UNIVERZA V MARIBORU • FILOZOFSKA FAKULTETA

ODDELEK ZA GEOGRAFIJO

REVIJA ZA GEOGRAFIJO
JOURNAL FOR GEOGRAPHY

5 – 2 2010

MARIBOR
2010

REVIJA ZA GEOGRAFIJO
JOURNAL FOR GEOGRAPHY
5-2, 2010

Special Issue for the 17th Annual Colloquium of the IGU Commission on the Sustainability of Rural Systems – 2009

ISSN 1854-665X
UDK 91

Izdajatelj / Published by
Oddelek za geografijo, Filozofska fakulteta, Univerza v Mariboru
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http://www.ff.uni-mb.si

Tisk / Printed by
Uni založba, Naklada / Number of copies 120

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New Challenges for Sustainable Rural Development in the 21st Century

INTRODUCTION

The relation between rural and urban areas differs widely through the World. In some areas, particularly in Europe, the distinction between rural and urban is becoming increasingly blurred. This regards in particular rural areas close to urban centres where a process of integration of rural and urban space is taking place. Thus many rural areas, while benefiting from an increased interaction with the urban areas close by and/or from an increasingly diversified economic base, also face the challenges of losing their rural characteristics and identity. At the same time more remote rural areas with low population density and a difficult economic development face an increasing dichotomy between rural and urban areas. Over the next decade urban agglomerations will benefit from current economic and demographic trends whereas many remote rural areas face increasing difficulties and needs to better capitalise their territorial potential.

The classical rural areas with traditional agriculture are predominantly to be found in the developing countries and Eastern parts of the EU. These traditional agricultural regions have high reserves and potentials that could be used for example by extensive and/or ecological agriculture, bio-industries, production of alternative energies to create new and possible better employment and living opportunities.

In this special issue of the Journal for Geography published at the occasion of the 17th Annual Colloquium of the IGU Commission on the Sustainability of Rural Systems entitled New Challenges for Sustainable Rural Development in the 21st Century, which took place from 13th to 18th July 2009 in Maribor, Slovenia, experts from Czech Republic, India, Indonesia, Portugal, Slovenia and Spain analyse and explain different practices and possibilities of how local communities from their countries strive to improve the conditions of live.

Sustainable Land Management can be defined as "the use of land resources, including soils, water, animals and plants, for the production of goods to meet the changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions" (UN Earth Summit, 1992). TerrAfrica (2005) has further defined sustainable land management as "the adoption of land use systems that, through appropriate management practices, enables land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources". Sustainable Land Management is crucial to minimizing land degradation, rehabilitating degraded areas and ensuring the optimal use of land resources for the benefit of present and future generations.

In the paper entitled Management of Soil as a Natural Resource in the Savinjska Statistical Region of Slovenia, the author **Milena Petauer** from the University of Maribor, Slovenia, examines the great landscape diversity and biotic diversity of the Savinjska statistical region conditioned by the variety of soils. The soil use illustrates the ratios between natural and socio-geographical factors. Forests cover almost 60% of the surface in the Savinjska statistical region, around 33% are agricultural surfaces, a bit less than 6% are urbane surfaces, 2% of the surfaces are in the process of overgrowing, and 1% consists of water and other surfaces. Among agricultural surfaces, meadows prevail (73%), there are about 18% of fields, while a

bit less than 10% consist of orchards, vineyards and other permanent plantations. The management and preservation of soil as a natural resource in the municipalities of the Savinjska statistical region are also evaluated. Due to numerous activities and their indirect and direct influences, the soils are highly burdened from the environmental point of view. The kinds of burdening differ according to different areas within the region.

Traditionally, rural areas could be differentiated from urban areas through their lower population density, different employment structure, lower level of income and worse access to public goods. From the point of view of territorial cohesion, lower population density should not be the decisive characteristic.

One of the Union's development aims is to modernise social structures, including employment structures. It is possible to increase territorial cohesion by aligning employment structures in rural and urban areas. Level of income and access to public goods therefore remain the biggest challenges for territorial cohesion and they can be most effectively improved through support for non-agricultural activities in rural areas. Rural development measures should not, however, drain resources intended for direct payments to farmers. New rural policy must be less substitutes and more investments. However, it should be made clear that rural development policy has a huge influence on territorial cohesion. For this reason, it does not seem justifiable to separate rural development measures from cohesion and regional development policy. This policy is better able than the CAP to assist with non-agricultural aspects of rural development, such as retraining people for work in more productive areas of the economy.

Helena Pina from the University of Porto, Portugal, summarizes in her paper entitled The Importance of Complementarity in the Territorial Cohesion and Sustainability of Rural Areas: The Case of Cambres, a Douro Winegrowing Area, and Magueija, a Mountainous Area, that new investments have to be made in the preservation and diversity of the landscape in order to obtain sustainable development and territorial cohesion. There are many possibilities, but the residents have to be trained, motivated and technically coordinated, so that these territories can be revitalized from a multifunctional perspective, in which complementarily is always present. In the implementation of these dynamics, tourism can also trigger a series of overarching activities in social and economic terms, including more socially depressed areas, such as Magueija. Should the coordination of local government in these areas be particularly promoted? Will territorial stagnation, or even regression, reveal a problem of governance?

The main aim is to achieve sustainable development leading progressively to territorial cohesion. A contextual perspective is however required wherein complementary is always present.

Slovenia has successfully integrated into the European economic space. Yet despite important structural changes and relatively high economic effectiveness, Slovenia is encountering socio–economic problems in individual regions. All the regions appear to show a positive economic growth of a higher average than that in the EU. Slovenian cohesion policy is largely based on stimulation of regional development. The strategic interest of the country is to reduce regional dissimilarities on its whole territory and thus strengthen economic and social cohesiveness. Three documents were adopted on the state level for this purpose: Strategy of economic development

of Slovenia, Regional development strategy, National Development Programme. These three documents delineate the priorities of harmonious regional development: to enhance competitiveness of the economy, enlarge investing in research and development, increase educational structure of human resources, ensure the quality of life and environment, and restructure agriculture and development of rural areas.

Matej Kraner, a postgraduate student, and **Lučka Lorber** from the University of Maribor, Slovenia, examine in their paper Structural Changes in Agriculture in the Pomurje Region After 1991. The year 1991 was crucial for Slovenian economy, as that year Slovenia gained its independence and the difficult process of transition started. The economic importance of agriculture in Slovenia is relatively small and limited mainly due to the harsh mountainous relief and considerable absolute share of forest and meadows. When Slovenia gained independence, the increase of efficiency and competitiveness of agriculture became the basic objective of the agricultural policies in the 1990s. The Pomurje region lies in the north-eastern part of Slovenia and is the most agricultural and the least developed region in Slovenia. In the past, this region was characterised by decrease of population, aging of population and emigration from rural areas. The importance of agriculture in the general economy of the Pomurje region is decreasing even more rapidly than in Slovenia as a whole. Nevertheless, the Pomurje region remains the most important agricultural area in Slovenia, with the highest rate of active population in agriculture. Agriculture in the Pomurje region is in a period of intense restructuring and technological modernisation. Well planned rural development policies will play a very important role in the restructuring of agriculture. Agriculture in the Pomurje region has a great potential in the development of agricultural complementary activities, ecological farming and tourism.

Rural development policy is an increasingly important component of the common agricultural policy (CAP). It promotes sustainable development in Europe's rural areas addressing economic, social and environmental concerns. Over half of the EU's population lives in rural areas, which cover 90% of the EU's territory. LEADER is an innovative approach within EU rural development policy. LEADER stands for 'Links between actions of rural development'. As its name suggests, it is a method of mobilizing and delivering rural development in local rural communities, rather than a fixed set of measures to be implemented. The importance of the LEADER method in the context of a local development strategy has been recognised all over Europe, and there are plenty examples under LEADER approach that show how local development strategies can be developed with LEADER funding and how they may continue to have a positive impact. LEADER has always viewed local people as the main asset of rural areas, and the distinctive characteristic of LEADER projects was the reliance placed on the people who live in rural areas, and on their ability to discover what was best suited to their environment, culture, working traditions and skills. It can play an important role in encouraging innovative responses to old and new rural problems.

In the paper entitled "The LEADER Approach" - New Development Opportunity for Rural Areas in Slovenia, **Tomaž Cunder** and **Matej Bedrač** from the Agricultural Institute of Slovenia examine the LEADER approach, which is implemented in Slovenia in the framework of the Rural Development Programme of the Republic of Slovenia. The main objective of the LEADER approach is comprehensive rural development on a local level. 33 Local Action Groups have been formed which cover an area of 19,739 km^2 with altogether 1,900,748 inhabitants living in 199

municipalities, which is almost 95% of all the municipalities in Slovenia. The Local Action Groups (LAG) established in Slovenia are very heterogeneous as regards their economic, social and environmental dimensions. The analyses of Development Deficiency Index (DDI) on the level of LAGs show significant differences between the most and the least developed LAGs and relatively smaller differences among other LAGs. The LAGs in the Central Slovenia are strongly on the lead, while the LAGs in the Pomurska region lag far behind those with the highest DDI. Other LAGs can be classified into two groups, the first one having a DDI lower than 100, and the second one having an index higher than 100. This classification of LAGs according to the DDI is useful in practice for classification purposes and as a criterion for the allocation of development funds. Nearly 60% of the priority tasks are directed towards the three most important economic sectors of rural areas: agriculture, tourism and small enterprises. It has to be stressed that, with reference to priority tasks, more attention should be given to social and spatial issues.

Many of the problems faced by territories, especially in European mid-mountain landscapes, cut across sectors and effective solutions require an integrated approach and cooperation between the various authorities and stakeholders involved. In this respect, the concept of territorial cohesion builds bridges between economic effectiveness, social cohesion and ecological balance, putting sustainable development at the heart of policy design.

The main aim of the article entitled Fighting for Survival. Planning and Development Issues in two European Rural Border Mid-Mountains Regions, written by **Alexis Sancho Reinoso** from the University of Barcelona, Spain, is to further our understanding of two mountain rural areas occupying two distinct geographical environments: the Spanish Pyrenees and the Austrian Alps. In the specific case of examining management practices that have been adopted as part of the public policies implemented in two mid-mountain regions; areas that do not have the same possibilities for development as those enjoyed by high-mountain environments. These places suffer structural problems resulting from low levels of agricultural competitiveness accompanied by factors that impinge negatively land use which, in turn, condition their landscape management practices.

The livestock sector in India plays a multi-faceted role in socio-economic development of rural households. Livestock rearing has significant positive impact on equity in terms of income and employment and poverty reduction in rural areas, as distribution of livestock is more egalitarian as compared to land. In India, over 70% of the rural households own livestock and a majority of livestock owning households are small, marginal and landless households.

Md. **Asif Iqubal** from the Aligarh Muslim University, India, examines the role of livestock husbandry as an important source of economic activity in the agricultural sector in India. The livestock sector improves the socio-economic conditions of people in general and rural people in particular. It is usually practiced in rural areas since ancient times. The increasing urbanization with the growing population and the changing food habits of the people enhances the demand of livestock products in the whole world. India is one of the developing countries with the highest number of livestock, and in the first place in the world as regards milk production. India has 185 million cattle and 98 million buffaloes, which is 20% of the world's bovine and 14% of cattle population.

In the paper entitled Livestock Revolution and Its Impacts on Sustainability of Marginal and Small Farmers in India: A Case Study, the authors **Nizamuddin Khan** and Md. **Asif Iqubal** from the Aligarh Muslim University, India examine the influence of livestock cropping that is practiced as an integral and complementary farming system, however, it is well rooted in rural areas. The optimum utilization of animal products and by-products in the cultivation of various crops and the use of crop residues and by-products for rearing the animals have resulted in the improvement of economic viability of agriculture and sustainability for poor farmers who follow the system. Soil fertility is also maintained through the use of manures, and using cow dung directly or after the production of biogas in plants for cooking food and other works can save energy. Proper management of livestock and crop-derived wastes could reduce the environmental pollution and increase the level of sustainability of the environment. Moreover, the livestock rearing undertaken by poor farmers with the cultivation of distinct crops is the key and boon for poverty alleviation at the national level. It is an economically viable, environmentally sustainable and socially acceptable farming system in the study area.

Livelihood from livestock among rural households in the majority of developing countries is not a specialized stand-alone economic activity, but is closely integrated with other agricultural endeavours within the framework of mixed production systems (e.g. crop-livestock). This general statement, however, recognizes that there are also a significant proportion of poor livestock keepers in developing countries that specialize in livestock. The mixed-farm facet of livestock livelihood is significant in that the potentials to livelihood improvement can be situated within the development stage of agriculture of individual countries at the macro level, and of farms at the micro level within countries.

Budi Guntoro from the Gadjah Mada University, Indonesia, aims to determine in his paper entitled Community Development Plan: Rural Livestock, Agriculture and Livelihood in Indonesia, the problems encountered by the community with the emphasis on livestock, agriculture and livelihood, and to recommend an appropriate plan of actions in addressing these problems. Field observation and interview with key informants were conducted. The data gathered served as the basis in the preparation of a Community Development Plan for Lopati Village, Yogyakarta Province, Indonesia, which was the ultimate goal of the activity. In addition, these data provided guidelines in the plan implementation. Additionally, it would serve as a basis for determining the different changes or accomplishments to be made. The results showed that the problems that were faced by the community were low income, lack of capital and credit sources, low price of product, and business management.

The World Health Organization and the Food and Agriculture Organization of the United Nations have defined probiotics as "live microorganisms, which, when administered in adequate amounts, confer a health benefit on the host." They are also called "friendly bacteria" or "good bacteria." The concept of probiotics arose at the turn of the 20th century from a hypothesis first proposed by Noble Prize-winning Russian scientist, Elie Metchnikoff. Most probiotics fall into the group of organisms known as lactic acid-producing bacteria and are normally consumed in the form of yogurt, fermented milks, or other fermented foods. Prebiotics are nondigestible food ingredients that selectively stimulate the growth and/or activity of beneficial microorganisms already in the human colon, and when mixed with probiotics, form synbiotics.

In the paper entitled Potential Role of Probiotics for Sustainabilitay in Rural India the authors **Kislay Roy**, **Tomaž Langerholc** and **Avrelija Cencič** from the University of Maribor, Slovenia, examine possibilities of the use of probiotics in Indian rural areas. Indian rural inhabitants with poor incomes have limited access to medicines, and health facilities are scarce. The introduction of probiotics to these economically challenged people is a cost effective and a natural way to improve their health conditions. Acceptability of diary products (the most usual form of probiotics) in India is high since they have been consumed traditionally in the Indian sub-continent. There are obstacles in preparing them in a suitable form, since cold distribution chain and refrigerators are generally not available, education is poor, as well as technical problems exist to prepare them. By preparing them in a suitable form for domestic use, we could improve the quality of rural inhabitants and to enable sustainability in the Indian countryside.

Many people believe that agriculture is getting more and more efficient. They perhaps get this impression on account of the fact that yields of crops are going up all the time. They may also be influenced in their thinking by the fact that farming is getting increasingly mechanised and requires less and less labour. But these facts do not in any way indicate greater efficiency. What they do show is an increase in productivity, which is a very different thing. Productivity means the amount produced per unit area of land or per person employed. There is no doubt that both these indices of agricultural production have increased enormously in the last half century. But efficiency has actually gone down over the same period. This apparent paradox arises because of a misunderstanding about the meaning of the word efficiency. It has nothing to do with productivity. The efficiency of a system means the ratio between the work or energy got out of it and the work or energy put into it. The more energy we get out per unit amount we put in, the more efficient the system is.

The authors **Matjaž Turinek**, **Maja Turinek**, **Silva Grobelnik Mlakar**, **Franc Bavec** and **Martina Bavec** from the University of Maribor, Slovenia, compare energy efficiency of different farming systems. A long-term field trial, started in 2007 at the University of Maribor, focuses on food quality and the ecological footprint of conventional, integrated, organic and biodynamic farming systems. All inputs and outputs in each farming system are carefully monitored. The data gained has been evaluated and interpreted using the SPIonExcel tool, a next generation ecological footprint calculator, developed by the Technical University of Graz. Results from the first year show better performance of both, organic and biodynamic systems in production of wheat and spelt, mainly due to non-use of external production factors, such as mineral fertilizers and pesticides. However, the ecological footprint for machinery use is greater in integrated, organic and biodynamic farming systems, due to harrowing needed in all the three systems. When yields are added to the equation, the organic and biodynamic farming systems emerge as more ecologically efficient in terms of land area "cost" per unit of yield. Thus, organic and biodynamic farming systems present viable alternatives for reducing the impact of agriculture on climate change, while ensuring sustainable food security.

Rural tourism related activities have been widely regarded as key-tools for rural development, especially in countries such as Romania and all the East European countries where rural space and production is still a major part of whole economic structure, trying this way to revitalize declining areas and ensure them possibilities of achieving a sustainable future. Rural tourism must thus be considered as a

complex plurality of multi-faced activities, contributing both to growth of other activities in rural areas and to improvement of life quality for local inhabitants, all this as part of an effective rural development integrated system. Cultural heritage comprises the sources and evidence of human history and culture regardless of origin, development and level of preservation, and the cultural assets associated with this.

The authors **Karina Ho ení**, **Radoslava Krylová**, **Pavel Klvač** and **Zbyněk Ulčák** from The Masaryk University in Brno, Czech Republic, examine in their paper entitled Tourism and Authenticity in the Czech Villages of the Romanian Banat, the connection between tradition and nostalgia. In the 1820s, several thousand Czechs moved to the Carpathian Mountains region near the Danube River. They built six villages. Strict ethnic endogamy helped preserve their cultural distinction. Nowadays, these villages are visited by tourists from the Czech Republic. Visits are motivated by the search for both "traditional" rural landscape and lifestyle. The paper analyses the ways of how tourists perceive rural landscape and lifestyle, how these perceptions vary among different actors, and how they influence their behaviour. It is assumed that there is nostalgia for the traditional, pre-modern world. The sentiment is used for tourism promotion there. Therefore the "harmonic cultural landscape" is not only of ecological and cultural value; its image becomes a commodity in the tourism industry.

In the paper entitled Tourist Farm Service Quality Assessment, **Karmen Pažek** and **Črtomir Rozman** from the University of Maribor, Slovenia, examine the meaning of service quality in farm tourism. Farm tourism is one of the most important supplementary activities which generate considerable secondary income. The authors present a methodology which enables the ranking of tourist farms based on their service quality. This is accomplished through the use of an expert system based on the decision making method called DEXi. Using the DEXi, the multi-criteria decision model for the assessment of farm tourism's service quality was developed. The results of the model are shown as the assessments for individual farms.

The authors presented in this issue cover many different perspectives of rural development. Tangible factors such as natural and human resources, investments, infrastructure and economic structure have traditionally been seen as the main determinants of differential economic performance. More recent research has highlighted the important role of less tangible or soft factors including various kinds of social, cultural, institutional, environmental and local knowledge which constitute the basic capital for regional development. The diversification of the economic base of rural areas goes beyond agriculture and tourism.

Lučka Lorber
Chief and responsible editor

MANAGEMENT OF SOIL AS A NATURAL RESOURCE IN THE SAVINJSKA STATISTICAL REGION IN SLOVENIA

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UDK: 631.4(497.4)
COBISS: 1.02 – Review article

Abstract
Management of Soil as a Natural Resource in the Savinjska Statistical Region
Animals, plants and microorganisms could not exist without soil, because without it life on Earth would not be possible. Thus we should always be concerned with preserving the soil condition. This should be a personal, a municipal, as well as a national concern. Nevertheless, the role of soil is not sufficiently incorporated into the planning of sustainable development of the Savinjska statistical region, therefore more active approaches are needed in the field of soil management and protection (education, research, raising public awareness, soil protection programs, soil related educational excursions, etc.).

Key words
soil, natural resource, soil degradation, soil contamination, soil management, soil protection, land use

The editor received the article on 20.1.2010.

1. Introduction

Animals, plants and microorganisms could not exist without soil, because without it life on Earth would not be possible. Soil provides plants with water and nutrients, supports the plants' roots, stores and retains minerals, organic matter, water and energy as well as various chemical substances. It is a natural filter for groundwater, which is the main source of drinking water. Furthermore, soil is the habitat for a variety of organisms, which through complicated and interconnected processes enable the cycling of substances and energy. It is the basis of human activity, the basis of the landscape, as well as of our heritage. All the aforementioned functions are dependent on soil. Damaging the soil structure affects the other elements of the environment as well as the ecosystem, because soil is formed very slowly (Lobnik, Suhadolc, Turk 2005). It takes many centuries for only one centimeter of soil to form, but due to inappropriate use it can be blown or washed away in a couple of years. The European Union is facing accelerated soil degradation (Lobnik, Suhadolc, Turk 2005). As soil is an irreplaceable natural resource, preservation and sustainable management of soil is of great importance, and this is emphasized by many authors (Lobnik 2005; Lovrenčak 2006; Rowell 1994).

The distinct biotic diversity of the Savinjska statistical region and the diversity of its landscape are the reasons for the great soil variety of this region. Therefore, the main objective of this paper is to determine and assess the role of soil in the Savinjska statistical region, because soil is an irreplaceable natural resource, and of great importance for the sustainable development of the countryside.

2. Characteristics of the Savinjska Statistical Region

Slovenia is divided into twelve statistical regions: Gorenjska, Gori ka, Jugovzhodna Slovenija, Koro ka, Obalno-kra ka, Osrednjeslovenska, Podravska, Pomurska, Savinjska, Spodnjeposavska and Zasavska.

Fig. 1: Statistical regions in Slovenia.
Source: http://sl.wikipedia.org/wiki/Slika:Slov-reg.png

The Savinjska statistical region has the natural geographical-characteristics of the Alpine and the pre-Alpine regions, as well as the Pannonian regions. It encompasses 2,332 km^2, which represents 11% of the area of Slovenia, and is third in size among the Slovenian statistical regions. According to data from 2005, the region had 257,525 inhabitants at the time, with a population density of 108 inhabitants per km^2, which is above the Slovenian average. There are two main urban and economic centers in the region: Celje and Velenje. The population density is higher there, with more than 400 inhabitants per km^2 (Regionalni razvojni program 2007, 38). In the Savinjska statistical region there are 31 municipalities, with eight administrative units: Celje, Laško, Mozirje, Slovenske Konjice, Šentjur pri Celju, Šmarje pri Jelšah, Velenje and Žalec.

2. Soil Types and Land Use in the Savinjska Statistical Region

In the Savinjska statistical region the physical-geographical and socio-geographical factors are changing rapidly from a macro-, as well as a micro-spatial perspective. Furthermore, they are heavily intertwined, which results in great soil variety. An analysis of the pedological maps of the region and soil surveying both showed that eutric cambisol is found in the region; it can mainly be found in Spodnja Savinjska Valley. The reasons for this frequency are the carbonate fluvial deposits accumulated by the Savinja river. As growing hop and other crops require high anthropogenic inputs, there is intensive agricultural use of this soil. This is evident from data concerning pollution, which shows that these soils and the groundwater are polluted (Lampič 1999; Zupan, Grčman, Lobnik 2008).

In the vicinity of the rivers Savinja and Voglajna, which still overflow and hinder pedogenesis, up to 30 cm of riverine soil has formed. The plains along the Ložnica, the Hudinja, the downstream of Sotla and the area of Velenje are covered with gleysol, which is the result of clay sedimentation. The prevailing vegetation cover here is grass. Due to hydromelioration some of the drained areas have been put to agricultural use.

The mountains Boč and Donačka gora are mainly covered with kalkokambisol and rendzinas. A kalkokambisol zone also spreads across Srednjesotelsko gričevje, from Virštanj, Pilšatanj to the hills near Dekmance. On the Pleistocene sediments on the left side of the river Bistrica a thick layer of kalkokambisol is found. Kalkokambisol also formed on the limestone of Paški Kozjak, as did a light to a medium thick layer of rendzinas. Rendzinas are dominant in the triangle between Kozje, Križani vrh and Gradišče.

Dystric cambisol covers the hills of Ložniško gričevje and Hudinjsko gričevje, the latter consisting of Miocene sands and sandstones. Rapid disintegration of these old rocks is the reason why these non-carbonate soils formed. They are covered by spruces and pine trees. Dystric cambisol and ranker are also found in the area of Macelj.

The connection between natural and socio-geographical factors is reflected in the land use, which is affected by natural and social factors. The former include altitude, slope, illumination, and the latter include the past and present economic situation and landholding relations. Different land categories (fields, vineyards, orchards, meadows, pastureland and forests) are presented as the primary sector (different branches of agriculture and forestry) reflect how soil is being used.

In addition to the current land-use category allocation, it is most important to determine changes in land use. Various processes are involved here. When the different land use categories are predominantly covered with forests, the process is called reforestation. The more intensive land use categories (fields, vineyards and orchards) are transformed into meadows and pastureland by planting. Transforming less intensive categories into more intensive is called intensification (transforming forests into pastureland; pastureland into meadows; meadows into fields, orchards or vineyards; fields into orchards and vineyards; orchards into vineyards). The term urbanization applies in case of settlement expansion; fertile land is transformed into infertile land (construction, building infrastructure networks, etc).

Land use is presented with the help of the 2008 Graphical Units of Agricultural Land (in Slovene: GERK), which show the actual use of the land, based on shots taken from the air. The land use map and the calculations determining the area in each municipality ascribed to a particular land use category (in hectares and percentage) were done using GIS tools.

Forests cover almost 60% of the area of the region, about 33% are agricultural areas, a bit less than 6% are urban areas, 2% of the area is in the process of overgrowing, and 1% consists of water and other surfaces. Among agricultural areas meadows prevail (73%), there are about 18% of fields, while a bit less than 10% consist of orchards, vineyards and other permanent plantations (Petauer 2009).

In the Savinjska statistical region, there are g great differences in land use between different areas. Some municipalities in Zgornja Savinjska dolina (Lu e, Ljubno, Sol ava, Gornji Grad, Nazarje) have the largest share of forests, which cover over 70% of the area of the municipality. Forests also cover from 60% to 70% of the area in the following municipalities: Dobrna, LaŠko, ŠoŠtanj, Vransko, Vitanje, Rogatec, Re ica ob Savinji, Prebold, Rade e and Mozirje. The municipalities of RogaŠka Slatina, Bistrica ob Sotli, Šmarje pri JelŠah, Slovenske Konjice, Dobje, Celje, Žalec, Šmartno ob Paki, Šentjur and Podčetrtek have the lowest percentage of forests (from 30% to 50% of the area) (Petauer 2009).

The municipalities of Dobje, Šmarje pri Jelšah, Šentjur, Rogaška Slatina, Podčetrtek and Bistrica ob Sotli have the highest percentage of meadows (from 30% to 50%). A high percentage of fields is found in some municipalities of Spodnja Savinjska dolina: Braslovče 27%, Žalec 22%, Polzela 16% and in the south and southeastern part of the region: Rogaška Slatina 26%, Bistrica ob Sotli 20%, Slovenske Konjice 17%. The share of urban (built-up) areas is the highest in municipalities with "larger settlements" (Celje, Velenje, Žalec, Slovenske Konjice, Rogaška Slatina) and in some smaller municipalities (Šmartno ob Paki, Polzela) (Petauer 2009).

We can conclude that in the Savinjska statistical region there is a similar pattern of changes in land use to that of other parts of Slovenia. There is a reduction of cultivated land, whereas the share of forests and uncultivated land is increasing. The dominant processes in land use category change are urbanization, overgrowing and forestation.

3. Soil Condition (Quality) in the Savinjska Statistical Region

The various activities and their direct and indirect effects impose a heavy burden on the soils in the area of the Savinjska statistical region (from the environmental

perspective). The type of burdening differs according to different areas of the region.

3.1 Soil Degradation

Šaleška dolina is the area where the use of natural resources is most intensive, as are the consequences, not only in the region, but also in Slovenia as a whole. The Velenje coal mine (underground mining) produces about 4.000.000 tons of lignite annually, resulting in the subsidence of the surface (Šterbenk 1999). The result is not only the degradation of the soil, but of the landscape as a whole.

As a result, about 3 million m^3 of the surface subside each year (Šterbenk 1999). The main reason for the subsidence, and consequently degradation, is the geological structure of the soil, consisting of new and sandy sediments, which are unstable and collapse after coal mining ceases. After the mining ceases, the surface continues to subside for about 15 to 20 years, which is a big obstacle for the development of human activity in the subsiding area. Nevertheless, more than a third of this area has been re-cultivated already, and brought to good use (tourism, agriculture, waste disposal sites, etc.). 2.4 km^2 of the subsiding area is covered by lakes (Velenjsko jezero, Družmirsko jezero and Škalsko jezero) (Šterbenk 1999).

According to the data provided by the Geological Institute of Slovenia for the year 2007, mineral resources were produced in 25 locations across the Savinjska statistical region (limestone in 6, dolomite in 16 and silicate in 3 locations). About 3 million tons of different raw materials were produced that year, and the reserves are estimated at more than 60 million tons. In the aforementioned cases the result in the excavation areas is complete soil loss, due to production of raw materials. Fig. 2 shows some of the more important locations.

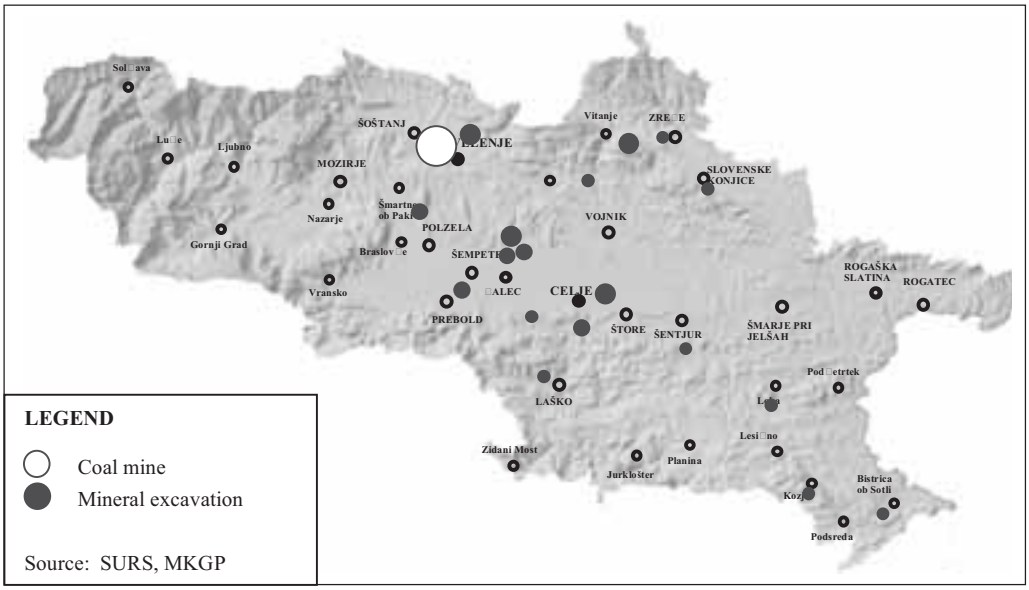

Fig. 2: Important coal mining locations and raw materials production in the Savinjska statistical region.
Source: Author.

3.2 Soil Contamination

In the broader area of Celje, research on soil (ground) contamination was first conducted in 1989 by the Pedology Department of the Biotechnical Faculty. More than 10 different parameters in 119 sample locations were analyzed. In the past, a lot of heavy industry (Železarna Štore, EMO Celje, Cinkarna Celje, etc.) was located in the broader area of Celje, placing a heavy burden on the region's environment. The most problematic were emissions of SO_2, NO_x, smoke, deposited particulate matter (heavy metals) and fluorides. Traffic and large- or small-scale individual burning of materials contributed to air pollution and consequently, soil contamination. The results showed that the soil was heavily contaminated with heavy metals, mostly with cadmium, chrome, zinc, lead, and to a lesser extent with arsenic, mercury and nickel.

The research continued in 2001 in seven locations in the Savinjska statistical region. In the years from 2004 to 2007, additional 15 areas (locations) were included in the research (Fig. 3). The areas included in the research differ in land use, the type of (potential) pollution and the presence of organic and non-organic substances in the soil. Soil was also analyzed in some other areas (e.g. Spodnja Savinjska dolina: analysis from the perspective of agricultural production). Local monitoring is conducted in Šaleška dolina (the consequences of environmental problems related to the Termoelektrarna Šoštanj power plant and the Premogovnik Velenje coal mine).

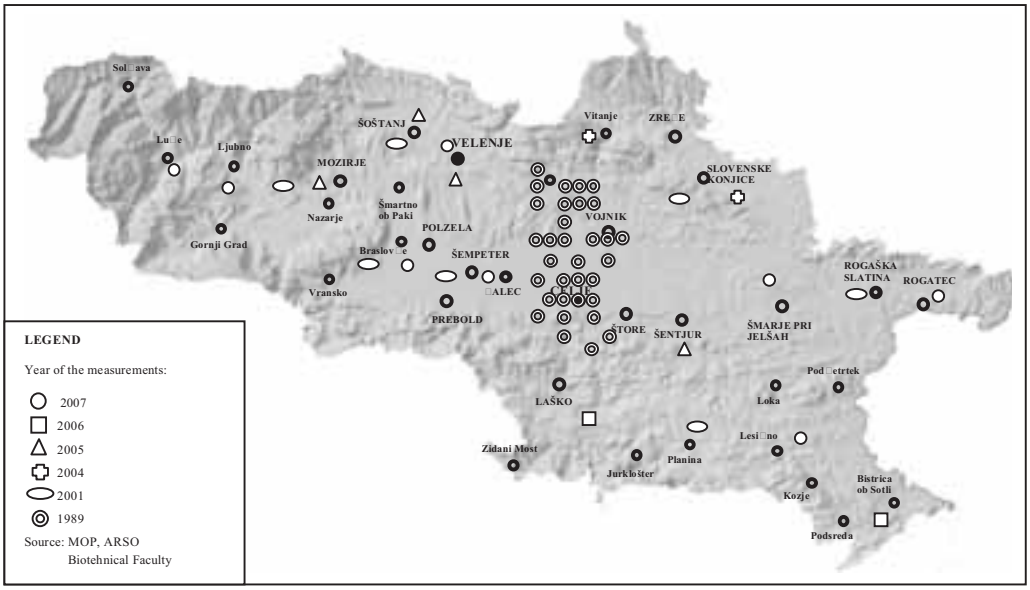

Fig. 3: Locations of the monitoring points in the area of the Savinjska statistical region (1989-2007).

The biggest problems arise in areas with a combination of intensive agricultural and industrial production, in addition to traffic infrastructure (Spodnja Savinjska dolina and Celjska kotlina). In general, marginal areas in the region have fewer problems. There the soil is less contaminated and degraded, because of the more preserved forests and less intensive industry. In most areas where certain measurements or

constant monitoring were conducted, a gradual decrease in the level of contamination is evident in recent years. For the most part, this is the result of lower emissions (and consequently imissions) into the air, in addition to the self-cleaning abilities of the soil. In the locations included in the measurements of 2006 and 2007, the emission limit value was exceeded in four categories, namely: lead, cobalt, nickel and arsenic. In no location the emission limit value reached the critical point.

The quality of the soil in the area of the Savinjska statistical region is affected not only by the "polluters", but also by some of the bigger polluters in the immediate vicinity (the Termoelektrarna Trbovlje power plant, the Lafarge Cement Trbovlje cement factory, etc.).

4. Soil Management in the Municipalities of the Savinjska Statistical Region

Soil management is a process that also encourages the sustainable development of other natural resources, without endangering the stability of the other vital ecosystems. This can benefit the economy and society in general. The objective of soil management is to establish a sustainable balance between using the resources needed to survive, and preserving resources for future generations. An integrated management approach includes soil management in urbanized, as well as rural environments, thus cooperation with all sectors that affect soil is needed. The involvement of the public and developing a positive attitude towards soil as a natural resource is also of crucial importance.

In the continuation of the study, we shall try to establish whether soil is included in the development programs of the municipalities in the Savinjska statistical region, as well as determine the role it plays. The municipalities have the power to affect soil management and have the responsibility to do so. The Slovenian Environmental Protection Law (UL RS, No. 39) states that municipalities must encourage economic and social development, which, in meeting the needs of the present generation, likewise allows for equal opportunities of the future generations, and secures the long-term preservation of the environment.

The study has established:
∞ That the municipalities do not have ordinances, acts or regulations for soil preservation, whereas that *is* the case with the preservation of water resources and air. Nevertheless, a variety of acts concerning the environment, economy, communal infrastructure (land use, agriculture, traffic regulation, etc.) were passed, which indirectly also concern soil as a natural resource. A "Regional Development Plan" for the years from 2007 to 2013 was adopted for the Savinjska statistical region, and it includes issues only indirectly related to soil.
∞ That there is no monitoring of soil fertility in the municipalities. The monitoring of soil fertility is not conducted systematically, as prescribed by the Agricultural Land Law. Farmers granted various subsidies from EU funds are obliged to allow for soil analysis of the areas they cultivate, but a wholesome system for monitoring soil fertility has yet to be established. Measures for improving environmental protection and soil quality could also be put into effect by establishing monitoring of soil fertility.
∞ That the municipalities do not have thematic maps of land contamination and proposed use or/and sanitation. In the municipality of Celje a map from 1989 exists, and soil contamination is being monitored in some locations; research on soil pollution was conducted in all of Slovenia, because this is prescribed by the National Envi-

ronmental Protection Program, whereas the municipalities do not have this kind of data or maps at their disposal.

∞ That soil vulnerability maps that show the pollution of sensitive areas with pesticides have not been commissioned by the municipalities. Here we have to point out the rural areas (Imensko polje, Bistriško polje) and especially the area of Spodnja Savinjska dolina where there is intensive agriculture, and groundwater is located a mere one meter under the surface.

