 2).

Table 2. Contemporary landscape typology in referential units (squares)

- A. Monofunctional areas where one form of land use constitutes a minimum of 91% of the referential unit area.**
- B. Bifunctional areas where two forms of land use jointly constitute a minimum of 91% of the referential unit area, while the dominant form's share exceeds 55% (over a half in total) and the second form's share constitutes a minimum of 2/3 of the dominant form, i.e. approximately 36 (over 1/3).**
- C. Trifunctional areas where three forms of land use jointly constitute a minimum of 91% of the referential unit area, while the dominant form's share is approx. 43% (less than 1/2), the second form's share constitutes a minimum of 2/3 of the first one, i.e. approximately 29% (less than 1/3 in total) and the third dominant form's share constitutes a minimum 2/3 of the second dominant form, i.e. a minimum of 19% (less than 1/4 in total)**
- D. Polyfunctional areas where four forms of land use jointly constitute a minimum of 91% of the referential unit area, while the dominant form's share is at least 38% (over 1/3), the second form's share constitutes 2/3 of the first one, i.e. approximately 25% (1/4 and more), the third form's share constitutes a minimum 2/3 of the previous form, i.e. approx. 17% (less than 1/5) and the last (fourth) dominant land use form's share constitutes at least 2/3 of the previous one, i.e. approx. 11% (1/10 and more).**

This thought construction provides further possibilities of cartographic experimentation with the objective to obtain a spatial image of the degree of industrial heritage distribution in a given area and resolution. Another process, implemented through the IDW (Inverse Distance Weighted) interpolation method in ArcGIS through Spatial Analyst tool, transferred the data related to the squares' gravity points (and their segments along the area's edges) back to these areas to create an isoline map where belts between individual isolines characterize the distribution of post-industrial areas and buildings in the landscape (Figure 7). Although one can dispute the procedure's correctness with regard to thematic cartography, the procedure still provides a more accurate (albeit one of disputable credibility) picture of post-industrial landscape typology of the study area on the topical resolution level.

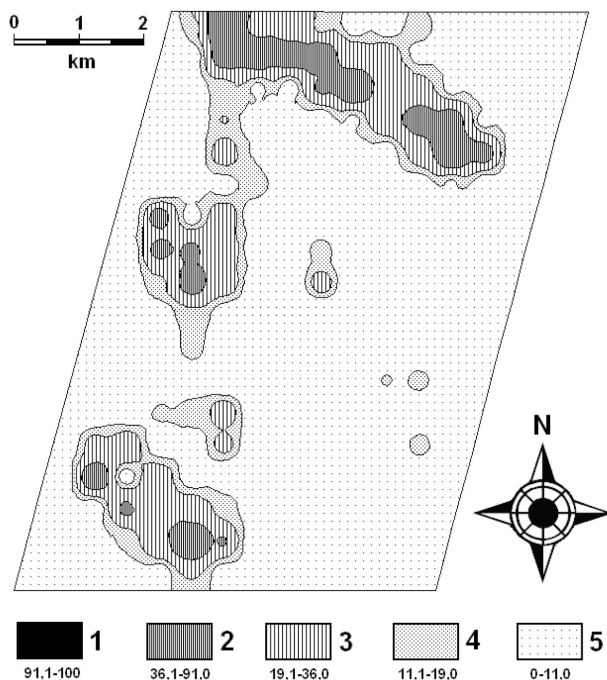


Figure 7. The Rosice-Oslavany area. Conversion of data on percentage ratio of post-industrial areas in squares into an isoline field (according to boundary % of percentage values interpreted as in Table 2)

1 – dominant post-industrial area (mono-functional – one-word description, with post-industrial areas only), 2 – remarkable post-industrial area (bi-functional – two-word description, at least the last one may be “post-industrial), 3 – important post-industrial area (tri-functional – three-word description, at least the last one may be “post-industrial), 4 – accessory post-industrial area (poly-functional – four-word description, at least the last one may be “post-industrial, 5 – areas without industrial heritage)

Discussion on the relation between post-industrial landscape and rural spaces

in the recent and more distant past, the Rosice-Oslavany area was subject to intensive industrial activities. Despite the fact that in the heyday of industrial development, particularly coal mining, most settlements saw a considerable increase in residential area development, settlements without industrial facilities and areas have preserved their rural character. This holds for settlements along the eastern border (Tetčice, Kratochvilka, Neslovice) and partly also along the western edge (Zakřany) of the “urban industrial axis” Zastávka-Zbýšov-Oslavany. Even settlements inside this axis (Babice, Padochov)

have not lost their rural character. The rural character is conditioned by the low detached or terraced houses, division of arable land into small lots and farm buildings along the edges of built-up areas. While most male population found employment in the surrounding coal mines, industrial companies or some related services (craftsmen workshops) and part of the female population managed to take hold in administration, trade and other services, a major part of employees living in the rural settlements retained small allotment farm production, mostly to cater for their family needs. This is apparent in land use maps from 1870 (ownership of small parcels of land dominated in the entire area) and 1978 (ownership of small allotments had the character of private plots near houses, while integrated fields of farm cooperatives dominated the open landscape). However, none of the settlements avoided the construction of multi-storey housing estates, albeit isolated in some cases, whose significance in the general character of individual settlements tends to be negligible. Prior to the main stage of industrial development (approx. 1850–1914), the towns which constituted the aforementioned “urban industrial axis” had had exclusively rural character as well. The town of Zastávka, which was built from scratch, is a kind of exception as its establishment was conditioned by mining and industrial activities. Throughout the period of industrial rise some settlements gradually rose to the status of towns and as such developed housing estates of blocks of flats, most of which date to the period between 1960 and 1980.

The following industrial decline did not favour this kind of development. Following a slump in industrial production in the mid-1980s, most mines and operations in the area closed down and most local inhabitants found employment in the newly developing services or started to commute to places outside the study area. While the settlements have not seen major changes in their appearance and retained their urban character, the rural character of open landscape has been enhanced. Communication networks safeguarding the transport of raw material and partly also electricity have been removed. A major part of the local railway network was dismantled, the overhead freight cableway was taken apart, most electric lines were replaced and redirected, some access roads to closed-down factories became derelict and overgrown with vegetation, insular shrub vegetation at the foots of electricity pylons and footing beams of the cableway disappeared and the areas of arable land have become more homogenous. The skylines of once industrial parts of settlements lost their factory chimneys and cooling towers while slag and ash heaps partly became overgrown with trees and shrubs and partly were subject to taking apart and recycling for new purposes. Forest restoration was conducted in places where forests had been strongly affected by industrial air pollution. Air quality improved markedly. Conducted questionnaire survey attests to impro-

ved perception of environmental quality by the local inhabitants. The rural appearance of an open landscape was visually enhanced (decreased and substituted elements of industrial origin, enhanced farming areas and tree/shrub vegetation). The visual aspect of settlements was affected only with respect to their enhanced urban character – massive developments of new single-family homes, limited development of multi-storey blocks of flats.

The definition of individual types of post-industrial landscape according to the degree of their “post-industrial” character is thus primarily conditioned by urbanized areas (with post-industrial facilities designated as industrial heritage) while the post-industrial open landscape tends to be represented by human made land forms and areas functionally converted in times of industrial development (bottoms of drained fishponds). Based on data obtained in recent years, we may presume that reduction of post-industrial areas will continue, primarily through conversion of both buildings and areas, recycling of deposited materials and replacing with new vegetation, soil and cultural superstructures. Only the open landscape (extravillan) may return to rural conditions (see Photo 1, 2, 3).



Photo 1. Area around the Oslavany coal power plant (constructed in 1913 – in background) and Oslavany Sugar Mill (in the foreground) at the time of capitalist industrializing in 1920 (courtesy Town Archive Oslavany) – example of an initial “gruendner” industrial landscape

Conclusion

The conducted post-industrial landscape classification and land typology may have practical use in designing alternative scenarios of future landscape conditions. Primarily landscape segments which contain the widest possible spectrum of contemporary post-industrial landscape types (according to the degree of their post-industrial” character) are suitable for designing various future development scenarios. Landscape variability facilitates the preparation and potential adaptation of a number of scenarios which may differ considerably from each other with respect to the degree in which various areas and buildings, including those of industrial heritage, are currently represented in them.



Photo 2. Area around the Oslavany coal power plant in 1978 at the beginning of industry decline in the late socialist period – non-modernized facility heavily polluting the surrounding residential landscape (photo J. Kolejka)



Photo 3. Oslavany power plant area in 2010 after power the plant dismount (in 1993) partially used for new industry, partially abandoned, landscape view returned to agricultural-residential use dominance (photo J. Kolejka)

The following scenarios of post-industrial landscape's future development in the Rosice-Oslavany area are currently possible:

- Continued uncontrolled decline in industrial heritage.
- Conversion and redevelopment of industrial heritage for other economic purposes.
- Introduction of protection measures designed for buildings, areas and the extended industrial heritage landscape.
- Removal of all evidence of the industrial era and transformation to residential landscape.
- Removal of all evidence of the industrial era and transformation to leisure and entertainment landscape with educational elements.
- Removal of all evidence of the industrial era and transformation to agricultural landscape or forestry-agricultural landscape.
- Conservation of industrial heritage and transformation to museum landscape of the “open-air museum” type.
- This outline is far from being comprehensive. Modeling scenarios of future post-industrial landscape development (in segments) will be undertaken in the course of further research.

