EDITORIAL BOARD:

Acad. Prof. Dr. Dan BĂLTEANU, University of Bucharest, Romania; Acad. Prof. Dr. Alexandru UNGUREANU, Al.I.Cuza University of Iaşi, Romania; Conf. Dr. Catălina ANCUȚA, West University of Timişoara, Romania; Prof. Dr. Joan Serafi BERNAT MARTI, Jaume I University of Castelló, Spain; Prof. Dr. Milan BUFON, Primorska University of Koper, Slovenia; Prof. Dr. Nicole CIANGĂ, Babeș-Bolyai University of Cluj-Napoca; Prof. Dr. Pompei COCEAN, Babeș-Bolyai University of Cluj-Napoca; Prof. Dr. Remus CREȚAN, West University of Timișoara, Romania; Prof. Dr. Branislav DJURDJEV, University of Novi Sad, Serbia; Prof. Dr. Liliana DUMITRACHE, West University of Timișoara, Romania; Prof. Dr. Vasile EFROS, Ștefan cel Mare University of Suceava, Romania; Prof. Dr. Javier ESPARCIA PEREZ, University of Valencia, Spain; Prof. Dr. Horst FÖRSTER, Eberhard Karls University of Tübingen, Germany; Prof. Dr. Jean-Baptiste HUMEAU, University of Angers, France; Prof. Dr. Ioan IANOȘ, University of Bucharest, Romania; Prof. Dr. Corneliu IAȚU, Al.I.Cuza University of Iași, Romania; Prof. Dr. Alexandru ILIEȘ, University of Oradea, Romania; Prof. Dr. Sebastian Kinder, Eberhard Karls University of Tübingen, Germany; Prof. Dr. Duncan LIGHT, Liverpool Hope University, Great Britain; Prof. Dr. Ionel MUNTELE, Al.I.Cuza University of Iași, Romania; Prof. Dr. Silviu NĂGHĂȚ, Academy of Economic Sciences of Bucharest, Romania; Prof. Dr. Martin OLARU, West University of Timișoara, Romania; Prof. Dr. Nicolae POPA, West University of Timișoara, Romania; Prof. Dr. Petru URDEA, West University of Timișoara, Romania; Prof. Dr. Vincent VESCHAMBRE, Ecole Nationale Supérieure d’Architecture of Lyon, France.
# TABLE OF CONTENTS

**Nicoleta TICANA** – The disparities of governance of the peri-urban development in Europe…………………………………………(pp. 5-16)

**Agi PAP** – Residential attitudes towards urban heritage in Budapest – through the example of the Wekerle quarter…………………..(pp. 17-32)

**Bojana SPASOJEVIĆ, Dejan BERIĆ, Igor STAMENKOVIĆ** – The valorization of tourism potential of Ovcar-Kablar’ Orthodox monasteries based on the use of two methods: the qualitative and quantitative research method and the Hilary du Cros research method ………………….(pp. 33-45)

**Remus PRĂVĂLIE, Igor G. SÎRODOEV** – Land use change in Southern Oltenia in postcommunist period: evidences from CORINE land cover……………………………………………………………………..(pp. 47-56)

**Nunzio FAMOSO, Linda COTUGNO** – Making Sicily greener: the regional plan for parks and reserves ………………………………..(pp. 57-66)

**Ionuţ-Dan ZISU** – The main physical-geographical characteristics of the Lugoj Hills and their cartographic representation …………..(pp. 67-89)
THE DISPARITIES OF GOVERNANCE OF THE PERI-URBAN DEVELOPMENT IN EUROPE

Nicoleta TICANA
Angers University, Department of Geography, France, Email: nicoleta.ticana@gmail.com

Abstract. For a long time the city attracted the population. At the end of the sixties it is the peri-urbanization, the process of “return” of the city-dwellers towards the countryside that replaces the rural exodus. This phenomenon occurred at first in the Western Europe, Central and Eastern Europe knowing the process from 1990s, once the communist regimes had fallen. If in the Western Europe the individual house is accessible to the middle class, in the East the new constructions are intended for wealthy population. If in the West land is serviced before construction, in the East, the land utilities miss. If the West is relatively rigorous in the respect for the rules and tools of town planning, in the East the legislation is not clear and the peri-urbanization manifests itself in a chaotic way. What are the modes of governance in the West, as well as in the East? What answer to the urban sprawling between the various European countries?

Pendant longtemps la ville a attiré la population. A la fin des années soixante c’est la périurbanisation, processus de « retour » des citadins vers la campagne, qui remplace l’exode rural. Ce phénomène a été ressenti d’abord en Europe de l’Ouest, l’Europe Centrale et Orientale connaissant le processus à partir des années 1990, après la chute des régimes communistes. Si dans l’ouest européen la maison individuelle est accessible à la classe moyenne, à l’est les nouvelles constructions sont destinées à une population fortunée. Si à l’ouest les terrains sont viabilisés avant la construction, à l’est, les réseaux d’infrastructures manquent. Si l’ouest est relativement rigoureux dans le respect des règles et d’outils d’urbanisme, à l’est la législation n’est pas claire et la périurbanisation se manifeste d’une façon chaotique. Quels sont les modes de gouvernance à l’ouest, ainsi qu’à l’est ? Quelle réponse à l’étalement entre les différents pays européens ?

Keywords: peri-urbanization, historical context, communist regimes, Western Europe, Eastern Europe, governance, legislation, discrepancies

Mots-clés: périurbanisation, contexte historique, régimes communistes, Europe de l’Ouest, Europe de l’Est, gouvernance, législation, discordances

1. INTRODUCTION

Europe knows important urban and rural changes in terms of residences, equipments or utilities. But there are differences between Eastern and Western Europe and the management is not the same. So this paper talks about the disparities of governance of the peri-urban development in Europe. The purpose is to make comparisons of this
phenomenon and give solutions of governance in some countries contingent on the methods applied by others that seem to work.

Once the communist regimes had fallen, Central and Eastern Europe has experienced a converting of landscapes in rural zones. The introduction of new urban elements in rural areas is made ceaselessly since 1990. This occurred earlier in some countries. New challenges appeared. They are connected to the metropolitan expansion. Often this growth is not accompanied by an urban planning or sustainable development. With four examples: Bucharest, Warsaw, Budapest and Sofia we can demonstrate this point. Many questions appear. Urban sprawl manifests itself in the same way in all Eastern European countries? Are there coordination problems between planning tools and the reality? Are there similarities with Western Europe? What is the right governance for this emergent phenomenon? In terms of methodology we focused first on the bibliography. The purpose of this phase was the comprehension of this phenomenon, its evolution, transformation and the solutions to the management of this process. For the Romanian case we realised a field survey during four years in the context of a PhD thesis (field observation, photos, urbanism documents, interviews, discussions, questionnaires, statistic data etc.). For the French case there were also these field surveys, but to a lesser extent (the PhD thesis was realised in a French laboratory). There are limits of this methodology applied for this paper. For all others European examples we rest on studies realised by different European researchers or organisms.

We will expose firstly the historical context. Then we will present peri-urban phenomenon in the four Eastern Europe metropolises. We will finish with two Western Europe examples: France and Germany and their solutions to urban sprawl. This phenomenon seems to be better managed in these two countries than it is in the four Eastern European countries

2. HISTORICAL CONTEXT: SOCIALIST IDEOLOGICAL HERITAGE

During a little more than forty years Central and Eastern Europe countries lived under communist regimes. Several characteristics of the communist period showed up in all the ex-soviet countries. It consist in the socialist ideology of the communist period, before 1990, based on the quasi-inexistence of the private ownership when everything belonged to the state, on the direct control of the state in land use, because at that time the policy was "anti-sprawl" (Gajdos, 2008). Other characteristics are: the restriction for one residence per family, heavy industrialization, supervision of town's growth and peri-urban process, local authorities lack of autonomy and the lack of democracy. The industrial sector is also over-represented in those European spaces and services are under-represented. The lack of a governance culture based on the partnership and the confidence between authorities is also present (Lepesant, 2008).

The Central-Eastern Europe countries are characterized by an average urbanization, between 50 and 70% (Coudroy de Lille, 2005). Big cities are modest in terms of demography. Among those capitals, Bucharest is the biggest with round about 1,95 million inhabitants in 2010. History played a very important role in the urbanization of this European corner. These countries knew conflicts in terms of occupation, and they were subjected to powers like Austro-Hungarian, Ottoman Empire or Russia. This creates
tensions that slow down their urbanization. This recent urbanization begins in the fifty’s, period which corresponds to the instauration of the communism. Cities become urbanized with the massive industrialization and the rural exodus which it entailed.

Since 1990 East opens to West. Migratory flows, that were almost inexistent before that date, begin to develop. Economy market is established and it permits a liberalization of commerce and exchanges. From town planning point of view cities organized it-selves in the same way : a hyper-center with offices, hotels and luxury residences. To the outskirts, residential peri-urbanization manifests itself in the form of imposing residences which are expensive. Commercial galleries and hypermarkets appear too. This process was accompanied by an accelerate motorization of cities. Yet, transport networks know an important delay. Soviet period mainly developed a railroad transport network turned to Russia and with a commercial vocation, limiting the road infrastructure to a little developed road network. Highways are also quasi-inexistent.

Few reasons make that certain ex-soviet capitals knew an economic boom. While Bucharest and Sofia occupied the last places on the podium, Budapest and Warsaw, capitals of the richest countries of in Central and Eastern Europe, know a higher concentration of activities and jobs. Besides, Poland and Hungary joined European Union earlier than Romania and Bulgaria. Closer to Austria and Germany, Budapest and Warsaw are more dynamic. Budapest enjoys, in the same time, a good touristic frequentation.

After losing a big number of inhabitants the four capitals know today a slight increase of their population, like their peripheries. We can find some causes to the origins of this phenomenon. The first answer is that peri-urbanization contributes to the growth of the population into the spaces that surround these metropolises. But these cities know a slight demographic boom (table n°1) because of their economic development that attracts population for work, most often young people, that at the end of their studies rest live and work in the capitals. Can we talk about re-urbanization? It is maybe too ambitious, because this demographic growth is insignificant compared to the large population losses that have affected these capital-cities over the past twenty years.

Table 1: Evolution of population at Bucharest, Budapest, Warsaw and Sofia between 2003 and 2011

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2005</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucharest</td>
<td>1932155</td>
<td>1927448</td>
<td>1940486</td>
<td>1943981</td>
<td>1944367</td>
<td>194451</td>
<td>1937421</td>
</tr>
<tr>
<td>Budapest</td>
<td>1719342</td>
<td>1697343</td>
<td>1696128</td>
<td>1702297</td>
<td>1712210</td>
<td>1721556</td>
<td>1733685</td>
</tr>
<tr>
<td>Warsaw</td>
<td>1688194</td>
<td>1692854</td>
<td>1702139</td>
<td>1706624</td>
<td>1709781</td>
<td>1714446</td>
<td>1720398</td>
</tr>
<tr>
<td>Sofia</td>
<td>1194164</td>
<td>1221157</td>
<td>1237891</td>
<td>1240788</td>
<td>1247059</td>
<td>1249798</td>
<td>1259446</td>
</tr>
</tbody>
</table>

Source: Eurostat (The data from 1990 to 2003 were not available)

3. EASTERN EUROPE: PERI-UrbanIZATION IN ROMANIA, HUNGARY, POLAND AND BULGARIA

The four countries that we study knew communist regime and the opening to the west in 1990. The migration flow begins to develop and the market economy is setting up, decentralization was produced. Population begins to leave the city to the countryside, but this residential peri-urban is for wealthy people, because the prices of land and housing are very high. Other dysfunctions exist: the public transit to those spaces is not developed, just
like the lack of the highways. For example the highway Warsaw-Berlin must be achieved this year, 22 years after the communism fall.

3.1. The Romanian case: Bucharest

Romania, like other East-European countries, presents all the characteristics of ex-soviet countries. Before 1990 the policy of urban planning was directed to “anti-sprawl” in the context of the “settlement systematization”. In this period urban sprawl was limited; the goal was to give the land to agriculture and every action was controlled by the central power. In 1990, the communist regime fell and the country knew a liberalization of energies. We attend the power decentralization. Local authorities are free to plan the organization of their administrative unit’s land. If until 2000 the process shows itself quite shy, from that time peri-urbanization spread. Today we assist to a rise of population outside the big city, to an extension of built and building land through increasing number of building permits, to a spectacular growth of cars number and to an important dynamic of motorization. This fact leads to commuting. In the peri-urban space the result of the increasing number of construction authorizations is that the number of housing grew a lot. The rate of built housing between 1990 and 2008 exceed 35% of the total housings in some administrative units, mostly to the north or to the west of Bucharest.