∞ That the municipalities do not keep records of the change of intended use of high quality farmland. The Savinjska statistical region lost cultivated areas, because these were used for settlements, industrial buildings, supermarkets and infrastructure. The intended use can be changed on the basis of the spatial plan of the municipality, without the consent of the Ministry of Agriculture, Forestry and Food. In the last five years, about 30.000 hectares of farmland were lost, and it is alarming that this trend continues (Lobnik 2005).

∞ That in the municipalities there is not enough expert staff in the field of soil management.

The results of the study suggest that the role of soil is not sufficiently incorporated into the planning of sustainable development of the Savinjska statistical region, therefore more active approaches are needed in the field of soil management and protection (education, research, raising public awareness, soil protection programs, soil related educational excursions, etc.). Public awareness regarding the importance of soil is still very low in this region. The fourth pillar of the Thematic Strategy for Soil Protection emphasizes that the lack of public awareness regarding soil protection is a problem, and therefore it has to be raised. Thus measures have to be taken, in order for the general public to gain more knowledge about soul, its characteristics and its importance as an integral part of the landscape. Only this way we can fully appreciate the value of soil, and ensure that it is managed economically and intelligently.

5. Conclusion

Soil is an irreplaceable natural resource and habitat. Although it is less noticeable in the landscape, it is nevertheless of no lesser importance than the other factors. It is also of great importance for humans, because without it growing crops would be impossible. Furthermore, it is the basis of human activity. Due to continuous population growth the need for food production is increasing. Thus, soil is becoming more important as a natural resource which should ensure more food.

There is great soil variety in the Savinjska statistical region, and this fact has to be taken into consideration when planning for sustainable development of Slovenia, because soil quantity and quality can be affected negatively. Nevertheless, we can conclude that the role of soil as an irreplaceable and vital natural resource is not sufficiently incorporated into the planning for sustainable development of the Savinjska statistical region. Thus we should strive towards a more comprehensive soil management from the perspective of the different functions soil has, and encourage the modernization and adaptation of soil protection policies, in order to achieve sustainable development. Different approaches on regional and municipal levels could ensure the raising of public awareness regarding the role of soil and its importance as a natural resource.

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MANAGEMENT OF SOIL AS A NATURAL RESOURCE IN THE SAVINJSKA STATISTICAL REGION IN SLOVENIA

Summary

Soil is an irreplaceable natural resource and habitat. Although it is less noticeable in the landscape, it is nevertheless of no lesser importance than the other factors. It is also of great importance for humans, because without it growing crops would not be possible. Furthermore, it is the basis of human activity.

The distinct biotic diversity of the Savinjska statistical region and the diversity of its landscape are the reasons for the great soil variety in this region. The fertile eutric cambisol can mainly be found in Spodnja Savinjska dolina, where intensive agricultural production requires high anthropogenic inputs, and causes the pollution of the soil and the groundwater. Rendzinas formed on a carbonate foundation found on inclined surfaces, and ranker formed on a silicate foundation. Postcarbonate soil prevails in the highlands, while on the volcanic and carbonate rock dystric cambisol prevails. By the rivers of Savinja, Dreta, Paka, Ložnica, Hudinja and Sotla, riverside soil has developed up to the depth of 30 cm, while pseudogleys appear in the clayey surroundings.

The connection between natural and socio-geographical factors is reflected in the use of soil. Forests cover almost 60% of the area of the Savinjska statistical region, about 33% are agricultural areas, a bit less than 6% are urban areas, 2% of the area is in the process of overgrowing, and 1% consists of water and other surfaces. Among agricultural areas, meadows prevail (73%), there are about 18% of fields, while a bit less than 10% consist of orchards, vineyards and other permanent plantations.

In the Savinjska statistical region there is a similar pattern in changes in land use to that of other parts of Slovenia. There is a reduction of cultivated land, whereas the share of forests and uncultivated land is rising. The dominant processes of land use category change are urbanization, overgrowing and forestation.

The various activities and their direct and indirect effects impose (from an environmental perspective) a heavy burden on the soils in the area of the Savinjska statistical region. The type of burdening differs between the different areas of the region.

The biggest problems arise in areas with a combination of intensive agricultural and industrial production, in addition to traffic infrastructure (Spodnja Savinjska dolina and Celjska kotlina). In general, the marginal areas in the region have fewer problems. There the soil is less contaminated and degraded, because of the more preserved forests and less intensive industry. In most areas where certain measurements or constant monitoring were conducted, a gradual decrease in the level of contamination is evident in recent years. For the most part, this is the result of lower emissions (and consequently imissions) into the air, in addition to the self-cleaning abilities of the soil. In the locations included in the measurements of 2006 and 2007, the emission limit value was exceeded in four categories, namely: lead, cobalt, nickel and arsenic. In no location the emission limit value reached the critical point.

The study also established:

∞ That the municipalities do not have ordinances, acts or regulations for soil presser-

vation, whereas that *is* the case with the preservation of water resources and air.

∞ That there is no monitoring of soil fertility in the municipalities.

∞ That the municipalities do not have thematic maps of land contamination and proposed use or/and sanitation, except in the municipality of Celje, where a map from 1989 exists.

∞ That soil vulnerability maps which show the pollution of sensitive areas with pesticides have not been commissioned by the municipalities.

∞ That the municipalities do not keep records of the change of intended use of high quality farmland.

∞ That the municipalities lack expert staff in the field of soil management.

The results of the study suggest that the role of soil is not sufficiently incorporated into the planning of sustainable development of the Savinjska statistical region, therefore more active approaches are needed in the field of soil management and protection (education, research, raising public awareness, soil protection programs, soil related educational excursions, etc.). We should strive towards a more comprehensive soil management from the perspective of the different functions of the soil, and encourage the modernization and adaptation of soil protection policies, in order to achieve sustainable development.

THE IMPORTANCE OF COMPLEMENTARITY IN THE TERRITORIAL COHESION AND SUSTAINABILITY OF RURAL AREAS: THE CASE OF CAMBRES, A DOURO WINEGROWING AREA, AND MAGUEIJA, A MOUNTAINOUS AREA

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UDK: 911.373(469)
COBISS: 1.02 – Review article

Abstract

The Importance of Complementarity in the Territorial Cohesion and Sustainability of Rural Areas: The Case of Cambres, a Douro Winegrowing Area, and Magueija, a Mountainous Area

Although the rural world reveals several troubling trends, such as demographic decline and stagnation/deterioration of the economic framework, there are multiple potentialities requiring urgent vitalization. Furthermore, heterogeneity predominates, a fact that becomes very clear when comparing the territorial setting of Cambres, a parish located in the Lamego municipality, part of the Douro winegrowing area and the area classified as World Heritage by UNESCO, with another parish set within mountainous terrain, Magueija, also located in the Lamego municipality, whose endogenous potential is completely neglected. As such, many challenges compromise its development and conformance with one of the main strategic vectors for the region, which is territorial cohesion.

Keywords

territorial cohesion, multifunctionality, TRA, complementarity

The editor received the article on 7.2.2010.

1. Introduction

The North of Portugal stands out nationally due to its high population density, albeit with a highly variable geographical distribution, and as exhibiting a number of the more problematic social and economic indicators. These asymmetries are more clearly visible when the territory under study is subdivided, making the concentration of the population and of the productive sector in the coastal regions undeniable.

This scenario is further magnified when we focus on peripheral areas, such as the Douro Demarcated Region (DDR), part of which was classified as World Heritage in 2001, or on the Trás-os-Montes and Beira areas surrounding it, which are gradually suffering population loss in a trend that is inseparable from the progressive ageing of the population and the stagnation/deterioration of the regional economic framework. The preservation of this landscape is thus compromised.

Fig. 1: The Douro Demarcated Region.

When focusing on these aspects at the local scale, this scenario becomes even bleaker. Indeed, when comparing the territorial setting of Cambres, a parish within the Douro wine region in the Lamego municipality, with another parish set within a mountainous morphology, Magueija, it becomes obvious that the less attracttive one is clearly undervalued, and its endogenous potential has been ignored. Nevertheless, considering the focus of the "National Strategic Reference Framework – 2007/2013" on rural development, consolidated in PRODER, the following aims stand out:

∞ Increase the competitiveness of the agricultural and forestry sectors, especially the more highly specialized strategic lines, an example of which is wine, enhancing marketing and internationalization.
∞ Invest in diversity, but where quality is the key factor, sponsoring and promoting certified products.
∞ Guarantee the sustainability of rural areas and "less favoured zones", protecting

edaphic and water resources and planning for their continued use.
∞ Increase territorial and social cohesion by boosting the qualifications of human resources, as well as making the best use of new technologies and broadening multifunctionalities, aiming to diversify the rural economy and raise the population's quality of life.

Thus, the region's endogenous potential could be boosted in such a way as to expand its capacity and implement the LEADER approach; yet, contrary to these key strategic lines, the more problematic areas are undervalued. In view of this, how is territorial cohesion to be reinforced? How can we expand local and regional competitiveness and, at the same time, increase the sustainability of these rural areas? Where do the private actors and local authorities stand in the implementation of strategies likely to minimize the imbalances highlighted? The cases addressed in this article illustrate these issues.

2. Cambres: a parish in the Douro Demarcated Region (DDR)

2.1 Some contextual notes

The parish is located in the western-most area of the DDR and covers over 11.16km^2, extending from the left bank of the Douro River at about 50 m in altitude, to 440 m at its highest point. The terrain is rugged and hilly but very attractive, rising from North to South, and becoming markedly steeper at higher altitudes.

In keeping with these characteristics, the striking changes in landscape are quite visible in terms of land occupation. Despite the traditional terraces filled with vineyards (Fig. 2), as we approach the 400 m mark, they are gradually replaced by olive groves, orchards and forests on the shadier slopes, offering remarkable biodiversity.

Fig. 2: Importance of viticulture implanted in traditional terraces.

Cambres offers a changing Mediterranean climate with daily maximum summer temperatures often topping 40 °C and sharp winters with frost setting in between January and March, although snowfall only occurs occasionally.

This is clearly an edaphoclimatic setting favouring winegrowing, the keystone for the extensive history of this culture. Port wine and other high-quality DOC Douro wines are produced in this region, in addition to olive oil and fruit. It's an environment in which man transformed harsh schist soils into a unique landscape (Pina 2007; Azevedo 1976), which merited the attention of UNESCO.

On the other hand, Cambres has a privileged location between two very important multifunctional urban centres: Lamego, with an extensive heritage, and Peso da Régua, the "capital of Port wine". Furthermore, Vila Real is within 15 minutes (via the A24 highway) of the main regional urban centre, and Viseu, the district capital, is less than 45 minutes away, to the south.

In addition to these characteristics, there is a significant cultural, gastronomic, wine and architectual heritage, making the Cambres' territorial setting a particularly appealing one.

2.2 The profile of the rural population

Although extremely attractive, this territory has a variety of problems, namely an inadequate land use structure, the persistence of old vineyards, demographic decline and an ageing population.

In terms of Cambres' demographic growth, two distinct trends can be pinpointed: continuous increases in population accelerating up to 1940, followed by a period of decline lasting until present, although it did gradually "slow down". In 1864, Cambres' population totalled 2,515. In 1900, this number rose to 3,290 and, in 1940, it reached a population high of 4,675 inhabitants (Rec. Gerais da População, INE). Later, a period of decline followed, lasting until 1974, reflecting the cumulative effect of various crises in the wine sector. If we overlook the period following the 1974 political revolution, in which the reduction was interrupted by the homecoming of people from the former Portuguese colonies and other emigrants, we are only left with decline. In 2001, there were just 2,561 inhabitants; in other words, 56.7% of the population recorded in 1940 (Rec. Gerais População, INE). However, 2001 was already a clear "slow down" year, since between 1981 and 1991 the drop was close to 25%, whereas during the 1990s, it was less than 10%. Indeed, according to the 2005 estimate, this slow down has become more noticeable.

Another important aspect to consider relates to the changes in the socio-cultural profile of the residents. In the mid-19th century, the majority of the population was very young, with 40% of residents under 21 and those over 65 comprising less than 4%, whereas in 2001 an ageing trend was undeniable, with 31% of the resident population over 65, and those under 21 totalling only 21% (Rec. Gerais da População, INE). Nevertheless, in the 19th century more than 70% of residents were illiterate (especially the elderly, particularly women), but in 2001, cultural and technical training was widespread, although much of the population did not have more than primary education.

Working-age young people in Cambres choose to work in the tertiary sector, in the

urban centres close to the parish, or have dual activities helping the elderly, those who actually sustain the wine sector. The underlying reason has to do with the fact that a minimum level of profitability of the vineyard is guaranteed after adopting technological improvements that reduce the time needed for farming activities by a third or a quarter (Pina 2007).

2.3 Local economic structure: the importance of the wine sector

The wine sector undoubtedly supports the local economy, although it is immersed in various problems, one of which relates to the land use structure of the farmsteads. Indeed, the significant sub-division of land is undeniable, as in 1999 the average size of the farmsteads was 3 ha and 46% were under 1 ha (Fig. 3). It should be noted that, even though they were already small, the farmsteads were further sub-divided into 2 or 3 plots, which meant that their average size was under 0.8 ha. Nevertheless, these farmsteads proliferated in a context where family sustenance is highly valued.

As such, it is hardly surprising that between 1989 and 1999, the number of farmsteads decreased. The fact is, despite the low profitability of farmsteads and the low level of mechanization, resorting to dual activity and the sentimental and social value of land ownership both justify the preservation of agricultural work under a family umbrella, and only the sale of land for urban expansion and property transfers has contributed to this reduction. In this context, out of the 319 farmsteads recorded in 1989, 274 were still there ten years later (Rec. Agrícolas, 1989 and 1999, INE). However, it should be noted that this was not in any way the result of abandonment.

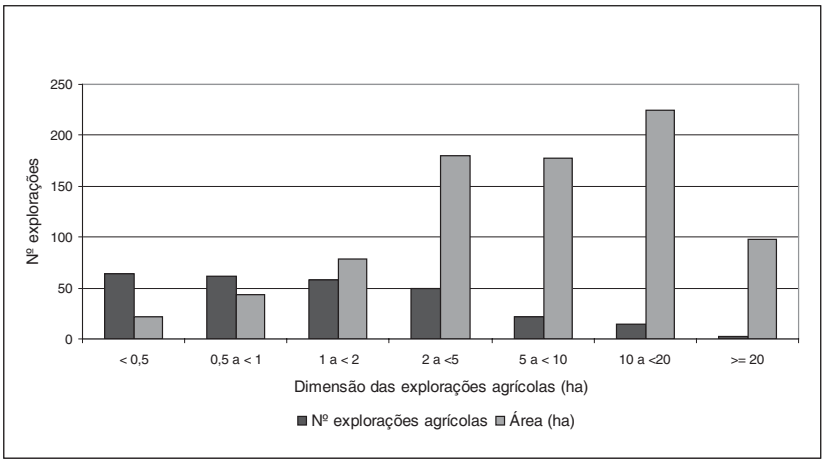

Fig. 3: Number of farmsteads in Cambres in terms of size in 1999.
Source: Recenseamento Geral Agrícola de 1999, I.N.E.

As a result of the constraints presented, it is no wonder that, in 1999, the farming population of the parish totalled only 30.7% of the residents, the majority of whom were elderly, with empirical training and low schooling levels. Although the younger population has increasingly better technical training, perhaps even at an undergraduate level, they are generally detached from the wine sector, the exception being the heirs of larger farmsteads, who have full technical training, a level that also applies to those over 65. Even though the social divide deepens, as

long as some level of profitability is to be obtained in the wine sector, since the farmers have sentimental ties to the vineyards, this sector will persist.

2.4 The multifunctionality of the Cambres landscape

We have established that the situation in Cambres is attractive, yet problematic, and is sustained by the wine sector. However, there are other possibilities that are likely to intensify the requalification/multifunctionality of the landscape, namely through better sized farmsteads, which are now beginning to invest in Tourism in Rural Areas (TRA). This tendency began in the 1980s, first in the Lower Corgo, the western-most sub-region of the DDR, where Cambres is located, and then in the Upper Corgo. This strategy was to truly expand in the 1990s, accompanied by greater territorial spread, predominating in the Lower Corgo. TRA is widespread here, as can be seen in Cambres, where one of the examples of this investment is the Quinta da Pacheca.

The name of this farmstead dates back to 1738, and it was one of the first Douro farms to bottle wine with the farm label. Its 37 ha of mechanized vineyards produce about 400 casks, under the coordination of the family and supported by 11 paid workers. The farmstead has run the tourism business for a decade, and it has become so valued that, in addition to being part of the "Port Wine Route", they also established the "Hotel Rural Quinta da Pacheca".

There are many other examples of investments made in tourism to make better use of the manifold potential offered. Such is the case of "Quinta da Casa Amarela", established in 1885 and running a traditional type of activity: the production of wines. It only started to make, bottle and sell generous wines in 1994, and from 2000 on, other DOC wines. Boasting 17 ha of traditional vineyards, it is part of the "Port Wine Route", receiving about 2,000 visitors a year.

Given the cultural and historical background of Cambres, TRA is expanding, providing for 9 new estates. Generally speaking, they are average in size, set in a privileged location and boast magnificent buildings. Run by families, they offer guests activities, some of which are only linked to the estate used for their stay, and others that allow the visitors to come into contact with the region and the main urban centres, in addition to visits to protected areas, such as the Biological Park of Meadas and the Natural Parks of Alvão and Marão. They have also signed agreements with regional companies to offer cruises along the Douro River, trips on the historical train and even water sports, among other attractions.

Part of the business strategies of these estates was to restructure the vineyards, and at the end of the 20th century and beginning of the third millennium, they increased the investment in tourism. For example, the "Quinta dos Varais", with its manor house dating back to the 15th century, renewed its vineyards, began to sell their wines, and at the end of the 1990s, joined the TRA scheme.

Other interesting examples are the "Quinta da Azenha", with a manor house dating back to the 17th century and set in a wine farmstead of 13 ha, the "Quinta do Mourão" dating back to the 18th century (Azevedo s/d, 306), the "Quinta de Tourais", and others, whose owners diversified their activities after the Douro Demarcated Region was classified as World Heritage.

TRA tourists are mostly national (60%) from Portugal's northern region, even

though there has been a clear rise in the number of foreigners, particularly from Spain, France and the UK. They are generally couples aged 30 to 50 years, who particularly enjoy the landscape, gastronomy and traditions.

Furthermore, to minimize the seasonal nature of tourism in the region, which is highly focused on the summer and most particularly on grape picking, the harvest of other fruits linked to the activity of preserves and liqueurs is being advertised to attract participants. If the harvest of olives is promoted, as it is closely linked to the production of olive-oil and tasting sessions, it will be an excellent activity to vitalize the low season. Reference must also be made to the local handicrafts, such as the basketry, barrel making and tinwork common among the men, and the lace-work and embroidery favoured by the women.

The attractive landscape and cultural settings, the improvement of accessibility and the classification of Douro as World Heritage have further merited new investments in this "major tourist hub" (according to the Tourism Strategic Plan 2007-2013, and the Douro Valley Tourism Development Plan 2007-2013), materialized in very ambitious private projects in the area of quality tourism, for example, the "Aquapura Douro Valley", a five-star hotel occupying a 19th century manor house, and the "Douro River Hotel" (Fig .4), a private 4-star establishment opened in 2009.

Fig. 4: Aquapura Douro Valley, a 5 star-hotel implanted at Quinta de Vale Abraão.

However, private initiatives cover more than tourist activities in Cambres. Investments in the wine sector intensified from the end of the 1990s on, taking full advantage of the proximity to Régua, the headquarters of wine sector services, with the establishment of wine-cellars in addition to other projects, such as "Lacticínios do Paiva, Lda."

In short, the varied use of Cambres is a fact and can be enhanced, thus strengthening a heritage consisting of a series of terraces and multicoloured vineyards. Indeed, the wine sector still sustains this idyllic scenario, and this is why it can never be underrated. This parish is a reflection of the general context of the DDR's western-most section and its central area, but in order to proceed with the

expansion and territorial spread of TRA, there is a need to innovate and adopt a transversal perspective that can cover all the different territorial, social, economic and cultural components. It is in this setting that there is also a need to publicize and professionalize, as well as to boost complementarity with other surrounding territorial units of the DDR, such as the mountain areas.

3. Magueija: a parish located within mountainous terrain

3.1 Some contextual notes

Travelling southwards from Cambres and beyond Lamego, the "cultural capital of the Douro", the landscape changes and the vineyard is replaced by traditional mixed farming, interrupted only by forests and orchards. This is where we find Magueija. The road takes us through an attractive 15 km track, which complements the Douro one. In fact, the complementarities between these two areas are grounded in historical roots. How can we ignore the "rogas" (a "*roga*" comprised a group of people from the mountain settlements, travelling to harvest in the Douro region) leaving for the Douro harvest, or the men helping in the reconstruction and preservation of the Douro terraces? How can we disregard the importance of cereals, wool, linen, potatoes and cattle from the mountain parishes, which fed the city of Lamego, and the wine parishes from where they received wine, olive-oil and fruit? First and foremost, the most prominent characteristics of Magueija have to be described.

Like Cambres, this parish belongs to the administrative area of Lamego, and is set within the transition area adjacent to the Montemuro Mountains. With an area of about 10.35 km^2, Magueija is a typical example of a mountainous area, with an irregular terrain and granite substratum. The Balsemão River, and other water routes with hundreds of "poças" (pools) and irrigation canals (Fig. 5), are the result of centuries-old "hydraulic engineering". There are numerous water resources and significant edaphics, boasting deep soils and humus up to the 750-850 m mark, where we find inhabited areas; the skeletal soils are only found above the 900 m limit.

Fig. 5: The "wells", although abandoned, still remain.

The diversity seen in Magueija, in edaphic terms, is also visible in the climate. In fact, the extremely hot summers in the Douro valley have now been replaced by "mild" temperatures and very wet and harsh winters, despite the more abrupt changes at higher sites, in which the year-round winds are predominantly NW and NNW, used to power the existing wind farm since 1996 (Pina 2007).

Although the physical substratum of Magueija may not be considered the most attractive, its diversity must nevertheless be highlighted. In fact, with the exception of the more exposed areas, the landscape structure is outstanding, and the built, cultural and social heritage is remarkable. Worthy of reference are Magueija and Magueijinha, with a pillory from the 16th century and an old jailhouse bringing to mind that it was once the seat of the council until administrative restructuring took place in the 19th century (Costa 1975). Furthermore, whereas on the rising slopes we find simpler constructions, here the landscape adds more distinctive features to the lack of historical architecture, as in Vila Lobos (Fig. 6), where the houses seem to merge with the blocks of granite.

Fig. 6: Vila Lobos.

Magueija is set within a bucolic and attractive landscape, presided over by a farming sector that has invested much in the trilogy formed by cereals/potato/livestock, although diversity is also unquestionable. In fact, the margins of the Balsemão River are flanked by narrow green stretches of cultivated land, called "leiras", and potato and cereals are cultivated on the rising slopes. On shadier slopes, chestnut-groves provide nourishment for the fattened pig, the "porco cevado", fed on smaller chestnuts for most of its life. The pig was thus fattened, and the taste of its meat was such that it was sent to the Portuguese Royal Court in the 16th century (Dias 1947, 31; Costa 1975, 110).

As for the uncultivated land at the base of which Vila Lobos is located, despite its stunning landscape, abandonment is prevalent, especially the support infra-structures used by the shepherds for their herds. In short, the endogenous potential

of Magueija is extensive and varied; yet, problems persist and multiply, particularly those of a demographic and economic nature.

3.2 Some demographic aspects: the farming population

If we thought Cambres' demographic structure had problems, the structure in Magueija is even more striking: after controlled population growths until 1950, the decline is obvious, making the population in 2001 less than in 1864. In fact, the census accounted for 907 inhabitants in 1864, whereas in 2001 there were only 742, which, in turn, corresponded to about half of the population in 1950 (1,520 inhabitants), when it reached its peak. This was the result of successive cereal crises, which were exacerbated by shortages of chestnuts and potatoes. As such, survival was the top priority of the local population, leading men to head towards Douro to perform "Douro tasks". This is why the population in 1878 was essentially made up of young women. In fact, 40.8% of the populations were under 21, and 25.6% were under 10, whilst those over 65 made up less than 8% of the population. Furthermore, 78.2% were illiterate (Pina 2007).

In the 20th century, as cereal production benefited from favourable conditions, the population increased. When the subsidies were withdrawn, and later totally abolished, the tendency shifted, and the population declined. This was also the result of a beetle plague that affected the production of potatoes and especially the result of the inadequate land structure and the frail distribution channels for the regional products.

In addition to demographic decline, the local population was ageing. In 2001, about 39% of the residents were over 65, and most of them were illiterate. Nevertheless, they supported whatever was left of the agricultural sector. In the meantime, of those under 21, only 24% (in 1981 they totalled 44.5%; Rec. Geral da População 1981, INE) had attended the minimum compulsory school years and only very rarely did they advance their studies. When this did happen, they would find employment in the tertiary sector in the regional urban centres, and for this reason, Magueija became a predominantly residential area. At the same time, many houses lacking proper access roads were abandoned, so about 60% of the parish houses at the beginning of the 21st century were in a very poor state of preservation. Despite its landscape settings, Magueija has gradually been abandoned, allowing deterioration to invade a heritage that would otherwise be ideal for tourist activities, namely, village tourism!

3.3 The local economic structure

The local economic environment was, likewise, of great concern. Although agriculture and livestock still governed the local economic environment, the agricultural sector was to face many problems. In fact, the land was sub-divided to cater for new generations, and these sub-divided plots of land were so insignificant in size that they were not economically feasible, and therefore were soon abandoned. While in 1979 there were 199 referenced farming units, ten years later, this figure stood at 74, and in the last census, in 1999 (Fig. 7), there were only 43 (Rec. Agrícolas de 1979, 1989, 1999). Furthermore, although farmsteads of between 1 and 2 ha were predominant, and those larger than 10 ha were rare, in 1999 the average size of farmsteads was 2.27 ha, an area generally split into 6 plots, which totalled an average unit size of 3,900 m (by survey in 2007).

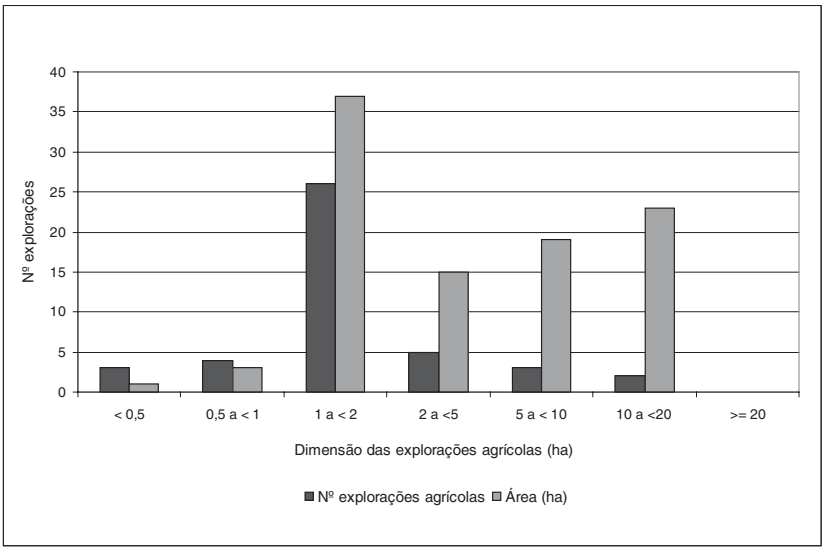

Fig. 7: Number of farmsteads in Magueija in terms of size in 1999.
Source: Recenseamento Agrícola de 1999, INE, Lisboa.

The total or partial abandonment of farmsteads was a reality. Only the places with proper access and water resources remained active, particularly those located around the farmer's main house. Therefore, 65% of the agro-forestry soil in Magueija was abandoned at the onset of the 21st century, and we expect the resulting environmental deterioration to spread to more than 85% of the area at the end of the decade.

The livestock sector was also affected. There were more than two thousand goats and sheep the area in the middle of last century, whereas in 2007 the number barely totalled a herd of 200 animals belonging to a young ex-emigrant who was desperately looking for an alternative to agriculture and raising livestock. With regard to cattle, nowadays there are no animals at all, not even the "porco cevado". The farming population, in turn, consists of only 15% of the resident population: 111 inhabitants, whereas in 1989, there were 322. Furthermore, their social and economic profile was very frail, with the illiterate elderly with empirical training representing the majority (Fig. 8). The rest had a primary level of education, and those who had furthered their studies were not professionally connected to the agricultural sector. In summary, the human structure linked to the farmsteads in Magueija was of much concern and showed a clear regression. However, the endogenous potential is increasing, showing a scenario in which sustainability is possible, especially if strengthened by different areas, namely those of the Douro.

3.4 The development of Magueija: some strategic guidelines

Although the current situation poses a problem to Magueija, its heritage is nevertheless fabulous. It consists of "poças" and irrigation canals located in the inhabited places and scattered elsewhere in the form of other structures which, despite being abandoned, still remain. The same can be said about the villages. This heritage is set within an exceptional, yet totally underused landscape and offers us differing structures according to their location on the slopes and their function.

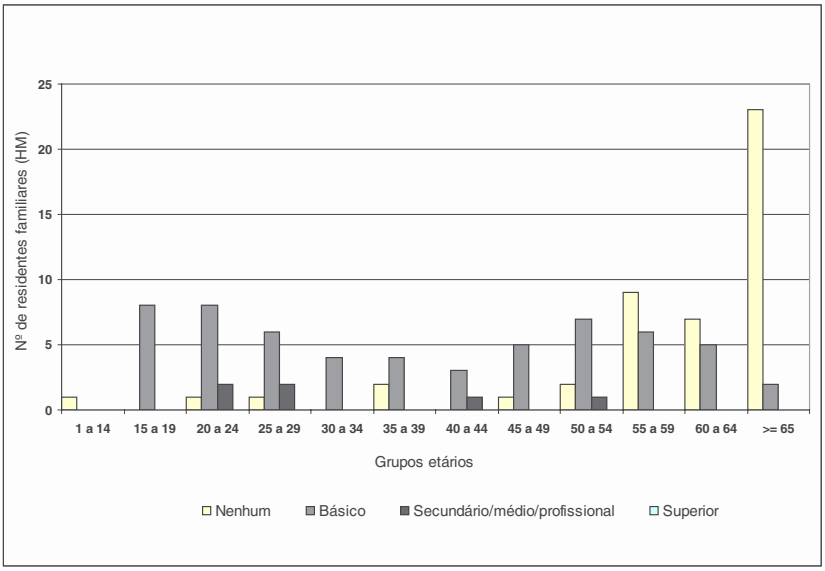

Fig. 8: Agrarian population in Magueija in 1999.
Source: Recenseamento Agrícola de 1999, INE, Lisboa

There is a pressing need to vitalize this area, as there are other activities that can be combined with the traditional ones, such as organic farming and technical forestation, in addition to the investment in ecotourism or in any other type of TRA. In fact, the potential is promising: "theme tracks" to promote the diverse fauna and flora, the revitalization of handicrafts to include the production of wooden clogs and the manufacture of rugs and quilts, articles that have survived until the beginning of the 21st century. We also can't forget the heritage value of watermills alongside the clear waters of the Balsemão River, waiting to be converted into a multipurpose project.

Furthermore, as the sheep meat produced in Magueija is highly reputed, this activity should be revived to allow visitors to accompany a herd in what could be called a "shepherd for a day" activity. But the unquestionable strategic investment that would launch this parish is the association movement. However, who would sponsor and coordinate such an institution? We have to remember that all investments will only be possible after restructuring, which would, in any case, allow project leaders to apply for the PRODER community funds.

One of the most important obstacles to overcome is related to the mentality of farm owners; yet, in view of such abandonment, there is some receptivity regarding this possibility. The potential work teams would recover the houses, preserving their regional characteristics and perform farming activities. The groundwork would contribute to vitalizing and certifying the "porco cevado" and related activities (sausages, the killing of the pig), in addition to chestnut harvests and related activities, thus reviving the "Falacha" (a typical cake). In terms of cultural animation, other teams would emerge, benefiting from joining efforts with the Associação de Amigos do Rio Balsemão (ASAMIRB) (Friends of the Balsemão River Association).

These are a few ways to revitalize these peripheral areas, which are today wholly underrated, to guarantee their sustainability and particularly to boost complementarities

between mountain areas and wine areas. Furthermore, if current trends persist, how can territorial cohesion be implemented?

4. Conclusion

To summarize this analysis, investments have to be made in the preservation and diversity of the landscape so as to obtain sustainable development and territorial cohesion. There are many possibilities, but the residents have to be trained, motivated and technically coordinated so that these territories can be revitalized from a multifunctional and complementary perspective. In the implementation of these dynamics, tourism can also trigger a series of overarching activities in social and economic terms. But how can investments in more socially depressed areas, such as Magueija, be stimulated? Should the coordination of local government in these areas be particularly promoted? Will territorial stagnation, or even regression, reveal a problem of governance?

The main aim is to achieve "sustainable development" leading progressively to "territorial cohesion". For this, a contextual perspective is required wherein "complementarity" is always present. It is also up to the local and national authorities to promote such guidelines and to support them first, in their various forms, particularly in the peripheral areas, since private initiatives disregard these problem areas. The complementarity between the different areas would nevertheless strengthen not only these specific areas but the entire territory, as we have seen in the examples described, Cambres and Magueija.

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THE IMPORTANCE OF COMPLEMENTARITY IN THE TERRITORIAL COHESION AND SUSTAINABILITY OF RURAL AREAS: THE CASE OF CAMBRES, A DOURO WINEGROWING AREA, AND MAGUEIJA, A MOUNTAINOUS AREA

Summary

The North of Portugal stands out nationwide, among other parameters, due to its high population density, albeit with a highly variable geographical distribution, as well as aggregating a number of the more problematic social and economic indicators. These asymmetries are more clearly visible when the territory under study is subdivided, in which demographic concentration and of the productive sector in the coastal regions is undeniable.

This scenario is further magnified when we focus on peripheral areas, such as the Douro Demarcated Region (DDR), part of which was classified as World Heritage in 2001, or on the Trás-os-Montes and Beira areas surrounding it, which are gradually suffering population loss. When focusing on these aspects at the local scale, this scenario becomes even bleaker. Indeed, when comparing the territorial setting of Cambres, a parish within the Douro wine region, with another parish set within a mountainous morphology, Magueija, both located in the Lamego municipality, it becomes obvious that the less attractive one is easily underestimated, despite the fact that the "National Strategic Reference Framework – 2007/2013", in its rural development dimension, emphasizes the need to increase territorial and social cohesion, and the enhancement of endogenous potential. Thus, a comparative analysis is required of the two parishes mentioned, so as to exemplify the statements made.

The first example, Cambres, a parish covering about 11.16 km^2 located in the western-most area of the DDR, where Port and other high-quality DOC wines are produced. It is set in an idyllic landscape, where traditional terraces cover the slopes, laden with vineyards on schist soils, and a highly favourable Mediterranean-type microclimate. It is further enhanced by it geographical location between two regional urban centres boasting good road accesses.

Despite this extremely attractive setting, demographic decline is undeniable, even though the trend has "slowed down" since the 1990s, associated with an ageing population and a younger generation which has come to opt for activities other than viticulture. Indeed, although winegrowing is the parish's economic mainstay, it is developed within a highly deficient land use framework, dominated by small-sized holdings less than 2 hectares in total area, which are further subdivided into plots scattered throughout the parish. Farmsteads with areas above 10 hectares are exceptions. Nevertheless, the vineyards are not abandoned.

Given Cambres' attractive territorial setting, and the fact that, since the 1990s, it expanded from producing wines, to their bottling and direct marketing, as well as Tourism in Rural Areas (TRA), advantage has been taken of the manifold potential of the landscape and the establishment of larger holdings. Examples include wine exporting companies that have established their headquarters in the parish, as have wine companies. More ambitious, mostly private, projects have also taken off, such as high-end yet small-sized signature hotels, blending perfectly with the landscape, one of which is a five-star establishment, and another, four-star. A dairy plant was also established in Cambres, thus profiting from new roadways, essential the distribution of its products. To sum up, Cambres' general conjuncture is quite favourable,

although profound restructuring of the wine sector is urgently required the foundation of the local economic fabric.

The second example, Magueija, has a completely different setting. Indeed, one just has to travel 15 km south to see that, beyond Lamego, the landscape changes, where winegrowing is substituted by the tradition mixture of crops, only interrupted by forests and orchards. It is in this scenario that Magueija stands out.

Like Cambres, this parish belongs to the administrative area of Lamego, and is set within the transition area adjacent to the Montemuro mountains. Magueija is the typical example of a mountain area, with an irregular terrain and granite substratum, but with important landscape, water and edaphic resources. Its built, cultural and social heritage is also remarkable, as is the great biodiversity of its flora and fauna.

Magueija is set within a bucolic and attractive landscape, presided over by a farming sector that has invested much in the trilogy formed by cereals/potato/livestock, albeit based on a very deficient land use structure, where plots under 3,000 m^2 in area dominate, scattered throughout the parish and with poor access routes. Faced with the lack of profitability of the farmsteads, particularly when cereal subsidies were ended and the trade circuits through which local products were distributed broke down, the younger generations felt discouraged. Only the elderly, illiterate or physically challenged remained to carry on with the farm work. In this context, the population has declined sharply, associated with the abandonment of the farmsteads and built heritage, namely places of residence.

Nevertheless, the endogenous potential of Magueija is extensive and varied, and if investment were to be made in revitalizing its rich tradition in handicrafts, in restoring the mills found along the banks of the Balsemão River for tourism, and reviving livestock breeding, most particularly of the "porco cevado" (pig fed primarily on chestnuts) and associated activities, a sustainable dynamic could be implemented in Magueija. Furthermore, from a multifunctional perspective, any type of TRA is also viable here.