References

- Cashen D., 2007, *Redeveloping a North Florida Post-Industrial Landscape*, University of Florida Journal of Undergraduate Research, 8 (3), [cit. 2010-09-14] URL: http://www.clas.ufl.edu/jur/200701/papers/paper_cashen.html
- Dunham-Jone, E., 2007, *Economic Sustainability in the Post-Industrial Landscape*, [in:] Tanzer K., Longoria R. (eds.), *The Green Braid. Towards an Architecture of Ecology, Economy, and Equity*, An ACSA Reader, Routledge, London, 44–59.
- Fragner, B., 2005, *Postindustriální krajina (Porúří-Emscher Park)*, Vesmír, 84, 178–180.
- Hansen H., Winther L., 2006, *The Heterogenous (Post-) Industrial Landscape of Copenhagen: Location Dynamics and Divisions of Labour*, [in:] *Proceedings of the Sixth European Urban and Regional Studies Conference*, 21st–24th September 2006, Roskilde, s. 1–26. [cit. 2010-10-11] URL: <http://www.byforskning.dk/publikationer/Siden%20publikationer/artikler/Hogni20Hansen0LarsWinther.pdf>
- Hayes B., 2006, *Infrastructure: A Field Guide to the Industrial Landscape*, London, W. W. Norton & Co.
- Jarczewski W. (ed.), 2009, *Przestrzenne aspekty rewitalizacji – śródmieścia, blokowiska, tereny poprzemysłowe, pokolejowe i powojkowe*, Kraków, IRM.
- Keil A., 2005, *Use and Perception of Post-Industrial Urban Landscapes in the Ruhr*, [in:] Kowarik I., Körner, S. (eds.), *Wild Urban Woodlands*, Springer, Berlin-Heidelberg, 117–130.
- Kirk J., 2003, *Mapping the Remains of the Postindustrial Landscape*, Space and Culture, 6, 178–186.
- Kirkwood N., 2001, *Manufactured Sites. Rethinking the Post-Industrial Landscape*, London, Taylor and Francis.
- Kolejka J., 1979a, *Teritoriální systém a jeho potenciál. Rosicko-Oslavansko. Využití půdy v r. 1825*, Map in the scale 1:25,000, Brno, Univerzita J. E. Purkyně.
- Kolejka J., 1979b, *Teritoriální systém a jeho potenciál. Rosicko-Oslavansko. Využití půdy v letech 1870-1875*, Map in the scale 1:25,000, Brno, Univerzita J. E. Purkyně.
- Kolejka J., 1979a, *Teritoriální systém a jeho potenciál. Rosicko-Oslavansko. Využití půdy v r. 1978*, Map in the scale 1:25,000, Brno, Univerzita J. E. Purkyně.
- Kolejka J., 2006, *Rosicko-Oslavansko: Krajina ve spirále*, Životné prostredie, 40, 187–194.

- Kolejka J., Lipský Z., Pokorný J., 2000, *Ráz krajiny České republiky. GIS a DPŽ pomáhají v jeho identifikaci a hodnocení*, GEOinfo, 7, 24–28.
- Novosák, J., 2005, *Brownfieldy ve městech Ostravské průmyslové oblasti jako hrozba i nevyužitý potenciál, pohled městské správy*, [in:] Svatoňová, H. (ed.), *Geografické aspekty středoevropského prostoru*. Brno, Masarykova univerzita, 573–579.
- Novosák, J., Szczyrba, Z., 2004, *Frýdek-Místek: Konverze tradičních průmyslových ploch, širší geografické vztahy*, Urbanismus a územní rozvoj, 7, 36–45.
- Rogers S., 2006, *Forgotten Landscapes*, Forgotten Landscapes Partnership, [cit. 2010-02-06] URL: www.forgottenlandscapes.org.uk/FL_ProjectBriefAug06.doc
- Shahid Y., Nabeshima K., 2005, *Japan's Changing Industrial Landscape*, World Bank Policy Research Working Paper No. 3758. [cit. 2010-01-15] URL: <http://ssrn.com/abstract=844847>
- Vráblíková J., Vráblík P., 2007, *Využívání území v průmyslové krajině*, [in:] Střelcová K., Škvarenina J., Blaženec M. (eds.), *Bioclimatology and Natural Hazards*, International Scientific Conference, Pořana nad Detvou, 1–5.

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A Geriatric Fountain of Youth in the Caucasus or Spurious Census Data: Spooning through the Yogurt Myth

Abstract: We examine the purported clustering of centenarians (those who have surpassed 100 years) in the Caucasus region of the former Soviet States, and question its plausibility based on the pattern of the reported data. The idea of extraordinary longevity being tied to a place is explored through the larger concepts of health geography and therapeutic places, as well as the rural-urban dichotomy. We also detail potential motivations behind this myth's persistence, including nostalgia, nationalism, and yogurt sales.

Key words: centenarians, therapeutic places, health geography, longevity, lifespan limits.

Introduction

Centenarians are a preeminent symbol of longevity (Ozaki et al. 2007) and they tend to cluster in rural areas (Jauhiainen 2009, Blackstock et al. 2006). Research has examined super-longevity to attempt to explain the relative role of environmental and innate processes (Ozaki et al. 2007). Some research has revealed that inheritable traits predict longevity (Wilkinson et al. 1998, Robine et al. 2005, Franceschi et al. 2000, Perls et al. 2000, Perls et al. 2002). However, centenarians, whether for environmental or inherent reasons, are also more likely to avoid diseases that cause mortality earlier in life (Perls 1995). Cultural mores, healthcare systems, diet, exercise, and genetic factors have all been associated with super longevity (Suzuki et al. 2004, Ozaki et al. 2007, Wilkinson et al. 1998, Robine et al. 2005). Other factors potentially

related to longevity include rich and meaningful social relationships and a positive life outlook (Suzuki et al. 2004).

The former Soviet States, and particularly the Caucasus region, has long claimed to be home to an astonishing number of centenarians (Myers 1964, Anderson et al. 1989). National censuses have reported with much publicity the existence of “super centenarians” living beyond 150 years of age (Garson 1991). Are Russia and the Caucasian republics the ideal havens against the unassailable forces of aging? Or is this phenomena merely a myth whose super-annuation has been prolonged by dubious data and commercial and nationalist interests? While reports of statistical irregularities in Soviet Russia serving the state interests are common, less research has explored specifically the geography of the Caucasus region as a potential explanation or political opportunity to justify longevity as a natural result of “healthy landscapes”.

Healthy landscapes

The belief that a large number of centenarians, or super-centenarians, are clustered in the Caucasus is imbedded in notions of health geographies and therapeutic landscapes. Basic to this belief is that place is connected with longevity. Whatever the determined cause of that longevity, whether real or imagined, the idea that a place imbues healthy characteristics is quintessentially geographical. For the purposes of this paper we will place this particular manifestation of longevity and place into the context of the geography of health, through two perspectives. The first is a manifestation of the long-standing construction of rural places as conducive to healing, or as being healthier than urban places. The second is as an example of a therapeutic place, an idea that emerged as part of the transformation in medical geography and the geography of health. The literature concerning both of these ideas will be briefly reviewed and discussed in relation to this particular manifestation.

The rural-urban health myths

Rural areas like the Caucasus as healing or healthy places is an idea that remains a powerful one, at least in developed countries (Gesler 1992, p. 736; Philo et al. 2003, p. 277; Watkins and Jacoby 2007, pp. 851–2). Rural spaces are idealized as healthy ‘havens’, while urban places are deemed unhealthy ‘ghettos’ (Philo et al. 2003, p. 277). Rural people believe that they are healthier due to “living in a healthier cleaner environment, surrounded by open fields and away from the environmental problems of the city such as noise,

pollution and over crowding” (Watkins and Jacoby 2007, p. 857). Visiting natural places may increase positive perception of people’s own health (Maas et al. 2009), and possibly their actual health (de Vries et al. 2003).

The Caucasus region is indeed rural and as such contains an abundance of these natural places, as well as other potential contributing factors such as fresh mountain air, and particular local foods like kefir, a yogurt-like milk product. While the connection between perception of health, or more broadly, the mind and health can certainly not be discounted in the face of statistically rigorous placebo effects, the actual health benefits of rural places may be derived solely through perception.

Numerous studies have found that rural places and rural populations are less healthy than their urban counterparts, largely due to poverty and limited access to services (Gould 1998, Pampalon et al. 2006, Philo et al. 2003, Watkins and Jacoby 2007). These studies include findings in Britain, Canada, the United States, and Sub-Saharan Africa. In addition to this dichotomous agreement across heterogeneous locations, almost all of these authors discussed an accompanying rural association with health in their region of study. Some of the potential causes of this persistent myth were covered in the previous paragraph, but some authors have assigned this idea to more than positive associations with the rural; it is also created through negative health associations with rural’s opposite: the urban.