Peri-urban space marks also the explosion of periphery shopping centers, office buildings, storage and logistic spaces and industrial zones. All this characteristics we can find it in other ex-soviet spaces. Some dysfunctions appear: construction on land non serviced, existence of bad and undersized roads that need some amelioration. These inconvenients exist because of the urban legislation that is not clear, because of the lack of a coherent strategy of urban development and because of the lack of dialogue between actors.

The extension of built space in the peri-urban of Bucharest is significant and we can observe an important urban pressure to the north of the capital, where the type of urban sprawl is “oil stain”. Most of the administrative units of the peri-urban present an urban sprawl in “glove’s fingers”, throughout the major roads. Some administrative units present an extension in form of “panther skin” by the apparition of village housing estate or solitary constructions in the agricultural land. The residential peri-urbanization manifest itself in the form of gated communities with big private housing estate or with apartment buildings secured with the presence of a fence and a security guard. Today with the economic and the real-estate crisis we assist to a collapse of the real-estate construction in the peri-urban with halt or even abandonment of the residential projects. The real estate developers focus today on unexplored spaces, where the price is still low, to little apartment buildings with small accommodation accessible to a large variety of buyers.

But what is the response to this phenomenon in Romania? How do local authorities manage urban sprawl?
Fig. 1: The rate and the number of housing built between 1990 and 2008 in the peri-urban space of Bucharest
3.2. A Hungarian example *peri-urbanization* at Budapest

In Hungary, Budapest is a case apart because the capital represents 17% (1 733 685 inhabitants in 2011) of the country’s population (Bucharest is around 10% and Warsaw about 5%). The second city most populated in Hungary is Debrecen with 200 000 inhabitants. Hungary is marked by an urban macrocephaly. Old capital of the Austro-Hungarian Empire, Budapest was booming during the XX century. The *peri-urbanization* began in 1980. During the 1990 the city-center lost 14% of its population, while the population of its periphery increased with 18% (ANAH, 2009).

In the 1960, the leaders wanted to develop other cities in the country and they had proceeded to the investments decentralization with the intention of reducing the Budapest’s role in the country’s industrial development. Due to this changing Budapest oriented itself to the service sector. This thing allowed the development of an enterprise spirit, unknown until this time in this part of Europe, as well as good network and transport infrastructure. These two characteristics had a particular importance in the 1990, at the moment of passing to the market economy (Iszac, Probald, 2003). Today other advantages contribute to the radiance of Budapest: tourism and scientific exchanges. The city has welcome 150 conferences and international congresses in 2006 (ANAH, 2009).

For many decades, Budapest, just like Bucharest, has welcomed the rural population. To the end of communist period, the demographic reports had been inverted. Urban population begins to decrease while the number of inhabitants of the “villages” into the agglomeration begins to increase. The first function of these spaces became residential. Budapest loose 130 000 persons between 1990 and 1996, and 40% of them were gone for living in the administrative units surrounding the big city (Dovenyi, 2003). Rich population chose verdant hills of Buda, while poor population, which is constrained to leave Budapest, because of the high prices, goes to the north-east, to less attractive administrative units, where life cost is lower. Just like in Bucharest the attraction to greenery is very important for the installing to new population.

So what is the response of Budapest and local authorities in the management of urban sprawl?

3.3. Urban sprawl in Poland: the example of Warsaw

Warsaw, Poland’s capital, one of the most populated East-European capitals does not benefit to a big demographic weight in its country like Bucharest and Budapest. Poland counts about 38 millions of inhabitants, and Warsaw counts about 5% of total country population. This is the result of many reasons : the city destruction in 1945, the hard industrialization renewed ten years later to the peripheries (lack of housing into the city) or the position to the east of the country.

Warsaw exercised an influence on its peripheries between 50 and 100 km (Laignel, 2006). During the communism period, Warsaw and the periphery administrative units were managed together by the power, the goal was to control migration flow and an anarchical *peri-urbanization*. After 1990 the administrative units became autonomous. They develop quickly a high competition in attracting developers. This thing provokes conflict between different local policies and in the end deficiency of global infrastructure policies.
After 1989 urban sprawl appears. Population leave the big city. Jobs are decentralized to the peripheries where we can see the apparition of commercial poles too. Often into the peri-urban space individual housing takes the form of gated communities or big buildings with luxury apartments. This offer takes away middle population of the real estate market. But urban sprawl manifest itself in a "wild way" in Warsaw too (Gaudray-Coudroy, 1997) and the surroundings of Warsaw do not have necessary services. This happens also into peri-urban space of Bucharest or Budapest.

Other dysfunctions, just like in Bucharest, exist: social and spatial segregation, because like we said, the residential peri-urbanization is for rich people. In terms of services, the number of schools and doctors isn’t enough for responding to an increasing demand of population in periphery administrative units of Warsaw. Projects for transport infrastructures were announced for 2011, but they still didn’t become reality. In 2008 Gille Lepesant talks about a coming line Lodz-Warsaw in 45 minutes for 2011 unlike 2 hours in 2008. A simple research Lodz-Warsaw on driving directions sites the result is still the same like three years ago: it still needs 2 hours to link together the two towns.

All these aspects demand a good management of urban and peri-urban spaces. A first response is the creation of a metropolitan space. How this happens in Warsaw?

### 3.4. The example of Bulgaria: the peri-urbanization at Sofia

At Sofia peri-urbanization manifest itself in the same way. There is an attraction to certain spaces just like in Bucharest. This phenomenon manifests itself mostly in the south part of the capital, because here we can find Vitosha Mountains, privileged residence place for the Bulgarian nomenclature. The same phenomenon can be observed at Bucharest. Peri-urbanization spread to the north of the city, where we can find a lot of lakes and woods. The north part of Sofia concentrates the most important industrial zones and this area is populated with a modest population. That’s why this part of the city does not attract real estate investments. The land pressure marks the southern part of the Bulgarian capital, where construction projects in the form of gated communities, occupied by rich population appear.

The north-south divide can also be observed with the land and real estate price’s maps made by Milena Guest (specialist of Bulgaria) in 2006. The land price can exceed 900 euros/m² to the south part and rarely more than 200 euros/m² to the north part. Respecting real estate price is about 500-750 euros/m² for the south and 200-500 euros/m² for the north. Just like in Romania, these new built spaces do not have utilities. Imbalances are occurring, firstly ecological, because of the advance of the urbanization to the mountains and the Natural Park of Vitosha.

This chaotic urban sprawl worries the authorities. What is the sofioite answer to this phenomenon.

### 4. WHAT GOVERNANCE FOR URBAN SPRAWL IN EASTERN EUROPE?

If in Budapest the management goes into the direction of urban renewal, conversion of brownfields and occupation of free spaces between other constructions, Sofia gambled on the creation in 2007 of a master plan with tree objectives: limit urban sprawl, development
of the north land of Sofia and development of a polycentric structure. Warsaw manifests the desire for the creation of a metropolitan area, just like Bucharest. Planning tools exist but there is a huge contrast between the urban strategy orientations and the reality of the urban dynamic. Often it is because of the financial lack that local councils promote the construction and finally they encouraged urban sprawl.

The solution for a coherent expansion is the cooperation between local councils with common projects. But often the lack of confidence and the competition between local actors contribute to a chaotic sprawl. There are contradictions between what we want to do and what we really do. Cooperation between different actors at different levels is necessary. But how that will be possible in this context of non-confidence between authorities? The response can arrive with the European Union that will introduce common measures with a view to coordinate and control urban territorial evolutions in Europe.

5. WESTERN EUROPE: REFLECTION MODEL IN TERMS OF PERI-URBANIZATION

In Western Europe, peri-urbanization appears at the end of the sixties, and today the process seems to be controlled. This phenomenon is for everybody, in comparison with Eastern Europe where peri-urbanization is for wealthy people. Land is serviced before construction, in comparison with Eastern Europe where utilities and services miss. There is a realization of its negative consequences and authorities act in the way of the sustainable development. The legislation seems to be clear and the different actors respect it.

5.1. Peri-urbanization in France

The peri-urban dynamic in France translate itself under different forms. It is firstly residential, and it marks the end of the compact city. It is then economic. In France this dynamic present different forms of urban extension. Individual house is accessible to middle class and the “extremes are lacking” (Jaillet, 2004). The land is serviced before construction and rules and tools of urban planning are respected. These spaces are also depending of individual transport. During the last four decades, the peri-urban area in France grew faster than population. For example in the department of Loire-Atlantique in the west of France the urbanized land was multiplied by 3,3 between 1960 and 2008 and population was multiplied only by 1,5 (AURAN, 2009).

Urban sprawl is determined by the individual preferences of each one, by the incomes and the prices. When incomes increase households turn towards rather to individual house then apartments. One important motivation rests the price. As we go away from the city-center the land prices fall. The car cost has decrease, favoring the increase of the motorization rate and the development of road infrastructures. This thing permits the growth of the speed of travel and in consequence the decrease of the “distance-time”. Contrary of what happens in the East in France, like in other Western European countries, it is the construction of the transport infrastructures that attract new urban implantations near access roads and stations.

So what is the French answer to this process that nibbles agricultural land?
5.2. Peri-urbanization in Germany

In Germany there are differences between east and west. After the fall of the Berlin wall, cities of East Germany knew an important demographic decline, due first of all to the deindustrialization and unemployment which result. Between 1989 and 1995 70 to 90% of industrial jobs had disappeared in East Germany. Cities in this German part assist to a massive emigration to the west (Florentin D., 2009). The post-socialist transition, just like in other countries in Central and Eastern Europe, had effects for the time being in the spatial structure in East Germany. The peri-urbanization is concretized first by the construction of individual periphery houses. This is in opposition with the compact city specific to socialist towns. The state subventions for the real estate development helped this process. Other factors like the increase of the families’ income and the promotion of a new type of accommodation also had their contribution. The abundance of land just like legislation which is not so restrictive had also permitted the install of shopping centers and enterprises.

But the subventions for construction and for commuting for distances longer than 20 km have stopped. The decline of the peri-urban residential model, the attractiveness revalorization of the accommodation in town make that east-German peri-urbanization is today in decline. Between 2000 and 2005 83% of German administrative units registered negative demographic evolution (Herfert G., 2007).

West Germany like France knew in the sixties this phenomenon. Apparition of individual house can be observed at that time. Motorization was a key factor of more and more distant travels. But the pollution, the noise and the energy consumption made that at the end of the 1980 West Germany was engaged in a process of sustainable development by supervision of urban sprawl and an evolution of the regard that Germans had on their way of transportation (Hecker A., 2007).

5.3. Governance in Western Europe

In France SRU (Solidarité et Renouvellement Urbain) low with urban documents: SCOT (Schéma de Cohérence Territoriale) and PLU (Plan d’Urbanisme Local) were developed in 2000. This low demand reduction of the land use and densification of land already build. SCOT and PLU are tools that control peri-urbanization. The cooperation between local councils also exists for a coherent development. The strategies of control of the urban sprawl articulate around some principles : organize the agglomeration increase by limiting the land offer intended for the urbanization, by promoting polycentric development or by fixing density norms, invest in the urban renewal by the reconquest of the urban fallow lands or by the re-value of city centers, accompany periphery municipalities in their town planning projects, set up economic tools as the interest-free loan for the investments in the center or the preservation of the outer-urban agriculture (Stainteny, 2008).

Germany is a country that promotes re-urbanization. This country encouraged the urban renewal by a strict control of urban tools and the land occupation from the Landers. Those documents authorized urban sprawl only in case of lack of building spaces between other constructions and in presence of public transit deserving those new built spaces. (Delfau E. 2005).

France and Germany seem to control the peri-urban phenomenon, which is very consumer of space. The emergence of this process in the Western Europe gives more
coherence to the urban sprawl and to its control via the various planning tools and the existence of the inter-municipal structures, compared with the East, where there is not yet awareness on behalf of the actors regarding this process. In our opinion France and Germany are two goods examples of territory planning for Central and Eastern European countries.