The historical complementarity between the various Douro winegrowing and mountainous areas has ceased to exist, accompanied by demographic decline. However, if the local agriculture and livestock breeding were to be revitalized, based on associations and other dynamics, this would be beneficial not only to Magueija, given its specificities, but also to other winegrowing areas. However, in the face of widespread inertia and discouragement of Magueija's inhabitants, as well as the lack of initiative on the part of the local authorities, deprived of the political, financial and technical means to undertake any type of enterprise, how can these areas be bolstered?

To summarize, investments have to be made in the preservation and diversity of the landscape in order to obtain sustainable development and territorial cohesion. There are many possibilities, but the residents have to be trained, motivated and technically coordinated, so that these territories can be revitalized from a multifunctional perspective, in which complementarity is always present. In the implementation of these dynamics, tourism can also trigger a series of overarching activities in social and economic terms, including more socially depressed areas, such as Magueija. Should the coordination of local government in these areas be

particularly promoted? Will territorial stagnation, or even regression, reveal a problem of governance?

The main aim is to achieve "sustainable development" leading progressively to "territorial cohesion". A contextual perspective is however required wherein "complementarity" is always present.

STRUCTURAL CHANGES IN AGRICULTURE IN THE POMURJE REGION AFTER 1991

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UDK: 911.37(497.4-18)"1991/2010":631
COBISS: 1.02 – Review article

Abstract
Structural Changes in Agriculture in the Pomurje Region After 1991
The Pomurje region is the most agricultural and the least developed region in Slovenia. Since 1991, the year when Slovenia gained its independence, the country transformed from the socialist system to the free market capitalism and was forced to restructure the agricultural policy. The decrease and the aging of the population, the abandon of the agriculture production and the decay of cultural landscape turned out to be serious problems. In Pomurje, agriculture was faced with unfavourable age structure of farmers in family farms. The Slovene agricultural policy was aware of this problem and took a number of measures to encourage the aging farmers to retire and the young generation to take over. Alongside this process began the process of merging land in the Pomurje rural areas. In the last 10 years, the agriculture in Pomurje underwent the improvement of agricultural technology, the specialization of productions and the enlargement of farms.

Keywords
Slovenia, Prekmurje, agricultural policies, CAP, agricultural structure, agricultural development

The editor received the article on 8.2.2010.

1. Introduction

Before 1991 Slovenia was part of the Socialist Federal Republic of Yugoslavia. The Slovene economy had the same characteristics as all the other Central and Eastern European countries that were under the socialist rule. The Slovene and the Yugoslav economy was the so called self-managed economy. This model did not work in practice, thus the political and economic system began to decline in the end of the 1980s. This peculiar economic system came to an end after a continuous economic crisis, ideological disintegration, dysfunction of institutions and growing social and ethnic tensions.

In 1991, Slovenia gained its independence. As a new democratic state, Slovenia had to undergo several very demanding processes, which were very closely connected. These processes were as follows:

- Process of political and economic transition.
- Process of Europeanization.
- Process of globalization.

The Slovene economy, as well as agriculture, was transformed from the socialist to the capitalist one, from planned to market economy, from the distributive to the competitive one. The ownership was transformed from the social property to the property of private owners. Europeanization was a logical consequence of the opening of the Slovene society and economy. When joining the EU and the NATO in 2004, Slovenia was faced with globalization.

2. Methodology

This research is based on analyzing and comparing scientific findings on the subject matter with the available statistical data. The main sources are the statistical data from the Statistical Office of the Republic of Slovenia (SURS), from the Institute of Macroeconomic Analysis and Development (UMAR) and from EUROSTAT. By analysing the statistical data, we try to determine the link between the selected socio-economic elements, agricultural policies and their impact on the agriculture in the Pomurje region in the last 20 years. Based on the current trends, we try to predict the future development of agriculture in the Pomurje region and find the niche market for agriculture.

3. European common agricultural policy (CAP) and its impact on Slovene agriculture

The CAP has its roots in the Western Europe of the 1950s. The CAP offered subsidies and systems that ensured high prices to farmers. Certain measures were introduced in the form of help for early retirement and for professional training in favour of less developed regions. These measures had high budgetary costs, distorted some word markets and did not always serve the best interest of farmers, to the extent that they became unpopular with consumers and taxpayers.

With the enlargement of the EU in 2004 and 2007, the European internal market expanded from 380 to nearly 500 million people. Seven million farmers were added to the EU's existing farming population of six million of the former 15 Member States. The 12 new Member States have added about 55 million hectares of agricultural land to the 130 million in the former EU, thus increasing it by 40%,

although production in the EU of 27 will only increase by about 10-20% as regards most products. This confirms the fact that the large agricultural production potential of the new member states is still far from being used to its full extent (Agricultural and Rural development, 2008).

When Slovenia became an independent country, it found itself in a position to design its own agricultural policy. In spring 1993, the Parliament enacted the Strategy of Agricultural Development in Slovenia, the main policy objectives of which were stable production of reasonably priced quality food in Slovenia, preservation of population density, cultural regions and agricultural land, and protection of agricultural land and water from pollution and misuse. In general, Slovenia has decided to adopt the EU-style of protectionist agricultural policy (Erjavec and Turk 1998, 22-24).

Slovene farmers were also able to use funds from the SAPARD pre-accession aid program. These were intended to improve the competitiveness of the agricultural and food-processing industry in candidate countries, with the aim to ease the negative consequences of joining the EU Čop 2007, 2–36).

In 1999, Slovenia started to implement the European agricultural subsidiary system. This played a very important role for Slovenia in the accession negotiations concerning the integration into the system of direct payments. As the only candidate to do so, Slovenia managed to reach an agreement on supplementing direct payments from the national budget. Due to this Slovene farmers receive from 2007 on direct payments on the same level as farmers in the EU-15 countries.

In 2004, Slovenia initiated the Rural Development Program (RDP) for the period 2004 to 2006. The program's aim was to support implementation of the development policy and to continue the activities Slovenia had been implementing already since the 1993. The RDP 2004-2006 was intended for the integration of different sectors to improve or to take new measures in:
- Quality of living in rural areas.
- Early retirement of farmers.
- Payments for less favourable areas.
- Agricultural measures.
- Support of the introduction of EU standards Čop 2007, 2–36).

In 2007 began the next period of rural development with an envisaged expansive rural development program (RDP 2007–2013). This is a uniform program uniting environmental and investment subsidies. The contents are divided into four axes:
- 1st axis: improvement of the competitiveness of the agricultural and forestry sectors.
- 2nd axis: improvement of the environmental and rural areas.
- 3rd axis: improvement of the quality of life in rural areas and the promotion of diversification activities.
- 4th axis: LEADER initiative intended for the construction of local employment capacities and diversification.

4. Brief outline of Slovene agriculture

The economic importance of agriculture in Slovenia is relatively small. Due to its small-property structure, it acted as a buffer against social stress in the period of

economic transition in the 1990s. The significance of agriculture in the general economy is constantly decreasing in Slovenia. This is evident in all of the three indicators commonly used to define the economic and social role of agriculture:
- Proportion of agriculture in the GDP.
- Proportion of people employed in agriculture.
- Proportion of agriculture in foreign exchange.

Tab. 1: Proportion of agriculture in GDP and employment in Slovenia (%).

Years	1990	1995	2000	2005	2008
Agriculture in GDP	4,8	4,6	3,5	1,8	1,2
Employment in agriculture	7,0	6,4	4,8	4,7	4,1

Source: SURS 2009, UMAR 2009.

The 3.5% of the total GDP ranked the Slovene agriculture in 2000 among less developed countries of the EU and alongside the other EU applicant countries, with the exception of Poland and Hungary. Between the years 2000 and 2005, the proportion of agriculture in GDP dropped significantly. It is now slightly lower than the European average.

The agricultural production conditions are rather unfavourable in Slovenia. Compared to the countries of the Western and Eastern Europe, Slovenia is characterized by the following features:
- Vast forest grown areas and a scarce portion of the total arable land (66% of Slovenia is under the forest) (SURS, 2008).
- Harsh relief resulting in areas with aggravated production conditions.
- Considerable absolute share of meadows and pastures and a modest share of fields in the exploitation structure of agricultural land (Potočnik 1998, 166).

5. Pomurje region - geographic review of the region

In 2000, Slovenia divided its territory into 12 statistical regions (NUTS III level). The Pomurje region lies in the north-eastern part of Slovenia and is divided into 27 municipalities. The Pomurje statistical region borders with Hungary, Croatia and Austria. From the historical viewpoint, the Pomurje region is divided into two sub-regions divided by the river Mura. The left bank is called Prekmurje and the right bank is called Prlekija.

From the geographical viewpoint, Pomurje is divided into the tertiary hilly areas of Goričko in NE, Lendavske gorice in SE and Slovenske gorice in the western side of the region. Along the Mura river lies the lowland of Murska raven, which is divided into Ravensko and Dolinsko on the left bank and Apaško polje and Mursko polje on the right bank of the Mura river.

Due to its geographical characteristics, the Pomurje region is a relatively detached agrarian region in Slovenia. Due to the favourable physical geographical conditions, which are reflected in the broad range plane in the central part (along the Mura river) and the hilly parts on the outskirts of the region, this region represent the biggest integral agricultural area in Slovenia. The relatively favourable sub-pannonian climate allows development of virtually all major agricultural branches. From the strategic point of view this is the most important area of food production in Slovenia, which is due to the fertility of the soil also known as the "granary of Slovenia".

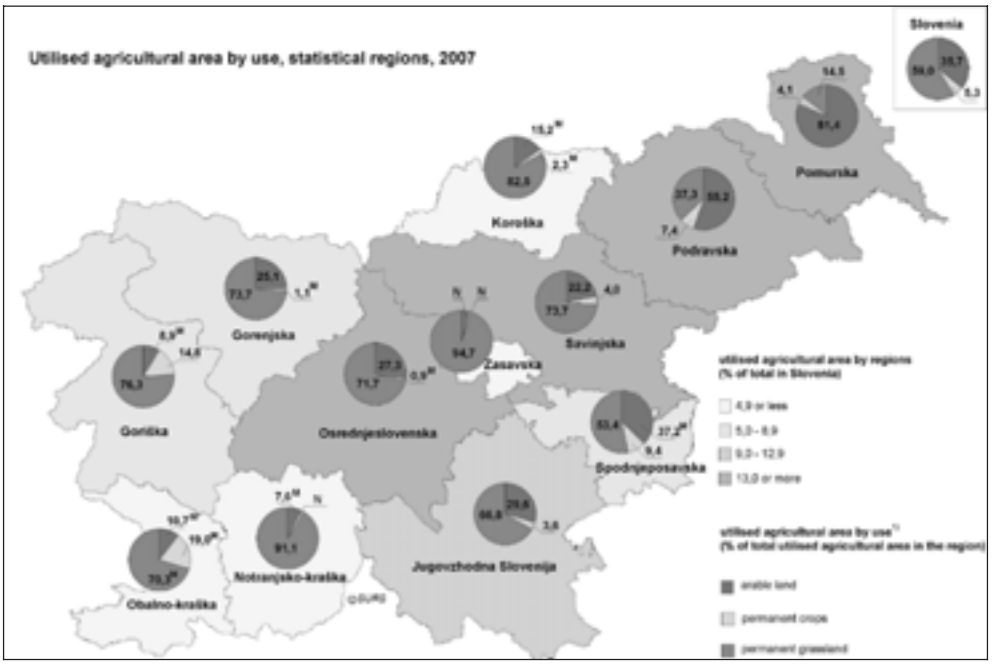

Fig. 1: Utillised agricultural areas by use.
Source: SURS 2009.

Fig. 2: The municipally in the Pomurje region in 2005.
Source: SURS 2009.

The Pomurje region represents 6.6% of the total surface of Slovenia and has 119,537 inhabitants (5.9% of Slovene population). Pomurje can be described as a demographically endangered area. The main reasons for this are:

- Aging of the population.
- Negative migration.
- Negative natural increase of the population.

Tab. 2: Number of inhabitants and average age in the Pomurje region and in Slovenia.

	1995		2000		2007		Index	
	SLO	Pomurje	SLO	Pomurje	SLO	Pomurje	SLO	Pomurje
No. of Population	1987505	126896	19990272	124761	2025866	121824	1995/07 101,9	1995/07 96,0
Average age	-	-	38,9	39,3	41,1	41,6	2000/07 104,6	2000/07 105,8

Source: SURS 2009.

As shown in the table, the aging of the population is far more intense in the Pomurje region than in Slovenia. The aging of the population in Pomurje is linked to out-migration particularly of the educated young people. The total decrease of population in the Pomurje region is due to the out-migration and the negative increase of population, especially in the more agricultural municipalities in the Goričko region (Horvat 2009, 220).

6. Structural changes in agriculture in the Pomurje region

6.1 Share of agriculture in Pomurje economy

For the Pomurje region as well as for Slovenia as such, it is characteristic that the importance of agriculture in general economy is constantly decreasing. This is reflected in all the indicators, particularly in the share of agriculture in gross value added (GVA) and in the share of farmers in the economically active population.

Tab. 3: Share of agriculture in the economy of the Pomurje region.

	Agriculture in GVA			Active population in agriculture		
	Share in %		Index	Share in %		Index
	2005	2006	2005/06	2005	2006	2005/06
Pomurje	8,3	6,9	83,1	10,9	10,8	99,0
Slovenia	2,5	2,4	96,0	3,9	3,8	97,4
Pomurje from SLO	13,4	11,7	87,3	14,6	14,5	99,3

Source: Cunder 2008.

It can be seen that the share of agriculture in GVA in the Pomurje region is decreasing more rapidly that in Slovenia as a whole. The reasons for that can be found in the agricultural as well as non-agricultural sectors. In the recent years, one of the reasons has been the low price of crops, especially of wheat. Another reason is more frequent natural disasters such as droughts and hailstorms. Nevertheless, the Pomurje region remains the most important agricultural area in Slovenia, with the highest rate of active population in agriculture.

6.2 Land use

Arable land represents the majority of all agricultural land in the Prekmurje region, and the share of arable land is increasing since joining the EU. This is due especially

to the introduction of direct payment (subsidies) for arable crops, which was carried out by the reform of agricultural policy in the end of the 1990s and was backed by the implementation of CAP. The increase of arable land is higher in the lowland along the Mura river. The share of permanent grass land is decreasing due to the increase of arable land. This is more evident in the lowland areas along the Mura river than in the hilly parts of the region. Due to the favourable geographical conditions, the Pomurje region represents a significant share of permanent crops in Slovenia, in the marginal areas of the region, especially in the hilly regions of Slovenske gorice, Goričko and Lendavske gorice, where wine and fruit growing is traditionally important. In the last few years some vineyards with less favourable growing conditions were abandoned due to the transition to growing high quality wine.

Tab. 4: Structure of land use in the Pomurje region in hectares.

Period	Total utilized area	Total agricultural area	Arable land	Permanent crops	Permanent grass land	Forrest	Barren land
2003	81.843	65.391	51.413	3.268	10.114	14.882	1.568
2007	82.043	66.050	53.326	2.669	9.502	14.458	1.535
Index 2003/07	100,2	101,0	103,7	81,7	93,9	97,2	97,9

Source: SURS 2009.

6.3 Agricultural holdings

Tab. 5: Number of agricultural holdings and utilized areas in the Pomurje region and in Slovenia.

	Number of agricultural holdings		Utilised agricultural area (Uaa) in ha	
	Pomurje	Slovenia	Pomurje	Slovenia
2003	10.058	77.149	64.795	486.473
2007	9.794	75.340	65.498	488.774
Index 2003/07	97,4	97,7	101,1	100,5

Source: SURS 2009.

Tab. 6: Agricultural holdings by size classes of utilized agricultural area (UAA) in the statistical region of Pomurje in hectares and numbers of agricultural holdings.

Period	0-5 ha		5-10 ha		10-20 ha		20-30 ha		30-50 ha		50 ha and more	
	ha	No.	ha	No.	ha	No.	ha	No.	ha	No.	ha	No.
2003	17.248	6.632	14.888	2.120	12.909	945	5.097	212	3.702	98	10.951	71
2005	15.760	6.386	14.864	2.129	13.135	964	5.121	216	4.402	120	11.496	81
2007	14.339	6.462	13.461	1.935	12.772	937	6.015	250	5.093	134	13.818	126
Index 2003/07	83,1	97,4	90,1	91,3	98,9	99,2	117,8	117,9	137,6	136,8	126,2	177,5

Source: SURS 2009.

It is evident that the total number of agricultural holdings in Pomurje is decreasing even faster than in Slovenia as a whole. On the other hand, the utilized agricultural area is increasing. This means that the average farm size has increased. The average size of a farm was 6.6 ha in 2007, which is 0.2 ha more than in 2003.

The utilized agricultural area consists of arable land, kitchen gardens, grassland, orchards, olive plantations, vineyards and vine, fruit and forest tree plantations used for agricultural production (irrespective of their ownership). During the past years we could observe significant changes in the context of the size structure of agricultural holdings. The number of holdings over 20 ha is increasing. The number of holding has increased by 7.1% and the area of utilized land in this category has increased by as much as 15%. Thus, the farms over 20 ha represent over 50% of the agricultural land in the region. The biggest increase can be noticed in the size class over 50 ha, and we believe that this trend will continue.

Tab. 7: Number of agricultural holdings by type of farming in the Pomurje region.

Period	Specialist field crops	Specialist horticul-ture	Specialist perma-nent crops	Specialist grazing livestock	Specialist granivo-res	Mixex cropping	Mixe livestock holdings
2003	1.641	65	431	608	191	3.652	1.692
2005	2.517	84	505	750	63	3.131	1.149
2007	2.330	37	581	892	64	3.300	1.007
Index 2003/07	141,9	56,9	134,8	146,7	33,5	90,4	59,5

Source: SURS 2009.

Over two thirds of the agricultural holdings belong to one of the mixed production types. Yet in the last few years, the number of specialized agricultural holdings has increased. In particular the number of holdings which are specialized in filed crops and in grazing livestock has increased significantly. All these changes result in structural changes in agriculture. Agricultural holdings are becoming more market oriented and specialized, so that they can be competitive in the common European market. All these changes are significantly encouraged by the CAP.

7. Potential of agriculture in the Pomurje region

Unfavourable age and education structure of farmers in Slovenia are important factors in the delimitation of faster restructuring of the Slovene agriculture, because young farmers are one of the most important mechanisms in the agricultural structural policy. The Ministry of Agriculture, Forestry and Food is encouraging young farmers to take over the farms since 1998 with non-refundable founds. The monetary founds for this purpose have increased since Slovenia joined the EU, yet the statistical impact of this policy in not yet proven because the new Agricultural census has not been done yet (MKGP 2009).

Tab. 8: Farm holders by age groups and school education in Slovenia and in the Pomurje region in 2000.

	Pomurje	Slovenia		Pomurje	Slovenia
under 35 years	4,6 %	5,2 %	No education or incomplete Elementery school	4,3 %	11,3 %
35-44	15,0 %	15,3 %	Elemnetary school	58,4 %	47,1 %
45-54	25,6 %	23,1 %	Vocational education	23,5 %	26,0 %
55-64	24,5 %	24,3 %	Secundary education	10,9 %	12,8 %
Over 64	31,2 %	32,1 %	College, graduate and postgraduate education	2,8 %	3,2 %

Source: Agricultural census 2000.

Agriculture in Pomurje is undergoing intense restructuring and technological modernization. In the future, the development will be influenced by the situation on the European markets, as well as by the measures of agricultural policies, not only CAP but also national and local policies. Well-planned rural development policies will play very an important role in restructuring of agriculture, especially by the development of agriculture related complementary activities and other non-agricultural activities in rural areas (Cunder 2009, 155).

In the Pomurje region, the Mura Regional Development Agency (RDA Mura) was established which plays the key role in the economic restructuring of the region. RDA Mura prepared the Regional development program of the Pomurje region for the years 2007–2013. Restructuring of agriculture plays an important role in this program. The agency made a SWOT analysis of agriculture in the Pomurje region.

Tab. 9: Results of the SWOT analysis of agriculture and rural development in the Pomurje region.
Source: RDA Mura 2007, 61.

STRENGHTS - favourable natural conditions for agricultural production - maintained and mostly unpolluted natural environment - high level of biodiversity - dense population in rural areas and a lot of available workforce - large number of agricultural experts and agricultural institutions	WEAKNESSES - poor competitive ability, especially of family owned farms - lack of organizational structure in agriculture, occasionally poor integration of producing, processing and marketing - fragmentation of agricultural land - poor educational structure - undeveloped complementary activities in agriculture
OPPORTUNITIES - favourable natural potential for agriculture - relative conservation of the natural environment - large proportion of landscape parks and water areas allowing the development of organic production - large proportion of rural population which is willing to work in agriculture - possibility of development of entrepreneurship and finishing - interesting landscape and rich culinary art and craft as a great potential for tourism development - integration and cooperation of all agricultural institutions	THREATS - reducing the volume of agricultural land due to the change of use - poor absorption capacity for drawing the CAP founds - slow implementation of structural and institutional reforms - collapse of certain food establishments - lack of own financial recourses

8. Conclusion

The Pomurje region is the most important region in Slovenia which is suitable for food production. Agricultural holdings cultivate almost 13% of all the agricultural land in Slovenia and raise almost 12% of all the livestock. Pomurje is a region with the best soil fertility in Slovenia; therefore we need to promote the development of agriculture, especially the cultivation of crops. On the other hand more attention needs to be paid to the environmental and ecological issues such as protection of groundwater. For effective implementation of these policies and programs, an

appropriate administrative support is required which includes financial assistance from the state and the European programs.

In the past 18 years, the Pomurje agriculture went through major changes. In the beginning of 1990s, this was characterized by the disintegration of Yugoslavia and by the formation of Slovenia as an independent country. The state governed agricultural holdings were privatized or nationalized. Depopulation and negative migration trends were significant. Farms were small and not specialized, with insufficient support from the government. The increase of efficiency and competitiveness of agriculture became the basic objective of the agricultural policy implemented in the 1990s. The second wave of changes came with the full integration of Slovenia into the European Union. The CAP became part of Slovene agricultural policy. Our government was relatively well prepared for the implementation of CAP, thus we can now see a positive impact on the Slovene agriculture.

Statistical data show that the Pomurje agricultural holdings are currently in the phase of intense restructuring and they are intensely adapting to the new conditions on the Slovene market and in particular on the common European market. The total number of farms is decreasing, yet the land which is utilized is increasing. The number of farms with more than 50 ha is rapidly increasing, together with their economic strength. Yet there are still some structural difficulties. One of them is the very unfavourable age structure of farm holders and their poor education. However, the agricultural institutions in Slovenia are well aware of this problem. Different institutions are organizing education for farmers of all profiles, and they subsidize young farmers to take over the farms.

Agriculture in the Pomurje region has a great potential for the development of complementary activities, ecological farming and tourism.

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STRUCTURAL CHANGES IN AGRICULTURE IN THE POMURJE REGION AFTER 1991

Summary

The year 1991 was crucial for the Slovene economy. The ownership of agricultural land was transformed from social property back to the property of private owners. Alongside this process of transition, the main political aim of Slovenia became the full integration into the Euro-Atlantic integrations. This aim was achieved in 2004, when Slovenia joined the EU and the NATO alliance.

The economic importance of agriculture in Slovenia is relatively small and its proportion in the total GDP has decreased from 4.8% in 1990 to only 1.2% in 2008. The potential of agriculture in Slovenia is limited mainly due to the moun-tainous relief and the considerable absolute share of forest and meadows. Since the independence, Slovene politicians have been aware that well planned agricultural policies are crucial for the restructuring of agriculture. Already before the joining the EU, Slovenia decided to adopt the EU-style of protectionist agri-cultural policies. The increase of efficiency and competitiveness of agriculture became the basic objective of the agricultural policies in the 1990s. With the full integration into the EU, the EU Common Agricultural Policy (CAP) became part of the Slovene agricultural policy.

The Pomurje region lies in the north-eastern part of Slovenia. It is the most agricultural and the least developed region in Slovenia. In the past, this region was characterised by the decrease of population, the aging of population and the emigration from rural areas. The abandon of the agricultural production and the decay of cultural landscape have represented significant problems even in the last 20 years. The importance of agriculture in the general economy of the Pomurje region is decreasing even more rapidly that in Slovenia as a whole. Nevertheless, the Pomurje region remains the most important agricultural area in Slovenia, with the highest rate of active population in agriculture. Due to the introduction of direct payments (subsidies) for arable crops, which was carried out by the reform of the agricultural policies in 1990s and was backed by the implementation of CAP in 2004, the share of arable land is increasing on account of the decrease of permanent grass land and permanent crops. The total number of farms in the Pomurje region has decreased from 10,058 in 2003 to the 9,794 in 2007, yet the number of utilized land is increasing. From 2003 to 2007, the share of agricultural holdings sized over 20 ha increased by 7.1%, and the share of utilized area in this size class increased as much as by 15%. Particularly the number of holdings which are specialized in field crops and in grazing livestock has increased significantly. Agricultural holdings are becoming more market oriented and specialized, so that they can be competitive in the common EU market. One of the significant problems of the Slovene agriculture in general is the unfavourable age and education structure of farmers. Over 60% of farmers in the Pomurje region finished only the elementary school or even less, and more than one third of farm owners are over 64 years old.

Agriculture in the Pomurje region is undergoing intense restructuring and techno-logical modernisation. In the future, the development will be influenced by the situation on the European markets as well by the measures of agricultural policies. Well planned rural development policies will play a very important role in the restructuring of agriculture. Agriculture in the Pomurje region has also a great potential for the development of complementary agricultural activities, ecological farming and tourism.

THE "LEADER APPROACH" - NEW DEVELOPMENT OPPORTUNITY FOR RURAL AREAS IN SLOVENIA

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UDK: 631(497.4):332.14
COBISS: 1.02 – Review article

Abstract
The "LEADER Approach" - New Development Opportunity for Rural Areas in Slovenia
Integrated rural development programmes, which are prepared with the active involvement of local citizens, have a long tradition in Slovenia. In the period 1991-2006, Slovenia introduced "Programmes of Integrated Rural Development and Village Renewal" and "Development Programmes for Rural Areas", which were quite similar to the LEADER initiative in the European Union. From the 2007-2013 programming period, the LEADER approach has been mainstreamed within the overall EU rural development policy. This means that LEADER is included in national and regional rural development programmes supported by the EU, alongside a range of other rural development axes. The main emphasis of the current paper is given to the implementation of the LEADER approach and establishment of local action groups in the 2007-2013 programming period. The paper consists of three parts. The first part presents the general characteristics of the LEADER approach and the measures which are carried out in the 2007-2013 Rural Development Programme. In the second part, an analysis of 33 Local Action Groups is described. The main focus is given to spatial-demographic characteristics, the partnership structure, and the organisation of the decision making body. The paper concludes with an analysis of 33 Local Development Strategies. We analysed the extent to which the strategic goals and priority tasks of Local Development Strategies follow the economic, social and spatial-environmental component of sustainable development.

Key words
rural development, agricultural policy, LEADER approach, local action groups, structure of partnership, local development strategies

The editor received the article on 6.2.2010.

1. Introduction

The Acronym LEADER (Laision Entre Actions de Dévelopément Rural) means the links between actions for the development of rural economy and represents an innovative approach to the implementation of rural development policy. The main objectives of the LEADER approach are the building of local capacity, new employment opportunities, diversification of activities in rural areas, stimulation of endogenous development, improvement of management in rural areas, and extension of innovation. The seven key features which distinguish the LEADER approach from classical rural development policy measures are: area based local development strategies, bottom-up approach, local public private partnerships, integrated and multisectoral actions, innovation, cooperation and networking.

From the 2007-2013 programming period on, the LEADER approach has been mainstreamed within the overall EU rural development policy. This means that LEADER is included in national and regional rural development programmes supported by the EU, alongside a range of other rural development axes. For the implementation of the "LEADER axis", the old member states must allocate a minimum of 5% of EU funding and the new member states at least 2.5%.

2. Materials and methods

The paper briefly outlines theoretical arguments for introducing the LEADER approach and examines the implementation of different support measures in the Slovenian agricultural policy. The main objectives of the paper are:

∞ To present general characteristics of the LEADER approach and the measures which are carried out in the 2007-2013 Rural Development Programme.

∞ To analyse Local Action Groups, where the main focus is given to spatial-demographic characteristics, the structure of the partnership and the organisation of the decision making body.

∞ To determine whether the strategic goals and priority tasks of the Local Development Strategies follow the economic, social and spatial-environmental component of sustainable development.

The paper is based on desk research drawing from relevant literature, legislation and strategic documents and available research studies. No modelling was conducted as part of the analysis. A critical evaluation is carried out following the established and known policy evaluation techniques.

3. Results and discussion

3.1 Previous experience with rural development community based programmes

Slovenia has quite a lot of experience in the preparation of locally based rural development programmes. The programme for Integrated Rural Development and Village renewal (IRDV) in the period 1991-2002 was nationally funded with 14,600,000 Euro and available to all the rural areas in Slovenia. It provided support for the following activities: preparation phase (analyzing development needs, elaborating the development programme, establishing partnerships, organizing training workshops); promotion of rural areas; village renewal; tourist and farm infrastructure; and developing and establishing trade marks for local products. The programme was destined for municipalities selected by a public tender published by

the Ministry of Agriculture. As a result, 140 municipalities benefited from the financing of 290 projects.

The second important national scheme was Development Programmes for Rural Areas in the period 1996-2006. With a budget amounting to 2.5 million Euro, it provided assistance for: establishing partnerships and the selection of managers; animation of local areas; and preparation of development strategies. Funding was available to groups of municipalities which intended to form partnerships, and this applied to all the rural areas in Slovenia which had similar development needs and opportunities. By the end of October 2006, 31 rural development strategies were developed and the same number of partnerships formed with the help of the programme, each partnership covering at least three municipalities. These partnerships represented 172 out of the existing 210 Slovenian municipalities.

Currently, these partnerships are being transformed into the Local Action Groups (LAGs). The main reason for setting up public-private partnership, known as Local Action Groups, is to identify and implement local development strategies. At the local level, it is the lack of interest and above all knowledge which stimulates the local population to take an active part with the preparation and implementation of local development strategies.

LAGs are set up in homogenous, socially cohesive rural territory with common historical and natural characteristics. The chosen area must have enough critical mass in terms of human, financial and economic resources for an efficient implementation of a local development strategy. The population of a LAG area must be between 5,000 and 150,000. The LAGs could be established on the whole territory of the country, with the exemption of settlements with over 10,000 inhabitants.

The LAGs operate on the basis of tripartite partnership. The partnership consists of representatives from public institutions, the economic sector and the interested civil society. The representatives of the economic sector and the civil society must have at least 50% of votes at the decision making level.

3.1 Measures under axis 4 of 2007-2013 Rural Development Programme

The main objective of the LEADER approach, or the 4th axis of 2007-2013 RDP, is comprehensive rural development on a local level. There are very different programmes and instruments for achieving this objective:
∞ Building of capacity.
∞ Creation of new employment opportunities.
∞ Diversification of activities in rural areas.
∞ Stimulation of endogenous development.
∞ Improving the management in rural areas.
∞ Extension of innovation.

Under axis 4 of the Rural Development programme (LEADER), Slovenia implements the following three measures:
∞ Running local action groups, acquisition of skills and animating the territory.
∞ Implementing local development strategies.
∞ Promoting inter-territorial and transnational cooperation.

The first measure – Running local action groups, acquisition of skills and animating the territory aims at encouraging the rural population to join the local action groups and to acquire qualification for running local action groups. The animation activity aims at promoting the LEADER approach, the local action groups, and the local development strategies in the selected area. The maximum aid rate for running LAGs, skills acquisition and animation of the territory amounts to 50 percent maximum of the eligible costs and may not exceed 20% of the total public expenditure of the local development strategy.

The second measure – Implementing local development strategies aims at the implementation of projects under the LEADER principles based on the local development potentials and reflects the needs of the local population. Additionally, it contributes to an improved quality of life and job creation in the countryside. Innovative projects which are compliant with the local development strategy, implemented in the areas with an operating local action group, should be selected. Local development strategies which were confirmed in a public tender are eligible for support under this measure. Only a LAG with a confirmed local development strategy can sign a contract with the MAFF, setting out mutual relations and indicative resources for all purposes of the measures under axis 4. Projects based on their own standards and criteria set by the LAG or its decision-making body are selected and submitted to the LEADER Office for confirmation.

The LEADER Office checks whether the selected projects are compliant with the local development strategy and within the amount of allocated financial resources for each LAG. The projects must contribute to at least one of the priorities of the 2007-2013 RDP. In addition to that, the implementation and financing of the projects must involve also private partners. Eligible costs consist of material costs, costs for obtaining the documentation and approvals, project promotion costs and other general costs directly related to the preparation and implementation of projects.

Promoting inter-territorial and transnational cooperation is the last measure under axis 4 and aims at grouping rural areas with similar development opportunities and needs to jointly implement development projects, exchange knowledge and experience and thus contribute to a more effective implementation of the local development strategies. Eligible costs consist of material costs arising in the implementation of the cooperation projects, as well as in the exchange of experience and information actions between the cooperating LAGs. Support is granted only for expenses related to the areas within the Community.

3.3 Main characteristics of Local Action Groups (LAGs)

The first Tender for Selection and Confirmation of Local Action Groups Eligible for Implementation of the LEADER Approach was published at the end of February 2008 and 14 Local Action Groups with elaborated Local Development Strategies already applied by the end of May 2008. The second tender was published in September 2008 and it closed with the confirmation of another 19 LAGs. The final number of LAGs in Slovenia in the 2007–2013 programming period is thus 33 and they cover an area of 19,739 km^2 with 1,900,748 inhabitants within 199 municipalities, which is almost 95% of all the Slovenian municipalities. The number of municipalities in LAGs varies from 1 to 14.

The average size of the Local Action Groups is 598 km^2 with 57,600 inhabitants. The

biggest LAG covers 1,812 km^2, which is almost 27 times more than the smallest LAG covering an area of 65 km^2.

The legal forms of LAGs vary. The most frequent form is Association and Public Institute. Other legal forms are non-profit Private Company, Cooperative, Societies and Task Force Group.

The structure of partnership of LAGs varies widely. The average partnership consists of 33% members from the public sector, 29% from the economic sector and 39% from the private sector. The number of partners is between 14 and 129. Municipalities still have a predominant role in the public sector (50%). Among other institutions from the public sector are the Agricultural Extension Service, development agencies, schools, Social Work Centres etc. Agricultural enterprises and farms represent 40% of the partners from the economic sector. The other 60% consist of different companies that are active in the area of the LAGs. The private sector is the most heterogeneous. It combines individuals, different associations and nongovernmental organizations (NGOs). The most common groups are Farm Women Associations, Rural Youth Associations and different tourist and cultural associations.

The composition of the decision making body (Administrative Board) differs among LAGs. It is important that private partners and associations have at least 50% of the votes at the decision-making level. In some LAGs this share is even higher.

3.4 Financial resources for the LEADER programme in Slovenia

Nearly 34 million Euros of public funds will be spent for the implementation of the LEADER measures in the 2007-2013 programming period. 20% of the funds are devoted to the running of Local Action Groups and 80% to the implementation of the projects. Annual financial resources for the running of Local Action Groups are distributed among the LAGs on the basis of the area size and the number of inhabitants of the LAG area. Resources for the implementation of the projects of each LAG are distributed as follows:

∞ 40% based on the assessment of local development strategies.
∞ 30% based on the area size (km^2).
∞ 30% based on the number of inhabitants.

The resources are adjusted using the Development Deficiency Index (DDI) of the region, which is a type of financial adjustment factor for differentiating LAGs according to their regional allocation. It takes into account the regional characteristics and socio-economic situation of the Slovenian regions and is used as the basis for funding direct and indirect regional incentives. It was introduced to Slovenia's regional policy as part of the National Regional Development Strategy adopted in 2001.

Fig. 1 shows the DDI in Slovenian statistical regions. There is only one region (Central Slovenia) where the DDI is lower than 50. The majority of regions are classified as DDI 2 and DDI 3 regions (index between 50 and 150), and only in one region (Pomurska) the DDI is higher than 150.

The LAGs in Slovenia are classified in four groups or classes. Among 33 Local Action Groups, 14 are classified as class 3, 13 as class 2, 4 as class 4 and 3 as class 1.

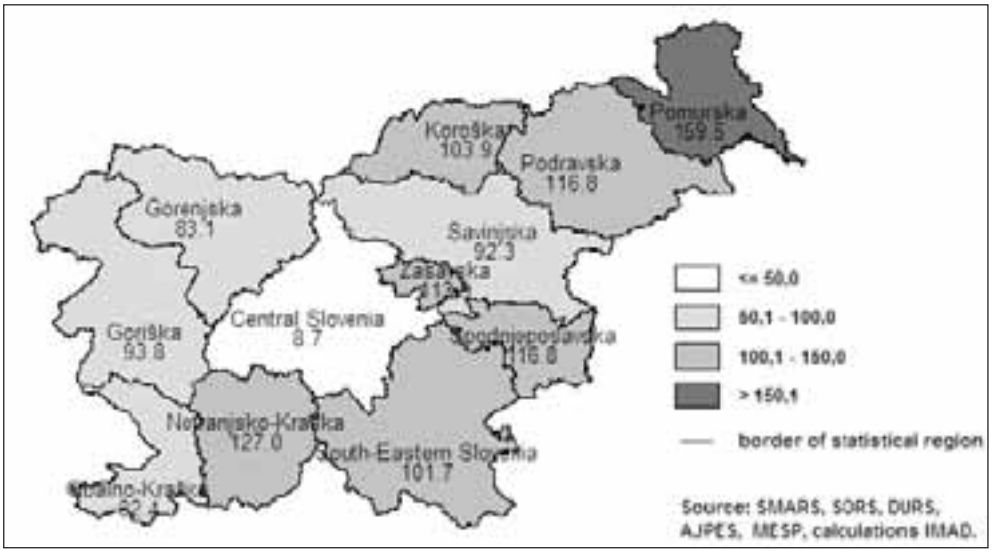

Fig. 1: Development Deficiency Index of Slovenian regions.