Urban places when contrasted with rural places are viewed as unhealthy, crime-ridden, and filled with strangers who range from anonymous to openly hostile. This is certainly not an environment conducive to living past 100! However, as has been demonstrated numerous times, urban areas are by standard indicators healthier environments, or at least contain healthier, longer-lived people. Knowing that, what is the cause of this seemingly false rural-urban dichotomy? Some authors have described the notion of an ‘urban penalty’, which arose in Europe, Russia, and other developing countries after the Industrial Revolution in the 19th and beginning of the 20th century (Harpham and Molyneux 2001, Gould 1998). At that time and in those places, cities were in fact much unhealthier than the countryside, manifested through higher mortality rates, especially among infants. These authors attribute this to overcrowding and poor sanitary conditions, resulting in high rates of death from communicable diseases such as cholera. As industrial countries developed economically and cleaned up their cities, they underwent an ‘epidemiological transition’, where disease deaths shifted from “a predominance of communicable disease to a predominance of non-communicable disease” (Harpham and Molyneux 2001, p. 115). It appears that this urban penalty is now being recreated in developing nations, due to a mix of old factors and new, such as HIV/AIDS.

Is the construction of the Caucasus as a healthful place merely a manifestation of the larger ideal of rural as healthy? Further, is this idea itself an outmoded continuation of truths that existed in Russia two centuries ago? Or does being surrounded by natural spaces actually affect one's health, either directly or through mental reinforcement? While the answer to these questions may be unknowable, we would like to suggest one more contributor to the persistence of the countryside as a healthful place; the power of nostalgia. Russia, along with the remainder of the world, is increasingly urban. Outside of a perhaps incipient new 'urban penalty' arising from this migration, the persistence of this rural association with health could also be part of a collective longing for ways of life that are rapidly being extinguished.

Therapeutic places

The second way in which this idea of the Caucasus as a home to exceptionally long-lived people touches on the geographic literature is through the notion of therapeutic places. These are "settings or situations that encompass physical, psychological and social environments that are associated with healing" (Gastaldo et al. 2004, p. 158; summarizing Gesler 1992). This was first explored by Wilbert Gesler in his 1992 paper "Therapeutic landscapes: medical issues in light of the new cultural geography". This idea was the beginning of a transition or expansion of medical geography, depending on one's viewpoint, that occurred in the 1990s (Kearns and Moon 2002, p. 607). Previously, medical geography had been largely concerned with epidemiology and diseases, and was a quantitative science (Rosenberg 1998). The new medical geography, or the geography of health and/or healing, attempted to "shift the subdiscipline from a concern with disease and disease services towards a focus on health and wellness" (Kearns and Moon 2002, p. 608). Following cultural geography traditions, geographies of health and healing attempted to take a more holistic view of the ways that place can tie into health. It also emphasized the importance of a place itself being a factor in health, not just as a medium through which epidemics move (Kearns and Moon 2002, p. 608).

Our current exploration of the Caucasus as a region of exceptional longevity relates to the concept of therapeutic landscapes at a specific point in its theoretical development. Fiona Smyth in her 2005 article, "Medical geography: therapeutic places, spaces and networks", reviews the literature on therapeutic places and identifies three general categories of published work that have arisen consecutively: specific therapeutic places, more generalized therapeutic spaces such as hospitals and health care settings, and finally therapeutic networks such as kinship groups (489-490). The current study fits best into

the first or initial category, the exploration of “‘extraordinary’ places of healing and well-being within which the ‘natural’ characteristics of the landscape were associated with improving and maintaining health” (489). This is obviously related to the previously explored rural-urban health characterizations, but the key difference here is the importance of the specific place, such as its landscape or its waters, as well as the extra-ordinary nature of the location.

The remaining portion of this paper will examine the evidence of the Caucasus as a site of extraordinary longevity. It may be that there are compelling reasons that this particular rural place is more therapeutic than others, or perhaps it is merely a reflection of wider beliefs about place and health.

Longevity in the Caucasus

The Caucasus region has changed its meaning over the centuries, but is generally defined as the area surrounding the Caucasus Mountains. Its northern border stretches into Russia, and its southern edge extends into Armenia and Azerbaijan (Figure 1). The Russian empire first began making military forays into this region in the mid-17th century. After extended conflict, much of it became part of the Russian empire in 1864 (Barrett 1995). Pushkin’s famous narrative poem “The Captive of the Caucasus” in 1821 inspired a wave of Russian fiction about the area (Hokanson 1994). These portrayed the region as exotic and possessing an incredible natural beauty (Scotto 1992). The area has remained a “powerful theme in Russian popular culture” ever since (Barrett 1998, p. 75).

The Caucasus, especially the coast of the Black Sea (present-day southern Russia and Georgia), had by the end of the 19th century become a Russian tourism destination because of its healthful climate and mineral waters. It was the location of numerous sanatoriums, mineral spas, and health resorts (Burns 1998, Lywood 2009, Radvanyi and Muduyev 2007). During this period, mineral water and kefir from the Caucasus were introduced as products in Russia and became popular enough to be available “on every street corner” (Barrett 1995, p. 75). It is evident that in Russian culture the Caucasus has long been associated with the natural, the rural, and health. This may help explain the acceptance and persistence of the idea of Caucasian super-centenarians.

The reports of super-normal occurrences of longevity in this region have not passed unnoticed by researchers. In a study on old age in Soviet-era Georgia, Lesnoff-Caravaglia (1987) found that the life expectancy of Georgian residents is significantly higher than elsewhere due to a relatively temperate climate, genetic proclivity to long life likely associated with a high prevalence of type O blood carriers, socio-economic and psycho-social factors such as

a high level of social and psychological “well-being”, and socio-hygienic factors like a healthy diet, a favorable balance of work and rest, and high physical activity (83–105).

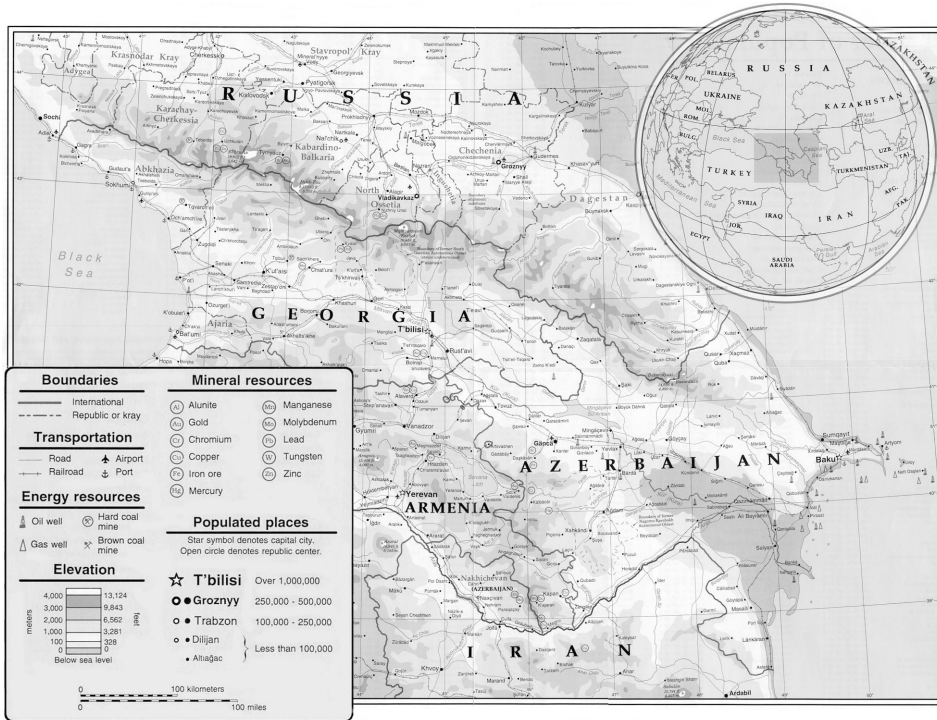


Figure 1. The Caucasus Region

Source: Produced by the Office of The Geographer and Global Issues, Bureau of Intelligence and Research, US Department of State.

Names for first-order administrative divisions (republics and krays) are unofficial provisional names. Names and boundary representation are not necessarily authoritative. 2762 6-94 STATE (INR/GGI)

Other authors have attributed longevity in this region to unusual adaptive capacity to extreme climate (Tatarinova et al. 2008). These explanations are both *post factum*, with the researchers theorizing in an attempt to explain an (apparently) existing phenomenon. This may explain one author attributing this longevity to temperate climate while the other credits extreme climate. It also raises the question, especially from Tatarinova's article which focuses on climate, why these commonly existing conditions have not produced similar results elsewhere.