6. CONCLUSIONS

With these few examples we showed similarities and differences of the peri-urban process dynamic and governance. Although these four big Eastern European cities have different rhythms of development, the peri-urbanization expanded with the fall of the communism and the characteristics are similar everywhere: residential rich peri-urbanization towards green spaces, incoherence between the documents of town planning and the reality, the mismanagement of the phenomenon on behalf of the local authorities, lack of inter-administrative units projects, the main cause being the lack of a culture of cooperation or the fear of the authorities to lose the autonomy on their territories. Comparisons with Western European spaces were added to present solutions of governance to the Eastern European peri-urbanization. In France, the model of governance is based on the links between local authorities and in Germany the model of current development is directed to the re-urbanization of the center having in mind a sustainable development. But the economic development of these countries is not the same. The Eastern Europe has to catch up a lot and twenty years after a centralist regime do not seem to have been enough for making a successful transition.

So Germany and France show themselves like countries that control the phenomenon with a rigorous legislation and sustainable development is also considered. Central and Eastern European countries knew the process later and the management is not the same. Legislation exists, but is not clear and the process can not be managed in an ordered way. If Western Europe research solutions which consider a sustainable and harmonious development, the Central-East Europe research an immediate development, and that’s why there are discrepancies.

Some solutions to the management of this process in this European corner are the inter-administrative units projects with the cooperation between different actors and the emergency of a governance mode adapted to the Central-East European peri-urbanization.

REFERENCES


Coudroy de Lille, L., (2005), Entre est et ouest, entre tradition et modernité : la Pologne dans l’Europe d’aujourd’hui, Géocarrefour, [en ligne], volume 80/1, mis en ligne le 14 janvier 2008, consulté le 10 avril 2011, URL : http://geocarrefour.revues.org/897


RESIDENTIAL ATTITUDES TOWARDS URBAN HERITAGE IN BUDAPEST - THROUGH THE EXAMPLE OF THE WEKERLE QUARTER

Ági PAP
University of Szeged, Department of Economic and Social Geography, Szeged, Hungary,
Email: pap.agi@geo.u-szeged.hu

Abstract Cultural heritage of various cities or neighbourhoods on the one hand gives a special character to places and on the other hand it provides the residents with the feeling of home and emphasizes the cultural distinctiveness for the outside world. In the study a 100-year-old garden city-like neighbourhood of Budapest, the Wekerle estate is examined. The houses of Wekerle built in Art Nouveau style, its unique street pattern contribute to the peculiar cultural heritage of the area. The aim of the study is to find out whether the residents regard the cultural heritage to belong or contribute to their own identity and also to find out whether the attitudes of the “aboriginals” and the “new comers” differ from each other.

Keywords: Wekerle estate, local community, cultural heritage, identity, residential questionnaire

1. INTRODUCTION

There are no two identical places in the world. As all the places are the outcomes of their history and have their own cultural heritage, all the places are unique. While some of the places are more special with more easily recognisable characters that are rather unique and exceptional in the world, other places seem to be just “average” with no outstanding features. The places where this special atmosphere is easily sensible usually become international tourist attractions. Places with less characteristic features may not be internationally known but at a narrower level, for example at the level of nation, they may become still highly appraised and visited places. However when visiting these places a higher level of knowledge regarding the regional and local culture is needed as to be able to sense their not so sharp-featured peculiarities (Rázt T. - Michalkó G., 2006). In some cases it is only the residents, who can sense the mild differences, the slightly perceptible genius loci, and the special atmosphere of their cities or neighbourhoods.

In big cities the various neighbourhoods often have different atmospheres. In some cases the cultural heritage of a territory gives a special, easily recognisable atmosphere to a quarter (for example the architectural style may be a rather easily perceptible characteristic of an area) and in other cases not even the residents are able to sense or to phrase the peculiarity of their area.
Beyond the fact that cultural heritage gives a special character to places it also gives the residents the feeling of home and raises the attention of the outside world for the cultural distinctiveness of the area (Scheffler, N. – Kulikauskas, P. – Barreiro, F., 2009). Cultural heritage may also support the identity of the residents. According to Ennen the fact whether cultural heritage strengthens the identity depends on the attitude of the residents. She classified the residents into the groups of “connoisseurs”, “take-it-or-leavers” and “rejecters” based on their attitudes (Ennen, E., 1999).

In this paper the Wekerle estate, a more than a 100-year-old garden city-like neighbourhood of Budapest, is examined. The neighbourhood of Wekerle is easy to distinguish from other parts of Budapest, as it has a rather unique but regular street-pattern and its houses are built in the Hungarian Art Nouveau style.

The aim of the study is to find out whether the special character of the Wekerle estate is perceived by the residents of the Wekerle in their everyday life, whether it is regarded to form the part of the local cultural heritage and thus whether it strengthens their local identity. On the other hand the study also tries to reveal whether there is a difference in the attitude of “aboriginals” and the “newly arrived people” regarding the perception of the local cultural heritage of Wekerle. Up to now there has not been any study on the Wekerle estate from this point of view. As the inhabitants of the Wekerle are changing fast, it is important to sense and understand these processes.

2. RELATIONSHIP BETWEEN CULTURAL HERITAGE, IDENTITY AND URBAN DEVELOPMENT

As cultural heritage highly influences the development and the economic performance of a territory, it may enhance the competitiveness of territories (Czene Zs, 2002). Thus cultural factors are important factors of the economy and help to create an innovative milieu.

All the territories are unique. The uniqueness of the spaces is determined by the complex of its material-historical, spiritual-social and natural characteristics. These characteristics must not be handled separately as social or natural factors, as all these factors taken together; their complexity is the cultural heritage itself (Fig. 1).
Thus cultural heritage is not interpreted as the heritage of culture. Cultural heritage is heritage in a broader sense that is inseparable of culture; that is heritage soaked with culture. From the point of view of planning cultural heritage is the complex ensemble of cultural, social and economic characteristics of a territory. Cultural heritage can be divided into three main fields: the material-historical, the spiritual-social and to the natural heritage, all of which is contributing to the uniqueness of the territory (Czene Zs., 2002).

According to another approach heritage can be divided into intangible and tangible heritage. This approach is the most commonly used. It is used be the UNESCO as well, as the protection of cultural and natural heritage (tangible heritage) ratified in the convention signed in 1792 (UNESCO 1972, 2003) was expanded in 2003 to the protection of intangible heritage (e.g. folk songs, habits, traditions etc.).

Whichever division of heritage is used, it is highly important to emphasize that the notion of the cultural heritage is always strongly connected to the past. In fact heritage is defined through the elements highlighted from the past, thus through history (Graham, B., 2002). As by time the interpretation of the past may change, the scope of things that are regarded to be cultural heritage changes as well (Graham, B. et al, 2000). Thus cultural heritage is not a given virtue, but a social construction which is, per se, changing by time and is shaped by social relations.

Identity is also a constantly changing social construction, the possessing over which is an important question. Thus identity is in the crossfire of powers struggling to acquire the ability to be able to decide which identity is the dominant, which is accepted and tolerated (Castells, M., 1997, Bugovics Z., 2007). On the other hand identity has different scales: local, regional, national, and on the other hand it can be seen from various perspectives: personal, collective, external, etc. As several of our identities seem to weaken due to modern times and globalisation, other identities become more important. This way local
identity becomes an issue of growing importance these days. Local identity is strongly related to tangible and intangible heritage: buildings, history, habits, etc. (Fig. 2.).

![Fig. 2. The relationship between cultural heritage, identity and development](image)

Source: Scheffler, N. – Kulikauskas, P. – Barreiro, F., 2009

It helps the citizens to become more strongly attached to their neighbourhood and it increases the feeling of belonging somewhere, which contributes to the residents’ willingness to advocate for it.

As identity can help to form the image of an area (Scheffler, N. – Kulikauskas, P. – Barreiro, F., 2009) it is becoming more important for mayors and urban planners as well. By creating a distinct image a city is more easily distinguished from other cities, which is a rather significant advantage in the global competition as positive image attracts people and investments as well (Boros L. – Garamhegyi Á., 2009, Boros L., 2010). Thus identity provides continuity in a fast changing world, it preserves the traditions of communities and makes sure that the changes do not destroy the essential qualities of cities or quarters. In urban development the existence of a positive image means that it has to be preserved or even built on (Scheffler, N. – Kulikauskas, P. – Barreiro, F., 2009)

Urban planning is successful only if it improves the development of the population living at the territory in question. According to the 2nd § of the Act XXI of 1996 on Regional Development and Physical Planning one of the aims of urban development is also to “keep and strengthen the national and the territorial identity”( Act XXI of 1996 on Regional Development and Physical Planning of Hungary). Thus the development policies that do not take into consideration the identity of the residents do not strengthen their identity and their feeling of home, but on the contrary, it may launch the alienation from the neighbourhood. As space is a social construction (Lefebvre, H., 1991), urban development needs to focus not on the place but on the residents of the place (Bugovics Z., 2007). The feeling of home is rather important for residents, as home is the place where people feel to be in security and home is the place over which they dispose. Identity is formed in space
and is formed by space - especially by the spaces of home. In developed societies the feeling of home is very important. Residents want to experience the feeling of home, and in case they lack this feeling, they are less committed to their neighbourhood and they participate less intensively in its formation and improvement (Bugovics Z., 2007).

The special feature of today’s globalising and fast-changing world is that identities are changing rather fast. In times of change and in times of crises societies look for stability and unity more intensively, which is the reason why the collective identities have been strengthened in the last years. People feel it necessary to keep up their cultural distinctiveness and to have the power over their life and their environment. These tendencies result in proactive (feminism, environmental movements) and reactive movements (religious movements), which oppose globalisation and cosmopolitanism (Castells, M., 1997). Some have the opinion that globalisation, the changes it generates and the new technologies weaken national units and strengthen particularism. According to this view the role of places is becoming less important as the internet and the mobile phones makes it possible that individuals geographically far away from each other form so called quasi-communities regardless of the geographical distance between them (Bugovics Z., 2007 referring to Price E. M.).

According to others local identities are not so much affected by globalisation but by the constantly changing political-economic processes and structures and by the current relationship among the actors having influence over the territory. Thus local residents, like one of the actors participating in this process, have a significant role in shaping local identity (Kneafsey M., 2000).

In some countries, especially in countries having experienced radical changes (e.g. becoming independent, the change of regime) it often happens that the state intends to turn the identity of citizens into a different direction than the direction the citizens would like themselves. For example, in Singapore nearly all the religious places and buildings fell victim to urban development, even though they served as a source for local identity as these buildings were erected on sacred places usually chosen by divine revelation. By erecting a modern metropolis all the oriental mysticism disappeared from the city, which resulted not only in a weakened local identity but also in the decrease in the number of tourists visiting Singapore (Kong, L.L., 2006).

In some cases various quarters or neighbourhoods have specific, rather sensible atmosphere different from that of the whole city. These quarters often become the popular tourist attractions of the cities. For example in many cases the neighbourhoods inhabited by immigrants and guest workers became interesting spectacles of North-American or European cities. From North-America the best example is the Little Italy in New York and the Chinese quarters both in San Francisco and in New York. This happened also in Berlin, where the neighbourhood called Kreuzberg, which is populated by guest workers from Turkey and Yugoslavia, became a “bohemian quarter” by today. In Krakow, in the Kazimierz quarter the traditions and the atmosphere of the Jewish culture is kept alive, even if there are living only a few Jewish inhabitants in the city. As the quarter has become an important tourist attraction in Krakow, not only the Jewish people but also the catholic inhabitants of the town aim to preserve the uniqueness of the quarter (Shaw, S. et al, 2004).
RESEARCH QUESTIONS AND METHODS

Cultural heritage gives a special character to neighbours or cities. This special character on the one hand confirms the cultural distinctiveness to the outside world, and on the other hand it provides the inhabitants with the feeling of home and thus contributes to their local identity. The aim of this paper is to find out if the cultural heritage of the Wekerle estate enhances the feeling of home in the residents and if it contributes to their local identity. The aim of the paper is to find out whether this area, which is rather special in its architectural character and rich in cultural heritage, is regarded to belong to the heritage of the residents. This research also intends to detect if there is any difference in the evaluation of heritage of the residents who moved to the Wekerle in the last few years and the residents who have been living here for several decades or maybe all their lives. The question is whether the special atmosphere of the quarter strengthens the local identity?