The Development Deficiency Index also gives some basic economic, social and environmental information about the developmental level of the regions where LAGs are situated. Namely, it is a kind of composite index consisting of eleven indicators which belong to one of the following three groups:

∞ Indicators of development (GDP/capita, taxable earnings per capita, value added of commercial companies per employee and employment-population ratio).
∞ Indicators of deficiency (registered unemployment rate, ageing index, share of population using the public sewer system).
∞ Indicators of developmental opportunities (number of years of formal education, share of NATURA 2000 areas in the total area, density of settlement and labour migration index).

Among the indicators of development, GDP per capita is the most frequent indicator for the assessment of development. The regional distribution of GDP per capita (2006) shows great development differences between LAGs in different DDI groups. The LAGs with DDI 1 have a GDP per capita significantly above the national average (144%). They are more urbanised and have an above average share of the services sector in the structure of the GDP. The least developed are LAGs in the DDI 4 region with only 2/3 of the Slovenian average GDP per capita.

Tab. 1: Indicators of development according to DDI regions.

	GDP/capita (USA $)	Taxable earnings per capita (%)	Labour productivity (%)	Employment rate (%)
Slovenia - total	15,446	100.0	100.0	60.4
LAGs in DDI 1	22,286	121.5	114.5	63.0
LAGs in DDI 2	14,177	98.0	93.5	60.6
LAGs in DDI 3	12,638	93.7	101.7	61.0
LAGs in DDI 4	10,223	75.5	71.2	55.4

Source: UMAR (Institute of Macroeconomic Analyses and Development of RS) 2006.

Taxable earnings per capita are based on all taxable earnings of the population and indicate the economic strength of the area rather than its economy. It is mainly dependent on the registered salaries and pensions of the selected area. This indicator is indirectly related to the degree of unemployment and the share of rural population. Taxable earnings per capita have not changed significantly in the regions in the recent years. An above average income tax is noted only in LAGs with DDI 1. According to the data from 2006, LAGs with DDI 4 have only 75.5% of the Slovenian average taxable income per capita.

Value added of commercial companies per employee is an indicator which shows labour productivity of the companies. In the year 2007 it was the highest in Central and South Eastern Slovenia. Labour productivity is the lowest in the LAGs with DDI 4 amounting to 71.2% of the Slovenian average.

The employment-population ratio or employment rate represents the share of working population which is employed. Full employment is the goal of different strategic documents and a generator of development. This is the reason why it is one of the indicators for the calculation of the DDI. According to the data for 2007, LAGs with DDI 1 have the highest employment population ratios, and LAGs with DDI 4 have the lowest population ratios.

The second group of indicators represents indicators of deficiency. The first indicator is the registered unemployment rate. Together with the GDP per capita, this is the most frequently used indicator, which shows underdevelopment and structural problems of the regions. In 2007, the registered unemployment rate was the highest in LAGs with DDI 4 and at 15.7% exceeded the Slovenian average by 74%.

The second indicator within this group is the ageing index. This index represents the ratio between the old population (65 years and older) and the young population (0-14 years). Due to increased life expectancy and lower birth rates, the number of the old population is increasing. In 2003, the average aging index in Slovenia exceeded 100 for the first time, which means that the number of older people was bigger than the number of young people. According to the data for 2007, the ageing index was above 100 in all the Slovenian regions. It was the lowest in the LAGs with DDI 1 and the highest in the LAGs with DDI 4.

Tab. 2: Indicators of deficiency according to DDI regions.

	Registered unemployment rate (%)	Ageing index (%)	Connection to the public sewer system (%)
Slovenia - total	9.4	115.1	49.9
LAGs in DDI 1	7.2	110.1	66.9
LAGs in DDI 2	8.9	118.1	46.3
LAGs in DDI 3	9.3	114.9	42.4
LAGs in DDI 4	15.7	121.2	31.2

Source: UMAR (Institute of Macroeconomic Analyses and Development of RS) 2006.

The population's connection to the public sewer system is the third indicator, which shows the ratio between the total population and the population connected to the public sewer system. According to the data available from the 2002 census, the lowest ratio is again found in the LAGs with DDI 4, and the highest in the LAGs with DDI 1.

The third group consists of Indicators of developmental opportunities. The first indicator within this group is the number of years dedicated to schooling, which is the most comprehensive indicator showing the educational level of the population. It is available only for the census years, which is its greatest disadvantage. The educational level of the population, measured by the average number of years dedicated to schooling, is quite uniform between the LAGs. It is the highest in LAGs with DDI 1 in the Central Slovenia (11.3 years), and the lowest in the LAGs with DDI 4 (10.0 years), which is 94% of the Slovenian average.

Tab. 3: Indicators of development according to DDI regions.

	Years of formal education	Share of NATURA 2000 areas (%)	Population density	Labour migration index (%)
Slovenia - total	10.6	35.5	99.1	100.0
LAGs in DDI 1	11.3	21.6	196.9	121.7
LAGs in DDI 2	10.5	32.8	91.7	95.8
LAGs in DDI 3	10.2	38.1	77.8	83.9
LAGs in DDI 4	10.0	43.5	91.2	90.3

Source: UMAR (Institute of Macroeconomic Analyses and Development of RS) 2006.

The indicator "Share of NATURA 2000 areas in the total area" shows the ratio of NATURA 2000 areas between the regions. Slovenia has designated 286 NATURA 2000 sites; 260 according to the Habitats Directive and 26 according to the Wild Birds Directive. The sites in total encompass 36% of the country, which is the highest rate in the EU. According to this indicator, the situation is quite the opposite, as the LAGs with DDI 4 have the highest share and the LAGs with DDI 1the lowest.

The population density is an indicator which shows under-population or overpopulation in the LAGs. Some LAGs have sparsely inhabited areas, which require large investments in public infrastructure to ensure quality housing conditions. According to the data from 2006, Slovenia has 99.6 inhabitants/per km^2. The most sparsely inhabited regions are some LAGs in the Inland-Karst region (DDI 3). The only LAGs with twice the Slovenian average density are in the Central Slovenia region (DDI 1) with 196 inhabitants/ km^2.

The labour migration index is the last index used for the calculation of the Development Deficiency Index. The labour migration index represents the number of persons in paid employment in a certain territorial unit by workplace as a proportion (%) of the number of persons in paid employment in the same territorial unit by residence. According to the data for 2007, the LAGs with DDI 1 have the highest labour migration index at 121.5%. In all the other LAGs the labour migration index is below the average, which means that there are less working places compared to the working population.

3.5 Local development strategy, strategic goals and priority tasks of LAGs

The local development strategy (LDS) is based on the endogenous development potentials of the selected area. The main goal of the strategy is to create long term development policies (at least for the whole 2007-2013 programming period). In the LDS, development problems and potentials which are based on detailed analysis of the situation in the area must be clearly identified. Every LDS must contain:

∞ Characteristics of the area (geographic, economic, demographic, sociological, and description of previous actions).
∞ SWOT analysis (development potential of the area).
∞ Development vision of the area (chosen theme and goals, priorities, target groups, expected results).
∞ Operating strategy (bottom-up approach, time schedule, innovative actions, transferability of actions and activities, sustainability of the strategy).
∞ Harmonisation with other development programmes.

It is important that strategic goals contribute to the solution of the development problems of the LAG area. The strategic goals must be sustainably oriented, which means that they need to follow economic, social and spatial-environmental aspects of development.

As can be seen in Fig. 2, the economic aspects of development are the most represented. Nearly half of the goals are oriented predominantly towards promoting economic development. More than 70% of the strategies follow all the goals of sustainable development, and the other 30% follow only some of them.

The development vision of the local development strategy which is defined in the strategic goals is also reflected in the priority tasks of the LAGs. The priority tasks should cover all the economic sectors. They have to be well balanced and long term oriented.

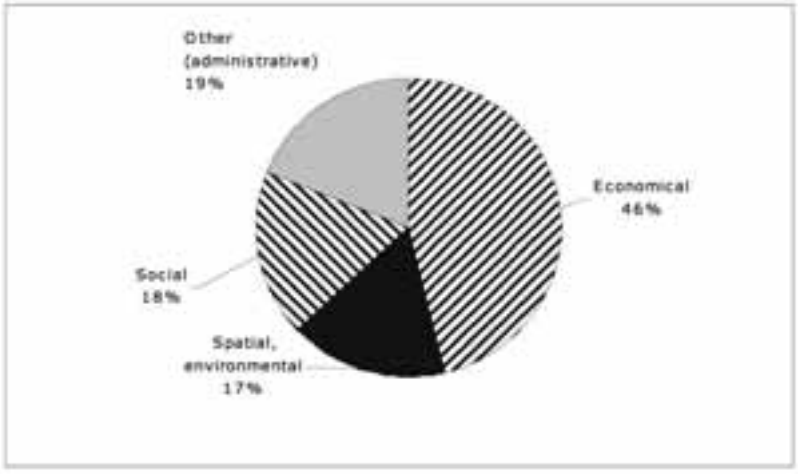

Fig. 2: Strategic goals of Local Development Strategies.
Source: Analysis of 33 Local Development Strategies, Agricultural Institute of Slovenia 2009.

Nearly 60% of the priority tasks are oriented towards the three most important economic sectors of rural areas: agriculture, tourism and small enterprises. As can be seen from Fig. 3, the most important priority tasks are increasing of production and marketing of local products.

4. Conclusions

We may conclude that the established Local Action Groups in Slovenia are very

heterogeneous as regards their size, structure of partnership and administrative structure. All the LAGs strictly follow a "bottom- up approach". Municipalities still represent the majority of public institutions in partnerships, which is not surprising, for they have gained a lot of experience with similar programmes in the previous years.

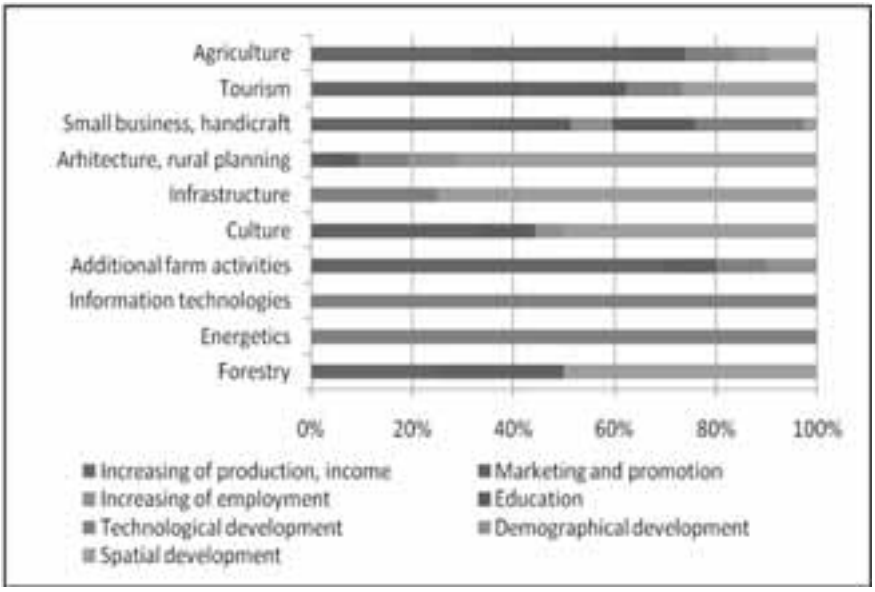

Fig. 3: Priority tasks of the Local Development Strategies.
Source: Analysis of 33 Local Development Strategies, Agricultural Institute of Slovenia, 2009.

The local development strategies in most cases consider all the aspects of sustainable development. It needs to be stressed that, with regard to priority tasks, more attention should be given to social and spatial issues. The building of local capacity, the increased funds for the implementation of Local Development Strategies and the inter-sectoral partnerships represent development opportunities for rural areas in Slovenia.

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THE "LEADER APPROACH"- NEW DEVELOPMENT OPPORTUNITY FOR RURAL AREAS IN SLOVENIA

Summary

The LEADER approach, which is implemented in the framework of the Rural Development Programme of the Republic of Slovenia 2007-2013 (RDP), represents some kind of novelty in the Slovenian agricultural policy. From 2007 on, the LEADER approach has been mainstreamed within the overall EU rural development policy. This means that LEADER is included in national and regional rural development programmes supported by the EU, alongside a range of other rural development axes.

The main objective of the LEADER approach, or the 4^{th} axis in 2007-2013 RDP, is comprehensive rural development on a local level. 33 Local Action Groups have been formed, which cover an area of 19.739 km^2 with 1.900.748 inhabitants in 199 municipalities, which is almost 95% of all the municipalities in Slovenia. Nearly 34 million Euros of public funds will be spent for the implementation of the LEADER measures in the 2007-2013 programming period. 20% of the funds are devoted to the running of Local Action Groups and 80% to the implementation of projects.

The established Local Action Groups in Slovenia are very heterogeneous as regards their economic, social and environmental dimensions. The analyses of DDI on the level of LAGs show significant differences between the most and the least developed LAGs and relatively smaller differences among other LAGs. LAGs in Central Slovenia are strongly in the lead, while the LAGs in the Pomurska region lag far behind those with the highest DDI. Other LAGs can be classified in two groups, the first one having a DDI lower than 100 and the second one having an index higher than 100. This classification of LAGs according to the DDI is useful in practice for classification purposes and as a criterion for the allocation of development funds.

The local development strategy (LDS) is based on the endogenous development potentials of the selected area. The main goal of the strategy is to create long term development policies (at least for the whole 2007-2013 programming period). In the LDS, development problems and potentials which are based on detailed analysis of the situation in the area must be clearly identified. The strategic goals must be sustainably oriented, which means that they need to follow economic, social and spatial-environmental aspects of development.

Nearly half of the strategic goals in the 33 analysed local development strategies are directed predominantly towards promoting economic development. More than 70% of the strategies follow all the goals of sustainable development and the other 30% follow only some of them.

The development vision of the local development strategy which is defined in the strategic goals is also reflected in the priority tasks of the LAGs. Nearly 60% of the priority tasks are oriented towards the three most important economic sectors of rural areas: agriculture, tourism and small enterprises. It needs to be stressed that, with reference to priority tasks, more attention should be given to social and spatial issues.

FIGHTING FOR SURVIVAL - PLANNING AND DEVELOPMENT ISSUES IN TWO EUROPEAN RURAL BORDER MID-MOUNTAIN REGIONS

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UDK: 711.3(4-23)
COBISS: 1.02 – Review article

Abstract
Fighting for Survival - Planning and Development Issues in two European Rural Border Mid-Mountain Regions
The main aim of this article (the paper is included in the context of a research project funded by the Spanish Ministry of Science and Technology – code: SEJ-2006-15331-C02-02) is to further our understanding of two mountain rural areas occupying two distinct geographical environments: the Spanish Pyrenees and the Austrian Alps. I am particularly interested in examining the management practices that have been adopted as part of the public policies implemented in two mid-mountain regions - areas that do not have the same possibilities for development as those enjoyed by high-mountain environments. These places suffer structural problems resulting from low levels of agricultural competitiveness, accompanied by factors that impinge negatively on land use (which, in turn, condition their landscape management practices). Finally, I reflect on the differences between the two regions and their future possibilities.

Key words
marginal mid-mountain rural areas, spatial planning and mountain policy, agrarian landscape, Spain, Austria, Pyrenees, Alps

The editor received the article on 8.2.2010.

1. Introduction

1.1 General approach and clarification of concepts

The article aims, first, to identify the similarities and differences between two mid-mountain territories located in two different parts of the European continent: the Pyrenees and the Alps. In particular, I seek to examine the different processes by which public policies of a spatial nature have been implemented to address the specific concerns of mountain areas: territorial planning and development, on the one hand, and landscape management via the adoption of sectoral policies, on the other. I seek to find answers to the three questions posed in my research which structure the results presented below:

∞ How have these two areas evolved in confronting the structural problems that they have suffered and which they continue to suffer?
∞ What have been the official government responses (implemented in their regional policies) in seeking to overcome these challenges?
∞ What has been the impact of this regional dynamics and of the associated political discourses on the landscape?

Two theoretical premises concerning two key concepts in the article must be clarified. The first is concerned with the idea of *mid-mountain areas*. This concept is used widely in academic contexts, and is used here to designate those mountain areas that have been marginalised to the extent that they do not receive any specific attention (unlike the so-called *high mountain* areas, which are frequently the object of symbolic representations in both cultural and political discourses). In the Spanish academic context, the concept has traditionally been associated with physical geography, but today it has been incorporated within other approaches including landscape dynamics (Lasanta 1997). In German geography the term *Mittelgebirge* is used, and in Alpine contexts reference is made to the *Alpine margin* (*Alpenrand*: Lichtemberger 2000) to contrast with the nucleus of the mountain range.

Second, the notion of *landscape* that I adopt has a cultural focus, in that the term is used to designate "a set of objective elements (physical and tangible) contemplated by different subjectivities (persons or individuals)" (Ojeda Rivera 2004, 274). I use this idea as a means of examining complexity, where landscapes "are natural and cultural footprints objectively present in each region (which we can see and walk over) and subjectively in each perception (which we can value and connote)" (ibidem 2004, 274).

Due to the complexity of the above questions, the methods adopted comprise various techniques aimed at achieving the proposed objective. Among these techniques the most important is field work (including interviews), underpinned by the premise of maintaining contact with the regions being studied. This approach reduces the difficulties inherent in any comparative study. Undertaking a study of two extremely different areas always involves additional complexities which relate to: seeking a correspondence between the terms adopted in the two academic contexts, which are distinguished by different visions and perspectives; and constructing a discourse that can ensure an appropriate balance in dealing with each area of study.

1.2 Geographical summaries of the case studies

As it has already been mentioned, two territories are analysed: la Terreta, a valley situated in the historical region of la Ribagorça, straddling the territories of Catalonia and Aragon), and die Metnitzer Berge in the easternmost Alps (the Niedere Tauern group, straddling the provinces of Styria and Carinthia).

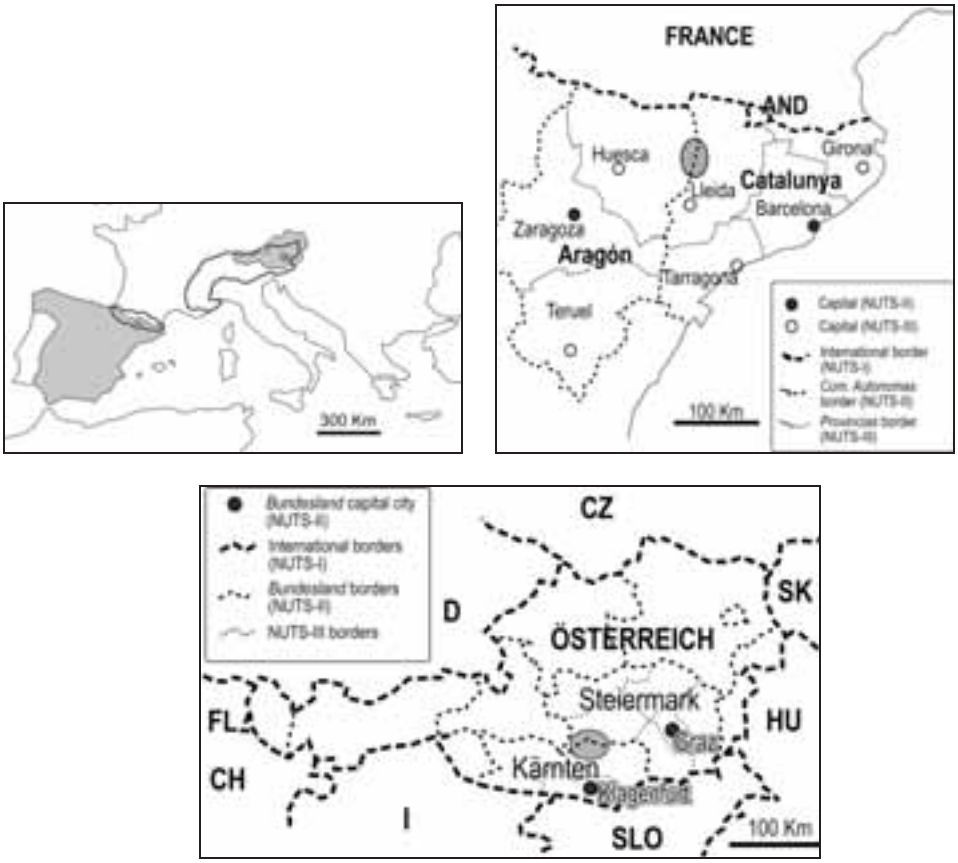

Fig. 1: Study cases' geographical location in Europe and location according to their administrative context: La Terreta in Spain, Metnitzer Berge in Austria (highlighted with circle).
Source: Author

The two territories are located far from the main axes of their respective mountain ranges. Not only are they physically distant, but they can also be considered to be located far from the geographical and historical elements around which the territory has become organised. In the Terreta, as in all of Spain's central Pre-Pyrenees, the traditional way of life has centred on agrarian practices organised in family units, in a physical backdrop characterised by a highly broken relief. By contrast, the peripheral location of the Metnitzer Berge (together with its crystalline nature) has resulted in the development of a sizeable forestry economy where individual subsistence activity has combined with a dominant role played by the large landowner.

The vicissitudes of the last century and a half in Europe have exacerbated the marginal nature of both regions. I refer, specifically, to their transfrontier character, with both areas straddling two historically divided units – the regions of Aragon and Catalonia in the first case, and those of Carinthia and Styria in the second – with borders that have tended to remain or to gain importance in the recent decades, with the consolidation of the modern Spanish and Austrian states.

The relief features of the two spaces, however, highlight a fundamental difference. While the Terreta forms a section of a valley divided administratively along the river (la Noguera Ribagorçana, the axis around which the area is structured), the Metnitzer Berge constitutes an upland area separated by political-administrative borders that traverse, virtually always the line formed by the highest points. In addition, it is not possible to equate a historically homogenous region (la Ribagorça) against two areas delimited quite clearly along a geographically defined watershed (a division that has contributed to the establishment of two differentiated communities).

Be that as it may, the marginal nature of the two regions is beyond question, if we bear in mind the historical processes that have given rise to their current situation. Historically, the inhabitants of the Terreta have predominantly exploited the valley's resources, while maintaining a series of relationships in equilibrium with the surrounding territories (Tremosa 1991). Today, the density of its population is less than 2 inhabitants/km^2 (Sancho 2008), and it has lost 83% of its population in the last 70 years. Agrarian and forestry practices are largely residual, and the possibilities for reform are complicated.

The Metnitzer Berge has also experienced far-reaching changes with the introduction of capitalism to the Alps. As a consequence, this section of Gurktaleralpen has an ageing demographic structure (more than 20% of the population is over 65 years old), together with a (slow, but progressive) loss in overall population (10% in the last 140 years) (based on census - http://www.statistik.at/blickgem). Moreover, the difficulties of jump starting an economy that presents little added value, and an agrarian territory in direct competition with forestry land uses, are self evident. This tendency is recognisable above all on the southern slopes, a valley that ends in a cul-de-sac (Metnitztal, in Carinthia); but less so in the north (Oberes Murtal, the high Mur valley in Styria).

2. Results

The results of the research are organised in three sections. First, I analyse the most important territorial changes undergone by the two areas. Then, I turn my attention to the field of public policy with the greatest repercussions for the territory: local and regional planning instruments and development strategies. And finally, I link together the main elements in the institutional discourses concerning the landscape, based on public intervention in mountain policy and the promotion of the territory for tourism.

2.1 Peripheral, rural and mountainous regions in Europe. Geohistorical background

In the context of the marked changes experienced by Europe's mountain regions over the last 150 years, the case studies analysed here illustrate two examples that could be classified as "losers" in these processes.

The Terreta is an example of an extensive mid-mountain territory (in the Pre-Pyrenees, as opposed to the higher altitude central axis of the mountain range) that began to undergo major changes around the mid-19th century (1850). At that time, the point of the greatest prosperity coincided with the impact of measures, taken by the new liberal state, in particular the process of disentailment, on the territory. With the objective of making a financial profit, attempts were made, through privatisation, to incorporate into the market economy areas of land for farming or forestry, which until that time had been in the hands of the Church or local corporations. However in many places, including the Terreta, these measures represented no more than a nominal change in ownership (the lands were not auctioned off, and a formal appropriation by the local residents of the municipality occurred).

Fig. 2: Landscapes of abandonment: Reduction of cropland and settlements in Sapeira (la Terreta).
Source: Author.

Some studies (Sabio Alcutén 1997) associate these circumstances with the origins of decline in Spain's mountain territories. In the Terreta, demographic pressure led to crop rotation in the shrubby borders of the marginal land won back from the woodland, which was characterised by very poor soils; and in a Mediterranean context such as this, the gradual disappearance of the forest was inevitable. After 1950, when the whole of the Ribagorça region was integrated into the state economic system, a rapid demographic decline occurred that has resulted in the present situation. Only in the last decade has the arrival of new outsider groups (with new ways of thinking and alternative styles of living, initially linked to the so-called neo-rural phenomenon (Nogue 1988) arrested the rate of social and economic decline.

The case of Metnitzer Berge is illustrative of the evolution undergone by the eastern sector of the Austrian Alps, a sector with a markedly different dynamic from that of

the western one (Lichtemberger 1965). Here, the forestry economy has historically played a key role. The production of timber was closely tied to the domestic production of iron ore in the region's forges, until its decline after 1870 (Soukup, Türk 2003). This crisis led to an initial acceleration in the zone's depopulation rate (a process which, however, had an earlier origin), as well as to the historical process of the introduction of extensive farming and the progressive disappearance of small farms throughout this Alpine region.

Fig.3: Landscapes of abandonment: Expansion of the forest over alpine pastures in the Metnitztal.
Source: Author.

Around this date, in Metnitzer Berge and throughout the Eastern Alps in general, there was a gradual increase in the forested area; a process that was a response to the same root cause (reforestation programmes for timber production) championed by different protagonists at two different points in history. During the period known as *Gründerzeit* (between the second half of the 19th century and the interwar years), the pressure groups in the area consisted of the timber industry and the large landowners (both from the nobility and Church). By contrast, after the WW2 (and particularly after the 1970s), it has been the action taken by the local farmers (and, hence, small landholders) that has permitted the expansion of the forested area (Čede 1998). As a result, the forests have invaded the territory of Metnitzer Berge: from having been limited quite strictly to areas in the shade, they have erased areas of pasture and croplands, or even today's permanent settlements.

2.2 Regional planning at the frontier

In this section I specifically focus on the mechanisms of cooperation that the regional planning tools include in an attempt to overcome the disruptions caused by the regional frontier. In doing so, I concentrate on regional plans and local development strategies.

2.2.1 Regional scale

The internal organisation of the Spanish and Austrian states has evolved along similar lines: both originate from a centralist tradition, and both have today become decentralised states: adopting a federal model in Austria (Bätzing 2008), and the so-called "model of the autonomies" in Spain (Serrano Martínez 2005).

This has led, as far as regional planning is concerned, to the adoption of these powers by the regional units (NUTS-2 regions): "Bundesländer" in Austria and "Comunidades Autónomas" in Spain. I should, however, point out the fundamental difference that determines the different application of each of these models. Spain is a state which does not have any primary legislation governing its regional planning to which the autonomous communities are subject (Benabent 2005), nor has it a tradition of inter-territorial cooperation (Romero González 2005). By contrast, Austria does have mechanisms and institutions responsible for the interstate coordination of regional planning among the three main actors undertaking this function (the Federation - *Bund*, the federal states and the municipalities): this role is fulfilled by the Austrian Regional Planning Conference (Österreichische Raumordnungskonferenz).

Clearly, the differences in scale hinder the possibility of placing the two Comunidades Autónomas and their mountainous regions (subject to their own planning tools) at the same level as those of the two Bundesländer and each of their planning regions. However, I present a series of features that might serve to sum up the state of regional planning in both study areas:

∞ In the Spanish case, the fundamental difference is that Catalonia can call on its instrument (Pla Territorial Parcial de l'Alt Pirineu i Aran) that includes elements of physical planning (with cartographic documents that reflect the various land use categories); Aragon, on the other hand, only has recourse to directives (Directrices Parciales de Ordenación del Territorio del Pirineo Aragonés), which while legally binding, require subsequent development at a much more detailed scale. Beyond these differences, both models are similar in conception: starting from a general document, they divide their territory into units which, later, receive more detailed attention.
∞ In the Austrian case, Styria, like Catalonia, also employs a physical planning instrument and a "cascade" strategy (Styria depends on the Landesentwicklungsprogramm) on which each of the Regionale Entwicklungsprogramme also depend. This is not the case of Carinthia, which does not yet have a general development strategy, but rather it possesses a strategy (without physical planning) for each development area or region. (Note: In Carinthia the Strategie zur Landesentwicklung –STRALE! K is currently being implemented, and which the various Regionale Entwicklungsleitbild are joining.)
∞ Therefore, parallels can be drawn between the territorial planning models of Styria and Catalonia, on the one hand, and those of Aragon and Carinthia, on the other.
∞ Finally, while in Austria the development instruments at the district level (*Bezirk*) are regional in nature (the study area is divided between the districts of Murau (Styria) and Sankt Veit an der Glan (Carinthia)), in Catalonia and Aragon, however, the district (*comarca*) development plans are legally part of the local system. (Note: In the case of the Catalan sector of la Terreta, the Pla Comarcal del Pallars Jussà applies; the Aragonese sector must be governed by the *comarcal* strategy of the Comarca of La Ribagorza (still to be applied)).

In terms of territorial cooperation between government entities at the regional level, an illustrative example took place in Austria under the appellation "Lungau-Murau-Nockgebiet Region", created in 1978; it was a working project conducted jointly by the *Bundesländer* (Salzburg, Styria and Carinthia) and was transversal in nature (Note: Verbindungsstelle der Bundesländer beim Amt der Niederösterreichische Landesregierung 1979). At the end of the 1990s, however, the initiative was frozen (the last meeting was held in 1997). Although within various authorities there is talk of reviving the meetings, it is significant that there is no reference to it in the latest ÖROK report (ÖROK 2008). All the municipalities of the Metnitzer Berge were included in the region.

In the Spanish case, no precedents exist for regional cooperation at the trans-frontier level in the neighbouring zones of Aragon and Catalonia. This situation is repeated throughout the state owing to the lack of initiative taken by the Central Government in generating transversal policies, and because of the centrifugal forces that derive from the establishment of regional governments.

2.2.2 Local scale

Regarding the cooperation at local level, two aspects should be stressed. First, in the context of Spain, a large number of municipalities (most of which are in mountain zones) do not have their own planning tools (PGOU or POUM - Plan General de Ordenación Urbanística Municipal and Pla d'Ordenació Urbanística Municipal); which is not the case in Austria, where every municipality has its Flächenwidmungsplan or urban plan. Second, the two case studies show certain contradictions in their municipal divisions: in the Terreta, this is of fundamental importance for much of its territory; in the Metnitzer Berge, by contrast, there is one specific instance that affects a given village.

Associative solutions allow the town halls to share various aspects of their public management obligations – those for which they are unable to take responsibility on their own. This is the case of the associations of municipalities (the so-called Mancomunidades de municipios) in Aragon or, at another level, of the districts in Catalonia. The subsequent establishment of the comarcas has meant the disappearance of many of these associations. The former Mancomunidad de Municipios de la Ribagorza Oriental, including the municipalities of the aragonese Terreta has been recently suppressed 7 years after the creation of the wider Comarca de la Ribagorza. The Catalan *comarques* are entities that developed out of the free association of municipalities. Moreover, their significance extends much further than any associative formula. In any case, the *comarca* provides certain public services jointly (Note: like refuse collection in the *comarca* of Pallars Jussà, in our case study). Today, these procedures are evolving towards other areas of activity, which include (in addition to administrative matters and those of primary services) joint strategies for regional development.

The most intensive work in this field is being conducted in Styria, through the entity of the "little region" (*Kleinregion* - all the municipalities in the study area belonging to this *Land* form part of a *Kleinregion*). These are associations of municipalities with a fairly well-established history (the first dating from 1981) that allow, in addition to the pooling of services, the sharing of local planning strategies. The solution is also present in Carinthia, albeit for the time being, on a more limited scale. It should be remembered, however, that these initiatives fall outside what is strictly speaking the

task of regional planning, being more closely related to strategies of regional development. In Carinthia, this policy has encountered additional obstacles in large municipalities resulting from mergers of the 1970s (Brunner 1991).

Returning to the Terreta, a hitherto untried initiative in the area is worth highlighting. It involves an association of municipalities of Ribagorça (*Associació pel Desenvolupament de la Ribagorça Romànica*) lying in both autonomous communities, created *ex professo* to manage a pilot project, developed by the State Government (Ministry of Agriculture) within the framework of the development of a new law affecting rural territories (Sustainable Development of the Rural Systems Act - Ley 45/2007, de 13 de diciembre, para el Desarrollo Sostenible del Medio Rural).

Yet, relations between the two sides of the frontier are marked by permanent shortcomings. One example of this is the management of protected spaces, which is being undertaken independently by each municipality without any form of collaboration (although the mentioned planning documents specifically refer to the need to coordinate the management tasks).

The systems developed for undertaking coordinated tasks between Styria and Carinthia in the Metnitzer Berge are also not operating optimally. The most significant example of this is to be found in the project designed to build "thematic" highways, in this case centred on the world of timber production. The so-called *Holzstraße* involves a basically transversal policy (the idea being to link tourism with the timber industry and environmental measures). But, precisely for this reason, what stands out is the fact that there are two different thematic highways (one in each *Bundesland*) without any obvious connection between them.

2.3 Landscape discourses as expressed in sectoral policies

Certain policies of a sectoral nature can have a profound impact on the landscape, but they also express, indirectly, the way in which the society conceives the landscape. Below, I offer various interpretations of these facts, as well as of the discourses that underpin them. In so doing, I shall concentrate on mountain policies and, explicitly, on the management of agrarian activities and tourism promotion.

Albeit the matter of mountain agriculture is longstanding in several parts of Europe, there are major differences concerning the way in which public authorities have handled the issue in the two study areas here as regards. In Austria, the state has historically implemented a strategy clearly aimed at protecting mountain agriculture (Lichtemberger 1965; Hovorka 2001), which has decidedly not been the case in Spain. The former organises farming into four categories according to which state subsidies are awarded; by comparison, the latter (Note: both at the level of the state and the *Comunidades Autónomas*) there is a marked absence of general, systematic measures (which means it is very difficult to establish what the main initiatives have been in this field).

At the present time, the promotion of tourism represents the main line of discourse in mountain areas. In this regard there exist a number of largely parallel initiatives in both case study areas, determined by a series of features: an absence of any tourist tradition due to the impossibility (or, in the Austrian case, the slight possibility) of developing winter sports activities; and, as a result of this, the

attraction of certain features within the territory (associated with its natural or cultural components), which serve as the lynchpins for strategies of tourism promotion.

In these terms, in the Terreta (specifically in the Catalan part) a tourist product has been developed based on its wildlife resources which exploits the relative anonymity of the area to attract alternative tourism (ecotourism, bird watching). On the other hand, the councils belonging to Aragon are also exploiting their architectural and archaeological resources in establishing a tourist product that is built more on the sum of its individual parts (Romanesque architecture, museums and interpretation centres) than any particular internal coherence. Likewise, some efforts have been made in the Metnitzer Berge to promote products such as former pilgrim routes, its gastronomy and the aforementioned timber industry. The strategy to promote tourism, however, seems to be well consolidated: at the regional level a number of tourist labels have been developed (like the "holidays region" – *Urlaubsregion*), which employ a joint strategy.

Fig. 4: Institutional awareness upon territory: "Urlaub am Bauernhof" near Metnitz.
Source: Author.

Rural tourism plays a particularly significant role, because it is called to be the element around which the economic foundation of these rural territories will be integrated. This form of tourism is common in both cases, albeit with marked differences in its implementation. The situation in the Metnitzer Berge shows that the Austrian strategy of the *Urlaub am Bauernhof* ("holidays on the farm") is well established, even in those places that face the greatest difficulties in setting it up. The success of the model lies in two closely related factors: the fact of having ensured that the initiative is being taken by the local populace, and of having established a national network that guarantees good quality. In the Terreta, although recently the number of rural tourism establishments has increased markedly, there is no truly common strategy for promoting these establishments,

nor for certifying their services. The connection between the owner and the customer is limited to the provision of accommodation; unlike in Austria, where each house (which remains a working farm) normally offers activities related to farming.

Fig. 5: Institutional awareness upon territory: forgotten and almost disappeared village (Escarlà, La Terreta).
Source: Author.

All these characteristics point to the existence of major differences in how a landscape is conceived from one place to another. For example, within several of the strategies implemented in the Terreta an indiscriminate emphasis is placed on the supposedly "natural" component of the landscape (local plant life and fauna). The cultural landscape (Note: as the result of the processes outlined in section 2.1) is omitted (involuntarily or deliberately) from these foci. It comes as no surprise that one of the consequences is the high degree of disconnection between the owners of farm land and tourists. The result of this *neglect* of the landscape (Fig. 5) and the peripheral nature of the region results in a form of management that is poorly integrated and the victim of political-administrative duality; despite the attempts made in the last few years in the area of landscape management (like the Catalonian Landscape Act in 2005 - Llei 8/2005, de 8 de juny, de protecció, gestió i ordenació del paisatge), the latter is a resource of limited relevance in Spain's public policies.