One of the potential contributors to longevity is diet, which has some particular ramifications for this region. The Caucasus is the purported origin

of kefir, an ancient fermented milk dish similar to a more liquid yogurt. In one version of the myth kefir was directly given to the Caucasus people by Muhammad himself as a reward for their devotion (Chandan 2006, p. 330). Many claims concerning the healthy effects of this food have been made, including general benefits such as increased health and longevity, as well as its effective treatment for specific stomach and intestinal disorders (Chandan 2006). More recently these claims have been expanded to include its pro- and anti-biotic capabilities, and anti-oxidant effects (Farnworth 2003). These claims have been subject to academic scrutiny; Farnsworth in 2003 summarized these and in brief found little support for its effects as a pro-biotic, but did note positive anti-tumor, anti-bacterial, and anti-fungal effects, as well as associations with lower cholesterol (97–102). In addition, other studies have found some evidence that yogurt is an anti-oxidant and anti-mutagen (Liu et al. 2005).

Kefir is a major part of the diet in Central and Eastern Europe and is listed as one of the regulated commodities in Russia (Farnworth 2003, p. 86). Like so many other traditional foods, it has undergone some serious changes in its production methods. No longer made by home-fermenting goat's milk in a leather sack suspended from a doorway, it has been industrialized and production for Russia alone in 1999 was estimated at 600,000 tons (Just-food.com 2001). Despite this change in character, companies continue to use its origins and mythology in relations to health and longevity in order to push sales.

The marketing strategies of two separate companies use these concepts and are an example of the ideas about longevity and health that we have discussed in this paper. Otchakovskiy, one of the four main kefir producers in Russia, uses as a slogan for all five of its kefir product lines "Eat our products and live one hundred years or more!" This is obvious effort to tie their version of this traditional Caucasus dish with longevity. Differently, the international dairy product company Danone, used this slogan to make its entry into the Russian market in 2000: "The taste you remember from your childhood!" This slogan uses childhood memories, or in a larger sense nostalgia, to sell its kefir. We previously discussed how the notions about rural places and nostalgia may be a part the construction of the Caucasus as a place of longevity. International corporations, seemingly always willing to turn sentiment to profit, have neatly exploited both of these ideas in order to sell their particular brand of yogurt-drink. We by no means wish to challenge the efficacy of Danone's products, but there is an accumulation of data questioning the endless happy lifespan that these companies are selling.

Natural limits to longevity

In general, humans' maximum age seems to be limited to around 120 years (Walford, 1983, Ruiz Torres and Beier 2005). Various studies have explored these theoretical limits to life expectancy: Manton (1991) found that through case-fatality reduction, risk-factor intervention, and slowing of the aging rate, an upper-limit life expectancy of 95 to 100 years (with a ten year standard deviation) may be achieved. Adherence to a Mediterranean diet, taking mid-day naps, and avoiding smoking have also been associated with superlongevity (Tourlouki et al. 2009). In addition, caloric restriction (Walford and Weindruch 1988), and growth-process modulating factors (Ruiz-Tores and Beier 2005) have been theorized to extend lifespan. It therefore seems possible that some people from the region in question are living over 100 years on a regular basis (although the claims of 150 seem mythical) however, the numbers in which they have occurred continue to raise questions.

Arguments against extraordinary longevity

The reported evidence of longevity has been contested primarily on the basis of dubious data quality. Garson (1991) questions whether the Caucasus region is really an exception to the relatively fixed actual and theoretical longevity limits. The probability of dying between ages 60 and 65 (5qx) according to the 1897 Soviet census at 60 was approximately .16 for males and females, corresponding to fairly high Coale-Demeny West model life table levels of 15% for males and 11% for females. Yet at age 95 the probability of death within five years is 46% for males and 48% for females in the Soviet census. The West model displays values of 84% and 68% for the same age range, and incredible difference.¹ At age 95, there are almost 77 times more males as expected in level 9 and 154 times more than expected in level 7, while the proportion of male centenarians in the census is 2.874 times greater than in a stable level 7 population (269).

Myers study (1964) of 1958–1959 Soviet life tables reports similarly apocryphal five-year life expectancies for those at advanced ages. Myers believes that “it does not seem possible” that the survival rate of a 90 year old Soviet woman is 41% when the corresponding rate is only 23% for the 1950–1951

¹ Since the most favorable level of life expectancy in the Coale-Demeny West model is 25, levels above these numbers are extrapolated.

Norwegian² life tables, suggesting that it is very likely that the Soviet mortality rates at the older ages are understated.

Similarly, Anderson and Silver (1989) claim that “it strains credulity that mortality conditions of persons aged 55 and over in rural Tajikistan in 1958–1959 were better than those of Swedish urban and rural populations combined in 1950–1960.” (262) In a comparison of death rates in the Soviet Union in 1958–1959 and 1984–1985, Anderson finds that the rates become much higher, going from “absurdly good” to “more plausible” (248) almost certainly as a result of “reduction in error of the statistics.” (253)

Further indication of unreliable data bloating centenarian life expectancies comes from the 1897 Soviet death registration data in which the ratio of expected proportion of deaths to reported deaths for males increases by age and is 252:1 for age 100. This implausible number is even more dubious given the under-registration for deaths above age 50 lies between 17 and 24 percent for males and 11 to 18 percent for females, a pattern which would skew mortality on the conservative side.

According to Garson’s study of Soviet censuses, life expectancy decreased from 1897 to 1970. Yet it is widely accepted in the Soviet Union that life expectancy has more than doubled between 1897 and 1970 (272). The gap between life expectancies of the census based life table and the West model increases after age 80 in both the 1897 and 1970 censuses but the difference narrows in 1970 as compared to 1897 (274). This is consistent with age overstatement. Furthermore, the age-specific life expectancies for both sexes increase at each age interval between ages 100 and 115 in the 1959 and 1970 censuses and are lower at every age in 1970 than in 1959 (276). Garson contends that clearly this is not a credible trend (276).

Age-heaping, i.e. the clumping of age values on certain numbers, usually those ending in zeros and fives, is a good indicator for faulty or estimated data. The age-heaping ratio of reported 70 year olds to those aged 69 and 71 in Garson’s examination of the 1897 Soviet census was 7.16% for females and 10.22% for males. Coale and Kisker (1986) have posited that a high degree of age-heaping is invariably associated with a large proportion aged 95 and over and a great excess of persons reported at age 70 indicates that when ages are badly misreported, the number of persons at very advanced ages is highly exaggerated. Such age-heaping is exemplified in the 1950 US census which reported more black centenarians than white ones even though the black population made up less than 10% of the entire US population (369). Similarly,

² Like Sweden, Norway has traditionally had one of the highest life expectancies and most complete and accurate census data in the world. Vital statistics are particularly well maintained as citizens of Norway are required to carry vital statistic information cards that are updated whenever a vital event occurs.

Anderson's et al (1989) corroborates the age heaping theory in Central Azerbaijan and Tajikistan. Nearly half of all persons aged 63–92 in the 1959 census reported their age as a multiple of 5.

Conclusion: a caucasus fountain of youth – myth or reality?

Perhaps the publicity and revenue generated by the Caucasuse' purported legion of centenarians would encourage old timers to favor prevarication over diminution of a myth that has brought attention to an otherwise depressed and internationally anonymous area. This could take the form of promotional capital garnered through advertisement campaigns associating products with hearty life spans. But why the age exaggeration started in the first place remains unknown. Certainly age-overstatement is known to occur among populations of less educated people – due to both the census workers' and demographers' failure to account for the phenomena and to a greater tendency for subjects to misunderstand census questions and to genuinely be ignorant of their real age. But this does not explain the proportionately greater incidence of overstatement in the former Soviet Union relative to other areas of comparable education levels.

Many consider Manton's 100 year life expectancy limit to be a liberal estimate and Walford's potential 120 year cutoff as visionary – certainly not ages expected to be achieved by populations in areas of such low living standards. The age distribution statistics of the supposed Soviet centenarians relative to the touchstone of western models of superior statistical fidelity with populations living under preferable health conditions is a cogent argument for dirty data. This argument is further corroborated by the apocryphal increase in mortality in the Soviet Union both at highly advanced ages relative to younger ages and over the past century as medical, nutritional and general quality of life improvements have increased life expectancies for the elderly worldwide. Only improved data fidelity could seem to credibly yield such results.

How can it be that the oldest “authenticated centenarian” in the world was a French woman, Jeanne Calment who died at age 122 in 1997 (<http://www.demogr.mpg.de/books/odense/6/09.htm>), yet in the 1959 and 1970 Soviet censuses, the life expectancies for males and females actually *increased* from one age interval to the next between ages 100 and 115 (276). During the cold war period, the efforts of industries such as yogurt companies to promote their product and Soviet journalists to promote their racial superiority encouraged age exaggeration. We also argued that the idea of a rural place such as the Caucasus being healthy or therapeutic is common one, despite numerous rigo-

rous studies to the contrary. Yet no contemporary pharmaceutical nor fresh mountain air can explain the statistical irregularities – and neither can the Russian tourism and yogurt lobby. Perhaps said lobbies were as effective recruiters of centenarian convert as jingoistic Soviet scribes' celebration of national eugenics.