As to find out the attitudes of the residents at Wekerle an inquiry based on a residential questionnaire was prepared. The research was carried out in March 2012. The selection of the sample was simple random sampling. Every 4th household (based on a territorial collation) was delivered a notification letter about the research. Besides the aim of the research it was also written in the letter that an interviewer will come on an exact date and will ask some questions on the indicated topics. Off course not all the households were opened for filling in the questionnaires and only residents above 18 years were asked. Apart from the notified persons further locals, met on the streets of the neighbourhhood, were asked to fill in the questionnaires. Finally 384 people filled in the inquiry form, which means that about the 8.5% of the households was asked.

The questionnaire contained closed and open-ended questions, two scales (a five-point Likert-type scale and a five-point Osgood-type scale) and several questions regarding the socio-economic parameters of the residents filling in the questionnaires.

The analysis of the results of these questionnaires brought on an overall view on how the locals live there and what kind of attitudes they have towards the built cultural heritage and the atmosphere of the Wekerle.

3. THE STUDY AREA: THE WEKERLE ESATEAE

4.1. The history of the Wekerle estate

The Wekerle estate is situated in the 19th district, which is one of the outer districts of Budapest (Fig.3.). The establishment of the Wekerle estate is strongly connected to the garden-city movement popular at the end of the 19th century in Europe. The creation of this estate was the biggest development of Budapest at that time. The estate was established over the borders of the then time city, where there was still enough place to raise the buildings and where the strict construction rules of the city were not valid. New dwellings were fairly needed at that time in Budapest, as between 1873 and 1900 the population of the city was doubled due to the intensive industrialisation, which required human labour. At that time people from villages moved to the city in favour of better job opportunities. As the population was growing rather fast, Budapest suddenly suffered from the lack of dwelling spaces (Kovács Z., 2006). This was the reason why Sándor Wekerle the prime minister of that time decided to buy the territory close to south-eastern border of the town and to create
A housing estate for workers and civil servants (Nagy G. – Szelényi K., 2001, Remeczki R., 2005). The estate was created in accordance with the characteristics and requirements of then modern and fashionable garden-city movement. In Budapest, for example, there were some other garden cities built in that time: the garden city built for the workers and officers of the gasworks in the IIIrd district or the garden city built for the workers of the national railway company in the XVth district.

In the case of the Wekerle estate the garden city was designed to have a small-town-like character so that the newly arriving residents, who came mainly from rural areas, could easily get used to the new environment (Csanádi G., 2010.).

While preparing the plans of the estate a highly meticulous attention was devoted to the details. The planner wanted to avoid the monotony of similar estates thus not only the functional arrangement of the streets and the houses were taken into consideration but also their aesthetic value. Its radial street-pattern looks like a spider web with a square in the middle (Fig.3.). The houses are built in the Hungarian art Nouveau style, thus various motifs of the rural architecture can be seen on nearly all the houses. The very special elements of the Wekerle houses are the shutters, which are regarded to be the iconic elements of the estate (Fig.4. and Fig.5.).
Fig. 4. One of the iconic buildings of the Wekerle estate
Source: the webpage of the Wekerle Association (www.wekerletelep.hu)

Fig. 5. Variations on the most characteristic element of the Wekerle estate:
the shutters
Source: the webpage of the Wekerle Association (www.wekerletelep.hu)

The construction works lasted for 16 years (between 1909 and 1926), during which time 1007 houses were built, that contained 4412 flats. Four schools and several kindergartens, 2 gymnasiums, a police headquarter and a post office supplied the needs of the inhabitants (László Gy., 1926). At the beginning all the flats were in the property of the state. The situation remained the same during the socialist era, and only after the change of the regime were most of the dwellings privatised. Most of the flats were bought by the tenants already living in it for several years or decades.
As the Wekerle estate is of outstanding value the National Office of Cultural Heritage of Hungary (NOCH) put the estate under temporal protection in 2009 and finally in September 2011 it was nominated to be a conservation area of special historical and architectural interest.

Even before the National Office of Cultural Heritage highlighted the importance of the Wekerle estate, the local government of the 19th district had already made steps to preserve the special character of the neighbourhood. In the appendix number 16 of the Planning and Urban Regulation Order of the 19th district (the Decree of the Representative Body of the Government of the 19th district No. 43 of 2000 (XI. 24)) it was already stated that special means are to be used in the urban planning of the Wekerle estate.

The regulations for the Wekerle estate rather accurately declare how the various interventions are to be executed. According to the regulations the street pattern, the urban landscape and the built environment have to be preserved. All the alterations carried out on the buildings, all the modernisation and renovation have to be in harmony with the original form, colours and materials of the buildings. For example the regulation clearly states how and what kind of roof windows can be inserted if the flat is extended by creating a loft. The parameters of the fences, of the terraces, of the newly built garages, of the store-houses in the gardens etc. are all defined.

When renewing or changing the windows or the doors of the flats, the owners must stick to the original design. The panel-like folding shutters, that are characteristics of the houses of Wekerle, must not be removed or changed for any other type. The exterior part of the air conditioners, the satellites and other constructions of public utilities (e.g. gas pipes, electric cables, etc.) have to be installed on the houses in a way that they could not be seen from the streets or if they are on the front of the house they have to be covered in a prescribed way.

Before the renovation or the modernisation of the houses is started, it has to be preceded by permission procedures which are rather time-, money- and energy consuming. Thus these permission procedures are often omitted, which results in the much diversified methods of renewing. On the other hand some resident violating the rules irritates the residents who take the trouble and try to preserve the uniqueness of the quarter.

4.2. The social characteristics of the Wekerle estate

The number of inhabitants living at Wekerle was the highest (around 22 000 inhabitants) in 1926, the year when the building operations were finished (László Gy., 1926). Today around 11.000 people live in these houses (Budapest 19th district – Kispest Integrated Urban Development Strategy 2008).

The proportion of inhabitants belonging to the age-groups under 14 (14.2%) and over 60 (27.1%) are higher than the average value concerning Budapest (12.8% and 22.9% respectively) (Table 1).

Table 1

---

1 All the statistical data used in the chapter 4.2 are the data collected by the Hungarian Central Statistical Office in the population census in 2001. As the sub-city data of the 2011 population census is not yet available, the statistical data of the study is based on the data of the 2001 census.
The high proportion in the age group under 14 is due to the tendency that young couples with one, two or more children move to the Wekerle. Families with young children seem to have been discovering the Wekerle estate lately and move into this "village-like neighbourhood, where the children are in green and calm environment, where there is less traffic, where the air is better and where the children and the families live in houses with gardens" (based on the results of the questionnaire, focusing on the opinion of the inhabitants who live less than six years in the neighbourhood). The high proportion of people in the age group over 60 is due to the fact that the calm environment is absolutely convenient for people in their pensioner years, so people of the older generations, even if economically could afford it, do not move out from the Wekerle. Particularly do not move out those who lived all their life at Wekerle. They are rather attached to the neighbourhood and do not feel necessary to search for another living area for their old ages.

The Wekerle neighbourhood can be characterised with a relatively high percentage of graduated persons (19.8 %) when persons over 25 years are taken into consideration. The percentage of employed persons within the age group of 15-64 (61%) is somewhat lower than that of the 19th district and Budapest. The high values showing the percentage of households without employed persons in Wekerle (41.4%) (as opposed to the 33.2 % of the 19th district and 38% of Budapest) is due to the fact that many of the households are one-man households often consisting of a pensioner. The Wekerle neighbourhood compared to the whole of the 19th district shows more favourable values in the indices demonstrating the percentage of the underprivileged groups (like persons without labour or income within the age group of 15-59 or persons with no more than primary school education and without labour income within the age group of 15-59) within the society.
4. RESIDENTIAL ATTITUDES TOWARDS URBAN HERITAGE IN THE WEKERLE ESTATE

Local residents of a place are only one, but a rather important, of the actors shaping the present life and the future development of a place. The more the residents feel home at a territory, the more they care about it and advocate for it.

According to one of the questions of the questionnaire (where statements had to be values on a five-point-scale, where 1 was strongly disagree, 2 was somewhat disagree, 3 was cannot decide, 4 was somewhat agree and 5 was strongly agree) the results of the questionnaire the residents of Wekerle have the unanimous opinion that their neighbourhood has to be preserved (Fig.6.). Some of the asked (mainly the elder ones) added the comment that the present state of the neighbourhood is only the faded form of its sometime state, and they think that preserving the present state is not sufficient, it should be restored to its former form. Most of the residents agreed on it that the monument buildings give a special character to the neighbourhood (average 4.63), even though a bit less strong was their agreement whether these buildings are strongly connected to their living milieu (average 4.26). The residents of the Wekerle estate do not think that the protection of monuments hinders the development of the neighbourhood (average 2.56). They also do not think that the neighbourhood’s richness in monument buildings does not meet the requirements of modern life (average 3.59). These two were the questions were the opinion of the residents varied the most from each other (the deviation was 1.4 and 1.34 at these two questions respectively).

The residents also strongly agreed that they feel home at Wekerle and that they are also proud of being Wekerle residents and they also found it right if the government is making steps to call the word’s attention to the uniqueness of their residence. They would not oppose the arrival of tourists (whose visit is rather rare at the present) and they think tourists would not have negative effect on their neighbourhoods. However the opinions were not so consonant regarding these questions (the deviation was 1.31 and 1.24 at these two questions respectively).

According to the results of the questionnaire the tourists are more warmly welcomed then the new inhabitants. This refrain from the new residents is one of the sensitive topics that were mentioned in all the interviews and it also appeared on the pages of the Wekerle newspaper. Due to these sources there is no harsh, but still a sensible disagreement between the „aboriginals” and the „intruders”. The aboriginals, the residents who have been living for all or nearly all their lives at Wekerle, find it difficult to tolerate that young and well-to-do families move to the neighbourhood. According to “aboriginals” the newly arrived residents do not integrate to the society or to the environment. The new settler, who are often in a more favourable financial situation, frequently make changes on their houses and fences, in their gardens and do not take into consideration the special regulations of the neighbourhood and thus the changes carried out erode the atmosphere and the unity of the neighbourhood. The aboriginals also find it irritating that majority of the new residents treat Wekerle only as a sleeping place, as it was phrased in the local newspaper several times: „He [the new residents] may not even know his neighbours. He is rarely seen to walk on the streets... He gets in the car in the morning and gets out from it in the evening. That’s all that he does at Wekerle. And he spends the nights here as well” (Wekerle paper, 2000, 18. Are you from Wekerle?).
On the other hand the persons who have moved to the estate in the last years think that the aboriginals are too conservative people with no financial background and with no intention to refresh, renew their houses and their surroundings.

Nearly 1/3rd of the residents claim that there is a “Wekerle-type person”. According to some the “Wekerle-type persons” are calm, helpful, caring, rather friendly living in a cohesive community where everybody knows everybody else. Other residents think that the community of Wekerle is a closed, snobbish community where the newcomers are nor accepted nor welcomed.
Regarding some questions, like whether the residents feel at home, or whether the residents feel attached to the built cultural heritage of the area, there is a slight difference in the opinion of the various groups of the Wekerle residents - grouped according to the number of years they have been living for at the neighbourhood (Fig.7).

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Cannot decide</th>
<th>Somewhat agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monument buildings give a unique character to the Wekerle</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel home at the Wekerle</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If many of the buildings were demolished at the Wekerle, I would not feel home any more</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am proud of being a Wekerle resident</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am glad that new people move into the Wekerle</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Fig. 7. Differences in the opinion of the Wekerle residents (divided into groups based on the length of time they have been living at the Wekerle)](image)

(Source: residential questionnaire, 2012)

There is a rather mild difference concerning the question whether the monument buildings give a unique character to the area. It seems that the persons who have been living all their life in the quarter sense less sharply its uniqueness, probably because they did not leave anywhere else and have no basis for comparison.

It is the attitude towards the newcomers where there is a significant difference in the opinion of the various groups of residents. For the longer time the residents have been living at the Wekerle estate, the less willing they are to accept the new residents moving to their neighbourhood.

All the residents of Wekerle, regardless of the length of time they have been living there, feel to be home there and are proud of being Wekerle residents. In general all the four groups think that the buildings give a unique character to the Wekerle, and would not feel home if these buildings would disappear.