The defence of the landscape understood as the historic product of human intervention in the territory is somewhat difficult in the Metnitzer Berge. On the one hand, it is no straightforward task to stem the impoverishment of the present-day landscape (spontaneous growth of woodland and loss of landscape diversity); even with the support granted to mountain farming. On the other hand, we are unsure whether the academic discourses (that warn of the problems caused by not supporting the landscape in mid-mountain regions) are captured within its tourism

promotional material. What undoubtedly is captured, however, are the attempts at linking agrarian and forest activities with tourism, despite the factors that hinder this (such as the reticence shown by the timber industry and large landowners). The Metnitzer Berge has, nevertheless, the basic requirements to be able to maintain a demand for high quality products, with easy traceability and a consumer demand *in situ*.

3. Conclusion

On the basis of the analysis undertaken, the following final thoughts can be recorded:

∞ The mid-mountain areas with all their demographic and economic problems (as outlined in this article) are peripheral spaces within a relatively central area (in the case of Austria), while they are peripheral spaces within the periphery (in the case of Spain).
∞ The difference between the cohesive nature of regional planning in the Austrian state and the absence of planning instruments to facilitate coordination between *Comunidades Autónomas* in Spain has had a definitive impact on the regional policies of each of these regions.
∞ Despite the relatively long tradition in some instances in the use of spatial planning tools at the regional level, the recent introduction of most of these instruments means that it is too early to draw any definitive conclusions as regards their use. However, a number of worrying failings have become manifest: the absence of a planning instrument for the whole of Carinthia, and the failure to develop the planning tools requested by the Directives of the Aragon Pyrenees are just two examples.
∞ Albeit is widely accepted that mountain agriculture is inadequate to serve as the motor for the economic structure of the regions analysed here, a major difference between the two states in their approach to this activity should be pointed out. The Austrian discourse recognises the difficulties associated with primary activities, but has chosen to strengthen their role in society (regardless of its role as productive activity). On the other hand, the Spanish discourse is unaware of the extra-economic role of mountain agriculture. This difference is indicative of the gap existing in all respects regarding the social awareness of cultural landscapes in the two cases.
∞ Spanish current society (partially including Catalan and Aragonese), having undergone a drastic transformation in the last 60 years (with the rural exodus), has recently rediscovered in the mountains a territory adjoining its urban environs; a territory that has not however been able to provide the collective imagination with a coherent and solid inheritance, nor with a consolidated landscape culture. By contrast, Austria, since 1945, saw the formation of an eminently rural society, and even with the processes of industrialisation and migration from the countryside to the city, it has never lost the link with its landscape culture.
∞ In the Spanish case, cultural landscapes are awaiting recognition (the agrarian landscape of the Terreta is present in individual and collective memories, but not in any official discourses), whereas, in Austria, there is a broad consensus between society and institutions, which has enabled them to widen the bases of the debate around the future of its landscapes.

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FIGHTING FOR SURVIVAL - PLANNING AND DEVELOPMENT ISSUES IN TWO EUROPEAN RURAL BORDER MID-MOUNTAIN REGIONS

Summary

This paper attempts to understand some current spatial processes being worked out in European mid-mountain landscapes. To do so, two different mountain areas were selected: a valley section in the Spanish Pyrenees (*la Terreta*, in the historical region of *Ribagorça*), and an uplands sector in the Austrian Eastern Alps (*die Metnitzer Berge*, in the *Niedere Tauern*). Despite the numerous differences between them, there are some relevant features which permit us to undertake a comparative assessment. For instance, both areas have been marginalised to the extent that they do not receive any specific attention (unlike the so-called "high mountain" areas). This fact is intensified due to their cross-border characteristics: the Terreta is divided between two Spanish regions – *Comunidades Autónomas* (Catalonia and Aragon); the Metnitzer Berge extends between Styria and Carinthia, two Austrian provinces (*Bundesländer*).

Within this context, the purpose of the paper is to examine the different processes by which public policies of a marked spatial nature have been implemented to address the specific concerns of mountain areas: territorial planning and development, on the one hand, and landscape management via the adoption of individual sectoral policies, on the other. Qualitative methods were used (evaluation and assessment of management tools and specific literature; analyzing the discourses underlying public policies), in combination with some quantitative data from statistical sources. On the other hand, in-depth interviews were carried out with several actors (local authorities and population in the Spanish case, scientific actors in the Austrian one).

The results are organised in three sections. First, the historic processes underlying the present territories are presented. Second, planning policies (including management tools at several spatial scales) are evaluated. And finally, the main elements in the institutional discourses concerning the landscape are assessed, and the public intervention in mountain policy and the tourism promotion of the territory are taken in account. Thus the following facts can be highlighted:

First, both areas have suffered a decline during the last 150 years, although of different intensity: a drastic migration process in the Terreta in comparison with a smooth and gradual demographic decline in the Metnitzer Berge.

Second, the administrative context at the State level in both cases is conducive to unevenness in territorial management at the regional level. Such dysfunctions are especially highlighted within the Spanish model of *Comunidades Autónomas*, which does not possess specific coordination tools typical of federal states like Austria.

And third, rural tourism was adopted as the main economic activity for the future in both cases, although with a critical difference: in Austria, agricultural activities are considered necessary, while in Spain its role in mid-mountain areas is often ignored. It is true that many common aspects between the two case studies can be identified, in a historical, geographical and administrative sense, and the difficulties faced are often similar. Nevertheless, approaches and especially political strategies to overcome the current situation do not coincide. If Austria wants to guarantee its internal (national) territorial cohesion, it must assume that the mountains should be

considered as an essential part of its territory. In my opinion, this is the situation. By contrast, Spain has great difficulties to define the role (both economic and social) of its mountain areas. As a result, the former has a basic consensus regarding a coherent mountain policy (a consolidated mountain agricultural strategy nationwide, supporting links between peasantry and tourists through rural tourism). This is so despite each *Bundesland* having its own management policy, and despite the fact that the debates about the threatened future of cultural landscapes are far being from solved. By contrast, in the Spanish case (despite the experience concentrated especially in Catalonia), one can note a lack of public recognition and commitment regarding the diverse dimensions of the landscape of mid-mountain areas. In this sense, a fashionable (but extremely distorted, because of its narrow-minded mentality) ecocentric focus must be restated.

ROLE OF LIVESTOCK HUSBANDRY ON RURAL TRANSFORMATION IN NORTH INDIA: A CASE STUDY

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UDK: 911.373(540-17):331.5
COBISS: 1.02 – Review article

Abstract
Livestock husbandry is an important source of economic activity in the agricultural sector contributing a major portion of GDP to India and improving the socio-economic conditions for people in general and rural people in particular. Livestock husbandry has been practiced, usually in rural areas, since ancient times. The increasing urbanization of the growing population and the changing food habits of people has enhanced the demand of livestock products worldwide. Thus, the world's livestock sector is growing at an unprecedented rate in developing countries. India is one developing country that shares the largest number of livestock and has a top position in milk production in the world. The livestock in India with 185 million cattle and 98 million buffaloes possesses 20% of the world's bovine and 14% of the world's cattle population. A micro level geographical area known as Aligarh district in north India has been selected for study. The data regarding various aspects of livestock husbandry at the grass roots level is not available in recorded form. 12 villages from the district have been selected for field survey to generate data regarding the socio economic transformation of rural people in the study region. The study revealed that livestock husbandry shows upward dynamism in terms of numbers. A positive growth of 7.5% livestock as a whole has been observed through the data analysis of two points of time i.e. 1993 and 2003. 83% of the workforce of households surveyed in the rural areas is found to be involved directly or indirectly in livestock husbandry, and it is practiced by landless, marginal and small farmers particularly.

Key words
livestock, women's participation, employment, economic viability

The editor received the article on 6.2.2010.

1. Introduction

Livestock husbandry is an important form of agriculture in the world. It is practiced in various forms, such as mixed farming, nomadic herding, commercial grazing, etc. This activity is very closely related to agricultural activity/production, as cultivation receives input from livestock and, in turn, provides output from livestock in the form of animal feed (Khan 2006). An important form of diversification of agriculture has recently emerged in the livestock sector in many developing countries like India. Employment generation for millions of poor and small rural landholders is also served by this sector. It provides a significant contribution to the national economy. Approximately 75% of the world's poor live in rural areas. For most of these people, livestock are an important part of their livelihood. In rural India, where over 15-20% families are landless and about 80% of landholders belong to the category of small and marginal farmers, livestock is their main source of livelihood. The unaffordability of modern inputs such as tractors and fertilizers for poor farmers is compensated by livestock husbandry (Info resources 2007).

The mixed crop-livestock system is also prominent in India and resource use in mixed farming (crop + livestock) is often highly self reliant as nutrients and energy flow from crops to livestock and back. This system allows the environment to internalize any cost to the environment i.e. being less damaging or more beneficial to the natural resource base. Pollution problems in rural areas are also internalized, as the small amount of waste produced is used as fuel or organic manure in the field (Conroy 2004).

Production of animal food products grew most rapidly in places with high consumption rates. A revolution is taking place in global agriculture that has profound implications for human health, livelihood, and the environment (Rollefson 2001). The change in the diets of billions of people could significantly improve the well-being of many rural poor. Livestock products are a source of protein and micronutrients, in which the poor in rural areas are usually deficient. This could be alleviated by increased consumption of even small amounts of meat and milk, which provide the same level of nutrients, protein, and calories that a large amount of vegetables and cereals would provide.

Unlike the supply-led green revolution that precedes it, the livestock revolution is being driven not by new technology, but by rising demand. That means it won't go away, regardless of its consequences. The rising demand for animal foods can be met: we can grow enough grain to feed livestock without taking food from the mouths of people, but research-based sustainable development is needed to achieve this (Hegde 2006).

The livestock revolution offers the way toward green commercial organizations and international development uniting their concern for poor farmers. Farm income could rise dramatically with a rising demand for livestock products. If it is handled correctly, it will improve and meet the rising demand of millions of poor and help save them from being driven deeper into poverty (ILRI 2006).

1.1 Objectives of the Study

Keeping in view the significance of livestock husbandry in socio-economic transformation as well as maintaining the agricultural sustainability and the economic

viability of poor farmers in developing countries like India in general and Aligarh district in particular, the researchers intend to meet the following objectives:

∞ To show the input of female labourers in livestock husbandry.

∞ To show the livestock oriented employment for various socio-economic groups in the study area.

Tab. 1: Basic data of the sampled villages in Aligarh district.
Source: Field survey 2007-2008

Blocks	Villages	Total household	Total population	Total male population	Total Female population
Khair	Manpur Kalan	103	588	316	272
Tappal	Bairamganj	116	637	317	320
Atrauli	Raipur Munzapta	369	2408	1302	1106
Bijauli	Ranmochna	217	1389	778	611
Gangiri	Bhay	104	637	362	275
Iglas	Tehara	274	1655	895	760
Gonda	Mati	233	1474	783	691
Lodha	Mirzapur Siya	113	921	513	408
Dhanipur	Morthal	334	2125	1130	995
Akrabad	Badri	79	465	230	235
Jawan	Samastpurkota	190	1279	709	570
Chandaus	Balrampur	78	623	330	293
Total		2210	14201	7665	6536

Fig. 1: Aligarh district research area.

1.2 Geographical Outlook of Study Area

Aligarh district, located in the western part of Uttar Pradesh, is an important district in India lying in the central part of Ganga Yamuna Doab. The capital of India is 130 km from Aligarh and 84 km from the city of Taj (Agra). The total area of the district is 3,700 km^2 and the population in 2001 was 2,992,286. The maximum extent of the district from east to west is 116 km and the maximum extent from north to south is about 62 km.

The shape of Aligarh district is dominated by an east-west protrusion. It is separated from Badaun district by the extreme north-eastern boundary of the river Ganga and the extreme north-western boundary, formed by the river Yamuna, separates Aligarh from Gurgaon district of Haryana state. It is bound by the district of Bulandshahr in the north, Hathras in the south, Etah in the east and Mathura in the west and southwest. The district has been divided into 5 tehsils, namely, Atrauli, Gabhana, Khair, Koil and Iglas. These tehsils are further subdivided into 12 development blocks, namely, Atrauli, Gangiri, Bijauli, Jawan, Chandaus, Khair, Tappal, Dhanipur, Lodha, Akrabad, Iglas and Gonda, which include 1180 villages. Information regarding sampled villages is given in Tab. 1. All the villages are dominated by poor farmers. Most of them practice a mixed farming system, i.e. a livestock-crop integrated farming system. These villages are served by pucca road (metalled road). The houses mostly have thatched roofs except for those owned by big farmers. Some villages, such as Bairamganj in Tappal block, are dominated by Brahmn (high caste); Mirzapur Siya in Lodh block and Morthal in Dhanipur are dominated by a Muslim population; Tehra in Iglas block by Hindu Rajput, and the rest of the sampled villages have mixed populations.

1.3 Research Methodology:

The present study is based purely on primary data. Primary data was collected through field survey of the sampled villages. Collected data was processed, presented in tabular form and analysed well for the purpose of deriving concrete and precise results. 1105 livestock-rearing households of various socio-economic groups were interviewed using a detailed survey regarding various issues of the study. Farms are classified as landless, marginal, small, middle and large on the basis of size of landholdings. Less than 1 hectare, 1-2 hectares, 2-4 hectares and more than 4 hectares of land are the criteria for marginal, small, medium, and large farms. Women's participation and employment generation in livestock husbandry were taken as indicators for socio-economic development in the study area.

2 Results and Discussion

2.1 Sampling of Farmers

For detailed study, 1105 households were surveyed, out of which 950 were livestock rearers, which is 85.97% of the total households.

Tab. 2: Number of Sampled Households in Aligarh district.

Sampled households	Share of households in livestock rearing	Percentage of livestock rearers
1105	950	85.97%

Tab. 3: Number of households involved in livestock husbandry in Aligarh district.

Category of farms	Share of farmers to livestock rearers	Percentage share of livestock rearers
Landless	103	10.84%
Marginal Farms (less than 1 hectare)	207	21.26%
Small Farms (1-2 hectares)	392	42.10%
Medium Farms (2-4 hectares)	155	16.31%
Large Farms (more than 4 hectares)	93	9.78%

Source: Field survey 2007-2008.

2.1 Share of Female Participants in livestock husbandry

The level of structural change in production of various livestock is the reflection of physio-socio-economic milieus of the concerned area. Increasing urbanizations, social transformations, food habit changes and increasing purchasing power appears to be very catalytic factors for livestock growth. Women play a crucial role in the sector of livestock farming. Women workers are equal in efficiency and performance to male workers in identical roles. In certain roles, women workers are even more efficient than men. In respect to reliability, promptness and punctuality, women have an edge over their male counterparts.

Gender discrimination in the matters of food, nutrition, education and health, compulsory responsibilities of domestic affairs, limited mobility and lower wages as compared to male workers, lack of economic independence and support and lack of confidence due to customs and family pressure are the most common hurdles for women.

Gender discrimination in agriculture in general and livestock in particular on large farms is accentuated due to social stratification and involvement in other respectable work such as education and indoor household work. Despite such variations, women's participation in animal husbandry, since ancient times, has been well recognized.

This study reveals that more than 90% of female participants on all categories of farms, except large farms, are involved in livestock husbandry. The marginal farms' share in animal husbandry is 99.12%, while it is 98.52% for small farms and 45.45% for large farms. The highest participation of landless farms and the lowest participation of large farms can be attributed to the socio-economic conditions of the respective groups.

Tab. 4: Percentage share of female participants involved in livestock rearing.

Type of farmers	Total female members in household	Female participants in rearing	Percentage of female participants in total female members
Landless	309	307	99.35
Marginal farms	802	795	99.12
Small farms	1442	1470	98.52
Medium	495	450	90.90
Large farms	407	185	45.45
Total	3505	3207	91.49

Source: Field survey 2007-2008.

2.2 Share of Female Labourers in Livestock Husbandry

The mode of utilization of women's labour in animal husbandry activities was also estimated, and it was found that, of the total input by female labourers, more than 90% were unpaid i.e. they were women from the same household.

Women are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. In all areas, milking in particular is done mostly by women in the household. In some villages, women from a few households take the animals for grazing. In addition to their own animals, they also take animals belonging to other households, for which they get monthly payments. Tab. 5 indicates that large farms have the largest share of paid women's labour and their female members are restricted to bringing the animals to graze in the field; however, at these households, they serve their own animals with no help from neighbouring farms.

Tab. 5: Estimation of women's labour input in livestock husbandry.

Type of farms	Average number of livestock	Women's labour input Per household		Total no. of female labourers per household
		Paid	Unpaid	
Landless	2	3 (0.97)	304 (99.02)	307
Marginal farms	2	23 (2.89)	771 (96.98)	795
Small farms	2	58 3.94)	1367 (92.99)	1470
Medium	4	45 (10)	405 (90)	450
Large farms	5	62 (33.51)	123 (66.48)	185
Total		188 (5.86)	2973(92.70)	3207

Source: Field survey 2007-2008.
Note: Figures in brackets are in percent.

Fig. 2: A landless female livestock rearer milks a cow.
Source: Author.

2.3 Social Structure of Employees

Moreover, the social structure of the population has also shown a paramount effect on the level of employment generation through livestock husbandry. This study revealed that some specific castes belonging to a backward group are specialized in particular kinds of livestock husbandry operations. Other backward castes (OBCs) and politically recognized social groups, including Rajput, Lodha Yadau, etc. showed the highest proportion (64.52%) of workforce involved in this sector (Tab. 6). These are followed by high castes and scheduled castes (SCs), the most socially deprived group. The high level of employment of OBC groups in livestock husbandry is mainly attributed to their traditional experience of animal rearing as well as the scarcity of land for full-time involvement of all family members throughout the year. They follow a mixed farming system in which both cropping and livestock rearing are practiced together with a view to increase economic viability of their family members and sustainability of different crops grown on limited land.

Tab. 6: Social structure of employees of animal husbandry in Aligarh district.

Category of farmers	Workers in Animal husbandry to Total workers (in percent)	Operations of livestock husbandry		
		Rearing producer	Marketing	Collection/Processing
High Caste	229 (24.10)	179 (78.16)	38 (16.59)	12 (5.24)
O B C	613 (64.52)	412 (67.21)	134 (21.85)	67 (10.92)
Schedule Caste	108 (11.36)	80 (74.07)	20 (18.51)	8 (7.40)
Total	950 (100)	679 (70.63)	192 (1.79)	87 (9.15)

Source: Field survey 2007-2008.
Note: OBC (Other Backward Caste).

The discussion regarding work also showed variation with social stratification. High castes showed the highest participation in rearing. They accounted for 78.16% of total people involved in animal husbandry. The highest share of this group in animal rearing is attributed to the easy availability of capital for investment in animal husbandry. Land for fodder is easily available to the high castes as they usually have a large size of landholding in the study area, which also contributes to the highest percentage of high castes in livestock rearing. After high castes, schedule castes are the second largest livestock rearers because they are either employed as labourers by high castes or involved in livestock husbandry either directly or by following the sharing system of small ruminants like goats and sheep.

Marketing involves the transaction of livestock and their products through different channels from producers to consumers. Next to OBCs with 21.58%, SCs were the largest shareholder (18.51%) because the marketing of livestock by high castes is done by the schedule castes, as they serve the high castes as hired labour. Moreover, collection/processing activities are mostly done by OBCs, with a share of 10.92% of the total workforce being OBCs, while the smallest share is of the privileged groups, i.e. high castes, because they almost never perform this job; it also differs from individual caste among high castes.

2.4 Employment Generation

Economic stratification on the basis of landholdings of the farmers is an important controlling factor of employment level generated through various operations of

animal husbandry in the study area. The study revealed that the level of employment generated or workforce absorption in the livestock sector is controlled by the size of operational holdings of the farmers. Farmers with marginal, small and medium sized holdings participated in a larger proportion of work, and more than 21% of their total workforce in each category was employed in different operations of livestock husbandry in selected villages of the district. The farmers follow the livestock-cropping integrated agricultural system, in which crop residues are consumed as animal feed and livestock wastes are used in crops as manure for good production. The family members of these groups of farmers involve themselves in both cropping and livestock husbandry simultaneously and are therefore able to enhance their incomes.

Tab. 7: Proportion of workers in different operations of livestock husbandry in Aligarh district.

Category of farmers	Workers in Animal husbandry to Total workers (in %)	Operations of livestock husbandry			
		Rearing producer	Marketing	Collection/ Processing	Total
Landless (0 hect.)	103 (10.84)	80 (77.66)	10 (9.70)	13 (12.62)	103 (100)
Marginal (0-1 hect.)	207 (21.78)	170 (62.96)	27 (13.04)	10 (4.83)	207 (100)
Small (1-2 hect.)	392 (41.25)	340 (86.73)	30 (7.65)	22 (5.61)	392 (100)
Medium (0-1 hect.)	155 (16.31)	122 (78.70)	18 (11.69)	15 (9.67)	155 (100)
Large (>4 hect.)	93 (9.78)	83 (89.24)	8 (8.62)	2 (2.15)	93 (100)
Total	950 (85.97)	795 (83.68)	93 (9.78)	62 (6.52)	950 (100)

Source: Field survey 2007-2008.

Fig. 3: Marginal and Small Farmers Selling their animals at the Livestock Market.
Source: Author.

Limited land and high agricultural population pressure have compelled poor farmers to be involved in the livestock sector. Landless and large farms at two extreme ends showed a low level of participation in this sector of not more than 9.78% of the total workforce of these categories. The low rate of participation of the landless category of the population is due to the fact that this group does not have sufficient capital for purchasing livestock, which is very costly, especially buffalo and cattle. Besides this, the absence of fodder or crop residue needed for livestock feeding also increases the production cost, as they would have to purchase feed from other farmers. These farmers are only involved in the rearing of small ruminants like goats, which do not require much capital or land for crop residue and fodder. Large farmers, although they have much capital and crop residue, show low participation because they hire labourers to do this kind of work. Their family members prefer not to work in livestock husbandry.

The analysis of farmers' work also reflected the impact of land-holding size on shares of participation in various categories of work like rearing, marketing and collection and processing. The highest percentage (89.24%), held by large farms, have easy availability of capital to rear livestock, but do not have much time for marketing and collection or processing. In the marketing sector, the highest percentage of workers involved are marginal farmers (13.04%) and medium farmers (11.69%) respectively, while in collection/processing, landless farmers are involved in largest percentage (12.62%).

3. Conclusion

The increasing level of income of the population, burgeoning middle class families, food habit changes and increasing urbanisation are becoming major factors in increasing livestock husbandry activities in the study area. Despite gender discrimination towards women in general and in livestock rearing in particular, the participation of women in livestock husbandry is enhancing rapidly.

Thus, the study shows that the social structure of the population has a paramount effect on the level of employment generation through livestock husbandry. Women's participation in animal husbandry by landless women is highest, and the participation of large farms is the lowest among all farms due to their low and high socio-economic divisions, respectively. The utilization of female labourers in animal husbandry activities was also estimated, and it was found that of the total input by female labourers, more than 90% were unpaid, i.e. they were women from the same household. Women on these farms are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. The total time devoted to these activities by different classes of farmers is also high in landless farmers due to much spare time after completing their household work.

Caste stratification among different social groups, which is very prominent in Aligarh district, also contributes to livestock husbandry for survival. All the work related to livestock husbandry and done by Scheduled Castes is not accepted by the higher social groups. Untouchability concepts restrict the Scheduled castes from selling milk, so their share in collection is less than the Other Backward Caste (OBC) and the Higher caste. Only Other Backward Castes who are known for having traditional experience of livestock husbandry are acceptable in all social groups (High castes and scheduled castes) for marketing of milk, so their share is the largest in all the work of livestock husbandry.

Economic stratification on the basis of landholding of the farmers is also one of the important controlling factors of employment level generated through various operations of animal husbandry in the study area. The work analysis of farmers reflects the impact of land-holding size on shares of their participation in various categories of work, such as rearing, marketing and collection and processing. The highest percentage (89.24%) in this work, held by large farms, is due to easy availability of capital to rear livestock.

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ROLE OF LIVESTOCK HUSBANDRY ON RURAL TRANSFORMATION IN NORTH INDIA: A CASE STUDY

Summary

In the paper is presenting the role of livestock husbandry as an important source of economic activity in the agricultural sector in India. The livestock sector improves the socio-economic conditions of people in general and rural people in particular. It is usually practiced in rural areas since ancient times. The increasing urbanization with the growing population and the changing food habits of the people enhances the demand of livestock products in the whole world. India is one of the developing countries with the highest number of livestock, and in the first place in the world as regards milk production. India has 185 million cattle and 98 million buffaloes, which is 20% of the world's bovine and 14% of cattle population.

For detailed study, 1105 households were surveyed in Aligarh district, located in the western part of Uttar Pradesh. 12 villages from the district have been selected for field survey to generate data regarding the socio economic transformation of rural people in the study region. All the villages are dominated by poor farmers. Most of them practice a mixed farming system, i.e. a livestock-crop integrated farming system. A positive growth of 7.5% livestock as a whole has been observed through the data analysis of two points of time i.e. 1993 and 2003. 83% of the workforce of households surveyed in the rural areas is found to be involved directly or indirectly in livestock husbandry, and it is practiced by landless, marginal and small farmers particularly.

The level of structural change in production of various livestock is the reflection of physio-socio-economic milieus of the concerned area. Increasing urbanizations, social transformations, food habit changes and increasing purchasing power appears to be very catalytic factors for livestock growth. Women play a crucial role in the sector of livestock farming. Women workers are equal in efficiency and performance to male workers in identical roles. In certain roles, women workers are even more efficient than men. In respect to reliability, promptness and punctuality, women have an edge over their male counterparts.

The study shows that the social structure of the population has a paramount effect on the level of employment generation through livestock husbandry. Women's participation in animal husbandry by landless women is highest, and the participation of large farms is the lowest among all farms due to their low and high socio-economic divisions, respectively. The utilization of female labourers in animal husbandry activities was also estimated, and it was found that of the total input by female labourers, more than 90% were unpaid, i.e. they were women from the same household. Women on these farms are mostly engaged in activities like milking, feed mixing, cleaning stalls, and feeding the animals. The total time devoted to these activities by different classes of farmers is also high in landless farmers due to much spare time after completing their household work.

Caste stratification among different social groups, which is very prominent in Aligarh district, also contributes to livestock husbandry for survival. All the work related to livestock husbandry and done by Scheduled Castes is not accepted by the higher social groups. Untouchable's concepts restrict the Scheduled castes from selling milk, so their share in collection is less than the Other Backward Caste (OBC) and the Higher caste. Only Other Backward Castes who are known for having traditional

experience of livestock husbandry are acceptable in all social groups (High castes and scheduled castes) for marketing of milk, so their share is the largest in all the work of livestock husbandry.

Economic stratification on the basis of landholding of the farmers is also one of the important controlling factors of employment level generated through various operations of animal husbandry in the study area. The work analysis of farmers reflects the impact of land-holding size on shares of their participation in various categories of work, such as rearing, marketing and collection and processing. The highest percentage (89.24%) in this work, held by large farms, is due to easy availability of capital to rear livestock.

LIVESTOCK REVOLUTION AND ITS IMPACTS ON THE SUSTAINABILITY OF MARGINAL AND SMALL FARMERS IN INDIA: A CASE STUDY

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UDK: 911.373(540):631.11
COBISS: 1.02 – Review article

Abstract
Livestock husbandry is an important segment of Indian agriculture. Its share of contribution to agricultural gross products has increased since the implementation of the globalization of agricultural trade. Livestock revolution has occurred not only in India, but in all tropical developing countries, owing to recently increasing demand for animal-derived products in national and international markets. We selected Aligarh, a micro geographical unit from the Upper Ganga plain of Uttar Pradesh for this study. 600 households from 12 villages in the area were surveyed for collection of data. The study revealed that the region witnessed growth in livestock husbandry with selected species during 1993-1994 to 2003-2004. Buffalo and goats showed a positive change due to enhancement in the demand of milk and meat on account of increasing urban consumers, liberalization of agri-business and the changing of food habits over the decades. Cattle numbers have contracted owing to the mechanization of agriculture and the prohibition of cow slaughter in the country. Two thirds of livestock keepers, workers and beneficiaries are poor farmers with less than 3 hectares of land holding. The majority of them follow the livestock-cropping integrated farming system, which is highly beneficial rather than rearing livestock exclusively. Livestock husbandry is an economically viable, socially acceptable and environmentally sustainable farming system in the study area of the Aligarh district.

Keywords
sustainable, economic viability, livestock revolution

The editor received the article on 20.1.2010.

1. Introduction

Livestock husbandry emerged as an important diversified form of farming systems in developing countries, especially in tropical monsoon Asian countries recently (Khan et al 2008). It is an allied and complementary activity to existing cropping systems. A large segment of workforce of these various countries has been employed in this sector of agricultural economy. Livestock husbandry is looked at as having a latent potential and boon for employment generation and poverty alleviation in poor resource regions (Picca 2008; Leonard 2006). The generation of income through various operations i.e. rearing, milking, marketing and processing, and the cultivation of crops should also improve the economic viability of poor farmers i.e. landless, marginal and small land-holders in the developing world (Taneja 2008; Rama et al 2005). Healthy nutrition and food security is also expected to be improved through increasing animal derived food availability and accessibility after development of the livestock sector. Soil fertility is maintained through the use of animal wastes such as manure used as natural fertilizer. Soil ecology must also be balanced (Alan 2007; Fakoya 2007).

The livestock sector developed tremendously over the last two decades in tropical developing countries of Latin America, Africa and Asia. Demand for animal derived products grew at international and national levels in most of these nations. The liberalization of agri-business, an increase in the number of urban consumers, changing eating habits from vegetarian to animal derived food as well as increasing health consciousness are the driving forces of the accelerating demand for livestock products like milk and meat. This kind of abrupt and fast growth of this sector has characterized this livestock growth as a livestock revolution (Delgado et al 1999, 83).

The revolution also has much challenge in the way of achieving successful targets. Intensification and scaling up of livestock and allied industries usually managed by corporate sectors present a threat to the survival of small farmers, enterprises and the ecological balance in the concerned areas (Steinfield 2006, 407). Increasing pressure of livestock per unit area of pastureland in arid, semi arid and mountainous regions has accelerated the degree of soil degradation and desertification through over grazing (Alan 2007). A high demand for feed grains as well fodder has resulted in more hectares of land needed for these crops and, consequently, excess amounts of water are drawn from underground for irrigation with a view to keep up the regular supply of animal feed throughout the year. This pattern of demand for land and water presented a grim situation in food security and water crises during the post economic reform period at a global level. Mismanagement of livestock waste, both solid and liquid, caused soil and water pollution. Global warming is also encouraged through the addition of green house gases produced by livestock and decomposing animal waste (The World Bank 2006, 63). An animal and human epidemic has also been spreading due to the increase of livestock rearing (Hoffman 1999).

Livestock husbandry has been well rooted in the Indian agricultural system since ancient times, but the scale of production has been subsistent in nature and the method of rearing, traditional in nature. Commercial or market oriented production systems developed to a minimum level, on a small scale, and usually in peri-urban areas. Animals like cows are considered to be religiously sacred by the majority of the population. The country ranked first in cattle and buffalo numbers in the world.

In the case of small rudiments i.e. goat and sheep, India also occupied the third and fourth positions at a global level. The poultry sector of livestock husbandry also showed a higher level of contribution in the world with a share of 4.25%.

1.1 Objectives of the study

In this study, the researchers aim to understand the following issues and objectives at a micro level in the geographical unit known as Aligarh district, which is located in the Upper Ganga plain in western Uttar Pradesh. The study area covers an area of 3,700 km^2 with a population of 2.90 million. 74% of the population resides in rural areas and 65% of the workforce is engaged in agriculture, including livestock husbandry. The objectives of the study are as follows:

∞ The pattern and growth of livestock and their products in the study area.
∞ Socio-economic structures of livestock farmers or farmers and levels of employment generation.
∞ Economic viability and sustainability of livestock husbandry and cropping system.

1.2 Geographical Outlook of Study Area

Aligarh district is an important district located in the western part of Uttar Pradesh at a distance of 130 kilometres from Delhi, in the central part of Ganga–Yamuna doab. It is bounded by the district of Bulandshahr in the north, Hathras in the south, Etah in the east and Mathura in the west and south-west. Aligarh is separated from Badaun district by the extreme north-eastern boundary of the Ganga River, whereas the extreme north-western boundary, formed by the river Yamuna, separates Aligarh from the Gurgaon district of Haryana state.

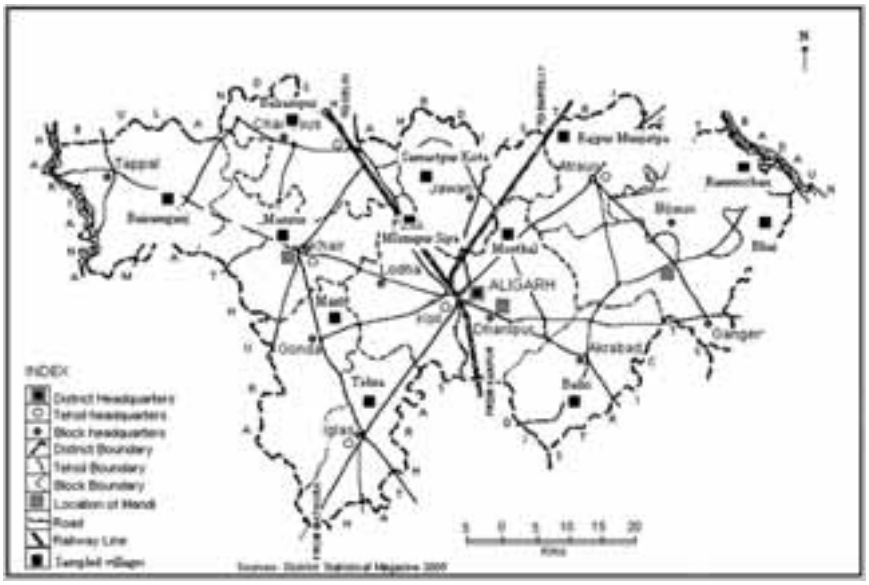

Fig. 1: Aligarh District research area.

The total area of the district is 3,700 km^2 with a population of 2,992,286 as of 2001.

The maximum extent of the district from east to west is 116 km and the maximum extent from north to south is about 62 km. The shape of Aligarh district is dominated by an east-west protrusion. The district has been divided into 5 tehsils namely, Atrauli, Gabhana, Khair, Koil and Iglas. These tehsils are further subdivided into 12 development blocks, namely, Atrauli, Gangiri, Bijauli, Jawan, Chandaus, Khair, Tappal, Dhanipur, Lodha, Akrabad, Iglas and Gonda, which include 1180 villages. Information regarding sampled villages is given in Tab. 1.

All the villages are dominated by poor farmers. Most of them practice the mixed livestock-cropping integrated farming system. These villages are served by pucca road (metalled road). The houses in the area consist mostly of thatched roofs except those belonging to large farms. Bairamganj in Tappal block is dominated by Brahmn (high caste), Mirzapur Siya in Lodh block and Morthal in Dhanipur are dominated by a Muslim population, Tehra in Iglas block is dominated by Hindu Rajput, and the rest of the sampled villages have mixed populations.

Tab. 1: Basic data of the sampled villages in Aligarh district.

Blocks	Villages	Total household	Total population	Total male population	Total Female population
Khair	Manpur Kalan	103	588	316	272
Tappal	Bairamganj	116	637	317	320
Atrauli	Raipur Munzapta	369	2408	1302	1106
Bijauli	Ranmochna	217	1389	778	611
Gangiri	Bhay	104	637	362	275
Iglas	Tehara	274	1655	895	760
Gonda	Mati	233	1474	783	691
Lodha	Mirzapur Siya	113	921	513	408
Dhanipur	Morthal	334	2125	1130	995
Akrabad	Badri	79	465	230	235
Jawan	Samastpurkota	190	1279	709	570
Chandaus	Balrampur	78	623	330	293
Total		2210	14201	7665	6536

Source: Field survey 2007-2008

1.3 Research Methodology and Data Collection

This, a micro level study, is based mainly on a primary source of data. The information regarding economic aspects of livestock and livestock farmers is not available in published form. 12 villages, one from each development block, were selected for a detailed survey. 50% of the total households of each selected village were questioned regarding various issues of livestock husbandry. The livestock farmers were classified as landless, marginal (0-1 hectare), small (1-2 hectares), medium (2-3 hectares) and large (more than 3 hectares) on the basis of the size of holdings.

In total, 600 households were surveyed. Secondary data was also collected from agricultural statistics published from district headquarters. Collected data was processed and presented in tabular form and analyzed for the purposes of deriving concrete and precise results.

2. Results and Discussion

2.1 Pattern and Growth of Livestock

Livestock husbandry is an important segment of the agricultural system in study area. All kinds of bovines i.e. cattle, buffalo, goat and sheep are reared along with the cropping of various crops. The district of Aligarh exhibited a domination of buffalo rearing followed by goats, cattle and sheep. Buffalo shared 67.78% (715,774 heads) of the total livestock reared in 2003-2004. Goats, with 187,111 heads, ranked second, and cattle, with 143,620 heads, stood at third position as is evident from the data (Tab. 2). The ratio between individual livestock species and area and population also showed the same pattern of buffalo domination in the composition of the livestock in the area under study.

Tab. 2: Present scenario and growth of livestock in Aligarh district.

Livestock Species	Livestock Number		Growth in percent	% to total livestock	Livestock /000 persons (2003-04)	Livestock /hectare (2003-04)
	2003-04	1993-94				
Buffalo	715774	550551	+30	67.78	239.20	2.39
Cattle	143620	192593	-25.42	13.59	58.63	0.48
Goat	187111	185259	+1.00	17.72	187.51	0.70
Sheep	9587	18532	-48.26	0.90	03.20	0.03
Total	1056092	946935	11.53	100		

Source: District Statistical Magazine, 2006.