References

- Anderson B. A., Silver B.D., 1989, *The Changing Shape of Soviet Mortality, 1958–1985, An Evaluation of Old and New Evidence*, Population Studies, A Journal of Demography, 43, 2, 243–265.
- Barrett T.M., 1995, *Lines of Uncertainty: The Frontiers of the North Caucasus*, Slavic Review, 54, 3, 578.
- Barrett T.M., 1998, *Southern Living (in Captivity): The Caucasus in Russian Popular Culture*, Journal of Popular Culture, 31, 4, 75.
- Blackstock K.L., Innes A., Cox S., Smith A., Mason A., 2006, *Living with Dementia in Rural and Remote Scotland: Diverse Experiences of People with Dementia and their Careers*, Journal of Rural Studies, 22, 2, 161–176.
- Burns, P. 1998, *Tourism in Russia: background and structure*, Tourism Management, 19, 6, 555–566.
- Coale A.J., Kisker E., 1986, *Mortality Crossovers: Reality or Bad Data*, Population Studies, 40, 389–401.
- Chandan R. C. 2006. *Manufacturing Yogurt and Fermented Milks*, Ames, Iowa: Blackwell Pub.
- de Vries, S., Verheij R. A., Groenewegen P.P., Spreeuwenberg P., 2003, *Natural Environments-Healthy Environments? An Exploratory Analysis of the Relationship between Greenspace and Health*, Environment & Planning A, 35, 1717–1732.
- Farnworth, E. R. 2003. *Handbook of Fermented Functional Foods*, Boca Raton, FL: CRC Press.
- Franceschi C, Motta L, Valensin S, 2000, *Do Men and Women follow Different Trajectories to Reach extreme Longevity? Italian Multicenter Study on Centenarians (IMUSCE)*, Aging Clinical and Experimental Research, 12, 77–84.
- Harpham T., Molyneux C., 2001, *Urban Health in Developing Countries: a Review*, Progress in Development Studies, 1, 2, 113–137.
- Hokanson K., 1994, *Literary Imperialism, Narodnost' and Pushkin's Invention of the Caucasus*, Russian Review, 53, 3, 336–352.

- Maas J., van Dillen Sonja M.E., Verheij R.A., Groenewegen P.P., 2009, *Social Contacts as a Possible Mechanism Behind the Relation Between Green Space and Health*, *Health & Place*, 15, 2, 586–595.
- Kearns R., Moon G., 2002, *From Medical to Health Geography: Novelty, Place and Theory After a Decade of Change*, *Progress in Human Geography*, 26, 5, 605–625.
- Garson K. L., 1991, *The Centenarian Question: Old Age Mortality in the Soviet Union, 1897–1970*, *Population Studies*, 45, 265–278.
- Gastaldo D., Gavin J. A., Khanlou N., 2004, *Therapeutic Landscapes of the Mind: Theorizing some Intersections Between Health Geography, Health Promotion and Immigration Studies*, *Critical Public Health*, 14, 2, 157–176.
- Gesler W.M, 1992, *Therapeutic Landscapes: Medical Issues in Light of the New Cultural Geography*, *Social Science & Medicine*, 34, 7, 735–46.
- Gould, W.T.S., 1998, *African Mortality and the New 'Urban Penalty'*, *Health & Place*, 4, 2, 171–181.
- Jauhainen, J.S., 2009, *Will the Retiring Baby Boomers Return to Rural Periphery?* *Journal of Rural Studies*, 25, 1, 25–34.
- Lesnoff-Caravaglia, G., 1987, *Realistic Expectations for Long Life*, New York, Human Sciences Press.
- Liu J.R, Chen M.J, Lin C.W., 2005, *Antimutagenic and Antioxidant Properties of Milk-Kefir and Soymilk-Kefir*, *The Journal of Agricultural Food Chemistry*, 5, 7, 2467–74.
- Lywood W. G., 2009, *From Russia's orient to Russia's Riviera reimagining the Black Sea coast/Caucasus from romantic literature to early tourist guidebooks*, Masters Dissertation, Ohio State University.
- Manton K. G., Stallard E., Tolley H. D., 1991, *Limits to Human Life Expectancy: Evidence, Prospects, and Implications*, *Population and Development Review*, 17, 4, 603–637.
- Myers R. J., 1964, *Analysis of Mortality in the Soviet Union According to 1958–59 Life Tables*, *Transactions of Society of Actuaries*, 16, 46, 1–9.
- Ozaki, A., Uchiyama, M., Tagaya, H., Ohida, T., Ogihara, R., 2007, *The Japanese Centenarian Study: Autonomy Was Associated with Health Practices as Well as Physical Status*, *Journal of the American Geriatrics Society*, 55, 95–101.
- Pampalon R, Martinez J., Hamel D., 2006, *Does Living in Rural Areas Make a Difference for Health in Québec?*, *Health & Place*, 12, 4, 421–35.
- Perls T., Shea-Drinkwater M., Bowen-Flynn J. et al., 2000, *Exceptional Familial Clustering for Extreme Longevity in Humans*, *Journal of the American Geriatrics Society*, 48, 1483–1485

- Perls T.T, Wilmoth J, Levenson R, 2002, *Life-Long Sustained Mortality Advantage of Siblings of Centenarians*, Proceedings of the National Academy of Sciences, 99, 8442–8447.
- Perls TT, 1995, *The Oldest Old*, Scientific American, 272, 70–75.
- Philo C., Parr H., Burns N., 2003, *Rural Madness: a Geographical Reading and Critique of the Rural Mental Health Literature*, Journal of Rural Studies, 19, 3, 259–281.
- Radvanyi J., Muduyev S. S., 2007, *Challenges Facing the Mountain Peoples of the Caucasus*, Eurasian Geography and Economics, 48, 2, 157.
- Rosenberg M.W, 1998, *Medical or Health Geography? Populations, Peoples and Places*, International Journal of Population Geography, IJPG, 4, 3, 211–26.
- Ruiz-Torres A, Beier W, 2005, *On Maximum Human Life Span: Interdisciplinary Approach About its Limits*, Advances in Gerontology, 16, 14–20.
- Robine J.M, Paccaud F., 2005, *Nonagenarians and Centenarians in Switzerland, 1860–2001: A Demographic Analysis*, Journal of Epidemiology and Community Health, 59, 31–37.
- Scotto P., 1992, *Prisoners of the Caucasus: Ideologies of Imperialism in Lermon-tov's "Bela"*, Publications of the Modern Language Association of America, 107, 2, 246–260.
- Smyth F., 2005, *Medical Geography: Therapeutic Places, Spaces and Networks*, Progress in Human Geography, 29, 4, 488–495.
- Suzuki M., Kanamori M., Miyajima H., 2004, *Successful Aging: Review of Life History and Caregiving Among Japanese Centenarians*, Igaku Seibutu-gaku, 148, 10–17.
- Tatarinova O.V., Kylbanova E.S., Neustroeva V.N., Semenova A.N., Nikitin Iu.P., 2008, *Phenomenon of Super-Longevity in Yakutia*, Advances in Gerontology, 21, 2, 198–203.
- Tourlouki E., Polychronopoulos E., Zeimbekis A., Tsakountakis N., Bountziouka V., Lioliou E., Papavenetiou E., Polystipiotti A., Metallinos G., Tyrovoulas S., Gotsis E., Matalas A.L., Lionis C., Panagiotakos D.B., 2009, *The 'Secrets' of the Long Livers in Mediterranean Islands: the MEDIS Study*, European Journal of Public Health. 2009 Nov 30.
- Walford R.L., 1983, *Maximum Life Span*, New York, W.W. Norton & Co.
- Walford R.L. Weindruch R., 1988, *The Retardation of Aging and Disease by Dietary Restriction*, Charles C. Thomas, Springfield, Illinois.
- Watkins F., Jacoby A., 2007, *Is the Rural Idyll Bad for Your Health? Stigma and Exclusion in the English Countryside*, Health & Place, 13, 4, 851–64.
- Wilkinson T.J., Sainsbury R., 1986, *A Census-Based Comparison of Centenarians in New Zealand with Those in the United States*, Journal of the American Geriatric Society, 46, 488–491.

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Socio-economic transformation of Bosnia and Herzegovina

Abstract: The purpose of this paper is to show a socio-economic transformation of rural areas in Bosnia and Herzegovina thus filling, to a certain degree, gaps in studying the settlements in Bosnia and Herzegovina. With regard to data availability, most of the attention has been paid to issues of economic development of rural areas. In addition, some characteristics of development of new activities in rural areas of Bosnia and Herzegovina in 2010 have been presented here. For decades, settlement growth in Bosnia and Herzegovina has been connected with spreading their external boundaries beyond historic and organic borders. Nowadays, suburban and remote provincial settlements are showing the highest level of dynamics.

Key words: socio-economic transformation, economy, Bosnia and Herzegovina, rural area, population.

Introduction

The main objective of this paper is to show socio-economic transformation of rural areas in Bosnia and Herzegovina. Among the problems in development of economy of Bosnia and Herzegovina, poor traffic connections and unfavourable socio-economic population structure in rural areas may be distinguished as main problems. With regard to data availability, most of the attention has been paid to issues of economic development of rural areas. In addition, some characteristics of development of new activities in rural areas of Bosnia and Herzegovina in 2010 have been presented here. The events that happened in Bosnia and Herzegovina from 1992–1995 caused a number of problems, which affected contemporary socio-economic transformation of rural areas. Exploring these issues should contribute to their future resolving and creating better conditions in socio-economic development of rural areas of Bosnia and Herzegovina in Europe, today (Grimm 1995).