Based on the answers of the residents’ choice between the pairs of attributes listed in the questionnaire (multifarious – monotone, particular – average, boring – lively, international – local, unfriendly – intimate, opened – closed, chaotic – transparent, well-groomed – neglected, dirty – clean, silent – noisy) the semantic profile of the Wekerle estate can be drawn (Fig. 8).

In general Wekerle is regarded to be a rather silent, clean and well-groomed particular neighbourhood which is also very friendly and very lively, not at all monotone.
There were only several cases when the opinion of the residents, grouped into 4 groups based on the length of time they have been living at the Wekerle, showed a significant difference. According to all the residents the Wekerle estate is a special neighbourhood. It is especially particular according the residents who have been living in the neighbourhood for 10 or less years, thus according to the residents who have moved in lately. Those who have been living here all their life said more often that it just an average neighbourhood. The biggest difference in the opinion of the four groups of the residents was shown when they had to decide about the cleaness of the territory. Interestingly the longer time the residents have been living at Wekerle, the less clean they regarded it to be. Probably this is due to the fact that in the early days of the Wekerle (the days only those residents remember who have been living there nearly all their lives) the streets of the neighbourhood were cleaned and kept in order (cutting the lawn, pruning the trees etc.) centrally and on a regular basis. Today the residents do these works themselves in a way and in a time they want to. Or in some cases they do not do them at all. Thus the common neatness and the consistent well-groomed character of the whole Wekerle has been fading away.

6. CONCLUSION

As there are no two identical places, there are no two places the cultural heritage of which is also identical. While some of the places are more special with more easily recognisable character that are rather unique and exceptional in the world, other places
seem to be just “average” with no outstanding features. Let it be a place with more or with less visible cultural heritage, in urban planning the heritage of a place must be taken into consideration. Cultural heritage gives a special character to the area, which on the one hand confirms the cultural distinctiveness to the outside and on the other hand provides the inhabitants of the area with the feeling of home and thus contributes to their identity. In the study a slightly more than a 100-year-old garden city-like neighbourhood of Budapest, the Wekerle estate is examined. The aim of the study was to find out whether the residents regard the cultural heritage of their neighbourhood belonging to their heritage and thus contributing to their local identity. It was also the aim of the study to examine whether the attitudes of the “aboriginals” and the new comers differ from each other.

As to answer these questions a residential questionnaire was carried out asking local inhabitants about their opinion and experience they have regarding the cultural heritage in their residence. According to the results of the questionnaires all the asked residents strongly agreed that they feel home in Wekerle, and that they are proud of being Wekerle residents. They think that the built cultural heritage give a unique character to their residence and that neighbourhood is to be told about to the rest of the world. There was a bit less general agreement on questions whether tourist should visit the estate and whether their presence would cause any negative harm to the estate.

If the analysis is carried out based on the groups formed according to the time for how long the residents have been living in the neighbourhood, the results show that the persons who have been living there for all their lives do not perceive the special, unique character of the neighbourhood than the other three groups. This is rather dangerous for cultural heritage and thus for identity. If residents do not see the uniqueness of their residence, how would they know what to preserve and why to preserve? This is in contradiction the fact that, even though, they think there exists a “Wekerle-type person”. The persons who have been living for all their lives at the Wekerle are also less welcoming towards the newcomers and think that the newly moved in families and persons do not feel the social and environmental atmosphere of the Wekerle estate, and this way they are not very eager in maintaining it.

The study will be continued by carrying out a similar research at two other neighbourhoods of Budapest that are also rich in cultural heritage: the area of Buda castle and the area around the sometime Jewish quarter. The comparison of the results gained at the three territories will show which issues and problems appear at all of these residences and which are the unique characteristics of any of the neighbourhoods.

ACKNOWLEDGEMENTS

This research was realized in the frames of TÁMOP 4.2.4. A/2-11-1-2012-0001 „National Excellence Program - Elaborating and operating an inland student and researcher personal support system convergence program” The project was subsidized by the European Union and co-financed by the European Social Fund
REFERENCES

THE VALORIZATION OF TOURISM POTENTIAL OF OVCAR-KABLAR’ ORTODOX MONASTERIES BASED ON THE USE OF TWO METHODS: THE QUALITATIVE AND QUANTITATIVE RESEARCH METHOD AND THE HILARY DU CROS RESEARCH METHOD

Bojana SPASOJEVIĆ, Dejan BERIĆ, Igor STAMENKOVIĆ
University of Novi Sad, Faculty of Sciences, Department for Geography, Tourism and Hospitality
Email: bojana.spasojevic@ymail.com

Abstract: For almost two centuries, monasteries of Ovcar-kablar gorge attracted attention of many researchers, artists, believers, and in recent times they became pull factors for modern tourists. These monasteries along with natural beauty of Ovcar-Kablar gorge and healing properties of Ovcar-Kablar Spa, make an extremely important area and tourist potential. Although Ovcar-Kablar monasteries by overall artistic achievements are behind Serbian medieval work of art, not many people can remain indifferent for their beauty and spirituality. The appearance of these temples (ten monasteries and two holy places) can be determined only approximately, which leaves a lot of space for numerous assumptions. In opinion of historians Ovcar-Kablar monasteries were built in the late XIV century, during the arrival of The Sinaite monks in Serbia. Monasteries of Ovcar-kablar gorge suffered numerous wars and destruction, but they still represent a place which keeps the true value of Orthodoxy. As religious and cultural-historical objects of great importance these monasteries attracts more and more visitors every year, leading to needs for tourism valorization, since the basic religious functions of monasteries should not be disturbed. Also, care should be taken about tourism impact on active life of the monastery and the environment. According to destination needs in this paper work author will present tourist valorization of these monasteries applying Quantitative and Qualitative research method and Hilary du Cros method. As a final conclusion will be presented comparative analyze of both results.

Key words: Ovcar-Kablar gorge, monasteries, Orthodoxy, Tourism valorization

1. INTRODUCTION

For almost two centuries, monasteries of Ovcar-kablar gorge attracted attention of many researchers, artists, believers, and in recent times they became pull factors for modern tourists. These monasteries along with natural beauty of Ovcar-Kablar gorge and healing properties of Ovcar-Kablar Spa, make an extremely important area and tourist potential, not
The valorization of tourism potential of Ovcar-Kablar Orthodox monasteries

only for Čačak, but for whole Serbia. Although Ovcar-Kablar monasteries by overall artistic achievements are behind Serbian medieval work of art, not many people can remain indifferent for their beauty and spirituality. The appearance of these temples (ten monasteries and two holy places) can be determined only approximately, which leaves a lot of space for numerous assumptions. In opinion of historians Ovcar-Kablar monasteries were built in the late XIV century, during the arrival of The Sinaite monks in Serbia. Monasteries of Ovcar-Kablar gorge suffered numerous wars and destruction, but they still represent a place which keeps the true value of Orthodoxy. Ovčar-Kablar Gorge is located in the central part of the Western Serbia. It is cut between the mountain ranges of Ovčar (985 m) and Kablar (890 m). Gorge connects Čačanska and valley of Požega. For centuries this area was wild and inaccessible, but after the construction of road and railway gorge becomes an important route linking the Central and Western Serbia with Montenegrin coast. The law of the Republic of Serbia pronounces the Ovcar-Kablar gorge an exceptional region of the first category, as a landscape of exceptional characteristics and a natural resource of great importance. "National Tourism Organization of Cacak" is determined for a guardian Valorization and traffic of this region are extremely disproportionate to its potential. According to the Tourist Organization of Cacak Ovcar-Kablar gorge annually visits about 60,000 tourists. These data must be interpreted with caution as they were obtained on the basis of the record of visits to the monastery Blagovestenje, which is the most visited monastery. The structure of the highest percentage of visitors make excursions and tourists in transit. About revenue generated from tourism, there are no official figures, but he considered insignificant. Tourist organization of Cacak organizes tours through Ovcar-Kablar gorge mainly at the request of the travel agency. These are short, usually one-day tours as part of some other travel packages.

The subject of this paper is to analyze condition of Ovčar-kablar gorge monasteries (ten monasteries and two sacred places) and to give propose for their implamentation in culture routes through Ovcar-kablar gorge.

The aim of this paper is to make a presentation of mentioned monasteries and natural attractions of Ovcar-Kablar gorge, and to give a proposal for route creating on sustainable development principles, with raising awareness of local population and monasteries’ priests about importance of tourism development.

The task of this paper is tourism valorization of mentioned cultural and natural attractions and possibilities for their implementation in cultural routes.

2. LITERATURE REVIEW

Sacred spaces have been defined by Jackson and Henries (1983, p.94) as ‘that portion of the earths surface which is recognized by individuals or groups as worthy of devotion, loyalty or esteem’. Such places are not simply discovered or constructed, but they are also claimed, owned and run by people supporting specific interests (Chidester and Linenthal, 1995). Although sacred sites vary in size and shape, they share the characteristics of being relatively permanent and inspiring respect and devotion (Terzidou, 2010).

National identity of Serbs is in a closets relation to monasteries because they represent not only foundation of religious roots, but first territories, countries and rulers from the moment that Serbs settled Balkan Peninsula. Inspire of historical alters and rule of other nations over Serbian people, monasteries and churches as a symbol of spiritual
freedom kept their role for centuries. From the very beginning monasteries were built and donated by rulers where architecture was evolutionally changing in three different styles: Raška School (XIII century), Serbian Byzantine School (XIV century) and Moravian School (XV century). Those styles mostly depended on significance of ruler countries in Europe and Mediterranean at the time and countries where the painters and constructors were coming from. Today, in Serbia, there are around 115 monasteries evaluated as monasteries of extraordinary and great importance, mostly equally scattered Serbia vide with few locations, situated as a groups of monasteries. For example, monasteries of Fruška Gora consist of over 15 cultural monuments similar as 11 monasteries in West Morava Ovcar- Kablar valley. Monasteries in this valley are known as Little Saint Mountain cause reminds at Athos Mountain (Saint Mountain) in Greece where Serbian, just as Bulgarian, Russian, and Greek monasteries are situated, in a way, that monasteries originally were located in some kind of protected places, were enemy could hardly reach and harm sacral buildings, some of them are even today isolated from direct civilization, in naturally preserved landscapes. Therefore, it is not unusual for cultural monument to be protected as naturally valuable sites. Decision on proclamation of suggested protection for certain area is accepted by Serbian Government. Protected is supported by legislative: Law on Environmental Protection and Law on Cultural Monuments; as well as by Institute for Natural Protection of Serbia and Institute for Cultural Monuments Protection of Belgrade, Novi Sad etc (Pantić, 2007).

During the last two decades some studies have been conducted about Orthodox sacred shrines, such as St. Katherine's Monastery, Mount Sinai, Egypt (Shackley, 1998) and Mount Athos (Andriotis, 2009; Gothoni, 1993; Kotsi, 1999). Common for these studies as well as for research on non-religious Byzantine sites (e.g. Chronis, 2005, 2006) is that they have paid little regard to the context authenticity plays to the study of experiencing Byzantine past. Andriotis (2011) in his study examinated various aspects of experiencing Byzantine tourist attractions including authenticity on the World Heritage Site of Mount Athos. Visitors to sacred places have multiple motivations, interests and activities, some of which have nothing to do with religion directly, but are connected with holiday making or with journeys undertaken for social and cultural reasons (Collins-Kreiner and Kliot 2000; Nolan and Nolan 1992). In this respect, religious trips are frequently multifunctional journeys which involve religious dominant factors along with other tourist motivations (Weidenfeld, 2005).

Among the various reasons for which people decide to travel, religion has been one of the oldest, including the importance of the visitors’ attraction to shrine sites or locations due to miraculous happenings. More than 2/3 (88%) of the World Heritage sites have religious significance, while the visitation of religious monuments is part of the normal tourism behavior (Shackley, 2001). Depending on the degree of their religious belief, people travel to sacred places searching for truth, enlightenment, or an authentic experience with the divine, to satisfy their spiritual or material needs (Vuconic, 1996).

The World Religious Tourism Association (WRTA, 2009) identified three primary reasons for the growth of religious tourism: (1) the increase of the overall number of travelers worldwide; (2) the increasing number of people who wish to display their faith, and act accordingly; (3) the many ways that people include their beliefs in their everyday life, such as regular participation in religious events (Petreas, 2011). Whether we consider religious as niche market or a major segment of tourism industry, the real aspect, is that
religious tourism is growing to become an important part of overall tourism (Lanquar, 2009).