The livestock sector has witnessed upward dynamism in terms of their number and their products (e.g. milk and meat) during the last three decades on account of technological change, government incentives and changes in the world economic order. A positive trend of 11.53% for livestock as a whole has been observed through the data analysis of two points of time i.e. 1993-1994 and 2003-2004. The analysis of growth of individual species showed very disappointing results. Cattle and sheep declined at the rate of 25.42% and 48.26% respectively from 1993-1994 to 2003-2004. Mechanization of agriculture reduced the demand of oxen (male cattle) in agriculture, as they had been used for ploughing the land and transporting the agricultural products from the farmhouse to the markets. Prohibition of slaughtering of cattle, especially cows, due to religious reasons, has also discouraged the rearing of cattle in the study area. The production of milk per cow is also rather low when compared to buffalo.

Sheep rearing is a caste specific occupation. Gadadia (shepherd), a backward community, reared sheep, which became uneconomical due to their inferior quality of wool and meat. Squeezing of common or public grassland is one of the serious problems suffered by farmers in this small ruminant in Aligarh district. The number of buffalo jumped up from 550,551 heads to 715,774 heads recording an exceptional positive change to the tune of 30% in the decade between 1993-1994 and 2003-2004. This kind of abnormal growth of buffalo in comparison to other species is attributed to the scheme of Flood Operation to enhance milk production, the increasing demand of meat in national and international markets due to increasing urbanization, the improvement in purchasing power among middle income households, the changing food habits from vegetarian to animal-derived foods and the

liberalization of agricultural trade under the auspices of the WTO. Aligarh Muslim University, with an enrolment of 30,000 students, is a good market for buffalo meat. The newly established four-meat industry near the town of Aligarh has accelerated the demand for 3,000 buffalo every day for the production of meat, which is exclusively exported to 22 countries in middle-east, south-east, central and west Asia (Allana 2005).

The goat, a small ruminant, also showed amelioration during the discussed period, but at a rather slow rate compared to buffalo. The rearing of this species became very popular recently in households of poor families with a larger interest from females. Goat rearing emerged as a new option for enhancing the economic power of women irrespective of any social class in rural areas of the district. Goats require low capital and can be fed on grasses and straw from growing crops. The demand for goat meat (mutton) is increasing day by day, as it is widely acceptable in all-ethnic groups of the Indian population in the country, unlike beef.

2.2 Economic Stratification and Livestock Husbandry

Livestock husbandry is rooted in the agricultural structure of the study area. Data revealed that 90% of total households of the selected villages are involved in various processes of livestock rearing (Tab. 3). The households of livestock husbandry belong mainly to poor farmers. Landless, marginal and small farmers with less than one hectare and one to two hectares of land-holding, respectively, belong to 75% of livestock rearing households in the study area.

Tab. 3: Economic stratification of livestock farmers in Aligarh district.

	Number of households surveyed	% of the total households and rearing households surveyed
Livestock Rearing Households	500	83.33%
Landless	75	15%
Marginal Farmer (less than 1 hectare)	100	20%
Small Farmer (1-2 hectares)	200	40%
Medium Farmer (2-3 hectare)	75	15%
Large Farmer (> 3 hectares)	50	10%

Source: Field Survey, 2007-2008.

These groups of farmers, with the exception of a few landless farmers, follow mixed farming practices with integration of livestock and crops. All adult family members are involved in this system and harness the maximum possible potential of livestock and cultivated crops. One fourth of livestock farmers are from larger-sized farms i.e. more than 3 hectares of land. They also follow the same system of livestock-crop integration as the former group of poor, but the involvement of household members is rather low. Hired workers are employed for livestock husbandry.

2.3 Economics of Livestock Husbandry

Livestock husbandry is a capital-intensive activity. It needs investment for the purchasing of animals, fodder, feed grains, oil cakes and some other concentrates and labourers to care for the livestock for feeding, grazing and milking. The cost of rearing varies with the nature and kinds of livestock. The assessment of the cost

incurred for various species of livestock is given in Tab. 4 and Tab. 5.

Tab. 4: Input assessment incurred for rearing of livestock per annum.
Source: Field Survey, 2007-2008.

Livestock Species	Input cost/head/year (in 1000s of Rs.)					
	Purchase	Fodder	Feed grain	Oil cake	Labour	Total
Buffalo	25	9	14.32	5.66	6	49.98
Cattle	10	8	14.32	5.00	6	43.32
Goat	25	1	20	-	1	6.50
Sheep	25	-	-	-	1	3.50

Tab. 5: Output assessment incurred for rearing of livestock per annum.
Source: Field Survey, 2007-2008.

Livestock Species	Output/head/annum (in 1000s of Rs.)				
	Milk	Dung cake	Manures	Offspring	Total
Buffalo	53	13.44	2	2.50	70.95
Cattle	36	10	2	2	50
Goat	1.50	-	1	7	9.50
Sheep	-	-	1	5	6

Note - 1 U.S. dollar is equivalent to 58 rupees.

Fig. 2: Heap of Dry Dung Cake for Marketing.
Source: Author

The estimated costs of rearing for buffalo and cattle are very high due to initial high capital: Rs. 25,000 for buffalo and Rs. 10,000 for cattle is required for purchase.

Contrary to this, goats and sheep require low capital, or less than Rs. 3,000 per head, so they are known as the poor and women's resource. The cost incurred for fodder, feed grain and concentrate is also higher for big ruminants rather than smaller ones.

Tab. 6: Input - output cost/head/annum difference (Rupees) for Various Species of livestock.

Livestock species	Input minus purchase cost	Output Price	Difference	Livestock	Input minus purchase cost	Output Price	Difference
Buffalo	34,320	70,948	36,628	Goat	4,000	9,500	5,500
Cattle	33,320	50,000	16,680	Sheep	1,000	6,000	5,000

Source: Field Survey, 2007-2008.

The production cost per head of cattle and buffalo also varies with the livestock specific and livestock-cropping integrated system adopted by livestock farmers (Tab. 7). In the exclusive livestock rearing system, the cost of rearing is rather high because all kinds of fodders, feed grains and other materials required for animal feeding need to be purchased from markets or external sources. In the latter case, the same materials are recycled or obtained from crop's products or from products like straw or residues.

The benefit or out-input ratio is higher in the livestock crop integrated system in comparison to the livestock specific system owing to the adjustment of mutual by-products, which reduces the production cost per unit of livestock and land. Analysis of cost and price with reference to the size of holdings/categories of farmers showed a variation in benefits achieved per unit head of livestock.

Tab. 7: Cost-benefit analysis for buffalo or cattle rearing/head/annum based on size of land-holdings.
Source: Field Survey, 2007-2008.

Input items	Landless Livestock farmers (only)	Livestock–Cropping integrated (Mixed farmers) Farmers				
		Landless	Marginal (Less than 1 hectare)	Small (1-2 hectares)	Medium (2-3 hectares)	Large (>3 hectares)
Labour	-	-	-	-	3000	6000
Feed grain	14320	13000	13000	10000	-	-
Fodder	-	-	-	-	-	-
Concentrate	5660	3600	3600	3600	-	-
Crop Residues	9000	4000	4000	3000	-	-
Other	1000	1000	1000	1500	2000	2000
Total (Input)	29980	21600	21600	18100	5000	8000
Total (Output)	70948	70948	70948	70948	70948	70948
Benefit	40968	49348	49348	52848	65948	64948

Medium sized landholders received the highest benefit per head. Large holders, small, marginal and landless farmers who practice the livestock-cropping integrated system follow. The return for livestock rearing is directly proportional to the size of holding of the farmer. Medium sized landholders receiving the highest profits can be

attributed to the availability of all kinds of livestock feeds from crops and free labourers from household members. Contrary to this, for large farmers, the input cost is rather high due to the use of hired labour for all kinds of operations performed for livestock husbandry, though feed, fodder, concentrates, etc. are fully available from the cropping system. The poor farmers cost of inputs is higher due to the purchase of feed grain, fodder, concentrates and so on from outside the farm. A partial amount of all forms of animal feed is obtained from crop products on poor farms, but the labour is free, as household members employ themselves in this form of agricultural system.

Goats appeared to be more beneficial for the poor because they do not require much initial capital for purchase. The rearing cost incurred is also very low, as their survival is based on grazing rather than feeding at home. Goats are considered to be the poor and women's cows and a latent economic resource. Above all, poor farmers with less than 3 hectares of land controlled 90% of livestock husbandry.

2.4 Employment through Livestock Husbandry

Livestock husbandry employs a great share of the workforce available in the study area. 83% of the workforce of households surveyed in the rural areas was found to be involved directly or indirectly in livestock husbandry. The proportion of livestock workforce to total workforce is directly related to the size of land-holdings, up to medium farmers, which range from 50-90%, while large land-holders absorb only 20% of their workforce in the livestock sector (Tab. 8).

The share for various cate-gories of farmers in the total livestock workforce varies with the size of holding. Marginal and small farmers showed a higher share of employment (20% and 40%) in this sector of the agricultural economy. Medium and landless holders contributed 15% each. Large farmers shared only 10% of total livestock workers in the selected villages. The study revealed that rearing employs the largest proportion (71.81%) of livestock workers in the study area; it varies between 66% and 86% among different categories of farmers. In rearing, the size of landholding is directly proportional to the share of livestock workers, with the exception of medium farmers.

The marketing of livestock and their products engaged only 14.40% of the total livestock workforce. Marginal and medium farmers employed 21 and 22% of their livestock workers in the marketing process. Contrary to this, large farmers showed very low participation in the same activity. Similarly, collection and processing also exhibited variation in involvement of livestock workers with the categories of livestock keepers. 13% of livestock workers in the study area are engaged in the processing of livestock products. Landless livestock workers represented the highest proportion (17%) in this operation (Tab. 8); small, marginal, medium and large farmers follow in descending order, as shown in the table.

The highest share of livestock workers involved in processing activities on landless farms is attributed to the absence of employment in any other sector of economy. Part time engagement in agriculture as seasonal labour also urged landless farmers to adopt a permanent secured economic activity. The least amount of participation by the large farmers is caused by availability of sufficient jobs in agriculture and their social status discouraging them to process milk or meat.

Fig. 3: Women from Marginal Farms Milking Buffalo.
Source: Author.

Tab. 8: Proportion of workers in various operations of livestock husbandry.

Farmers	% of livestock workers to total workforce	% of livestock workers	% of Workers in Various Operations of Livestock husbandry to the total livestock workforce.			
			Rearing Producers	Marketing	Collecting and processing	Total
Landless	50%	15%	50 (66.66)	12 (16)	13 (17.00)	75 (100)
Marginal	70%	20%	68 (68)	21 (21)	11 (11)	100 (100)
Small	75%	40%	146 (73)	22 (11)	32 (16)	200 (100)
Medium	90%	15%	52 (69.33)	15 (20)	8 (10.66)	75 (100)
Large	20%	10%	43 (86)	2 (4)	5 (10)	50 (100)
Total	83.33%	100%	359 (71.18)	72 (14.4)	69 (13.80)	500 (100)

Source: Field Survey, 2007-2008.

2.5 Livestock–Cropping Integrated System and Sustainability

Livestock husbandry in the study area is practiced mainly in two forms: the exclusive livestock and livestock–cropping integrated systems. 90% of farmers have been following the second system traditionally since ancient times. It is a well-integrated system for the most efficient management of livestock and crop-derived products utilization through the recycling process. The study revealed that this system proved to be more economically viable than the exclusive livestock system in which all feed and fodder are purchased and obtained from outside the farm. 93.40% of respondents during the survey period replied that the integrated system is practiced for the generation of extra income. Meat and milk production, forage linkage, and sustainable food production were preferred second, third and fourth, respectively. Soil fertility enhancement along with the reducing of crop risk are also very important benefits of mixed farming, but were placed at fifth and sixth place.

The use of livestock as draft power in transportation and cultivation of crops declined on account of intensive mechanization of agriculture. In this way, in the integrated system of livestock husbandry, sustainability is maintained through the continuous cycle of resources, energy and nutrients. Livestock rearing supports crop production in the form of provision of draft power and manures. It also diversifies the source of income through the sale and purchase of livestock and livestock products like milk and meat, which improve the capital asset to invest in agriculture. In return, the crop residues, fodder and feed grains are used for feeding livestock in either managed enclosures (cattle pan) or through post-harvest grazing. Farmers, however, maximize the production from limited land and capital, enhance income through diversification of employment opportunities, minimize the crop risk and improve food and health security. The crop-livestock farming system is a highly economically viable, environmentally sustainable and socially acceptable form of agriculture in the study area as revealed from analysis of the data.

Tab. 9: Operational features of the crop-livestock production system for sustainable development.

Utilization of crop-livestock Production systems for:	Landless	Marginal Farmers	Small Farmers	Medium Farmers	Large Farmers	Average	Rank
1-Extra income	99	99	99	90	80	93.4	I
2-Sustainable food production	90	85	80	80	50	77	IV
3-Enhance soil fertility	50	50	80	90	90	72	V
4-Meat and milk production	100	100	90	85	80	91	II
5-Transportation	30	40	50	40	20	36	IX
6-Draught power	90	90	30	10	5	45	VIII
7-Reduce risk	45	45	79	85	90	68.8	VI
8-Forage linkage	90	90	90	85	70	81	III
9-Waste disposal	50	50	60	70	90	64	VII

Source: Field Survey, 2007-2008.
Note: Figure shows percentage of respondents who answered the queries.

3. Conclusions

Livestock husbandry is practiced as an integral and complementary system to agriculture in the area. The mechanization and modernization of the cropping sector and increasing demand for livestock products, especially meat and milk, brought a dramatic change in the composition of bovine species of livestock. Buffalo stand highest in the ranks, pushing back cattle in recent years. Cattle's rearing has been continuously discouraged on account of the mechanization of agriculture and prohibition of meat production for religious reasons. Small ruminants like goats showed improvement in their numbers at a very slight rate, though demand for meat is high. For this reason, they are reared by poor and female workers in very traditional ways. No commercial or intensive farming is done in the study region. Similarly, buffalo have recorded the highest growth in their numbers over the last decade in response to the growth of demand for milk and meat at national and international levels.

The study area follows exclusive livestock as well as integrated livestock-cropping or mixed farming systems. 83% of farmers follow the second system, mainly landless livestock keepers. Poor farmers with less than 3 hectares of holdings control live-

stock husbandry. Livestock husbandry is a diversified source of income and employment for them to enhance their income during the agricultural off-season. More than 70% of the workforce under these categories is employed in this sector.

The comparative cost and benefit analysis of livestock rearing in the district revealed that the integrated livestock-cropping system is more profitable than the exclusive livestock system on account of lower input costs adjusted through the use of livestock feed and fodder from residues of crops from their own fields. Medium sized landholders achieved the highest amount of benefit per buffalo/cattle/year due to the availability of animal feeds free of cost from their own crops and through the use of maximum amount of labourers from household members. Large farmers are found to be less involved in livestock husbandry directly and depend upon hired labourers for rearing livestock. The availability of sufficient full-time employment in the cultivation of crops as well as in other sectors of the economy are the main factors for low participation by large farmers in the rearing of livestock.

The livestock-cropping integrated farming system is well rooted in rural areas. Optimal utilization of animal products/by-products in the cultivation of various crops and the use of crop residues and by-products for rearing animals have resulted in the improvement of economic viability of agriculture and sustainability for poor farmers who follow the system. Soil fertility is also maintained through the use of cow manure as fertilizer directly. The production of biogas is also used for cooking food and other work, which can save energy. Proper management of livestock and crop-derived wastes could reduce environmental pollution and increase the level of sustainability of the environment. Moreover, livestock rearing undertaken by poor farmers, with the cultivation of distinct crops, is the key and boon for poverty alleviation at the national level. Integrated crop-livestock farming is an economically viable, environmentally sustainable and socially acceptable farming system in the study area.

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LIVESTOCK REVOLUTION AND ITS IMPACTS ON THE SUSTAINABILITY OF MARGINAL AND SMALL FARMERS IN INDIA: A CASE STUDY

Summary

Livestock husbandry is an important segment of Indian agriculture. Its share of contribution to agricultural gross products has increased since the implementation of the globalization of agricultural trade. Livestock revolution has occurred not only in India, but in all tropical developing countries, owing to recently increasing demand for animal-derived products in national and international markets.

The mechanization and modernization of the cropping sector and increasing demand for livestock products, especially meat and milk, brought a dramatic change in the composition of bovine species of livestock. Buffalo stand highest in the ranks, pushing back cattle in recent years. A cattle rearing has been continuously discouraged on account of the mechanization of agriculture and prohibition of meat production for religious reasons. Small ruminants like goats showed improvement in their numbers at a very slight rate, though demand for meat is high. For this reason, they are reared by poor and female workers in very traditional ways. No commercial or intensive farming is done in the study region. Similarly, buffalo have recorded the highest growth in their numbers over the last decade in response to the growth of demand for milk and meat at national and international levels.

Livestock husbandry is a diversified source of income and employment for them to enhance their income during the agricultural off-season. The comparative cost and benefit analysis of livestock rearing in the district revealed that the integrated livestock-cropping system is more profitable than the exclusive livestock system on account of lower input costs adjusted through the use of livestock feed and fodder from residues of crops from their own fields. Optimal utilization of animal products/ by-products in the cultivation of various crops and the use of crop residues and by-products for rearing animals have resulted in the improvement of economic viability of agriculture and sustainability for poor farmers who follow the system. Soil fertility is also maintained through the use of cow manure as fertilizer directly. The production of biogas is also used for cooking food and other work, which can save energy. Proper management of livestock and crop-derived wastes could reduce environmental pollution and increase the level of sustainability of the environment. Moreover, livestock rearing undertaken by poor farmers, with the cultivation of distinct crops, is the key and boon for poverty alleviation at the national level. Integrated crop-livestock farming is an economically viable, environmentally sustainable and socially acceptable farming system in the study area.

COMMUNITY DEVELOPMENT PLAN: RURAL LIVESTOCK, AGRICULTURE AND LIVELIHOOD IN INDONESIA

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UDK: 332.1:631(594)
COBISS: 1.02 – Review article

Abstract
This study aimed to determine the bio-physical and socio-economic characteristics of the community, to determine the problems encountered by the community with emphasis on livestock, agriculture and livelihood and to recommend appropriate plans of action in addressing these problems. Field observation and interviews with key informants were conducted. The data gathered served as basis in the preparation of a Community Development Plan for Lopati Village, Yogyakarta Province, Indonesia, which was the ultimate goal of the activity. In addition, this data provided guidelines in plan implementation as well as serving as a basis for determining the different changes or accomplishments to be made. Eight key informants were involved in the interview. The results showed that there are many problems faced by the community, including low income, lack of capital and credit sources, low prices of products and business management. Several plans of action that were made and proposed included strengthening of the existing farmers' multipurpose cooperative, conversion of the farmers and women's association into a cooperative, introduction and implementation of swine dispersal project, intensification of cattle, goat and duck raising, home industries, introduction of purely self-help projects, training workshops for farmers, youth and women, competitive farm gate prices for the community's products, payment of previous loans, encouragement/reactivation of other banks to participate in a credit program, and general assembly meeting/monitoring and evaluation of projects/program.

Key words
community development plan, rural livestock, agriculture and livelihood

The editor received the article on 25.1.2010.

1. Introduction

Building social capital is the primary objective achieved by residents playing a central role in decision making and believing that they "own" the process as they move away from being dependent (Sanoff 2000). The principles of community building are to involve residents in setting goals and strategies, to identify a community's assets as well as its problems, to work in communities of manageable size, to develop unique strategies for each neighbourhood, to reinforce community values while building human and social capital and to develop creative partnerships with institutions in the city (Naparstek et al 1997). Communities taking initiatives from the perspective of solving problems casts a negative tone on what should be a positive capacity-building process. Community building should start by identifying neighbourhood assets and finding ways to build on them; community building orientation should be positive and constructive (Kretzman and McKnight 1997).

Developing a community plan involves systematically assessing alternatives and making choices in the context of a defined community vision. Planning is a process that assists community members in translating knowledge, concerns and hopes into action. Community plans are developed based on the logic and structures of the strategic planning process. The logic of this process takes us from a broad-based vision to specific actions and action plans. The process links vision, goals, objectives and action into a logical and inter-related structure. The development of a community plan requires resources and dedicated leadership. It is important to determine whether we have what it takes to put a plan in place before we actually begin. To start the process and fail to complete it can harm our community and undermine the commitment of community members to future development approaches (Frank and Smith 1999).

Community planning is for the good of the people and as such they should play the lead role in this process. The community members should be the ones planning and managing their own development. Planning should be treated in the context of the community members' lives, aspirations and experiences. We can do this by going to the countryside to the people to find out their needs and desires for development.

Planning is aimed at solving multifarious problems confronting the community, especially the marginalized rural poor. There are a lot of activities undertaken by farmers to improve their socio-economic conditions, but these activities are not laid down in a manner that is suitable and systematic, therefore, planning is vital in this aspect. We can clearly see that planning should be organized and done together by the people themselves to make it reflective of their aspirations and goals.

Generally, the objective of the study is to come up with a community development plan for Lopati village in Bantul Regency, Yogyakarta Province, Indonesia. Specifically, the study aims to:

∞ Determine the bio-physical and socio-economic characteristics of the community;
∞ Determine the problems encountered by the community with emphasis on live-stock, agriculture and livelihood;
∞ Recommend appropriate plans of action in addressing these problems.

2. Methodology

Lopati village was selected as the site of the study based on it being a rural

community characterized mainly by agricultural production activities. The accessibility to transportation facilities was also considered, as it was suited to the time resources of the researcher.

Field observation and interviews with key informants were conducted. The data gathered served as the basis for the preparation of a Community Development Plan for Lopati village, which is the ultimate goal of the activity. In addition, this data will provide guidelines for the plan's implementation as well as serving as a basis for determining the different changes or accomplishments to be made.

The researcher prepared guide questions for the interviews. Informal interviews with some key informants facilitated the gathering of data. A total of eight key informants were involved in the interview and these included some of the village councillors, a schoolteacher, and group leaders. Different problems and needs were identified and discussed and possible solutions or interventions were formulated. During the field visit, the researcher conducted an ocular survey and observed what the situation of the community was. This was also done to validate the data collected in the interviews.

The village officials informed the researcher that secondary data about the community could be obtained from the development plan they had submitted to their local government. When the researcher got hold of a copy of the plan, it was found that much needed vital information was not included in the plan. Thus, the researcher depended more on the data gathered during the field visit and interviews as basis for the preparation of the community's development plan.

This study was limited to livestock, agriculture and livelihood concerns of the village. The study considers insufficient data and time constraints as a hindrance for the preparation of a more comprehensive and extensive development plan that would help village officials pursue their developmental efforts for a better Lopati village.

3. Results and Discussion

3.1 The General Situation

∞ Location - Lopati village is one of the seventeen villages in Trimurti major village, Srandakan subdistrict, Bantul Regency. The village is bound on the south by Gunung Saren Kidul village, on the west by Nengahan village and the north by Celan village, and on the east by Gunung Saren Lor village. It is very accessible to transportation facilities. The total land area of the village is 12.8 hectares. The distance from the municipality of Bantul is about 8 km.

∞ Biophysical Characteristics - The village is an agricultural area. The agricultural area is devoted to farming and residences of the farming households. The dry season for the area is from April to October, while the rainy season is October to April. Various crops are grown in the area signifying that they have fertile land. The village has a flat slope. The farmers grow agricultural crops such as rice, corn, various vegetables and coconut. The dominant crop is rice because it is a staple food. Five years ago, gravity irrigation existed in the farms. However, this irrigation system dried up. Presently, water sources include artesian wells for household use and water pumps for farming. The dominant land use in the village is for agricultural purposes, orchards planted with coconut and mango, and for residential purposes.

∞ Labour Force - Generally, there is sufficient labour in the area. However, after the planting and harvesting season, these labourers are left with no job. More than 200 younger persons (age range 15-25) and another 200 with an age range of 25-35 are employed. Thus, they seek employment outside the community and go to other municipalities in Bantul and Yogyakarta.

∞ Economy - Most of the people in the village are farmers and their primary source of income is farming. Their income from farming is supplemented with income from vegetable raising, cash crops, livestock and poultry raising. Other economic activities include employment in public and private firms both locally and abroad and operation of home industry. Farm inputs such as fertilizers, seeds, pesticides, etc., are always available in the community and can be purchased anytime if cash is at hand.

∞ Land Ownership - The comprehensive Agrarian Reform Law whereby the farmers till land on a leasehold basis covers most of the land in the village. The farm owners also pay taxes to the government.

∞ Organizations - The village has one Farmers' Multipurpose Cooperative and women's group.

∞ Education - The village has an elementary school where the majority of the children of the residents' study. Others who have adequate financial resources send their children to private schools in the town proper or other nearby facilities. There is a day-care centre where children aged four to five years are taken care of by an assigned day-care Worker.

3.2. Problems/Needs in Agriculture and Livelihood

The respondents identified the common problems that they were experiencing as far as agriculture and livelihood is concerned in the village. These are as follows: low income, lack of capital and credit sources, unemployment, low price of agricultural products as compared to farm inputs, and lack of livestock/agricultural equipment.

∞ Low income - Low income is considered to be the major problem of the residents in the community. Although there is no available data on their average earnings, it was evident that their income can hardly support their needs. They are hard up in making ends meet. Based on the interviews, most of the farmers have no choice but to obtain loans from usurers who loan them money with very high and exorbitant rates just to buy inputs needed for their farms. After harvest, only a small portion of their profit is left upon payment of these loans.

∞ Lack of Capital and Credit Sources - Whenever the farmers need capital for their livelihood activities, they always meet difficulties in obtaining their requirements. Many are taken advantage of by informal lenders with which the same problems persist as in the above concern. Although there are government financial institutions extending loans for farmers in the locality, their previous unsatisfactory lending records haunt them and are the cause of disapproval.

∞ Unemployment - There are a lot of unemployed individuals in the village. Employment opportunities are very rare in the community because of the absence of firm programs and projects providing employment.

∞ Low price of produce - The prices of the farmers' produce are dictated by the informal money lenders/usurers from which they receive their loans. They have no control of the price of their produce.

The above-mentioned problems are interrelated and interconnected, and a solution for a given problem, if successfully implemented, will eventually solve the other problems. Which problem is to be given attention first is the concern of both the village officials and the community residents themselves. These problems cannot be solved in isolation and single-handedly by a sector of society; they should be addressed coordinately, cooperatively and harmoniously.

Based on the foregoing problems and needs that were identified, the general objective of the community development plan for Lopati village is to develop and effect some changes in the community, particularly in increasing the community's capacity for income generation. Specifically, the plan aims to:

∞ Strengthen the capacity of the existing cooperative in terms of its operation and management.
∞ Convert the farmer's and women's associations into a cooperative.
∞ Introduce and implement various alternative livelihood opportunities such as swine dispersal projects, duck raising and home industries.
∞ Introduce purely self-help projects.
∞ Conduct specialized training or intensification of knowledge in farming.
∞ Help farmers market their produce with realistic farm gate prices.
∞ Encourage farmers to pay their previous loans from banks in order to avail continued services of the lending program/institutions.
∞ Involve other banks in participating in credit programs.

3.3. Plan of Action/Interventions Proposed

The following are the plans of action or interventions proposed to develop and effect some changes in the community, particularly in increasing the community's capacity for income generation.

∞ Strengthening of the existing farmers' multipurpose cooperative - Cooperatives are considered as a viable vehicle for solving various problems that confront the majority of people in the community. The group believes that if the existing farmers' cooperative is strengthened, it will serve the purpose for which it was organized. The present operation and management of the cooperative seems to have no direction. There are no clear policies on how to increase the capitalization of the cooperative. There is no expansion in membership. Most of the village officials interviewed was not members of the cooperative and they are the ones who should be leaders in the promotion of cooperative development. In this regard, there should be continuous membership expansion through continuous education and training seminars for interested residents. If membership was increased, many community members would contribute to the capital requirement of the cooperative thereby widening its business activities to cover all aspects of the needs of members. In addition, continuous education in a capital build up scheme will motivate members to pour capital into the cooperative and increase capitalization of the cooperative. The capital may reach a level at which all requirements of the farmers will be met by the cooperative, meaning that it can serve as a source of capital for the members, thereby

eliminating middlemen and usurers who continue to impoverish the rural poor.

Plan of Action

Objectives/ Project Activities	Target Group	YEAR 1 PERIOD OF IMPLEMENTATION												Person Agency Involved	Indicator
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
To strengthen the capacity of the cooperative in terms of its operation and management															
A. Pre-membership education seminar	Interested residents	■	■	■	■	■	■	■	■	■	■	■	■	Cooperative Officers	No.of interested participant
B. Cooperative Management Training	Officers/ members of the coop	■			■			■			■			Cooperative officials	No.of officers/participants interested in the training No. of trainings conducted
To converted the farmer's and women's association into cooperative	Members of the farmer's and women's association														
A. Organizational meeting		■												Association's officers/ members	No.of members and officers of the association
B. Pre-membership education seminar		■												Officers/ members	No.of interested or prospective members
C. Preparation of the requirement documents for registration			■											officers	Documents needed for registration
D. Cooperative Management training and follow-up training					■			■			■			Officers/ members	No.of participants No. of training donducted

Plan of Action

Objectives/ Project Activities	Target Group	YEAR 1 PERIOD OF IMPLEMENTATION												Person Agency Involved	Indicator
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
To introduce and implement swine dispersal project	Village official/ extension workers and others with expertise														
A. Preparation of the project proposal	Village official /extension			■										Village officials	Development proposal
B. Submission to funding agency					■									-do-	Approved funding
C. Selection of beneficiaries								■						Village officials	No.of selected beneficiaries
D. Swine raising seminar for the beneficiaries									■					Village officials	No.of participants in the seminar. No of seminar conducted
E. Inspection of the pig fens/ hosuing of the beneficiaries									■					Village officials	No.of piglets distributed to beneficiaries
F. Distribution of piglet to the beneficiaries									■					Village officials	No.of piglets distributed to beneficiaries
G. Follow-up and monitoring of the project										■	■	■	■	Village officials	No.of pigs sold No. of mortalities Income from sold pigs

∞ Conversion of the farmers' and women's associations into cooperatives - It is recommended that the farmers' and the women's associations be converted into cooperatives. Cooperatives have many privileges granted by law compared to associations. Associations, being non-stock and non-profit organizations, cannot engage in business like cooperatives do. The services extended to the members

would be many if these existing associations were converted into cooperatives.

Plan of Action

Objectives/ Project Activities	Target Group	YEAR 1 PERIOD OF IMPLEMENTATION												Person Agency Involved	Indicator
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
To improve knowledge/skill of the communbity in duck raising	Duck raiser														
A. Conduct of training							■							Village officials	No.of training and participants
B. Assist farmers in availment of small amount loans							■	■						Village officials	No.of participants Amount loaned to farmers
C. Selection of beneficiaries of loans										■				Village officials	No.of beneficiaries
D. Implementation of duck raising in the farm and in the lake by the beneficiaries											■	■	■	Beneficiaries	No. of ducks raised
E. Monitoring/evaluation Follow-up		■	■	■	■	■								Village officials	No.of ducks sold Amount of ducks sold No.of mortalities Increase in income by the beneficiaries Paid loans for the imple-mentation of the project

Plan of Action

Objectives/ Project Activities	Target Group	YEAR 1 PERIOD OF IMPLEMENTATION												Person Agency Involved	Indicator
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
To increase knowledge in home industries activities	Duck raiser women/ youth and other residents														
A. Conduct of seminars/training on the following: salted eggs nata decoco bakpia handmade from bamboo milk cracker tofu		■												Village officials	No.of participants
B. Sourcing out of funds to government and non-government agencies to start a small industry businiess			■	■	■	■	■								
C. Tapping the women's group to start the business activities								■						Association/ cooperative	Project implementation
D. Implementation of the project/ Monitoring				■	■	■	■	■	■	■	■	■	■	-do-	No.of products sold amount of produce sold increase in income

∞ Introduction and implementation of swine dispersal project - This project will help beneficiaries acquire skills and technologies in swine raising that will motivate them to engage further in swine production enterprises. This will also increase their income and can even become their primary source of livelihood.

∞ Intensification of duck raising - Duck raising is suitable in Lopati village because the area is along the Progo River. The ducks are a source of meat and eggs for the family as well as for selling purposes. To increase the value of duck eggs, they could be processed into salted eggs, which are a very famous Indonesian delicacy. There are plenty of technicians from the Department of Agriculture and other agencies that could assist the farmers in this endeavor.

∞ Home industries - Home industries require only a small capital to start their operation. These projects are ideal for women and youth in the village who are unemployed. Such industries (making tofu and salted eggs, coconut candies, coconut broomsticks, milk crackers, *geplak* and nata de coco and basket/hat weaving from bamboo) can be the occupation of the people after the planting/cropping seasons are finished.

∞ Introduction of purely self-help projects - These activities will not require so much time for the residents. These will be usually done during their spare time. Both young and old people can participate in these self-help projects, such as backyard gardening, home beautification, sports development activities and fund-raising activities.

∞ Training workshops for farmers, youth and women - Various training workshops mentioned in the matrix will be provided to interested individuals to improve their capabilities and expertise in their chosen field of specialization. These workshops will condition their attitudes and behaviour towards these activities to increase in the production of the aforementioned products.

∞ Competitive farm gate prices for the community's products - As mentioned earlier, farmers and fishermen are always at the mercy of the dealers or middlemen. It is suggested that farmers themselves should be taught to market their own produce. The cooperative should seek assistance from the extension workers of the Department of Agriculture regarding various marketing strategies. In doing so, farmers could get competitive farm gate prices for their produce.

∞ Payment of previous loans - Most residents in the area are indebted with banking institutions for their farm inputs. Because of natural calamities that struck the community, the majority of people were not able to pay their loans to the banks. In this regard, it is suggested that the community should reactivate crop insurance. In times of disaster, such as after an earthquake, they would be able to claim some benefits from these insurance companies, thereby enabling them to pay part of their incurred loans. Aside from crop insurance, the farmers should be motivated to pay their previous loans in order to gain access to the services of these credit institutions.

∞ Encouragement/reactivation of other banks to participate in a credit program - It is suggested that other banks must be encouraged to participate in supervised credit programs. This can be done through collaboration with various banking institutions of the municipal government of Bantul as well as the provincial government of Yogyakarta.

∞ General assembly meeting/monitoring and evaluation of projects/program - Just like in any program or project, it is important that these programs be monitored and

evaluated to determine what factors contribute to their successes and failures. It is recommended that the community should conduct regular general assembly meetings to voice their problems and needs. In addition, the occasion would serve as a place for members to learn from the other residents of the community. Likewise, regular monitoring and evaluation of the implemented programs and projects should always be done to check the operation and management of these programs. In this way, if there are problems in the program, they can be addressed immediately.

4. Conclusion

Not all community development initiatives require formal plans. Many valuable outcomes have been obtained through ad hoc or less structured processes. On the other hand, many potentially successful initiatives have failed because there was either no plan or a very poor one in place. Depending on the complexity of the situation and the resources involved, the need for a formal plan will vary. Regardless of the formality of the planning process, community development action is not possible without a common vision and purpose.

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COMMUNITY DEVELOPMENT PLAN: RURAL LIVESTOCK, AGRICULTURE AND LIVELIHOOD IN INDONESIA

Summary

Planning is aimed at solving multifarious problems confronting the community, especially the marginalized rural poor. There are a lot of activities undertaken by farmers to improve their socio-economic conditions, but these activities are not laid down in a manner that is suitable and systematic, therefore planning is vital in this aspect.

Study was done in one community in Lopati village, Bantul Regency, Yogyakarta province, Indonesia. This study was focused on how a rural community planned their development with their own strength and potential through rural livestock, agriculture, and livelihood. Generally, the objective of the study is to come up with a community development plan. Specifically, the study aims to determine the biophysical and socio-economic characteristics of the community, determine the problems encountered by the community with emphasis on livestock, agriculture and livelihood and recommend appropriate plans of action in addressing these problems.

Lopati village was selected as the site of the study based on it being a rural community characterized mainly by agricultural production activities. Accessibility to transportation facilities was also considered, as it was suited to the time resources of the researcher.

Field observation and interviews with key informants were conducted. The data gathered served as the basis for the preparation of a Community Development Plan for Lopati village, which is the ultimate goal of the activity. In addition, this data will provide guidelines in the plan's implementation as well as serving as a basis for determining the different changes or accomplishments to be made. The researcher prepared guide questions for the interviews. Informal interviews with some key informants facilitated the gathering of data. A total of eight key informants were involved in the interview, including some of the village councillors, a schoolteacher, and group leaders. Different problems and needs were identified and discussed and possible solutions or interventions were formulated. During the field visit, the researcher conducted an ocular survey and observed what the situation of the community was. This was also done to validate the data collected in the interviews.

The village officials informed the researcher that secondary data about the community could be obtained from the development plan they had submitted to the local government. When the researcher got hold of a copy of the plan, it was found that much needed vital information was not included in the plan. Thus, the researcher depended more on the data gathered during the field visit and interviews as basis for the preparation of the community development plan.

Lopati village is one of seventeen villages in Trimurti major village, Srandakan subdistrict, Bantul Regency. The village is bound on the south by Gunung Saren Kidul village, on the west by Nengahan village, on the north by Celan village, and on the east by Gunung Saren Lor village. It is very accessible to transportation facilities. The total land area of the village is 12.8 hectares. The distance from the municipality of Bantul is about 8 km. The village is an agricultural area. The agricultural area is devoted to farming and residences of the farming households. The dry season for the area is from April to October, while the rainy season is from October

to April. Various crops area grown in the area signifying that it has fertile land. The village has a flat slope. The farmers grow agricultural crops such as rice, corn, various vegetables and coconut. The dominant crop is rice because it is a staple food.