On the basis of these objectives, it is necessary to determine the most precise criteria for overcoming economic, social and ecologic crisis and to justify some investments into economic activities in Bosnia and Herzegovina. According to contemporary trends, spatial distribution of economic activities in Bosnia and Herzegovina is very different. There's a strong concentration of jobs in four regional centres: Sarajevo, Mostar, Banja Luka and Tuzla, and on the other hand, there's an underdeveloped remaining territory. Transformation of rural areas has its content with modified physiognomic and functional structures. This content, due to interconnections between towns and suburbs, gives to these areas a completely modified perspective during forming urban systems and their functions.

Objectives

This paper attempts to answer some contemporary challenges to rural settlement development. Research is based on detailed analysis of structural changes and development plans in settlement network that occurred in the last decade of the twentieth century. In addition to assessment and evaluation of structural settlement issues, which are a consequence of contemporary socio-economic changes, we have paid a particular attention to two more phenomena: social-economic geographic distribution of suburbanisation, which increasingly spreads toward provincial areas and a general, advancing dispersion of settlement network and the related structural changes within a rural area itself.

The key discussions are related to analysis of conditions and evaluation of causes for an advent of successful transformation of rural areas. In evaluation of consequences of population dispersion development in space, we rely on studying the selected, in our opinion, key triggers of geographic processes, which stimulate these processes either spontaneously or as a consequence of certain policies that lead to present condition. This requires a particularly detailed research of those development processes, which are going on non-organically and/or contrary to the set goals.

The answers to actual questions will serve as a guiding principle for forming critical premises offered by economic and/or social political backgrounds, with a reflexion in rural settlements and the rise of suburbanised areas (Woods 2009).

On the basis of empirical analyses, in conclusion derived from the point of overpopulation of urban regions, by means of reformulation of the starting point in policy of spatial planning of urban and provincial settlements, we have defined the following measures for its strengthening:

Suburbanization in suburbs causes accelerated dispersion of settlement development, as urban areas due to high level of centralization on the labour market in urban centres are subject to particular types of settlement expansion, and rapid structural changes.

Spontaneous deconcentration of settlement development and depopulation with increase in social prosperity offers a massive increase of traffic flows in Bosnia and Herzegovina. Furthermore, urban areas are due to dominantly intraregional traffic flows extremely overcrowded, which requires a particular strategy of alleviation of overcrowding. Continuous development pressure on the settlement network in urban areas requires forming the environment of favourable strategy of directing the settlement areas, and it may be possible to expect changes of targeted use of rural areas in the future that would be more and better directed into economic development (Ilbery 1998). Economical development of commuting is possible to reach with intensive processes of development of jobs in suburbs, with consistent adoption and implementation of system of decentralized concentration (e.g. by means of 'mixed land use') and the anticipated development of new communication technologies in suburbanised areas, which basically do not recommend deconcentrations, and enable more optimal utilization of traffic flows.

Overview of structural changes and aspirations in settlement structures of Bosnia and Herzegovina

Bosnia and Herzegovina has always had a great dispersion of settlements and a low level of urbanisation. The performed analysis for the last four decades has shown a general increase in population by one fourth; it showed that urbanisation was rapidly developing until the beginning of the 1990s, as the level of absolute concentration was present in more than a half of the cities of Bosnia and Herzegovina. After that period, dynamics of population in the cities almost bisected on account of growth in most suburbs of the cities of Bosnia and Herzegovina, in comparison to previous period. Indicators for the entire period show the highest level of growth in immediate suburbs of the cities of Bosnia and Herzegovina and an intensive concentration in the centres of regional importance, around which a ring of industrialized settlements formed in the 1990s, which, as a rule, were formed from the centres of local importance (rural areas). Dynamics of settlement development in these areas is above the republic average (Jordan 2009).

In half of the remaining, dominantly rural settlements, population decreased in that period by one eighth. Geographic distribution of these areas indicates that the highest concentrations of population had occurred in large

hinterland of all larger towns and dense areas, especially in plains and valleys, on the largest rivers, (the Sava, Neretva, Drina, Bosna, Una, Sana...) in conditions of favourable (road) traffic accessibility. Long-term decrease in population has been recorded in most of mountainous areas, in large area of Herzegovina, and, to a great extent, in remaining mountainous parts of Bosnia and Herzegovina. In 2010, Bosnia and Herzegovina has around 654 settlements, out of which 6,542 rural and mixed settlements with 48% inhabitants of Bosnia and Herzegovina.

Four fifths of rural and mixed settlements have less than 500 inhabitants. Only 4.6% of population of Bosnia and Herzegovina live in 35.2% of settlements with less than 100 inhabitants, and 35.7% of population of Bosnia and Herzegovina live in 47.1% of rural and mixed settlements (estimates); (Figure 1).

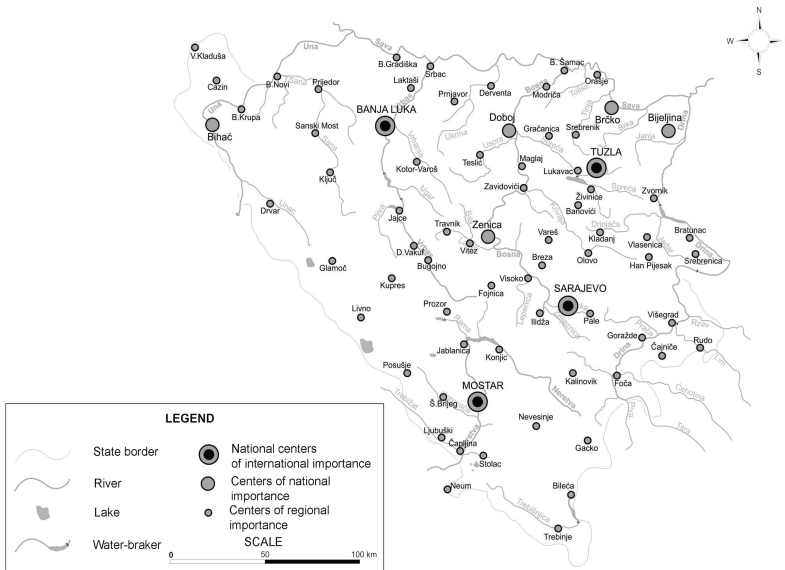


Figure 1. Network of regional, subregional and more important municipal centres in Bosnia and Herzegovina, 2010

Following independence of Bosnia and Herzegovina, at general stagnation of population, advanced development of (post) urban structures in plains was directed from the city and the narrowest suburbanised areas toward suburbs and rural areas, thus moving away even further and indicating the path of settlement development in the areas that develop economically and socially on the basis of economic and structural changes (Lorber 2006). The reason for

social-geographic transformation of urbanised areas is getting less dependent on decreased population growth, as it is associated with increased population mobility. This is proved by larger cities of Bosnia and Herzegovina in the last decade of 20th century that show a positive movement balance in total number of 17,141 inhabitants. (0.9% of total population).

If we analyse the cities of Bosnia and Herzegovina as a unique urban system, we come to edifying results. The present size of urban settlements in Bosnia and Herzegovina indicates to hierarchic features of urban system. Certain irregularity that was also present in urban development of Bosnia and Herzegovina in earlier periods may be noticed. The first thing that may be noticed in order of size of urban settlements in Bosnia and Herzegovina is that Sarajevo, Banja Luka, Tuzla, Mostar and Zenica, as the biggest urban settlements, are oversized against the others. There are unequal dynamics of increase in total population and urban population, as well as differences between some central settlements and the communities of municipalities throughout Bosnia and Herzegovina.

On the basis of data provided by the State Agency for Statistics of Bosnia and Herzegovina, the highest growth of total population in the observed period from 1991–2010 had Sarajevo with +74,912 or 12.4%; Zenica +32,458 or 65.5%; Banja Luka +15,678 or 15.4%; Tuzla +18,679 or 28.6% and Mostar +12,438 or 19.6%. In 2010, large industrial centres of work are dominant in Bosnia and Herzegovina. Stronger centres of work had a special importance for development of continuous urbanized zones. According to our analysis these are the centres with 20,000 or more employed people (estimates). There are five such centres in 2010. Sarajevo is the biggest centre of work, with more than 184,674 or 46.9%; Banja Luka 65,026 or 16.2%; Zenica 54,991 or 13.7% and Tuzla 51,852 or 12.9% of total employed population in Bosnia and Herzegovina. Total of 34 settlements up to 4,999 inhabitants were dominant in structure of urban settlements, according to size. There were 48 of medium-size urban settlements from 5,000 to 19,999 inhabitants, whereas 2 urban settlements had over 100,000 inhabitants. In the biggest five urban settlements of Bosnia and Herzegovina there were 16.72% of urban inhabitants, respectively 38.2% of total population (Table 1).