The majority of studies on religious tourism and pilgrimage have been concentrated on congested shrines (Andriotis, 2009). The main finding of these studies is that these sites are experienced by visitors as “commodities”, in other words as “cathedrals of consumption” offering increasingly magical, fantastic and enchanted consumption settings (Ritzer 1999:8). Although most religious shrines offer “a commodified version of heritage”, what MacCannel (1973), this is not the case in Ovčar-Kablar valley. It combines past and present, conveying a causal relationship.

All objects, phenomena or spaces formed by natural processes or human activity which possess a certain attraction for visitors can be a subject of tourist valorization. In practice, two methods of tourist valorization are most often used. The most common is a quantitative–qualitative method, which allows a fair amount of freedom in the evaluation, and it is based on six indicators. The second, more complex method, is the Hilary du Cross method of tourist valorization, which is, due to its complexity and variety of indicators that are included in the process of cultural property evaluation, considered to be more appropriate and more reliable (Stanojlović, 2010). In this paper, using the above methods, we tried to determine the tourist potential of Ovcar-Kablar monasteries. The results obtained using these two methods will be placed in a position of comparison, in order to determine whether they differ significantly from each other.

It should be noted that in tourist valorization difficulties arise from the imperfection of the methodology used for the quantification of indicator values for valorization by giving them numerical scores. It should also be noted that different approaches lead to results with limited reliability, bearing in mind that the assessment is based on the subjective perception and evaluation of the grader, as is the case with this assessment. For this reason this type of research must intersect and complement with contact studies of tourist clientele, because it is the only way to reliably determine how tourists experience the cultural and natural values of a given space.

Shackley (2001) thinks that in many cases the economic benefits of tourism to religious sites outweigh the negative impacts associated with tourism development, especially for those sites without steady incomes. However, tourism development is not only an opportunity, but also a challenge, as it brings economic benefits as well as management problems, which demands a balance between accommodating tourists’ needs and maintaining the normal religious function and spirit of place (Shi, 2011).

3. THE CONCEPT OF TOURISM VALORIZATION

According to Čomić (1990) tourism valorization includes "Evaluation" or, the qualitative and quantitative assessment of the value of tourism resources previously listed, as well as other constituent elements of the tourism potential (tourist equipment). Valorization is professional and methodological proceedings made by experts before the tourist use of the monumental space. In this regard, valorization represents the establishment of a tourist evaluation or appraisal of tourist attraction, or evaluation of tourist attractions and assessment of any phenomena, objects and spaces that have, among other properties and characteristics that are attractive (interesting) to tourists, and through them tourists can meet their tourists’ (cultural or recreational) needs (Томка, 1998).
Tourism valorization is not a goal of itself, but serves a specific purpose. The main objectives of tourism evaluation are:

1. Evaluation of tourist values of all individual objects of a space or area as a whole.
2. Assessment of possible tourist visits.
3. The assessment of potential investment activities (both in terms of volume of investment, and by type of object)
4. Protection of area in which we want to develop tourism.
5. Tourism organization
6. Tourism marketing and advertising.

The Characteristics of tourism values are:

- Tourist value is the relative size which depends on the time, space, development and characteristics of tourism demand, as well as subjective assessment of experts
- Tourism value is more or less subjective assessment, we provide experts from many years of practice, which leads to an increase in the degree of objectivity
- Tourism value is variable and depends on the development of tourism demand and supply, as well as the volatility of the fundamental properties of the tourist facility, which is valued

Before joining the tourism enhancement, it is necessary to determine the elements on which it will be carried out. Elements vary depending on the type of tourist motivations. Selection of elements of tourist valorization of cultural heritage sites must be such as to include all the elements that form the basis of future tourism presentation of the monument.

### 3.1. Results of the quantitative – qualitative method of tourist valorization

In particular, quantitative–qualitative method consists of the so-called „complete methods“ (based on the system of factors which also include examination of cultural and geographic factors, i.e. the cultural values of space, then suprastructure and infrastructure) (Ćirković, 2005). The quantitative evaluation in reality can not encompass all the components of space, and therefore the so called complete methods are also called „quasi-total“.

The evaluation process is done by using the scale of values which is not universal – it is determined according to specific needs. In this paper the scoring was carried out by using a scale with a range from 0 to 5. It should also be noted that different approaches lead to results whose reliability is limited, bearing in mind that the evaluation is based on the subjective perception and evaluation of a grader, which is the case with this valorization.

Tourist valorization of Ovčar-Kablar monasteries is carried out by analyzing: microlocation’s position and availability (position relative to the homeplaces of tourists, traffic communication and accessibility), artistic value (aesthetic quality, monumentality, rarity, cultural and historical significance), tourist attractiveness and recognizability (attractiveness for tourists, the level of tourist visits), tourist value of the ambience (arrangement, preservation of nature, etc.), construction and equipment of the space (the
The valorization of tourism potential of Ovcar-Kablar Orthodox monasteries

level of construction of basic and additional tourist facilities, incorporation into tourist richness (complementary tourist motives in the narrow dispersive area, their connection, etc.)

The next step, after analyzing these elements, is their evaluation (conducted after a detailed field and afterwards cabinet research) to determine the overall value of tourism. The evaluation was carried out as follows:

- grade 1 (unsatisfactory quality) – inability for tourist presentation,
- grade 2 (satisfactory quality) – local tourist importance,
- grade 3 (good quality) – regional tourist importance,
- grade 4 (very good quality) – national tourist importance,
- grade 5 (excellent quality) – international tourist importance

(Cirković, 2005).

Microlocation’s position and availability of most Ovčar-Kablar monasteries is favorable. The monasteries that are located next to the regional road Čačak-Užice are extremely accessible. All monasteries are located in immediate vicinity of Ovčar Spa, and the Spa itself is 18 km away from Čačak, 162 km from Belgrade, 204 km from Niš. Besides the international airports in Belgrade and Niš, the nearest airport (“Ponikve”) is located in Ladevci near Kraljevo and it is about 30 km far from Ovčar Spa. Its reconstruction began in 2011 and in the near future it will be open to civilian traffic. In the vicinity of the protected area (in the southeastern part) passes the planned highway route E-763 Belgrade – South Adriatic, whose construction began in 2010 (Програм развоја туризма подручја Овчар Бање и заштићеног подручја ПИО „Овчарско –калбларска клисура”, 2012). Ovčar spa is also connected with standard gauge railway on the realtion Kraljevo – Požega. Ten trains run daily between Čačak and Požega, with a commitment to stop in Ovčar Spa, and 4 express trains do not stop.

Although Ovčar-Kablar gorge is well connected with various emitting centers and nearby tourist sites, many sites in the gorge are not properly connected. Most of the monasteries can be reached by bus, and there exist also parking spaces. On the other hand, there are monasteries which can hardly be reached by a car. For example, the monastery Savinje is reached solely by steep pedestrian path. The road to the Uspenje monastery, Jovanje, Sretenje and St.Trojice is extremely narrow and passable for only one car, which is a major obstacle for mass visits. Grade: 3.

Artistic value of Ovčar-Kablar monasteries is high, especially when we consider their age (some of them are old almost 8 centuries). Nevertheless, architecture and frescoes of the monasteries have no artistic value like other Serbian medieval monasteries. Their greatest value lies in cultural and spiritual significance for the Serbian people. High value also have antiquities kept in monastic treasuries. Grade: 3.

Tourist attractiveness and recognizability of religious heritage is still insufficient and unused in relation to the potential that they have. Visitors to monasteries are mostly believers, organized excursions and rare cultural tourists for whom this is a primary destination, not a passing point. Some of the monasteries that are located along the regional road invest more effort to attract more tourists (e.g. monasteries Vavedenje and Blagoveštenje). None of these monasteries generate considerable tourist turnover. It is necessary to create a unique tourist offer of natural and cultural values of the gorge and improve cooperation between Tourist Organization of Čačak and monks. Rating: 4.
Tourist value of the ambience of Ovčar-Kablar monasteries is more than beautiful. On all sides are surrounded by beautiful nature made from the banks of the West Morava river and the slopes and peaks of Kablar and Ovčar mountains. This area is also protected by the state as outstanding landscape. The monasteries are surrounded by silence, well isolated and away from any noise, which is the proper setting when it comes to spiritual monuments. All ten of the monasteries, and two sanctuaries are built so that one gets the impression that these monasteries belong only to that nature, and that in other environments they would not fit. Rating: 5.

Construction and equipment of the space has progressed in recent years. Almost all monasteries have been restored over the last two decades thanks to bishop Nikolaj Žički. The biggest problem are the bad and narrow village roads leading to the some monasteries. Tourist Signalization is pretty bad, tables which indicate the direction of the monastery are not placed in good places, nor is the information given by them what kind of road is leading to the monastery. It is necessary to open the monastery’s treasures to the public. In addition, monastic quarters can not be used for tourist accommodation, and accommodation facilities across the whole gorge are scarce. It is needed to further mark and regulate access to the monasteries. Rating: 3.

Incorporation into tourist richness of Ovčar-Kablar monasteries is extremely good. All monasteries are close to each other. Each of these monasteries is a single tourist destination, but a compact tourist product can be also formed. As part of the gorge, there are a number of natural attractions. All of this benefits the overall impression that monasteries offer and as a result are more attractive to tourists. Rating: 5.

Table 1. Tourism valorization of Ovčar-Kablar monasteries

<table>
<thead>
<tr>
<th>Elements of tourism valorization of Ovčar-kablars' monasteries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microlocation's position and availability</td>
</tr>
<tr>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

Ovčar-Kablar monasteries were graded with overall rating of 3.83, indicating that these sites are quality tourist resource of regional importance (according to the spiritual and historical values of national importance) and suggesting the potential for further tourism development. General assessment of current tourist attraction of the monasteries is very good, with the possibility of further tourism development and improvement of the current situation. The potentials of the monasteries are large and need to be constantly developed in order to obtain multiple benefits.
3.2. Valorization of tourism potentials of monastery Vavedenje by using Hillary du Cros model

Hilary Du Cros (Du Cros, 2000) introduces the process of tourism evaluation of destination, cultural-tourism sub-indicators and the degree of their graduation (Hadžić, 2005). Tourism sector is represented by two sub-indicators: market attractiveness of cultural assets and the factors important for designing of tourism product. Sub-indicators are graded by marks 0 to 5, but certain indicators have different ranks of marks. The grades are later summed up and market attractiveness of cultural assets is evaluated. After that the sum is ranked as: low attractiveness, medium attractiveness, high attractiveness for tourism development. The sector of cultural asset management also contains two sub-indicators: cultural importance and robustness. Sub indicators of this sector are graded by different grades, and the conclusion on sub-indicators of cultural importance/robustness for the sector of cultural asset management is evaluated as sensitivity/low cultural value, medium value, and high value.

Ambience
The monastery is located in a pleasant natural setting, surrounded by forests. The natural environment is to some extent compromised by vicinity of Ibarska highway, along which the monastery is located. Tidiness of monasteries’ complex is at a high level and strictly manages maintenance of the monastery courtyard. Grade is 3 (weak 0-1, adequate 2-3, good 4, great 5).

The site renowned beside local area
The very fact that Ovčarsko-kablarzki monasteries are outside the local box known as a religious entity, has led that monastery Vavedenje is not distinguished by a recognition. The monastery of Vavedenje is somewhat better known than the other monasteries only because of its proximity to the Ibarska highway and its visibility from the road. So, grade is 2 (not 0, in certain amount 1-3, very well-known 4-5).

The important national symbol
Considering the fact that Ovčar-kablarzki monasteries as a unit are important national symbol, each of these monasteries is also a national symbol. Grade is 3. (not 0, has a potential 1-3, yes 4-5).

Evocative place
Monastery Vavedenje is connected with numerous legends and folk traditions (such as the legend about the building of the monastery, in which is believed that monastery was built by Saint Sava). Also, in the monastery are kept the relics of many saints and martyrs who are believed to have healing and miraculous abilities. Evocativity is certainly one of the strengths of a large number of these monasteries, including the Monastery Vavedenje, and therefore it deserves the highest grade for this sub-indicator, 5. (not 0, has a potential 1-3, yes 4-5).