Most of the people in the village are farmers and their primary source of income is farming. Their income from farming is supplemented by income from vegetable raising, cash crops, livestock and poultry raising. Other economic activities include employment in public and private firms both locally and abroad and operation of home industry. The comprehensive Agrarian Reform Law whereby the farmers till land on a leasehold basis covers most of the land in the village. The farm owners pay taxes to the government. The village has one Farmers' Multipurpose Cooperative and a women's group.

The respondents identified common problems that they experience as far as agriculture and livelihood is concerned in the village. These are as follows: low income, lack of capital and credit sources, unemployment, low price of agricultural products as compared to farm inputs, and lack of livestock/agricultural equipment. The above-mentioned problems are interrelated and interconnected, and a solution for a given problem, if successfully implemented, will eventually solve the other problems. Which problem is to be given attention first is the concern of both the village officials and the community residents themselves. These problems cannot be solved in isolation or single-handedly by a sector of society, but must be addressed coordinately, cooperatively and harmoniously.

Based on the identified foregoing problems and needs, the general objective of the community development plan for Lopati village is to develop and effect some change in the community, particularly in increasing the community's capacity for income generation. The following is a list of plans of action or interventions proposed for the purposes of developing and effecting some changes in the community, particularly in increasing the community's capacity for income generation:

∞ Strengthening of the existing farmers' multipurpose cooperative.
∞ Conversion of the farmers' and women's association into cooperatives.
∞ Introduction and implementation of a swine dispersal project.
∞ Intensification of duck raising.
∞ Home industries.
∞ Introduction of purely self-help projects.
∞ Training workshops for farmers, youth and women.
∞ Competitive farm gate prices for the community's products.
∞ Payment of previous loans.
∞ Encouragement/reactivation of various banks to participate in credit programs
∞ General assembly meeting/monitoring and evaluation of projects/program.

Study concluded that not all community development initiatives require formal plans. Many valuable outcomes have been obtained through ad hoc or less structured processes. On the other hand, many potentially successful initiatives have failed because there was either no plan or a very poor one in place. Depending on the complexity of the situation and the resources involved, the need for a formal plan will vary. Regardless of the formality of the planning process, community development action is not possible without a common vision and purpose.

POTENTIAL ROLE OF PROBIOTICS FOR SUSTAINABILITY IN RURAL INDIA

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UDK: 579:911.373(540)
COBISS: 1.02 – Review article

Abstract
Potential Role of Probiotics for Sustainability in Rural India
Probiotics (greek "for life") have been recognized and explored for over a century. Metchnikoff's pioneering work was converted into commercial reality in the 1950s, and since then many probiotics' benefits have been described. Nowadays they have already found place as a food supplement and as a preventive or curative drug. The term probiotic describes a variety of microorganisms which can colonize the host and have health improving effects on it. Since it is a natural and comparably affordable product even for people with low incomes, it could be introduced into the diet of people living in the Indian rural areas. The biggest obstacles for this are education about their use and technology to prepare them in a convenient form for domestic use. Regular use could improve the quality of live and reduce the dependence on drugs and medical expenses.

Keywords
probiotics, sustainability, India

The editor received the article on 12.1.2010.

1. Introduction

Probiotics are dietary supplements of live microorganisms thought to be healthy for the host organism when administered in adequate amounts. Their beneficial effects to the host are beyond those of basic nutrition. At first, probiotics were thought to beneficially affect the host by improving its intestinal microbial balance, thus inhibiting pathogens and toxin producing bacteria. Today specific health effects are being investigated and documented including alleviation of chronic intestinal inflammatory diseases, prevention and treatment of pathogen-induced diarrhea, urogenital infections, atopic diseases etc. A recent research also provides data on anticancer and hypocholesterolemic effects of probiotics (reviewed in Gupta and Garg 2009). The most common types of probiotic strains are *Lactobacillus*, *Bifidobacteria*, but also certain yeasts and bacilli are available (Singhi and Baranwal 2008).

Poor sanitary conditions and limited health facilities are common in rural India. Unavailability of modern medicine with concomitant outbreaks of intestinal diseases is calling for an additional simple and accessible method to improve the quality of these economically challenged people. The acceptability of probiotic dairy products in India is high because people already consume a lot of curd, milk and cheese. In the southern parts of India traditional dairy products such as rasam are prevalent since ancient times (http://www.indiadairy.com/info_milk_products_dairyproducts.html). These are good for general nutrition but have a limited role in the improvement of digestion or serious disorders, since the bacterial strains are not selected. In the present paper we focus on health improving properties of probiotics, for which they could be recognized to find place in the diet of Indian rural people.

2. Intestinal tract and bacterial colonization

The intestinal mucosa surface exceeds 300 m^2, and to ensure normal functions regulated homeostasis is necessary. It requires a complex interplay between the intestinal epithelial monolayer and the underlying mucosal immune system. The intestinal epithelial barrier is a dynamic system composed of a single layer of densely packed enterocytes along the villous axis of the crypt (Thomson et al 2003b; Thomson et al 2003a). Tight junctions between the cells prevent leakage through the layer. Enterocytes are highly polarized cells with apical (towards the intestinal lumen) and basolateral part (towards the body) of the membrane, the organisation which controls selected and directional transport of substrates while maintaining a barrier to pathogens (Snoeck et al 2005). The mucosal immune system provides tolerance to food antigens along with protection against pathogens. This autologous synergistic concept was recently expanded to include intestinal commensal microorganisms, which are believed to be the third and indispensable player for the normal intestinal balance (Hooper and Gordon 2001; Sansonetti 2004). Intestinal microbiota interact with the epithelial cell barrier and the mucosal immune system and it can be modulated by the use of probiotics to increase their potential in preventing and curing of diseases (Nissen et al 2009). The interaction between them has been studied using *in vivo* and *in vitro* models (Botic et al 2007).

3. Health-improving potential of probiotics

3.1 Modulation of the immune system

Many studies are showing immunomodulatory effects of probiotics *in vitro*. The

response of the immune system to probiotics is weaker than in the presence of other gram positive pathogens (Veckman et al 2004). Generally, they suppress the formation of proinflammatory IL-12 while maintaining high production of immuno-suppressive cytokine IL-10 (Braat et al 2004; Hart et al 2004; Lammers et al 2003). They can also elicit non-specific immune response, like production of oxygen species and NO (Pipenbaher et al 2009). Most of the studies focused on short-term effects, while long-term consumption of probiotics has not been assessed in details with regard to sustained improvements of the immune system.

3.2. Treatment and prevention of infectious diseases

In addition to strong physical epithelial barrier, gut has additional chemical antibacterial mechanisms to control growth of potential pathogens. Plasma cells in intestinal submucosa secrete pIgA as a part of adaptive immune response (Macpherson and Uhr, 2004). Epithelial and immune cells secrete cationic antibacterial peptides: α–and β–defensins and cathelicidins (Cunliffe and Mahida 2004).

Despite the sophisticated innate and adaptive immune response, pathogens still manage to destroy or traverse the epithelial barrier and invade the host. Various *in vitro* experiments and clinical trials showed positive effects of probiotics in prevention and cure of intestinal pathogen induced diseases. Probiotics compete with pathogens for adhesion sites, strengthen the epithelial barrier by preservation of tight junction protein expression between enterocytes (Parassol et al 2005) and inhibition of epithelial cell apoptosis (Yan and Polk, 2002). Alternatively, they may inhance mucosal IgA-mediated immune response to pathogens (Rautava et al 2006). Furthermore, probiotics are known to secrete antimicrobial molecules. Currently, most beneficial effects of probiotics have been observed in studies on diarrhea, in particular rotavirus watery diarrhea (Szajewska and Mrukowicz 2005).

Our results showed efficacy of probiotics in other viral food and water born infectious diseases, like hepatitis viruses (unpublished results). Reports also suggest protection against *Lysteria monocytogenes*, *Salmonella enterica* and reduction of *Helicobacter pylori* load (Lin et al 2009), the infection which leads to chronic gastritis and increased risk of gastric malignancies. Little or no knowledge is available about the potential role of probiotics to prevent infection by uncommon enteroviruses like poliomyelitis (Palacios and Oberste 2005) and meningo-encephalitis (Antona and Chomel 2005), the outbreaks of which are generally more frequent in the developing world.

3.3 Probiotics and prevention of necrotizing enterocolitis

Neonatal necrotizing colitis (NEC) is a challenging clinical disease entity, which is a complication of very low birth weight infants and is often fatal. The etiological cause for the disease is not understood, but it is generally accepted that the normal intestinal functions are underdeveloped in the newborn and therefore it can not deal with the challenges of dietary and microbial antigens (Lin and Stoll 2006). Several clinical studies showed that the use of probiotics significantly reduces mortality (Hunter et al. 2008, Lin et al 2008). In rural India, where pregnant women often deliver at home or in inadequately equipped facilities (Iyengar et al 2008), the use of probiotics could reduce the incidence of death along with the severity of symptoms.

3.4 Prevention of allergies and inflammatory bowel diseases

Allergies and inflammatory diseases are typical western diseases closely linked to unhealthy lifestyle (hygiene hypothesis; Garn and Renz, 2007). These diseases are significantly less common among rural Indian people, also due to prevalent vegetarian food, a lot of exercise, breastfeeding and early contact with bacteria and domestic animals. These diseases are rising due to globalization in India as well. The potential role of probiotics to treat patients with allergic diseases like atopic eczema, food allergies and atopic dermatitis has not been clinically evaluated yet in detail (Bunselmeyer 2006), but reports suggest that intestinal microbiota and its diversity are different between healthy and atopic eczema affected patients (Penders et al 2007). Several lines of evidence suggest that a loss of immunological tolerance to intestinal microbiota is a major component in the etiology of inflammatory bowel diseases, like Crohn disease and perhaps also ulcerative colitis and pouchitis (Korzenik and Podolsky 2006). The most convincing data of probiotics' benefit is linked to the treatment of pouchitis (Lammers et al 2005), but little is known about treating other above mentioned diseases.

3.5 Reduction of cancer and malignant diseases

Chemical industry produces xeno-compounds with mutagenic properties, which have found numerous use in our daily-life. Since their use is widespread, they can also be detected in the food-chain. Probiotics were shown to posses antimutagenic and anticarcinogenic activity against well-known mutagens and promutagens, although the mechanisms are still unknown (Rafter 2002). They can decrease levels of cellular enzymes responsible for the activation of procarcinogens. Alternatively, microbes can be involved in the metabolism of substances or into the prevention of their binding to the cell surface (Rafter 2002).

3.6 Lactose intolerance

Although general nutrition of Indian rural population is vegetarian-based, they traditionally consume a lot of milk and milk products as an important source of proteins. Cow milk contains lactose, which is degraded after consumption into monosaccharides by β–galactosidase. The level of endogenous enzyme declines over age and causes lactose intolerance especially in the aged people, and the condition manifests with clinical symptoms such as bloating, flatulence, nausea, abdominal pain and diarrhea. Probiotic strains may decrease the symptoms by producing their own secreted β–galactosidase or by consumption of lactose during the fermentation. Dairy products could thus stay in the normal diet of the majority of population without posing the risk of health problems.

4. Sources of probiotics

Probiotics have been lately exploited extensively by the dairy industry as a tool for development of new competitive functional products. Traditionally, probiotics have been incorporated into yoghurt; however, a number of additional carriers appear on the market including mayonnaise, edible spreads and meat. A wide variety of species could be considered potential probiotics, but commercially used strains should have several desirable criteria: safety (lack of pathogenicity and toxicity), tolerance to harsh conditions along the digestive tract, adhesion to mucosal surface, validated and documented health effects (Morelli 2000).

Fermentation of milk in a natural way with non-selected bacterial strains would not provide substantial health benefits as described above. Since already fermented dairy products are difficult for distribution in rural India due to unreliable cold distribution chain, it would only be possible to provide people with lyophylized or spray-dried bacterial strains. To prepare an affordable and effective bacterial strain is not of interest for the industry - moreover, there are technological challenges to prepare them and to be effective starters of fermentation in the hands of final consumers.

5. Status of probiotics in India

Functional dairy products with probiotics are promising in the Indian market, as major players such as Amul, Yakult, Mother Dairy and Nestle launch more health drinks and yoghurts in the country (2008). The market for products containing probiotics is expected to grow as Indians become more aware of natural, healthy ingredients in foods. Probiotics are available for purchase mainly in big cities (Delhi, Bombay). According to estimates by Dairy India, the size of the dairy market is expected to grow at almost 40% annually or even more, reaching Rs 5,20,780 crores ($122,825 million) by 2011 (2008).

Currently, probiotics are often used as animal feed supplements for cattle, poultry and piggery. This requirement is also met by importing probiotics from other countries. The most commonly found commercial probiotic drinks for human consumption are found in the form of probiotic drinks, icecreams and frozen desserts. The latest and recent addition to the list of probiotics in India is ViBact (which is made up of genetically modified *Bacillus mesentricus*), which acts as an alternate to B-complex capsules (Sonal et al 2008). Probiotic products are gaining acceptance mostly in urban areas. The Indian market is big, but difficult to reach since cold storage and cold distribution chain are underdeveloped in India, especially in the rural areas. In the future, it is important to increase the awareness of the country people and to educate them about the probiotics' benefits.

6. Conclusion

Probiotics are food preparations of live bacteria, which are beneficial for health. Since they have already been known for more than 100 years, they are proved to be safe, natural and effective. The general knowledge about them has not reached the Indian rural areas and additional education of the country people is needed to boost their use. Probiotics could be used as prevention against diseases and to improve the quality of life of rural people. Moreover, lower dependence on expensive chemical drugs and scarce medical facilities would improve sustainability of the Indian rural countryside.

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POTENTIAL ROLE OF PROBIOTICS FOR SUSTAINABILITY IN RURAL INDIA

Summary

Probiotics have gained importance in the last decades mainly in the western world, but they are spreading in the third world as well. Their benefits are well documented and vary from protection against pathogens, alleviation of lactose intolerance, immune system modulation, prevention from inflammatory bowel disease and necrotising eneterocolitis.

Intestinal bacteria are supposed to be one of the most important players in the gut. Intestinal commensal microorganisms interact with epithelia and the underlying immune system and all the three partners are indispensable for the intestinal balance. There are hundreds of different bacteria colonising the gut, but they are not selected with respect to the benefits they could provide for the intestine. Probiotics are selected strains of bacteria (mostly from genus Lactobacillus and Bifidobacteria), which are able to generate some of the properties described above. By consumation of probiotics, beneficial bacteria can colonize the gut and exert health improving actions in the intestine.

Indian rural inhabitants with poor incomes have limited access to medicines, besides; health facilities are scarce as well. Introduction of probiotics to these economically challenged people is a cost effective and natural way to improve their health conditions. Acceptability of diary products (the most usual form of probiotics) in India is high since they have been consumed traditionally in the Indian subcontinent. There are obstacles in preparing them in a suitable form, since cold distribution chain and refrigerators are generally not available, education is poor, and technical problems exist to prepare them. By preparing them in a suitable form for domestic use we could improve the quality of rural inhabitants and enable sustainability in the Indian countryside.

ECOLOGICAL EFFICIENCY OF PRODUCTION AND THE ECOLOGICAL FOOTPRINT OF ORGANIC AGRICULTURE

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UDK: 631.147
COBISS: 1.02 – Review article

Abstract
Ecological efficiency of production and the ecological footprint of organic agriculture
The rising energy prices and climatic changes have intensified the search for alternative farming systems where energy consumption per unit would be lowered. A long-term field trial, started in 2007 at the University of Maribor, focuses on food quality and the ecological footprint of conventional (CON), integrated (INT), organic (ORG) and biodynamic (BD) farming systems. The gained data has been evaluated and interpreted using the SPIonExcel tool. Results from the first year show better environmental performance of both, ORG and BD systems in production of wheat (*Triticum aestivum* L.) and spelt (*Triticum spelta* L.), mainly due to the non-use of external synthetic production factors. When yields are added to the equation, the ORG and BD systems emerge also as more efficient per unit of land area. Thus, the ORG and BD farming systems present viable alternatives for reducing the impact of agriculture on climate change, while ensuring a more sustainable food security.

Key words
organic agriculture, biodynamic agriculture, ecological footprint, comparison of farming systems

The editor received the article on 24.1.2010.

1. Introduction

The world Commission for environment and development (the Brundtlandt Commission) coined the definition of sustainable development in the year 1987 – it is defined as development which satisfies the needs of current generations without compromising the needs of future generations (WCED 1987). Consequences of excessive or unsustainable consumption and production are still evident in the collapsing of global environment system (UNEP 1992). Excessive consumption is addressed towards consumers, production towards companies and organisations which produce goods or offer services (Veleva et al 2001). The industrial revolution and the intensification of agriculture have, for the first time since the permanent settlement pattern and agriculture over 12,000 years ago, led to economic activities which profoundly influence the ecosystem to the point where global environmental stability and geographic political security are jeopardized (Wackernagel and Rees 1996). But it is difficult to determine or implement sustainable development in everyday practice. And it is even harder to measure it. Indicators can help define and communicate questions regarding sustainable development and can also be used to predict and follow the results of political decisions.

According to van der Werf et al (2007), indicators and/or tools for evaluating sustainable development have to be chosen very carefully as regards the method, which best suits the needs, the set goals and the expected results. The tools or indicators known today can be used individually, as several indicators together or as a joined indicator, comprised of more indicators with a single result. Such a single result can be very useful in communicating results to the public or the policy makers. In recent years, numerous tools and methods have emerged which are supposed to determine sustainable development on the level of single enterprises (Veleva et al 2001) as well as on a higher, societal level (Lenzen and Murray 2001; Chen et al 2009). The most of attention is given to the sustainable development of the society due to easy access to databases. One of such tools is also the environmental or ecological footprint (Wackernagel and Rees 1996). It tries to summarize the biologically productive area which is needed to produce yearly flows of materials used by the population of a certain region (city, state, world) with all the accompanying waste in the form of emissions (especially CO_2) and the area needed for building infrastructure. In the second step, the calculated area is compared to an area available to a certain population or individual, which is called the biocapacity. In the cases where the ecological footprint is greater than the biocapacity, this means that the human consumption or life standard exceeds the natural carrying capacity (Haberl et al 2001). The data for the ecological footprint is usually excerpted from statistical databases, in the case of agriculture from the yearly statistics of individual countries or the food and agriculture organisation. The drawback of such data lays in the inaccuracy of the attained footprint for smaller units e.g. farms.

To evaluate production processes, other tools based on actual/real data are more appropriate. One of such tools is called the LCA (life cycle assessment) and it assesses the environmental burden caused by a product, a production process or an activity (Curran 2008). It takes into account the technological processes of all the activities, the basic materials and the transportation into and from the production unit. In the second step, sources used for each input are evaluated by adding the environmental impact, including the resulting emissions and waste. The result can be interpreted on a per unit of product basis (kg) or equivalent area (ha), where areas used outside the production unit are included (van der Werf et al 2007). The

only drawback of this tool is the limited comparability of the gained data on the global or state level. Consequently, the LCA needs to be joined by other indicators or tools.

The research in the area of the ecological footprint or the LCA in agriculture is still developing. According to our present knowledge, there has been no scientific research published on the comparison of production of field crops and vegetables in different production systems using a joint framework of the ecological footprint and the LCA, called the Sustainable process index ® or SPI (Narodoslawsky and Krotscheck 1995; Krotscheck and Narodoslawsky 1996; Sandholzer and Narodoslawsky 2007), which has been customized for agriculture. In this paper, we used experimental data from a long-term field trial. The results therefore reflect the conditions in real-life situations and real-life farming systems. The main question we tied to answer was how sustainable the production systems most commonly used today are, and where they can be improved to sustainably produce food also for the future generations.

2. Materials and methods

2.1 Long-term field trial

Tab. 1: Production systems used and differences among them.

Production system	Soil cultivation and basic operations	Weed management	Pest management	Manure application
Conventional farming (CON) according to the Slovene Agriculture Act and good agricultural practice (GAP)	Ploughing, seedbed preparation, sowing, harvesting	Preventive use of herbicides according to GAP, harrowing when needed	Preventive use of pesticides according to GAP	NPK and N mineral fertilizers used according to GAP and nutrient removal estimates
Integrated farming (INT) according to the standards for integrated farming (MKGP 2002 and 2004)	Ploughing, seedbed preparation, sowing, harvesting	Use of herbicides according to the rules of INT management, harrowing at least once	Curative use of pesticides according to the rules of INT management	NPK and N mineral fertilizers used based on soil analysis and nutrient removal estimates
Organic farming (ORG) according to the EC regulation 834/2007	Ploughing, seedbed preparation, sowing, harvesting	Harrowing 2-5 times/season, cover crops after cereals, weed burning in vegetables	Use of some natural pesticides (Neem-oil, BT extract) on vegetable crops when needed	1,4 livestock units (LU) of cattle manure /ha
Biodynamic farming (BD) according to the Demeter International production standards	Ploughing, seedbed preparation, sowing, harvesting	Harrowing 2-5 times/season, cover crops after cereals, weed burning in vegetables	Use of BD preparations, some natural pesticides (Neem-oil, BT extract) on vegetable crops when needed	1,4 livestock units (LU) of composted cattle manure /ha with added BD compost preparations
Control plots	Ploughing, seedbed preparation, sowing, harvesting	Harrowing 1-3 times/season	none	none

Farming system definition sources: MKGP 2002; MKGP 2004; EC 834/2007 2007; MKGP 2008; Demeter International e.V. 2009.

The experimental site is located at the University Agricultural Centre of the University of Maribor in Pivola, near Ho(e, Slovenia (46°28' N, 15°38' E, 282 m a.s.l). The yearly mean air temperature of the area is 10.7 °C; with the mean monthly minimum in January with 0.4 °C, and the average monthly maximum in July with 20.8 °C. The average annual rainfall in the area is around 1000 mm. In 2007, thirty experimental field plots (7m×10m) were set up on a dystric cambisol (deep) (average pH value 5.5 (0.1 KCl solution), soil soluble P at 0.278 g/kg^{-1} and soil soluble K at 0.255 g/kg^{-1} in ploughing soil layer), and are maintained within two different five-course crop rotation designs, where various sequences of crops in the crop rotations are used. In one such rotation, there are typical crops of this region (two years of red-clover grass, wheat, white cabbage, oil pumpkins). The other one is an alternative crop rotation (two years of red-clover grass mixture, spelt, red beet, false flax). Four production systems with control plots were arranged in a randomised complete block split-plot design with four replicates. The farming systems differed mostly in plant protection and fertilization strategies (Tab. 1). Soil cultivation, sowing and harvesting were identical among experimental plots and were performed on similar dates and in a similar manner than at the adjacent fields.

2.2 SPIonExcel tool

In order to include easily applicable tools that give an overall picture of environmental impacts of products and processes and on top of that offer insights into the steps of a life cycle that exert the largest environmental pressures, the life cycle assessment using the Sustainable Process Index (SPI), a member of the ecological footprint family, is well suited for this task.

The Sustainable Process Index (SPI), developed by Krotscheck and Narodoslawsky (1996), is based on the assumption that a sustainable economy builds only on solar radiation as a natural income. Most natural processes are driven by this radiation on the earth's surface, and for the conversion of radiation into products and services surface area is needed. Surface area is a limited resource in a sustainable economy because earth has a finite surface. Therefore area is a convenient measure for the SPI; the more area a process needs to fulfil a service, the more it "costs" from the point of view of ecological sustainability. Human activities exert impacts on the environment in different ways. On the one hand, they need resources, energy, manpower and area for installations. On the other hand, they produce emissions and waste besides the intended goods. Consequently, the SPI includes all these different aspects of ecological pressure on the environment.

The SPI method is based on the comparison of natural flows with the flows generated by a technological process. The conversion of mass and energy flows into the area is based on two general "sustainability principles" (Sandholzer and Narodoslawsky 2007):

∞ Principle 1 - Anthropogenic mass flows must not alter global material cycles. As in most global cycles (e.g. the carbon cycle), the flow to long term storage compartments is the rate defining step of these dynamic global systems, flows induced by human activities must be scaled against these flows to long term stores.
∞ Principle 2 - Anthropogenic mass flows must not alter the quality of local environmental compartments. Here the SPI method defines maximum allowable flows to the environment based on the natural (existing) qualities of the compartments and their replenishment rate per unit of area.

We will not go into further detail as regards this method, for it is described in several research papers (e.g. Krotscheck and Narodoslawsky 1996; Sandholzer and Narodoslawsky 2007). However, the SPIonExcel was developed to bring this methodology into an easily applicable form. It calculates the ecological footprint of a process and the SPI of a product or service through the input that characterizes the process given by an eco-inventory. The eco-inventories used for the calculation of the overall footprint contain engineering mass and energy flows of processes in terms of input and output flows (Sandholzer and Narodoslawsky 2007).

For the needs of this research project, our research team met with the developers of the SPIonExcel tool several times in the years 2005-2007, and the result of this is a modified, a more detailed inventory and database for the calculation of the ecological footprint of different production systems.

From the attained footprint an additional ecological efficiency of production systems was calculated using the following equation:

$$Ecological\ efficiency\ of\ production = \frac{Ecological\ footprint}{Yield} \quad (1)$$

The SPI as calculated by Eq. (1) gives an indication of the "cost" in terms of ecological sustainability of a given product or service (Sandholzer and Narodoslawsky 2007). The number indicates what fraction of the overall "ecological budget" of a production system is used to provide this good or service - in our case 1 kg of wheat or spelt grain.

2.3 Data used

All the work performed on the trial in the season 2007/2008 was carefully monitored and recorded. The data collected from the field trial was transformed into tasks performed in a system in a year and the time needed for those tasks (e.g. ploughing, seeding, harrowing, spraying, etc.). Not all the operations could be done by a machine (e.g. spraying) due to the nature of the trial, therefore real-life operational times were taken from the University Agricultural Centre Farm, where the experiment took place. The footprint was determined for 1 ha of area.

2.4 Statistical analysis

The data for the yield and energy efficiency of production were analysed by one-way ANOVA with the production system as a factor using Statgraphics Centurion (Version XV, StatPoint Technologies, Inc., Warrenton, VA) and were followed by comparison of means according to Duncan (Hoshmand 2006). The values given in this paper are the means ± standard error (SE). We excluded one repetition due to extremely low yields in some parcels, as it was a wet year and water logging occurred in some parts.

3. Results and discussion

Yields of wheat and spelt were below the average levels in Slovenia, mainly due to the late harvest (August 8th) as a consequence of a long rainy period that year. As regards wheat, the yield differences between production systems were insignificant, whereas some differences can be observed as regards spelt yields (Tab. 2).

Tab. 2: Yields of wheat and spelt depending on production system in the season 2007/2008 (at 12% moisture).

	Wheat yield (kg/ha)	Index of wheat yield (CON=100)	Spelt yield (kg/ha)	Index of spelt yield (CON=100)
Farming system	n.s		*	
Control	1,687±267	72	1,630±64^{ab}	103
CON	2,343±240	100	1,583±110^{ab}	100
INT	2,440±222	104	1,403±125^{b}	89
ORG	2,223±356	95	1,533±97^{ab}	97
BD	2,400±368	102	1,867±40^{a}	118

Means ± SE, n=3. Different letters indicate statistically significant differences at P<0.05 (Duncan test).

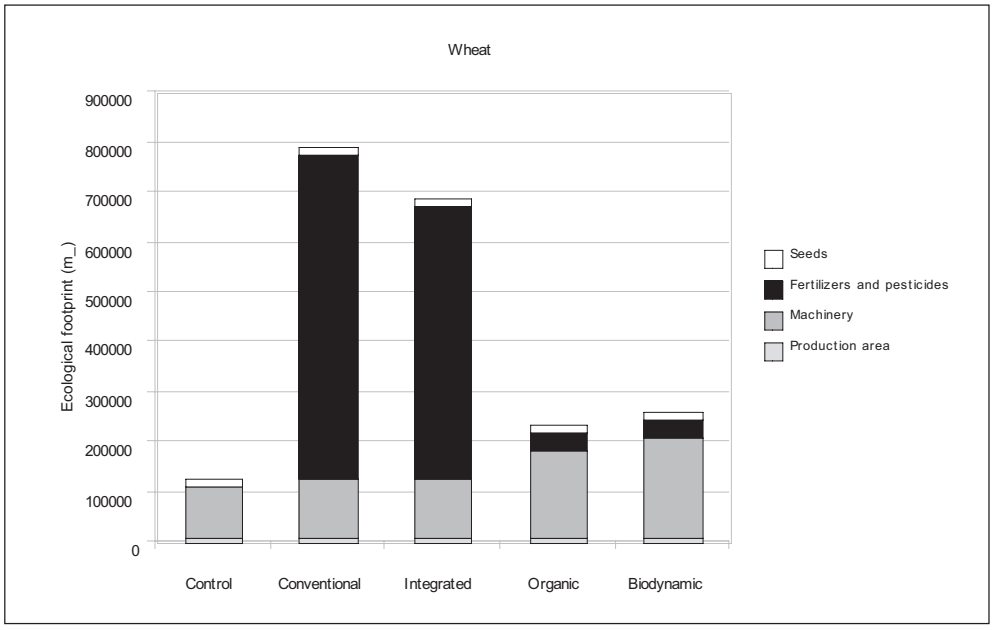

Fig. 1: Ecological footprint for 1 ha of wheat production in the season 2007/2008.

The results of the ecological footprint of production systems for wheat and spelt show a high proportion of the final footprint with CON and INT systems derives from the use of mineral fertilizers and pesticides (Fig. 1 and Fig. 2). However, ORG and BD systems have higher footprints in the field of machinery use impacts, mainly due to manure spreading, harrowing and the use of BD preparations with the BD system. What is surprising is that also control plots for wheat and spelt production have an ecological footprint of 126,168.4 m^2 and 116,469.7 m^2 respectively. This means that by using current standard machinery to till the soil and produce crops, we already leave a great environmental impact and "consume" 11-12 times more land than needed to plant the crops. In this sense, there is great need for improvement in the current agricultural practice and the way we understand, to till and work the soil. Furthermore, alternative fuels (e.g. plant oils) and more efficient machinery are a must in order to minimize the impact of agricultural production on the environment. However, when the total ecological footprint area of CON wheat

and spelt production, which amounts to 792,646.8 m^2 and 537,668.6 m^2 respectively, is visualized it takes some effort to perceive and take into consideration the vast impact the industrial way of farming has on the environment and ecosystems. The INT system does not perform any better, although it is publicised and advertised as more nature friendly and as one of the sustainable agricultural systems (MKGP 2004).

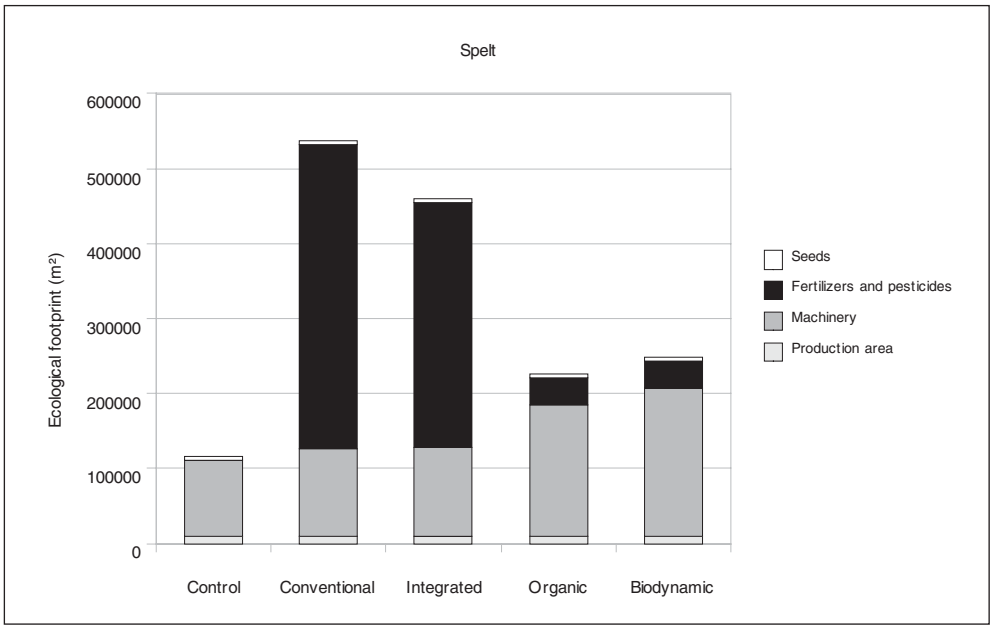

Fig. 2: Ecological footprint for 1 ha of spelt production in the season 2007/2008.

The results of the ecological efficiency of production give an even more insightful picture, as yields are taken into the equation (Fig. 3 and Fig. 4). When compared to the CON system, significantly higher efficiency (4.39, 3.08 and 3.03 times higher) was attained with the use of the control, ORG and BD farming systems for wheat production, respectively. Similar values can be observed for spelt production, where the control, ORG and BD plots had a 4.77, 2.29 and 2.56 times higher efficiency of production when compared to CON plots, respectively. One has to keep in mind, however, that these are the results for the first year of grain production after grass-clover, thus values and ratios will probably change in the next 2-3 years of the trial, and control plots are expected to produce significantly lower yields. Despite this fact, the ORG and BD systems would still have significantly higher ecological efficiencies of production.

But where can improvements be made in the future? As previously mentioned, efficient use of machinery and inventing new forms of working the soil will be of crucial importance. Some good examples pointing towards the future can already be seen in practice, e.g. the Eco-Dyn System (http://www.eco-dyn.de) or converting diesel engines to drive only on plant oil (http://www.elsbett.com). To discontinue the use of mineral fertilizers and pesticides would obviously improve the ecological footprint and environmental efficiency of the nowadays prevalent CON and INT farming systems.

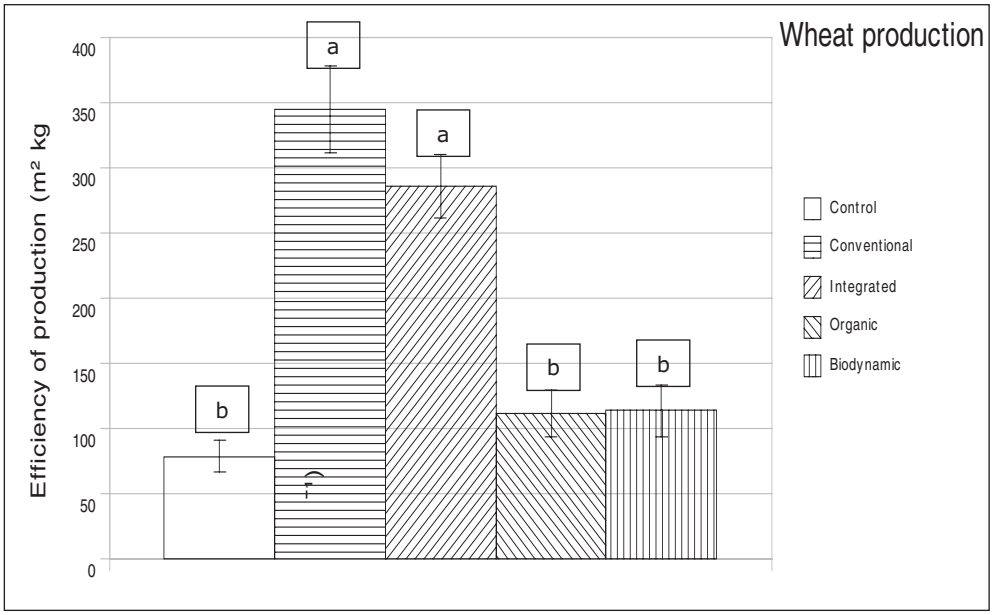

Fig. 3: Efficiency of wheat production for the season 2007/2008 in m^2 of impact for 1 kg of produced grain.
Means ± SE, n=3. Different letters indicate statistically significant differences at P<0.05 (Duncan test).

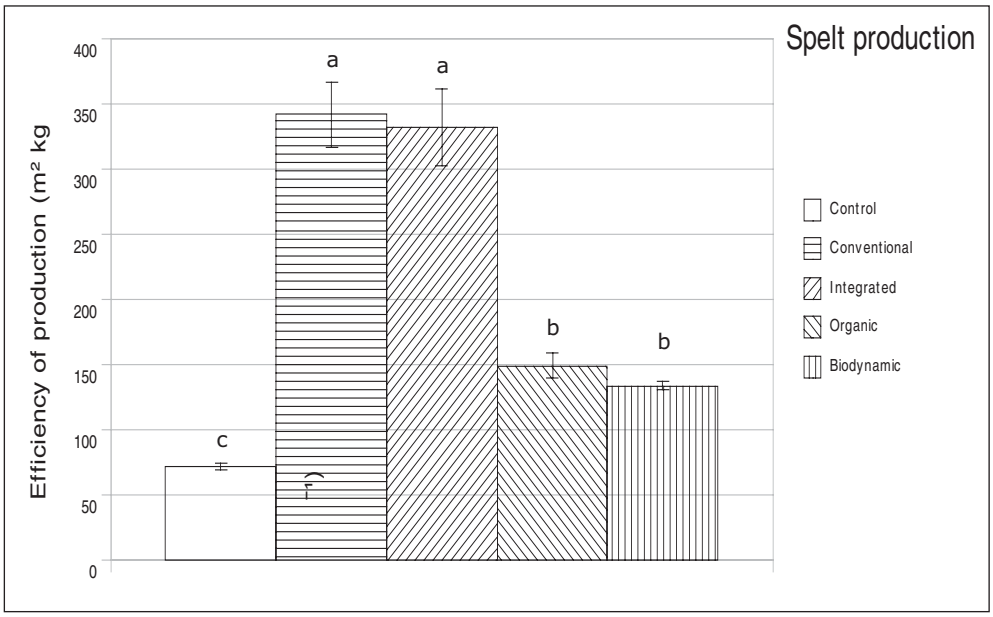

Figure 4: Efficiency of spelt production for the season 2007/2008 in m^2 of impact for 1 kg of produced grain.
Means ± SE, n=3. Different letters indicate statistically significant differences at P<0.05 (Duncan test).