According to estimations, in the last two decades (1991–2010), population increased by 5%. Population in urban areas increased by around 7%, while in rural areas it decreased by 5%. In that period there were around 1,592,688 constructed apartments in Bosnia and Herzegovina, thereof, according to estimations of urbanites even around three fourths of individual private houses. Housing growth increased with increase of (informal) number of households, mainly on account of decrease in average number of household members whose number has been decreasing for half a century (Table 2).

Table 1. Structure of urban population of Bosnia and Herzegovina in 2010 according to size of urban settlements

Size of urban settlements	Number of urban settlements	% of total number	Population	% of urban population BiH	% of total population BiH
100,000–and more	2	2.1	279,400	16.7	6.3
20,000–99,999	10	10.6	743,985	44.4	16.9
5,000–19,999	48	51.0	541,651	32.3	12.3
2,000–4,999	34	36.1	107,819	6.4	2.4
Total	94	100.00	1,672,855	100.00	38.2

Source: Statistical yearbook of Bosnia and Herzegovina, Sarajevo 2010.

Table 2. Development of some demographic indicators in Bosnia and Herzegovina, 1991–2010

Indicators	Year		Rate of growth (%)
	1991	2010	
Population	4,377,033	4,613,414	105.00
Household	1,203,441	1,335,800	111.00
Apartments	1,294,868	1,592,688	123.00
Populated (constructed) areas in ha	114,922	144,802	126.00
Average number of apartments/households	3.64	3.45	94.80
Net population density (constructed areas /apartments) in ha	85.6	90.2	105.40

Source: Statistical yearbook of Bosnia and Herzegovina, Sarajevo 1991 and CIA-The World Factbook, 2010.

Since the mentioned period, due to technologic changes and transformation of economic and social structure in Bosnia and Herzegovina, the time has come for leaving demographic growth in the cities and starting the period of so-called 'urban development without growth', which indicates spatial expansion of urban influences into suburbs and internal city transformation. Statistical data remind that volume of constructed areas from 1991–2010 increased by 29,880 ha. Huge changes are noticed especially on margins of the cities, irrespective of their size and position in hierarchic basis of urban network and rural areas as well. This is where the constructed areas increased by 22,4107 ha, or 75% of all the reconstructed areas. With existing data it is possible to analyse relations between different subclasses of constructed areas. Thus, for example, areas of settlements represent 71%, while the remaining 29% of areas is occupied by different infrastructure facilities among which road network is dominant (construction of crossroads). Increase in the populated areas is noticeable in significant decrease in agricultural land.

Changes in settlement development cause a transformation in development of jobs. General decline in number of jobs after 1987 (which lasted until the mid-1990s), was immediately followed by increase in unemployment rate. In the second half of the 1990s circumstances on the labour market stabilized. Yet, due to extensive social and economic changes (globalization, liberalization of commerce, deregulation of financial markets, new communication technologies...) we have spoken about noticeable structural changes in employment of active population. Recently, instead of prevalence of secondary sector in structure of active population, shares of tertiary and quaternary sectors, both of which are service activities, have been dominant. For development of settlement system, redistribution of jobs is particularly of crucial importance. It is going on gradually or rather equally – beyond traditional business centres, as 4,286 or 70% of settlements of Bosnia and Herzegovina have at least one job. This means that a number of settlements with at least one job, increased in the smallest, dominantly provincial settlements, in the last decade by two thirds.

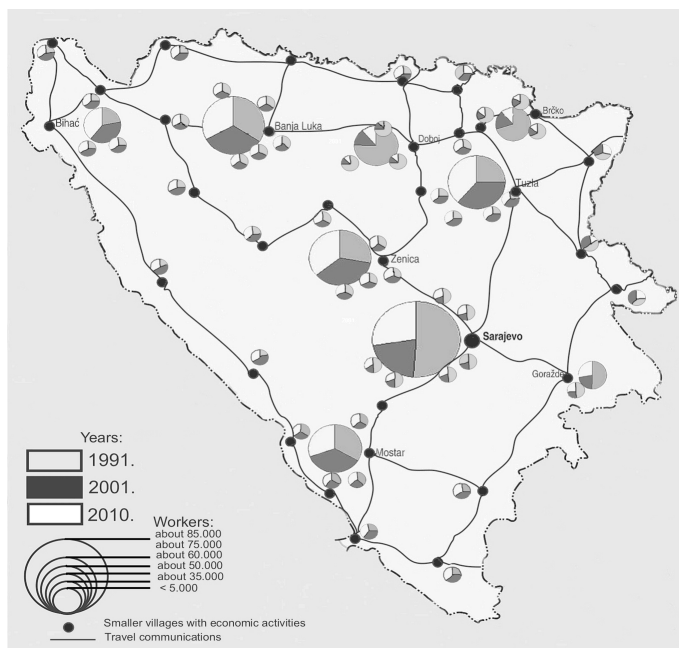


Figure 2. Centres of work according to number of workers in public sector, 1991–2010

The largest urbanised areas spread around our largest cities. In central Bosnia and i Herzegovina Sarajevo is the major centre of work. The urbanised area of Sarajevo has extremely stellar form. Narrow urbanised zones stretch

from Sarajevo along the major traffic lines, more exactly, along the railroad tracks towards the satellite centres: Vogošća, Pale, Ilidža, respectively, Hadžići, Tarčin, Pazarić, toward Ilijaš, Kiseljak, then to Breza, and toward Kakanj, Visoko and Zenica. In its west and northwest sector the urbanised area is the broadest. In northwest Bosnia the largest urbanised area was created under influence of Bihać. This urbanized area has even more expressed stellar shape than the other areas. At Bihać, a narrow zone of the settlements around the city is urbanised, and the settlements along the traffic lines to Cazin, Velika Kladuša, Sanski Most and toward the east.

All urban settlements that have become industrialized centres since World War II still have a positive location divergence of jobs. Decrease in jobs is lower in industrialized settlements than those in cities, and these settlements increased their share in total number of employment in the last decade, which is around one sixth. Nevertheless, their relative share has been gradually decreasing on account of rapid increase in number of jobs in suburbs.

The suburbs have even more negative location divergence, namely an approximately one-third deficit of jobs in relation to active population, although it decreases gradually due to enormous growth. There are changes in number of jobs, where the number increased by one fifth in a recent period, though their share in total number is still insignificant and ranges around 1/12. Thus, provincial areas contribute to forming urban regions thus affecting the changes in land use (Lorber 2010).

The next very important factor of structural transformation in settlement development is associated with educational level of population. Distribution is based on comparison of mutual structural conditions between three major groups with the highest levels of education achieved, as follows: finished elementary school, secondary and higher school, and university education, respectively, for each local community separately. The comparisons indicate to a very high concentration of more educated groups of inhabitants in environments with higher level of urbanisation. The level of education is extremely high in Sarajevo, as well as in suburbs of all larger cities. Shares of population with university education and two-year post-secondary qualification in cities and suburbs of local communities are 3–7 times higher than those in provincial municipalities (Lukas 2001).

Infrastructure connections, particularly a road network, play the key role at transformation of contemporary settlement system, first of all, in the suburbanized processes. At the beginning of the 21st century Bosnia and Herzegovina had 21,846 km of roads, thereof a status of state (more significant) roads have 4,714 km or 21.6%, while the remaining 78.4% of roads have a significance of local or public roads. Density of road network is 0.43 km/km² and 211 inhabitants, on average, lean on it. Extremely high level of density

of road network is in Sarajevo urban region and in the remaining urban and suburban local communities of all bigger agglomerations (Mostar, Banja Luka, Tuzla and other).

The railway traffic in Bosnia and Herzegovina has a great importance in economic and social development of Bosnia and Herzegovina. First of all, it enables accessibility to all rural areas thus affecting the regional development. Length of the railway tracks is 1038 kilometres, thereof 944 kilometres of the single railway tracks and 94 kilometres of the double railway tracks. According to data on the length and density of the railway network, it is noticeable that there is a big difference between rural areas in Bosnia and Herzegovina. Lately, the road traffic has had an increasingly important role in the system of connections between particular rural areas in Bosnia and Herzegovina, which gives a new image of the regional development in the space. Inclusion into development processes of the European Union opens a possibility of faster economic development in the rural areas, particularly through valorisation of certain advantages of Bosnia and Herzegovina.

Bosnia and Herzegovina, by means of that indicator, shows a clear basis of the dispersed surface and corridor population in large suburbs, in a broad buffer zone, at the highest urban centres. Population density in urbanised areas, as one of the indicators of efficiency of infrastructure, has been decreasing since the end of the 1990s. The causes are in advantages offered by mass motorization and the state decisions, which make, by improving the road network, reconsidering the possibilities of new construction land beyond the arranged urban areas possible (Muller 2000).

The equipment of urbanized environment is increased by constructing a new infrastructure in rural settlements, which may be difficult to plan and to take adequate measures against unwanted consequences of that process. At prevalent stagnation of number of inhabitants in the last decade and a strong increase in settlement areas, density of technical (road-traffic) infrastructure per capita is constantly increased, particularly in suburbs, which creates additional problems and reminds us, at the same time, of the main task for future generations. Long-term ignorance of this problem, sooner or later, brings to unavoidable rehabilitations and a significant increase in (unplanned) financial resources.