The site different from other nearby cultural assets
By its monumental great guest house of monastery complex does not differ greatly from other lodgings of Ovčar-kablarzki monasteries. In the monasteries’ treasury is kept the famous Gundulic Four Gospels. The grade is 3. (not 0-1, adequate 2-3, good 4, very good 5).

The site’s attractiveness for special purposes
In the monastery complex, due to the limited space and the proximity of the highway are extremely modest conditions for organizing of larger meetings and events. Grade 1. (not at all 0, has a potential 1-3, very good 4-5).

Complementary to other tourism products at the destination
Monastery Vavedenje belongs to the whole religious comunity of Ovčar-kablar gorge monasteries ("Serbian Holy Mountain"), and it is one of its better-known monasteries. Grade is 5. (not at all 0, has a potential 1-3, very good 4-5).

Tourist activity within the region
For this monastery are associated religious, sightseeing, transit and excursion tourism which are characterized like a short stay, considering that area is not suitable with accommodation facilities. The grade is 3. (barely none 0, in certain amount 1-3, strong 4-5).

Associated with culture
Monastery Vavedenje is a valuable historical monument and it is an important part of the spiritual heritage of the people of this region. The grade is 3. (not at all 0, has a potential 1-3, completely 4-5)

Factors important for design of tourism product:

The accessibility of cultural asset
Monastery Vavedenje is the most affordable of all the Ovčar-kablars' monasteries. The fact that it is on the main road to Ovčar Spa and that is located just 8 km from Cacak gives it a grade 5 for this sub-indicator. (not allowed 0, limited 1-2, allowed access to all assets 3-4).

Transportation from population center to cultural asset
Organized transport to the monastery does not exist. Although next to the monastery runs a regular bus service from Cacak-Ovčar Spa, next to the monastery there is not a bus stop. Visitors use their own cars. While excursions and organized groups arriving by bus. Grade 3. (long distance/difficult access 0, enabled access 1-2, easy access 3).

The proximity of other cultural assets
Other Ovcar-kablar's monasteries are located in the immediate vicinity of the monastery Vavedenje. Grade is 3. (long distance/difficult access 0, enabled access 1-2, easy access 3).

The service availability
Monastery Vavedenje is lacking in this segment. In addition to the parking lot, a few benches in the courtyard and a small gift shop, you can not say that there is something else that would cost to serve visitors and that would make their stay even more enjoyable. Near the monastery there are two restaurants, which somewhat improved service benefits. Grade is 3. (weak 0, adequate 1 - 2, good 3 - 4, and great 5).

After the evaluation of these indicators, the conclusions on attractiveness of cultural asset for tourism sector can be made. As the sum of the points of the sub-indicators of tourism sector for monastery vavedenje is 44, the degree of the market attractiveness of the site is evaluated as high attractiveness. (the scale of attractiveness: low attractiveness 0-20, medium attractiveness 21-40, high attractiveness 41-60)

Cultural asset management is taking into consideration:
Aesthetic value
The monastery is well integrated into the natural environment with beautifully landscaped and great aesthetic value of building. However, the Monastery Vavedenje is
allocated by the aesthetic values of the other Ovčar-Kablar's monasteries. Grade is 1. (low 0, medium 1, high 2).

Historical importance
Monastery Vavedenje has great historical significance primarily for people who have lived in the area for centuries. In addition, it stands out for its larger historical significance. The grade is 1. (low 0, medium 1, high 2).

Educational value
Living quarters is open and women can stay overnight with permission of major nuns. It has great potential in terms of features monastery religious education of women. As this potential has not yet been used, grade is low – 0. (low 0, medium 1, high 2).

Social value
Gatherings of more people is out, except during religious holidays, such as the Feast of the monastery Vavedenje. Grade for this indicator is 1. (low 0, medium 1, high 2).

Scientific value
Monastery Vavedenje is the goal of scientific research only under Ovčar-Kablar's monasteries whole. Rating is 0. (low 0, medium 1, high 2).

Rareness of the cultural asset at the destination
Near the monastery Vavedenje is nine monastery of great artistic value, cultural and historical significance. Each of these monasteries is special by something. The rating is 0. (usual cultural assets of same type 0, unusual cultural assets of same type 1, rare cultural assets of same type 2, unique cultural asset 3).

Representativeness of the site
Given the fact that the only monastery Vavedenje is directly visible from the main road for all the passers-by, it can be said that it is a representative building of Ovčar-Kablar's monasteries complexes. Grade is 3. (weak 1, good 2-3, great 4).

Robustness includes several sub-indicators related to "load" the tourist facility, or its physical condition, the sensitivity of tourist visits and activities that it is reduced to the least possible extent.

The sensitivity of the cultural asset
Expressed in the need to preserve the spiritual peace that the monument could serve its basic purpose. Should be strictly taken care of every step taken in the field of design. It is very important that the monastery complex environment as much as possible keep their original values. Grade is 3. (very sensitive 0-1, sensitive 2-3, insensitive 4).

Reparation status
In recent years, steps have been taken in the field of reconstruction and development of the monastery. Constantly being smaller works and repairs and maintenance of their environment. Grade is 3. (weak 0, partly repaired 1, good 2-3, great 4).

Existence of the management plan of the cultural asset
Cultural property of this significance requires a more serious approach and a precise plan of management. Therefore, the level of tourism organizations create plans bigger tourism affirmation of the monastery. The grade is 2. (not existing 0, in preparation 1-4, exists 5).

Regular monitoring and maintenance
All monitoring and maintenance in connection with the Monastery Vavedenje is done under the Diocese of Žiča, with benevolence benefactor income countries and believers. Grade is 3. (not existing 0, in preparation 1-4, exists 5).
The potential for ongoing investments and stakeholders

Monastery Vavedenje is a good potential for investment and growth in religious tourism. For now it seems that everyone enough that has been done so that some big plans for investments gone. The rating is 3. (great possibility 1, medium 2-4, small possibility 5).

Possibility of tourists negatively affecting the physical state of the site

Unlike other Ovčar-Kablar monasteries the monastery of Vavedenje notices a large number of visitors that can affect both positively and negatively. The positive effects of a large number of visitors are reflected to a greater openness to the visitors of nursing in relation to other monasteries Nevertheless too many tourists interfere with daily tasks and habits of nursing and therefore must respect their peace and time of visits. Review this indicator 3. (great possibility 1, medium 2-4, small possibility 5).

Possibilities of modification

Despite the changes that occurred in society and nature, the monastery has been largely retained their original values, both in appearance and in the way of life that leads to it. Grade is 4. (great possibility 1, medium 2-4, and small possibility 5).

After evaluation of individual indicators of sector of cultural asset management, the total grade of management sector is in total 27 which is the medium value (the scale: low value 0-20, medium value 21-40, high value 41-60).

Based on the conducted analysis, ”market attractiveness/robustness matrix” consisting of 9 cells is set up and marked with M (i,j), (i,j=1,2,3). For every cultural asset it is determined to which cell it belongs, depending on the grade that it previously was assigned in the process of evaluation (Hadžić, 2005; Besermenji, Pivac, 2008). The cells are defined as:

- M (1, 1) - high value of indicators of cultural importance/robustness and low market attractiveness,
- M (1, 2) - high value of indicators of cultural importance/robustness and medium market attractiveness,
- M (1, 3) - high value of indicators of cultural importance/robustness and high market attractiveness,
- M (2, 1) - medium value of indicators of cultural importance/robustness and low market attractiveness,
- M (2, 2) - medium value of indicators of cultural importance/robustness and medium market attractiveness,
- M (2, 3) - medium value of indicators of cultural importance/robustness and high market attractiveness,
- M (3, 1) - low value of indicators of cultural importance/robustness and low market attractiveness,
- M (3, 2) - low value of indicators of cultural importance/robustness and medium market attractiveness,
- M (3, 3) - low value of indicators of cultural importance/robustness and high market attractiveness.

Based on the analysis and the matrix of “market attractiveness/robustness” given above, it is concluded that the monastery Vavedenje pertains to the category M (2,3), medium value of indicators of cultural importance/robustness and high market attractiveness.
The valorization of tourism potential of Ovcar-Kablar Orthodox monasteries

Table 2. Matrices of market attractiveness and robustness of the monastery Vavedenje

<table>
<thead>
<tr>
<th>Robustness (27)</th>
<th>M (1,1)</th>
<th>M (1,2)</th>
<th>M (1,3)</th>
<th>M (2,1)</th>
<th>M (2,2)</th>
<th>M (2,3)</th>
<th>M (3,1)</th>
<th>M (3,2)</th>
<th>M (3,3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>21-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>21-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>21-40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the research we can conclude that the Vavedenje Monastery represents an important religious, cultural and historic building Ovcarso-Kablarska gorge. Although it is not characterized by a particular artistic value, the monastery is “at the door” of the gorge and it achieved visitors first contact with the monks (nuns). For this reason it is important that the Monastery of vavedenje be better promoted in public, because he is in some ways mirror the other Ovcar-Kablar monasteries.

4. CONCLUSION

Monasteries of Ovcar-Kablar gorge make the cultural treasure of inestimable value, both for Serbia and for the whole of Orthodoxy. Besides, they represent today an oasis for people who are determined to devote his life to God, they can be a place where other people could learn more about the Orthodoxy and tradition. For these reasons, religious tourism is a way to get people closer to the monasteries, and at the same time preserve their centuries-long peace and a long tradition. How Ovčarsko-kablar gorge is not only its monasteries, but also priceless natural treasures such as the West Morava river, meanders, gazebo, synonymous with this region is the synergy of natural and cultural heritage. It is necessary to improve cooperation with monks who live in the monasteries, so that they could understand the importance of visits and general mass tourism. It is necessary to make tourism development strategy of Ovcar-Kablar gorge which take into account the cultural assets and natural resources, sustainable development of all goods, then they should do a feasibility study and calculate the carrying capacity of Ovcar-Kablar gorge. Because the goal of all stakeholders in tourism development of this invaluable treasure must be only his protection and improvement.

REFERENCES

Andriotis, K. (2009), Sacred site visitation: A phenomenological study, Annals of Tourism Research, 36(1), 64-84.


Karabasić, J. (2001): *Turistička atraktivnost monastira u Ovčarsko-kabalarskoj klisuri*, Department of Geography, Tourism and Hospitality, Faculty of Sciences, Novi Sad, Serbia


Spasojević, B. (2012): *Sinergija prirodnog i kulturnog nasleda Ovčarsko-kabalarske klisure-predlog i analiza tematske rute*, Department of Geography, Tourism and Hospitality, Faculty of Sciences, Novi Sad, Serbia


Land Use Change in Southern Oltenia in Postcommunist Period: Evidences from CORINE Land Cover

Remus PRĂVĂLIE
Bucharest University, Faculty of Geography, Bucharest, Romania,
Email: pravalie_remus@yahoo.com

Igor G. SÎRODOEV
University of Bucharest, Interdisciplinary Center for Advanced Researches on Territorial Dynamics (CICADIT), Bucharest, Romania,
Email: ingvarri@gmail.com

Abstract. The paper assesses changes in land use pattern in South Oltenia in the last two decades, the analysis being based on the Corine Land Cover data 1990 and 2006. Particularly, we analyzed spatial-temporal dynamics of several land use classes, related to landscape stabilization or water quantity in the area: forests, wetlands, rice fields. Our outcomes show drastic changes in all the analyzed categories, especially wetlands, which reduced with approximate 90%, respectively from 40 678 ha in 1990 to only 2991 ha in 2006. The main cause of such a negative dynamics is the anthropogenic factor and, to a smaller extent, the natural factor (global climate change).

Keywords: land use pattern, environmental impact, change detection, Corine Land Cover, South Oltenia.

1. INTRODUCTION

Global environmental change caused by human activities in the last centuries represents an (almost) unanimously accepted reality (MA, 2005). Globally, it is believed to be provoked by human-induced changes in the Earth's climate through its impact on the key environmental parameters (IPCC, 2007). At the local level, this relationship is not so unidirectional and clear: the causes can be more complex and the consequences much more important for human well-being. Local changes (clearly related to global climate or not) can be much more spectacular than we can even imagine. Against the background of global climate change, unstable balance of fragile ecosystems and landscapes can be easily disturbed (or even destroyed) by intentional or involuntary human interventions. Among possible examples, the Aral Sea case seems to be the most spectacular one (Micklin, 2010).