It needs to be added that nowadays, the ORG:CON farmed land ratios in the EU are from 1:830 (Malta) to 1:6.48 (Austria), with the EU-27 average amounting to 3.9% of the total agricultural area (Willer et al 2009).

Where will that bring us in the future, when the results from this trial will be taken into account? One of the main objectives against organic farming is that it does not produce enough food to feed the whole population – now as well as in the future (Avery 2007). However, several research projects and reports have demonstrated the oposite (Badgley et al 2007), including this one. Even if yields in the developed European countries, where CON industrial agriculture is predominant nowadays, are around 5% lower due to ORG agriculture, population projections for the next 50 years coincide with these lower yields in almost the same ratio (UNPP 2008). Taking a step further from the production levels, what will happen when we run out of oil? It is important to keep in mind that the relation between population and oil production is one of cause and effect. The sky-rocketing of population is not merely coincident with the sky-rocketing of oil production. It is the latter that actually causes the former. With abundant oil, a large population is possible - ignoring, of course, the fact that environmental degradation may eventually wipe out those human numbers anyway. Without abundant oil, on the other hand, a large population is not possible (Goodchild 2007).

So can we preserve and provide enough resources for future generations, although we use or leave an impact on almost 80 ha of land to produce 1 ha of wheat (or any other crop in a similar size range)? Or do we have to re-think and above all change the way we live, farm and take decisions in order to survive on Earth? After all, there is only one planet Earth, is there not?

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ECOLOGICAL EFFICIENCY OF PRODUCTION AND THE ECOLOGICAL FOOTPRINT OF ORGANIC AGRICULTURE

Summary

The rising of energy prices and climatic changes have intensified the interest in the search for alternative farming systems, where energy efficiency would consistently increase and consequently energy consumption per unit would be lower. Several studies and comparisons have been made which compare energy efficiency of different farming systems; however, they mainly focus only on conventional and organic agriculture.

A long-term field trial, started at the University of Maribor in 2007, focuses on food quality and the ecological footprint of conventional (CON), integrated (INT), organic (ORG) and biodynamic (BD) farming systems. All inputs and outputs in each of the farming systems are carefully monitored. The data gained is evaluated and interpreted using the SPIonExcel tool, an ecological footprint calculator of the next generation developed by the Technical University of Graz. The results from the first year show better performance of both, the ORG and BD systems in the production of wheat (*Triticum aestivum* L.) and spelt (*Triticum spelta* L.), mainly due to the non-use of external production factors, such as mineral fertilizers and pesticides. However, the ecological footprint for machinery use is greater in the INT, ORG and BD systems, due to the harrowing needed in all the three systems. When yields are added to the equation, the ORG and BD systems prove to be more ecologically efficient in terms of land area "cost" per unit of yield. Thus, the ORG and BD farming systems represent viable alternatives for reducing the impact of agriculture on climate change, while ensuring sustainable food security.

TOURISM AND AUTHENTICITY IN THE CZECH VILLAGES OF THE ROMANIAN BANAT

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UDK: 911.3(498=162.3):338.48
COBISS: 1.02 – Review article

Abstract
Tourism and Authenticity in the Czech Villages of the Romanian Banat
In the 1820s, several thousand Czechs moved to the Carpathian Mountains region near the Danube river. They founded six villages. Strict ethnic endogamy helped preserve their cultural distinction. Nowadays these villages are visited by tourists from the Czech Republic. Visits are motivated by the search for both "traditional" rural landscape and lifestyle. The paper analyses the ways of how tourists perceive the rural landscape and lifestyle, how their perceptions vary and how they influence their behaviour. It is assumed that there is a sentiment for traditional, pre-modern world. This sentiment is used for tourism promotion there. Therefore the "harmonic cultural landscape" does not only have ecological and cultural value, but its image becomes a commodity in the tourism industry.

Key words
tourism, authenticity, Banat, myth, landscape character

The editor received the article on 2.2.2010.

1. Introduction

In the course of the 1820s, several hundred Czechs moved to the mountains of the Banat Carpathians as part of the colonization of the sparsely settled borderlands of the Habsburg Monarchy. More than one thousand Czech compatriots still live in six secluded Czech villages in the territory of today's Romania – Svatá Helena, Gernik, Rovensko, Bígr, Šumice and Eibentál. Strict ethnic endogamy (intermarriage of members of one ethnicity) went hand in hand with the preservation of cultural differences. To date, the Czech minority here has preserved its cultural uniqueness – language, religion, traditions and farming methods, which are reflected in the striking appearance of the surrounding landscape (Klvač 2003).

With the relaxation of the political system after 1989, the Czech villages in Romania became a favorite destination for trip-makers from the Czech Republic. Full travel agency buses, small groups and independent tourists have become part of daily life here over the past 20 years. It is no wonder; "*a true journey back in time*" to "*Czech history*" is a tempting morsel.

2. Methodology

Our research is based on participant observation during study stays at the six Czech villages in Romania (Svatá Helena, Gernik, Rovensko, Bígr, Šumice and Eibentál), interviews with visitors and local residents, and the analysis of documents related to tourism there. Our theoretical base was the *concept of authenticity*, as it has been developed by contemporary social science. The research is focused on the question in what way the visitors from Czechia perceive the local landscape, the village and the residents, and what they actually value about their visit.

3. Tourism and Authenticity

Several sociological and anthropological theories of tourism state that one of the most important reasons for travelling is the fact that exotic and traditional culture may represent an image of our past for us (Valentová 2003, 57). This past is often perceived to be *authentic,* unspoiled by the modern era; in short, a *golden age* (Budil 1995, 28-30), from which our civilization is growing further and further apart. The view of people from traditional cultures as *noble savages*, who live close to nature and the roots of our civilization, from whom we have greatly grown apart, has been around since Rousseau's time. Romanticism as well as anthropology helped strengthen this view (Valentová 2003, 56).

In the social sciences (sociology and anthropology), the concept of authenticity was at first considered to be the basic essence of traditional cultures (Valentová 2001, 107), e.g. something rather static and invariable that is either still present in the studied culture, or no longer exists. If traditional culture meets tourism, then its authenticity is threatened according to this view. It is gradually transformed into a saleable commodity and in the end it is completely anaesthetized – Greenwood's negativist theory. Or, in a better case, this meeting can lead to strengthening of the feeling of belonging to the group and to understanding the significance of maintaining authenticity – McKean's balance theory (see Valentová, 2001, 106).

Contemporary social sciences work with authenticity as a variable category, determined by the interaction between tourists and locals (Valentová 2001, 108).

The domestic culture takes on influences from tourists and their surroundings, and thus its identity is constantly changing. However, it is impossible to decide which stage of society is the original/ideal, the one to which we should relate, and therefore it is impossible to say which society still has that *essence of authenticity*, and which does not. Determining authenticity through interaction therefore arises as tourists choose what they want to see and the locals choose what they want to present from their culture.

Kevin Meethan, a critic of the rigid view of authenticity, refers to Erik Cohen's tourist typology (Meethan 2001, 93). Cohen divides tourists into several groups that differ on the level institutionalism, i.e. on the degree to which they let travel agencies or other third parties organize their vacation. The less institutionalized tourists are, the more they are interested in authenticity and the closer they want to get to the everyday lives of the local inhabitants (Burns 1999, 43).

This brings up the question in what sense can tourists find the "*authentic*" and "*traditional*". Before we attempt to answer this we must explain the notion of *authenticity* in terms of social sciences. In everyday life this term evokes an image of something traditional and original - for example a preserved rural farmstead, a traditional agricultural landscape or a way of farming passed down through generations. As opposed to landscape ecologists and historic preservationists, the social sciences work with the concept of authenticity in a different way. There is no interest in to what extent the given artifact or phenomenon is of historic origin, nor is there interest in its "*originality*". Instead, interest is put on what they represent for specific social actors, whether they are representatives of traditional culture or tourists, who either search for or create this specific quality (whether intentionally or unintentionally).

4. "Let's go" to the Banat

When advertising tourism in the Czech villages of the Romanian Banat, references to the "*authenticity*" of life there and the state of the landscape are apparent and often explicit. Potential visitors are enticed to take a "*journey to the time of our forefathers*". Advertising material is inflected with terms such as "*authenticity*", "*romance*", "*tradition*" and "*nature*" (see the website www.banat.cz) for example:

∞ *"A romantic vacation – Do you like the smell of hay, the chirp of crickets and the Balkan sun? Then head off on a vacation to the Czech villages of the Romanian Banat. An authentic rural environment with home-cooked meals and striped sheets awaits you."*

∞ *"Tradition – our fellow countrymen have preserved the customs and traditions they brought with them from their home. Therefore in these villages you can speak Czech, housewives will offer you Czech pastries and schnitzels and in the evening you can relax with a quilt just like at grandmothers. During your stay you can help the farmer rake hay, cut and thresh grain, bake bread or use a stone gristmill."*

∞ *"Nature – Gentle, traditional agriculture has preserved the undisturbed landscape abundant with animals and rare plants, and with sights that are reminiscent of Josef Lada's paintings. An abundance of caves, karst streams and rock formations together with the well preserved folk architecture of the sheepfolds and villages create an unique environment for relaxation, recreational sports or family*

recreation".

The visual part of the advertisement uses photography of the stylized rural idyll. There are pictures of aged country women wearing head scarves and carrying baskets, girls in traditional folk costumes, domestic animals (cows, horses, geese), farming equipment, painted mugs, hay stacks, flowering meadows, small religious buildings in the landscape, etc. All these attributes of traditional farming reflect and reproduce the generally shared stereotype of the "*tranquil harmonious countryside*", for which the modern urban mentality hungers (Brooks 2001). It is thus understandable that, for example, cars and satellite dishes, otherwise ordinary parts of everyday life for the local residents, do not have a place in these pictures.

The *genus loci* here ordinarily makes a strong impression on visitors from the Czech Republic, where respect for and admiration of *the cult of the countryside* has a firm place (compare Blažek 1998; Librová, 1987). Visitors staying with a compatriot's family can thus see, as well as take part in, ordinary, everyday tasks such as mucking out, using a horse-drawn plow, milking cows, grinding grain in old-fashioned mills, baking bread, or drying hay. This experience is evaluated as strong and emotionally positive by the visitors. At evening meetings in the local tavern (Magazin mixt), tourists staying with different families talk excitedly about their personal experience with farm work during the day and praise various types of the local "*home-cooked food*" consisting of "*local specialties*". Everything is considered as being "*similar to back home in the olden days*", or being like "*in my childhood*", or "*at granny's*". Visitors' attempts to find remnants of how people lived "*at home one hundred years ago*" are almost omnipresent. Smith (2003, 117-120) labels this type of travelling, where tourists get to know as intimately as possible the life of local inhabitants, "*indigenous cultural tourism*". Although he emphasizes that it is mostly an affair of exotic Asian and African destinations, it is clear that we can speak about the same in the Banat. Visitors, escaping from the routine of their lives at home, "find" and value "*comfort*", "*tranquillity*", "*true interpersonal relationships*", and the "*happy*" and "*unhurried*" life there, which is in contrast with their normal life style that has "*long ago lost*" these values and characteristics.

The evaluation of the landscape there is similar. Visitors as a rule judge it to be "*beautiful*", "*traditional*", "*original*", "*virginal*", "*untouched*", "*preserved*", "*harmonious*", etc. Attributes of the landscape here include small fields worked by peasants, unpaved carriage roads, meadows, balks, and other landscape elements which, in general, the landscape in the Czech Republic greatly lost as a result of collectivization.

Travel agencies and other subjects that promote tourism in the Banat are well aware of the attractiveness of the local landscape for modern people, and thus commoditize and sell the landscape there: they offer the landscape experience as part of the tour ("*visit*"), just like the "*striped sheets*", "*milking the cows*", "*moonshine*" and "*rosehip jam*". This is a symbolic encapsulation of a complex of attributes that are attributed to the Czech villages in the Banat: authenticity, reality, and untaintedness. Tourists should "*experience*" these attributes, for example, through landscape perception. The images of landscapes with narrow swathes of fields, ploughed by a team of horses or grazed by a herd of goats, which draw tourists to the Banat, are still sought out when they are actually there. "Impressions are made from looks, sounds and smells – memorable experiences that are necessary to fix by a camera, experiences that are worth talking about at home, because they are so

different from experiences at home" (Bauman 1995, 51).

Everything that is reminiscent of home (i.e. the modern era) must thus be removed. In this sense, the attitudes towards the advances civilization is gradually making in these Czech villages are illustrative. In the spring 2008, these were above all the asphalt road to Svatá Helena and developers' intentions to build wind turbines above this village. Both construction projects were largely rejected by the visitors. From their point of view, the "*original harmonious landscape*" that they can admire there would suffer, referring to its authenticity and traditionalism. They assess the landscape as a part of the entire life style, which they consider to be worthy of admiration – it is harmonious and idyll, however (forever) lost to modern people. Wind turbines and asphalt roads (even though they can improve the material quality of life of the local residents) would thus destroy these images and stereotypes.

5. Conclusion

In this paper, we have tried to present the uncertainness of terms such as "*authenticity*", "*originality*", and "*tradition*", which make up a large part of the image of the Czech villages in the Romanian Banat. The life of the local residents and the surrounding landscape are perceived in these terms by tourists/visitors and are reproduced by specific practices during their actual stay. Tourists, with ideas and stereotypes rooted in these cultural constructions, search out the life and landscape here as a symbol of the pre-modern sentiment that is rooted in the modern mentality. The *myth* (Barthes 2004) of the "*Czech Banat*" is thus created and reproduced through the selective perception of tourists, and the way they speak about their visit, which tells more about the culture the tourists in the Czech villages of Romania come from than that of the place itself.

Acknowledgements:
This paper was written with the support of the project No. 2B06126 "Landscape character as a key feature of the Czech cultural landscape and its protection", which is part of the National Research Program "2B - Health and quality of life".

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TOURISM AND AUTHENTICITY IN THE CZECH VILLAGES OF THE ROMANIAN BANAT

Summary

In the course of the 1820s several hundred Czechs moved to the mountains of the Banat Carpathians, Romania, as a part of the colonization of the sparsely settled borderlands of the Habsburg Monarchy. More than one thousand Czech compatriots still live in six secluded Czech villages there. Strict ethnic endogamy went hand in hand with the preservation of cultural differences. To date the Czech minority here has preserved its cultural uniqueness. After 1989 the Czech villages became a favorite destination for trip-makers from the Czech Republic. Full travel agency buses, small groups and independent tourists have become a part of daily life here over the past 20 years. Research was based on participant observation during study stays, interviews with visitors and local residents, and the analysis of documents related to tourism here. The theoretical base for us was the *concept of authenticity*, as it has been developed by contemporary social science. The research is focused on the way in which visitors from Czechia perceive the local landscape, the village and residents, and what they actually value about their visit.

Several sociological and anthropological theories of tourism state that one of the most important reasons for travelling is the fact that exotic and traditional cultural may represent an image of our past for us. This past is often perceived to be *authentic,* unspoiled by the modern era; in short it is a *golden age*, which our civilization is growing farther apart from. The concept of authenticity in the social sciences at first considered authenticity to be the basic essence of traditional cultures. If traditional culture meets tourism then according to this view its authenticity is threatened. It is gradually transformed into a saleable commodity and in the end is completely anaesthetized. Or if the case is better, this meeting can lead to a strengthening of the feeling of belonging to the group and to understanding the significance of maintaining authenticity. Contemporary social sciences work with authenticity as a variable category, determined by the interaction between tourists and locals. The domestic cultural takes on influences from tourists and from their surroundings, and thus its identity is constantly changing. This brings up the question in what sense can tourists find the "*authentic*" and "*traditional*". Before we attempt to answer this we must first explain what social science means by *authenticity*. In everyday life this term evokes an image of something traditional and original. As opposed to landscape ecologists and historical preservationists, the social sciences work with the concept of authenticity in a different way. There is no interest in to what extent the given artifact or phenomenon is of historic origin, nor is their interest in its "*originality*"; instead, there is interest in what it represents for specific social actors, whether they are representatives of a traditional culture or tourists, who either search out or create this specific quality (whether intentionally or inadvertently).

When advertising tourism in the Czech villages of the Romanian Banat references to the "*authenticity*" of life here and the state of the landscape are apparent and often explicit. The visual part of the advertisement then uses photography of the stylized rural idyll. The *genus loci* here ordinarily makes a strong impression on visitors from the Czech Republic, where respect for and admiration of *the cult of the countryside* has a firm place. Visitors staying right with a family of their compatriots can thus see ordinary, everyday tasks such as mucking out, using a horse-drawn plow, milking cows, grinding grain in old-fashioned mills, baking bread, or drying hay.

This experience is evaluated strongly, and emotionally positive by visitors. The evaluation of the landscape here is similar. Travel agencies and other subjects that promote tourism in the Banat are well aware of the attractiveness of the local landscape for modern people, and thus commoditize and sell the landscape here. Everything that is reminiscent of home (i.e. the modern era) must thus be removed. Wind turbines and asphalt roads (even though they can improve the material quality of life of the local residents) would thus destroy images and stereotypes. Tourists, with ideas and stereotypes rooted in cultural constructions, search out the life and landscape here as a symbol of the pre-modern sentiment that is rooted in the modern mentality. The *myth* of the "*Czech Banat*" is thus created and reproduced through the selective perception of tourists, and the way they speak about their visit, which tells more about the culture the tourists in the Czech villages of Romania come from than that of the place itself.

TOURIST FARM SERVICE QUALITY ASSESSMENT

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UDK: 631.11:338.48
COBISS: 1.02 – Review article

Abstract
Farm tourism shows a structure different from agriculture, forestry, and fishery; farm tourism is expanding, labour intensive, generates an influx of money, and maintains the service base in the region. Farm tourism is one of the most important supplementary activities and generates considerable secondary income. This paper presents the developed methodology that will enable the ranking of tourist farms based on their service quality. This is accomplished through the use of the expert system based on the DEXi decision-making method. Using DEXi, the multi-criteria decision model for the assessment of farm tourism's service quality was developed. The model was applied in practice on 7 vacation farms. The data from the questionnaires completed by farm guests and hosts was used as input data in the multi-attribute model and as an arbitrary estimation for the farm. The results of the model are shown as the assessments for individual farms. Out of seven chosen farms, four achieved the best possible estimation. Two of them achieved middle estimation. For the last tourist farm, where a data deficit was present, the model showed two final possible estimations (very good or good and bad - depends on value of missing attributes).

Key words
tourist farm, multi-criteria analysis, DEXi methodology, ranking

The editor received the article on 7.1.2010.

1. Introduction

Farm tourism is probably the oldest form of rural tourism (Nilsson 2002), arguably dating back over a century (Dernoi 1983). In many rural regions, tourism is accepted as a natural part of the socio-economic fabric juxtaposed with agriculture (Fleischer and Tchetchik 2005). While demand-side motivations for farm tourism remain enigmatic, incentives for the operators are perhaps more obvious. Perceived economic benefits are normally a key factor. Extra income was the most frequent motivation for farm tourism businesses. Diversification into tourism does sometimes keep the household economy viable (Sharpley and Vass 2006), with tourism earnings even exceeding those from agriculture (Worth 1997). On the basis of the aforementioned facts, for the successful performance of vacation farms, ongoing information about market behaviour, specialized offer, education processes and searching for comparative advantages and emerging opportunities are crucial (Pa ek et al. 2005).

The service quality of rural tourism suppliers is a decisive factor considered by customers/consumers when choosing a farm to visit/stay on (Poto nik 2006). Therefore, there is a clear need for evaluation of service quality. The literature suggests different methods for measuring tourism industry service quality (Fleischer et al 1993; Reiche et al 2000; Calantone and Benedetto 1991). Kahn (2003) developed an aim to investigate the service quality expectations of the ecotourists by developing an adapted version of the SERVQUAL scale. In contrast, Štambuk (2002) and Poto nik (2006) proposed a methodology based on multi-criteria analysis. For instance, the expert system DEX (and its Windows successor DEXi) for qualitative, multi criteria decision-making (Bohanec et al 2000; Bohanec et al 1995) has already been successfully used for estimation of tourist service quality in case of hotels (Štambuk 2002) and vacation farms (Poto nik,2006).

DEX (and its windows version DEXi) is an expert system methodology shell for qualitative multi-criteria decision-making and support. Many life applications of multi-criteria methods were based on DEX (Bohanec and Rajkovi 1990). DEX combines "traditional" multi-criteria decision-making with some elements of Expert Systems and Machine Learning. The main characteristic of the DEX method is its capability to deal with qualitative variables. The objectives are hierarchically ordered into a tree structure. The DEX expert system can be used to find solutions to various decision problems (Leskovar 1993; Bohanec et al. 1995; Bohanec et al. 2000; Bohanec and Rajkovi 1999). The basic approach in DEXi methodology is a multi-criteria decomposition of the problem: the decision problem is decomposed into smaller and less complex decision problems (sub-problems). In this way, we get a decision model consisting of attributes that represent individual sub-problems. The attributes are organized hierarchically and connected with utility functions. The utility functions evaluate each individual attribute with respect to their immediate descendants' objective in the hierarchy. Instead of numerical variables, which typically constitute traditional quantitative models, DEXi uses qualitative variables; their values are usually represented by words rather than numbers, for example "low", "appropriate", "unacceptable", etc. Furthermore, to represent and evaluate utility functions, DEXi uses *"if-then"* decision rules. The utility function, in fact, represents a knowledge base (the complete set *of "what if"* decision rules), which is ultimately used for evaluation of alternatives (Bohanec and Rajkovic 1999; Bohanec et al 1995; Bohanec et al 2000; Bohanec and Zupan 2004).

2. Materials and methods

This study is based upon multi-attribute decision analysis and the expert system DEXi. Hierarchical multi criteria decision models (MCDM) are a general decision support methodology aimed at the classification or evaluation of options that occur in decision-making processes (Rozman and Pa ek 2005). However, in order to incorporate different conflicting criteria in the decision-making process, MCDA methodology was considered for decision support on tourist's farms. In comparison to standard evaluation approaches such as farm budgeting or linear optimisation techniques, the MCDA is able to build the hierarchy of the problem and prioritize individual decision-making criteria, as seen in Fig. 1.

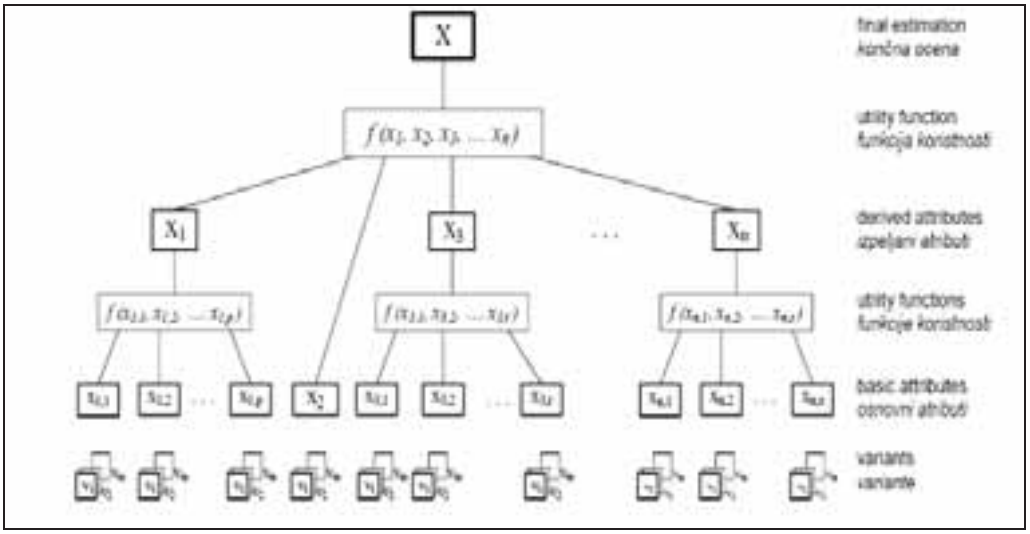

Fig. 1: Multi-criteria decision-making tree.
Source: Lipuš ek 2005.

According to the preliminary defined hierarchy, two sets of questions were constructed in order to derive priorities and values for individual criteria. The first questionnaire was issued to tourist farm operators and its staff and the second to customers – guests. The guest questionnaires were set according to Taylor (1992) recommendations for the main parameters (attributes) influencing the guest's decision regarding whether to take a vacation on a specific site. A total of 7 vacation farms were included in the research and guest questionnaires were issued to a total of 103 guests of various national backgrounds. The questionnaire results were, to some extent, used as input data for the DEXi multi criteria model as well as for modification of initial hierarchy. In the first stage of DEXi decision model development, the possible alternatives are identified. The problem is divided into individual less complex problems and a set of qualitative values (scales) is assigned to every attribute (criteria) (Tab. 1).

After each attribute has been assigned to its scales (qualitative value), the utility functions (knowledge base) are defined. The next step in forming the multi-criteria decision-making model is defining the utility functions, i.e., the decision-making ("*if-then*") rules. The rules need to be developed for all the criteria that have dispersed structures underneath them in the decision-making tree; this means all, except the

criteria on the lower branches of the decision-making tree. We can present the criteria in the form of a table for each group. What we need to be careful about when developing the decision-making rules is the consistency between the defined rules for certain combinations of the criteria values. The utility functions evaluate each individual attribute with respect to their immediate descendants in the hierarchy. The decision rule can be, for instance: "if the premises are unsuitable and the services are poor, then the guest decision rule is poor". The decision rules are presented in complex form where an asterisk "*" means any value and >= means acceptable or good (Tab. 2). This procedure is conducted for each level in the hierarchy (partial utility function for aggregate attributes and overall utility function for the whole model except for the lowest level in the hierarchy).

Tab. 1: Decision hierarchy and scales.

Attribute	Scales
Tourist farm supply quality	poor; average; good; very good
Guest	poor; average; good; very good
Premises	unsuitable; suitable; very suitable
Landscape	unsuitable; suitable; very suitable
Environment	unsuitable; suitable; very suitable
Arhitecture	unsuitable; suitable; very suitable
Order and cleanness	satisfactory; good; excellent
Access to the farm	poor; acceptable; good
Parking	no parking place; acceptable; good
House	poor; acceptable; good
Equipment	unsuitable; suitable; very suitable
Homeliness	no; yes
Cleanness	satisfactory; good; excellent
Spaciousness	unsuitable; suitable; very suitable
Services	poor; acceptable; good
Food	poor; acceptable; good
Taste	not good; good; excellent
Look	not good; good; excellent
Variegation	monotonous; variegated; very variegated
Serving	poor; acceptable; good
Drinks	poor; acceptable; good
Variegation	monotonous; variegated; very variegated
Serving	poor; acceptable; good
Tradition	typical; extra
Attitude	unfriendly; friendly
Personal to customer	unfriendly; friendly
Personal - personal (family members)	unfriendly; friendly
Personal cleanliness	not suitable; suitable
Additional services	poor; acceptable; good
Sport	not available; available
Animation regullary	not conducted; conducted sometimes; conducter
Souvenirs	not available; few; available
New visit	no; yes
Farm operator	poor; average; good; very good
Plans for the future	will not continue with farm tourism; will continue with farm tourism
Satisfaction	poor; acceptable; good
Work comparison	harder; more demanding; easier; more pleasant
Income	poor; acceptable; good
Labor distribution	unsuitable; suitable; very suitable
Is working in farm tourism interesting?	not; interesting; very interesting

Finally, attributed values for each alternative are put into the DEXi evaluation table (the values are obtained from questionnaires) and the multi-criteria analysis is provided.

Tab. 2: Decision rules for tourist farm supply quality problem – highest level.

Premises	Services	Additional services	New visit	Guest
30%	29%	18%	24%	
1 unsuitable	poor	*	*	poor
2 unsuitable	<=acceptable	poor	*	poor
3 unsuitable	<=acceptable	*	no	poor
4 unsuitable	*	poor	no	poor
5 <=suitable	poor	poor	*	poor
6 <=suitable	poor	*	no	poor
7 *	poor	poor	no	poor
8 unsuitable	acceptable	>=acceptable	yes	average
9 <=suitable	acceptable	acceptable	yes	average
10 unsuitable	good	poor	yes	average
11 unsuitable	good	>=acceptable	no	average
12 suitable	poor	>=acceptable	yes	average
13 suitable	<=acceptable	acceptable	yes	average
14 suitable	acceptable	<=acceptable	*	average
15 >=suitable	>=acceptable	poor	no	average
16 very suitable	poor	poor	yes	average
17 very suitable	poor	>=acceptable	no	average
18 unsuitable	good	>=acceptable	yes	good
19 <=suitable	good	acceptable	yes	good
20 suitable	acceptable	good	*	good
21 suitable	good	<=acceptable	yes	good
22 suitable	good	acceptable	*	good
23 >=suitable	good	acceptable	no	good
24 very suitable	poor	>=acceptable	yes	good
25 very suitable	acceptable	poor	yes	good
26 very suitable	>=acceptable	acceptable	no	good
27 >=suitable	good	good	*	very good
28 very suitable	>=acceptable	>=acceptable	yes	very good
29 very suitable	>=acceptable	good	*	very good
30 very suitable	good	*	yes	very good

3. Result and Discussion

Evaluating the variants is a procedure of determining the final estimation of the variants on the basis of their description according to the basic criteria. The evaluation is undergone from "the bottom up", in accordance with the structure of the criteria and utility functions. The variant with the best evaluation value is usually the best, as long as no major errors occurred during the evaluation. The final estimation is influenced by many factors and an error may occur at each of these factors. Besides, the final estimation usually does not suffice for the full picture of an individual variant; therefore, variants need analysis.

The aim of this paper is to address 7 vacation farm service quality assessment problems with the application of the expert system DEXi. On the base of the defined utility functions, the selected vacation farms, with respect to the defined decision hierarchy for service quality evaluation, were evaluated. Ranking of farms from the best to the worst is also enabled. The results show the evaluation for 7 analyzed farms.

Tab. 3 shows assessment for aggregate and basic attributes (input values). The asterisk (*) means that we had no data for the particular basic attribute. The highest assessment ("very good") was obtained for the farms B, C, F, and G. This is followed by the farms A, which have been assessed as "good". According to the

defined decision rules, two results are possible for farm D ("average", "good") and for farm E ("good" or "very good") and the final result for those two farms would depend on the unknown values of basic attributes. Since professional service quality farms have been selected for the model application the model does not separate between the farms. The final DEXi assessment of their supply quality is presented in Tab. 3.

Tab. 3: Results of DEXi evaluation with values of basic and aggregate attributes (Part 1).

Attribute	**A**	**B**	**C**	**D**
Tourist farm supply quality	good	very good	very good	
Guest	good	very good	very good	average; good
Premises	very suitable	very suitable	very suitable	very suitable
Landscape	very suitable	very suitable	very suitable	very suitable
Environment	very suitable	very suitable	very suitable	very suitable
Arhitecture	very suitable	very suitable	very suitable	very suitable
Order and cleanness	good	excellent	excellent	excellent
Access to the farm	good	good	good	good
Parking	good	good	good	good
House	acceptable	good	good	good
Equipment	suitable	very suitable	very suitable	suitable
Homeliness	yes	yes	yes	yes
Cleanness	good	excellent	excellent	excellent
Spaciousness	very suitable	very suitable	very suitable	very suitable
Services	acceptable	good	good	poor;acceptable
Food	acceptable	good	good	acceptable
Taste	excellent	excellent	excellent	good
Look	excellent	excellent	excellent	good
Variegation	variegated	very variegated	very variegated	variegated
Serving	acceptable	good	good	acceptable
Drinks	*	*	*	*
Variegation	variegated	variegated	variegated	variegated
Serving	acceptable	good	good	good
Tradition	*	*	*	*
Attitude	friendly	friendly	friendly	*
Personal to customer	friendly	friendly	friendly	*
Personal - personal (family members)	friendly	friendly	friendly	*
Personal cleanliness	suitable	suitable	suitable	*
Additional services	poor	poor	poor	poor
Sport	not available	not available	not available	not available
Animation regullary	not conducted	not conducted	not conducted	not conducted
Souvenirs	few	not available	not available;	not available
New visit	yes	yes	yes	yes
Farm operator	very good	very good	very good	very good
Plans for the future	will continue with farm tourism	will continue with farm tourism	will continue with farm tourism	will continue with farm tourism
Satisfaction	good	good	good	good
Work comparison	more pleasant	more pleasant	more demanding	more pleasant
Income	acceptable	good	good	good
Labor distribution	very suitable	suitable	very suitable	very suitable
Is working in farm tourism interesting?	very interesting	very interesting	very interesting	very interesting

The precise analysis of attributes can be used in order to identify possible weaknesses (attribute analysis) of the analyzed farms. Another potential problem of DEXi is that it currently supports only qualitative attributes and utility functions, but

provides no facilities for dealing with quantitative ones. As this seems highly desirable for many practical problems, further study should be particularly focused on an integration of qualitative and quantitative modelling techniques in the assessment of service quality.

Tab. 3: Results of DEXi evaluation with values of basic and aggregate attributes (Part 2).

Attribute	E	F	G
Tourist farm supply quality	good; very good	very good	very good
Guest	very good	very good	very good
Premises	very suitable	very suitable	very suitable
Landscape	very suitable	very suitable	suitable
Environment	very suitable	very suitable	suitable
Arhitecture	very suitable	very suitable	suitable
Order and cleanness	excellent	excellent	good
Access to the farm	good	good	acceptable;
Parking	good	good	acceptable;
House	good	good	good
Equipment	very suitable	suitable	suitable
Homeliness	yes	yes	yes
Cleanness	excellent	excellent	excellent
Spaciousness	very suitable	very suitable	suitable
Services	good	good	good
Food	good	good	good
Taste	excellent	excellent	excellent
Look	excellent	excellent	excellent
Variegation	very variegated	very variegated	very variegated
Serving	good	good	good
Drinks	*	*	*
Variegation	variegated	variegated	variegated
Serving	good	good	good
Tradition	*	*	*
Attitude	friendly	friendly	friendly
Personal to customer	friendly	friendly	friendly
Personal - personal (family members)	friendly	friendly	friendly
Personal cleanliness	suitable	suitable	suitable
Additional services	good	acceptable	good
Sport	available	available	available
Animation regullary	conducted sometimes	not conducted;	conducted sometimes
Souvenirs	few	few	few
New visit	yes	yes	yes
Farm operator	*	very good	very good
Plans for the future	*	will continue	with farm tourism
Satisfaction	*	good	good
Work comparison	*	more demanding	more demanding;
Income	*	good	good
Labor distribution	*	very suitable	very suitable
Is working in farm tourism interesting?	*	very interesting	very interesting

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TOURIST FARM SERVICE QUALITY ASSESSMENT
Summary

The carriers of the farm's activities are often forced to choose an additional activity because of unfavorable structure of the farm and, consequently, an unsatisfying financial situation. According to aforementioned facts, the data also shows that farm tourism is the supplementary activity with the most important role.

In the research, a multi-criteria model for evaluation and ranking of vacation farms using DEXi, the expert system for multi-attribute decision-making, was developed. The DEXi multi-attribute decision models are based on the division of the problem into smaller sub-problems, which have to be assessed separately. Single sub-problems (attribute, criterion, parameters) are located on different levels of the "hierarchical tree". Merging the assessments of single sub-problems, we achieve the final – aggregated estimation of the utility (worthiness). Using the utility functions that are defined in the form of *"if-then"* decision rules, the influence of a single criterion on the final estimation of the utility is enabled. DEXi uses qualitative attribute values, which are of great importance in cases dealing with less structured decision problems and where the participation of expert knowledge is needed. The expert system also enables analyses of forming single estimation and selective analyses. The data is transparent and easily checkable, but does not reduce the meaning of an expert's contribution. It enables the systematic use of data and automation of the process.

The model was applied to 7 vacation farms with accommodation from different parts of Slovenia. On all of them, the guests and the carriers of the supplementary activity were interviewed. The results of the questionnaires, relating to general meanings of single attributes of the supplied tourism's quality, were used for correction of a preliminary planned model. In the second round of the interviews, the concrete estimations of single supply's attributes for chosen vacation farms were obtained. This data was used as input data for the DEXi model in the phase of evaluation of the utilities. The results gained in the model were compared with the arbitrary assessment based on the guest interviews.

The DEXi multi – attribute decision model enables ranking of farms by their quality. From seven chosen farms, four achieved the best possible estimation. Two of them received middle estimation. For the last farm, which had deficient data, the model has shown two possibilities: in the case of excellent or good estimation of carrier's results, the farm would achieve very good result; in the case of bad criterion of carrier's satisfaction, the final utility of the farm would be bad.

The ranking of vacation farms based on the DEXi model and the arbitrary ranking is similar. However, there were a few differences, which are easy to explain. The fact is that the final assessments of investigators are subjective, while the model-based assessments reflect estimations of single supply's attributes.

One of the methods successfully being used in practice for solving such decision-making problems is the method of multi-criteria decision-making. The presented multi-criteria models enable precise estimation and ranking of vacation farm service quality. It is a useful facility for objective assessment of farm tourism's supply. The presented multi-criteria models enable precise estimation and ranking of vacation farm service quality. Despite the minor deficiencies (such as use of qualitative data

only), we have found that the approach has fulfilled most of our expectations and revealed considerable advantages in comparison with other approaches. The multi attribute DEXi model can, therefore, be regarded as a useful alternative tool for service quality measurement and can also be used by government institutions responsible for vacation farm certification as well as for assessment of applications for various rural development supports. Further research is needed in the field of integrating quantitative data into DEXi modelling framework as well as comparison to other multi criteria methods (such as AHP; Saaty 1980) and other service quality measurement tools.

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