How to direct economic development of Bosnia and Herzegovina?

Differences in regional development are the problem of the whole world. The European countries are also differently developed, and developmental dif-

ferences are present between different regions as well. Regional developmental differences in Bosnia and Herzegovina are characterized by regional polarization of population and functions. If we discuss importance of active population share by sectors of activities in regional centres, we can notice considerable differences. These differences originate from a number of factors, the most important of which are level of development and orientation to particular activities, which partially depends on stocks of particular natural resources. This is best shown on examples in Bosnia and Herzegovina in which coal ensures more than 50% of total energy consumption. It may be expected that the future regional development will be carried through area plans (Nurković 2010a).

Transition, especially the processes of economy and society restructuring in Bosnia and Herzegovina, as a whole, are going on very intensively, but also under significantly deteriorated and special conditions. The standard transition package, applied more or less in most of the post-communist countries, was completed by the World Bank and the International Monetary Fund in line with the principles of neoclassical economic ideology. In transition from the post-communist to market system, Bosnia and Herzegovina uses its significant natural-geographic, traffic, as well as demographic advantages. However, these processes were significantly slowed down and deteriorated by The Balkans war crisis from 1991–1995.

In this context, the first private accumulation of capital was developing the fastest in areas of commerce, tourism and catering, finances, intellectual services and alike, with considerably slower restructuring of industrial production, where a very strong dominance of the state ownership is still present at the transition stage. In such economic circumstances, processes of deagrarianisation, urbanisation, deruralisation and restructuring of population toward tertiary, have been considerably slow in the past years. Socio-economic orientation of Bosnia and Herzegovina was presented through analysis of employment by sectors (Table 3).

Table 3. Share of active population (in %) by sectors in Bosnia and Herzegovina, 1991–2010

Sectors	1991	2006	2010
Primary sector	6.40	3.10	2.70
Secondary sector	54.70	36.80	33.40
Tertiary sector	38.90	60.10	63.90
Total	100.00	100.00	100.00

Source: The State Agency for Statistics of Bosnia and Herzegovina in Sarajevo, March 2010.

In 1991, the biggest number of active population in Bosnia and Herzegovina was in secondary sector: 54.70%. The tertiary sector followed with 38.90% and primary sector with 6.4%. In 2006, there was 60.1% of active population in tertiary sector of Bosnia and Herzegovina, in secondary sector 36.8% and

in primary 3.1% of total active population. In 2010, there are 63.9% of active population in tertiary sector of Bosnia and Herzegovina, in secondary 33.4% and in primary 2.7% of total active population. The secondary sector also represent the most developed activity in all municipalities of Bosnia and Herzegovina, although the share of employed population reduced by 21.3% against 1991, in primary by 3.7%, and in tertiary increased by 25%.

Focus of polarized development is Sarajevo urban agglomeration, constituting the broader social-economic region in which dynamical processes of social-geographic transformation are under influence of the leading urban centre of Bosnia and Herzegovina. At the level of regions, such is the development plan of Sarajevo, in which more than 20% of total population, around 18% of employed people and even two thirds, 67% of all investments in long-term property of Bosnia and Herzegovina, are concentrated. The spatial plan of Bosnia and Herzegovina was prepared on the basis of methodology which has envisaged, among other, the sectoral, home and regional line. Regionalization in Bosnia and Herzegovina did not exist, and in preparation of the plan the so called planned regions were used (Nurković 2010b).

In 2010, Bosnia and Herzegovina started to differentiate functionally as well. First of all, this relates to expansion of tertiary activities and infrastructure in suburbanized settlements. In their development in period from 1991–2010, urban cores of Bosnia and Herzegovina obtained the character of relative decentralisation. Suburban settlements expressed faster tendency of increase in number of population. These settlements experienced stronger and stronger functional transformation due to expansion of industrial firms. In this way, more or less intensely urbanized settlements have been separated.

All settlements that do not meet the mentioned criteria in the model have been included in a separate group. Status of town gained the settlements with over 2,000 inhabitants, below 10% of agricultural population, and with over 50% of workers in place of living, provided that it had less than 10, 000 inhabitants. Following adoption of the spatial plan of Bosnia and Herzegovina in 1991, a very broad process of preparation of spatial plans for municipalities was opened and certain number of spatial plans for special areas was prepared as well.

Apart from Sarajevo, the leading centres of polarisation are also the macro regional centres of Banja Luka, Mostar and Tuzla, in which these towns are functional foci. A similar, even more expressed disproportion between number of population, investments in long-term property and number of employed people is also present at the regional level. Thus, according to demographic concentration and investments, four regions are distinguished in spatial plans: Sarajevo, Mostar, Banja Luka and Tuzla.

At the same time, a positive correlation between the analyzed indicators of polarized development of the regions and demographic development

of the main core settlements is obvious. So, the leading centres of the regions that are dominant in polarization of population and functions, in most cases, are the demographically developed regional centres. By polarized development of population and functions, specificity of regional development is seen in different functional orientation of regions, maintained by social-economic structure of employed population.

Summary

After the 1990s, an intensive process of social-geographic transformation of rural areas of Bosnia and Herzegovina reflected the appearance and radicalization of new social-geographic issues, among which a special importance has a stagnant and spatially differentiated economic development. Strong concentration and polarisation of population and its spatial differentiation in urban development are also present. Numerous social-geographic issues that are result of war destructions of society and economy of Bosnia and Herzegovina, global economic and regional transition processes and processes of political, social and economic transition of Bosnia and Herzegovina, resulted in creating a very complex social-geographic structure with emphasized regional differences, which implies a slowed down social-economic development and extremely uneven regional development of Bosnia and Herzegovina.

In addition, Bosnia and Herzegovina is facing, like many European countries, crucial demographic and structural changes, which are affected by social and economic polarization. As a consequence of global competitiveness, areas with favourable location factors where the tensions between expansion of urbanisation and very scarce arable land are the highest, gain increasingly in their importance. Orientation of settlement development is not associated only with spatial (ecologic) instruments, but also with economic and social indicators. Investments into settlement development and accompanied infrastructure have not been evaluated in a satisfactory manner until now.

The key discussions are related to analysing the conditions and evaluation of causes for emergence of successful transformation of rural areas. In evaluation of developmental consequences of spatial dispersion of population, we relied on studying the selected, in our opinion, key factors. These factors advance geographic processes, which are either spontaneous or a consequence of particular policies that lead to the present condition. This requires a particularly detailed research of those development processes, which are going on non-organically and/or in opposite direction to the set goals.

References

- Grimm F.D., 1995, *Der Wandel des ländlichen Raums in Südosteuropa*, München, Südosteuropa-Gesellschaft.
- Ilbery B., 1998, *The Geography Rural change*, London, Pearson Education Limited.
- Jordan P., 2009, *Development of Rural Space in post-Communist Southeast Europe after 1989, A Comparative Analysis*, *Revija za geografijo, Journal of Geography*, 4–1, 89–102.
- Lorber L., 2006, *The impact of economic restructuring on sustainable agricultural development in rural Slovenia*, Cairns, 14th Colloquium on the Commission on the Sustainable Development of Rural Systems.
- Lorber L., 2010, *Transition in Slovenian Rural areas*, *Revija za geografijo, Journal of Geography*, 4–1, 2009, 103–116.
- Lukas Z., 2001, *Die Landwirtschaft der Transformationsländer 2000*, *Osteuropa-Wirtschaft*, 46/2, 105–124.
- Muller D., 2000, *Der ländliche Raum Südosteuropas in der Transformation. Agrarpopulismus in der Zwischenkriegszeit und Reformstrategien in der 90er Jahren am Beispiel Rumaniens*, *Aus der Südosteuropa-Forschung*, 12, 55–61.
- Nurković R., 2010a, *Influence of Tertiary Activities on Transformation of the Rural Settlements in Bosnia and Herzegovina*, *Revija za geografijo, Journal of Geography*, 5–1, Maribor, 67–74.
- Nurković R., 2010b, *Actual changes in Economic structure of Agricultural production in Rural Settlements of Bosnia and Herzegovina, in Europe, today*, 5.konferenca DAES, *Sodobni izzivi menadžmenta v agroživilstvu*, 207–214.
- Statistical Yearbook of Bosnia and Herzegovina for 1961, 1971, 1981, 1991, 2001, 2007 and 2009*, The Republic agency for Statistics, Sarajevo.
- Woods M., 2009, *Rural Geography*, London, SAGE Publications Ltd.

In summer 2010 Israel hosted the Regional Conference of International Geographical Union under the title Bridging Diversity in a Global World, where a debate took place related to the subject of local and regional development. A special session of the Local Development Committee was devoted to that subject matter, and it was decided to publish in the current volume the most interesting papers presented there. The array of papers authored by scholars that represent research institutions from Bosnia and Herzegovina, Czech Republic, India, Israel, Poland, Spain and USA offers a variety of insight into the problems revolving around local and regional development. Of particular value here is their multifaceted approach, since they have a social, economic, environmental and cultural dimension.

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