In Romania, Southern Oltenia can be considered among the most ecologically fragile territories. Since the end of XIXth century this territory with sandy soils and droughty climate has been subject to intense human interventions with a range of purposes, from
environmental consolidation and improvement to maximal exploitation (and depletion) of local resources (Dumitrașcu, 2006). A general overview of the recent trends in this area suggests not just intensification of environmentally destructive processes, but general economic and demographic decline, the area being among the most depressive Romania's regions (Ianoș et al., 2010).

In this context, evaluation of environmental change in the area in the last two decades can supply additional information for deeper understanding of social-economic processes, on the one hand. On the other hand, such an assessment can reflect environmental impact of economical changes related to the two main events of the Romania's recent past: collapse of communist regime in 1989 and joining the European Union in 2007.

Environmental change can be analyzed at various scales, depending on research objectives and tasks. Choosing the scale of analysis is often a compromise between the opposite issues: geographical coverage and complexity of the analysis. Thus, global assessments are usually limited up to 20 regions of the world. National level is preferable for analyzing policy options and inter-state relations. Subnational scale can be suggested for impact, vulnerability and adaptation assessments. At this scale, parameters with high spatial variability, such as land use patterns, which is a crucial parameter that determines actual impact, can be introduced in the analysis (Van Vuuren et al., 2007). However, the Corine Land Cover database is a good methodology for change detection analysis of land use/land cover, this database being widely used in the specialized literature (Falaschi et al., 2007; Feranec et al., 2007; Kuehmerle et al., 2008; Romero et al., 2011 etc).

In such a way, our analysis is based on several pivotal elements: the goal (assessment of environmental change), the data (land use patterns), the method (change detection), and the region (Southern Oltenia). Our hypothesis to be analyzed in the paper consists in the fact that changes in land cover/land use use in the study area can be related to global environmental change and aridisation of local climate (Prăvălie, 2013). Thus, land cover/land use classes more likely to reflect such a relationship will enjoy special attention.

2. STUDY AREA

The study area is situated in Southern Oltenia, between Danube and Olt Rivers and the Getic Piedmont hills, covering for most of its length the Oltenia plain (figure 1). The relief is longitudinal shaped by two important generations of valleys, first generation being constituted by Danube, Olt and Jiu and the second generation by the secondary Blahniţa, Drinca and Desnătui rivers (Dumitrașcu, 2006). Also, relief is fragmented by wide valleys, that create a specific landscape of floodplains, terraces and piedmont plains such as Leu-Rotunda and Sâlcuţa. Sandy soils and rocks, in combination with specific geomorphologic and climatic conditions, have created the premises of appearance and consolidation of sand dunes to the east of Danube (western part of Blahniţa plain) and Jiu rivers (Dâbuleni and Leu-Rotunda plains) (figure 2).

Local climate is influenced by Atlantic, Mediterranean and East-European air masses. It is also subject to local variations caused by Balkan-Carpathian mountain ranges and particularities of the active surface (***1983; Dumitrașcu, 2006). These conditions create specific topoclimates in the area with precipitations brought by humid south-western air masses in the cold season (Ielenicz, 2007).
River network is represented by two generations of rivers. The first generation (Dunărea, Jiu and Olt) has a complex stream flow, with high waters especially in spring. The second generation of rivers (Blahnița, Drincea and Desnățui) have specific characteristics of the stream flow, with high flow figures in spring and winter, and long period of low water in summer and autumn, when they often dry out entirely (Ielenicz, 2007). Thus, local factors play much more significant role in controlling hydrological regime of these rivers.

The area is characterized by forest-steppe vegetation with small forest bodies in the north. Among the representative species, one should mention xerophyte species of oak. In addition, halophyte and psamophyte vegetation is quite widespread in the area (Doniță et al., 2005). The psamophyte black locust was artificially introduced for stabilization of sand dunes. In the case of the study area the role of vegetation, especially perennial one, is extremely important not just for stabilization of dunes, but for keeping optimal hydrological conditions and preventing soil erosion as well (Arghiriade, 1977). Thus, as reported in previous sources, widespread deforestation in the last decades has led to reactivation of the mobile sand dunes in the area (Licurici, 2011).

Soils in the area are characteristic for quite high abundance of soil classes with significant sandy texture: cambic chernozems developed on sandy parent rocks in the south,
between Jiu and Danube rivers, and psamosols (sandy soils) that appear predominantly east of Jiu River, in the northern part of Danube floodplain. Characteristic feature of these soils in the area consists in existence of sandy materials of the parent rock immediately below the layer A of the soil profile and of coarse texture (Oprea, 2009), which have direct effect on the field capacity of these soils. Main specific features of the area, mentioned above, are suggest existence of a quite fragile landscape vulnerable to changes, especially those that could contribute to aridisation of the area.

3. DATA AND METHODS

Our analysis was based on Corine Land Cover data for 1990, 2000 and 2006 (European Environment Agency). Among all the land cover / land use classes, we focused on detecting quantitative changes in some of them, related to landscape stabilization, such as forests, or suggesting availability of water, such as water covered areas, marshes and wetlands.

The latest available data are for 2006. Thus, it would be difficult to fully assess the effect of joining EU on the environment in the area. Nonetheless, some assumptions with this regard could be justified, taking in consideration that this process is not punctual, being extended over several years prior to the event itself.

Although, the data and the method allow making quite precise assessments of the changes in landscape characteristics of the area, they have important drawbacks, coming from the nature of the data. Corine Land Cover is a database derived from satellite imagery, thus, reflecting the state of the environment at a point in time. This 'time-slice' is a subject to the variability of short-term evolutions of the environmental parameters prior to acquiring the images. Remote sensing technologies are advancing and improving their outputs. In our case, Corine Land Cover is based on three different satellites and has different spatial resolutions: Landsat 5 TM and Landsat 7 TM for Corine Land Cover 1990, respectively 2000 (both at 30 m resolution) and IRS P6 LISS-III (23.5 m resolution), respectively SPOT 4 XI (20 m resolution) for Corine Land Cover 2006 (EEA, 2007). In addition, classification schemas are different for each year. These drawbacks can affect the reliability of quantification of changes, but do not deny existence of long-term trends and do not undermine the outcomes of any analysis based on them.

4. RESULTS AND DISCUSSIONS

The spatial-temporal analysis of land cover / use changes using data provided by Corine Land Cover (for 1990, 2000 and 2006) shows significant changes at the level of land use classes, certain categories playing an essential role in stopping / reducing the negative effect of these changes.

Therefore, the observations were made by choice in relation to the second category because it plays a key role in maintaining the optimum ecological conditions in this area, namely the forest areas and water surfaces. There were also taken into consideration other surfaces such as those cultivated with wheat and vineyards which are important in maintaining the soil moisture, respectively in stabilization of sand dunes.

At the first glance, the forest areas, have not suffered major changes in space, but after the analysis of the Corine Land Cover database in the previously mentioned three years
period, the differences between the forest areas become alarming. To be more specific, in 1990, the forest areas occupied a surface of approximate 62 502 ha, while in 2000 they were reduced by approximate 5.5% (3000 ha), leading to approximate 59 177 ha. In 2006, the forest areas continued to diminish with 1000 ha, occupying an area of approximate 58 060 ha. The main cause is represented by the deforestation.

Moreover, according to the Corine Land Cover database, significant forest surfaces have been cleared from the area of contact between the Dăbuleni Field and the Leu-Rotunda Field, the Poteiului Meadow, but also in the most vulnerable areas, namely in the Southern part of the Baileşti Plain in the Ciuperca-Desa area. This region is extremely vulnerable due to extended areas of sand dunes. These surfaces need forest plantations (mainly locust) and this is the reason why the deforestation which is more and more obvious in the recent decades has caused problems of destabilization of the dunes.

Another problem of the forest areas is that they do not exist in the key areas, namely in the areas where there are sand deposits. More specifically, there are extremely extended areas with sand soil texture which need forest stabilization (figure 2), especially in the context of the degree of permanent wind modeling.

Fig. 2: Representation of areas with sand dunes partially fixed/unfixed with forests and vineyards
(data processing CLC 2006)

A similar situation can be found in the Dăbuleni Field where the soils with sandy texture occupy an area of over 12 000 ha, while the forest areas are almost absent. Forests occupy very small areas that consist of clumps of forest. Although this area is partially fixed
with vineyards (figure 3), this region remains one of the most environmentally fragile areas in the Southern Oltenia. Therefore, intervention measures for stabilization of sand dunes are required in this area. Similar situations are found in the South-Western part of Leu-Rotunda Field (Sadova area), in the Central part of Băilești Plain (Afumați-Bârcă area) and in the Central part of Jiana Plain (figure 2).

The **vineyards** also play an essential role in stabilization of the sand dunes, but they have suffered a more accentuate dynamics in terms of the occupied area (figure 3). Although at the level of the Corine Land Cover database from 1990, this category did not exist separately, significant differences can be observed in 2000 and 2006.

In this way, the comparison between those two years showed that the wine-growing areas decreased with approximate 63.4% and respectively from approximate 42 823 ha in 2000 to 15 683 ha in 2006. Thus, in just seven years, according to the Corine database, 63.4% (27 140 ha) of vineyard areas disappeared. The vineyards have been abandoned on large areas because of poor maintenance and their low productivity, thus those surfaces were replaced with arable land or pastures and meadows (Dumitrașcu, 2006). However, due to the very pronounced changes, a special attention should be paid to these areas. The dynamics of the areas require a confirmation also by other sources such as, for example, a
diachronic analysis of the old topographic maps and recent orthophotomaps of the analyzed area.

By overlapping these surfaces taking into consideration the two years of comparison (2000 and 2006), it can be observed that the largest vineyards disappeared in the Băileşti Plain and in the following areas such as Calafat - Desa - Rast and Galicia Mare - Unirea, but also in other areas, such as the South-Western Bălăcitei Piedmont in Vânju Mare-Vlădaia area, in the Jiana Plain in Jiana area, or in the sand deposit areas from the Dăbuleni Field and Leu-Rotunda Field in Dobroşti and Dâneşti area.

**Water bodies and wetlands** have suffered the most pronounced dynamics during the analyzed period of seventeen years (figure 4).

![Fig. 4. Spatial and temporal dynamics of the swampy surfaces in Southern Oltenia](data processing CLC 1990, 2000 and 2006)

In this category, there were analyzed the aquatic areas of the lakes and watercourses (the Danube, the Olt River and the Jiu River) and also wetlands (swampy surfaces). Regarding the aquatic surfaces, they constituted a low dynamics, even though significant changes were observed in the case of the lakes between 1990 and 2006.

Major changes are observed in the case of wetlands, which gradually reduced from approximate 40 678 ha in 1990 to 22 887 ha in 2000, respectively just to 2991 ha in 2006. Therefore, according to the Corine Land Cover database, the surfaces covered by swamps diminished by 90% in just seventeen years, so these extremely negative changes require
special attention. In this case, it is necessary to confirm the results by using different in order to see precisely the changes and their causes in the analyzed area.

After the spatial analysis, large wetlands were found in the 1990s at the level of the meadows (the Salciei Meadow, the Bistreț and Jiu-Jieț Meadow and the Poteiului Meadow) and also in the Jiana Plain and in the Dăbuleni Field. In 2000, there can be observed an almost complete decrease of wetland areas from the Poteiului Meadow and Dăbuleni Field, while in 2006 wetlands were found on limited surfaces only in the areas of the Jiana Plain and the Bistrețului Meadow (figure 4).

An important role in the disappearance of wetlands is played by the climatic impacts in a regional context. In this case, the topic of discussion is the intensification of the phenomena of drought after 1980 (Dumitrașcu, 2006, Dragotă et al., 2011). Here we can also add explanation of the anthropic origin as well. Wetlands were drained mostly to expand the agricultural areas; their area has reduced due to watercourse damming as well.

Another category of land use having a key role in maintaining the wetlands, is represented by the rice fields (figure 5).

Since these crops require a large amount of water to grow all over the year, their existence in the Southern areas of Oltenia may be useful to keep current balance, because it compensates the relative deficit of water.
Diminishing of the areas covered by rice fields in the recent years because of economic and ecological reasons could trigger an increase in water table depth and decrease in the soil moisture. Thus, from the total of the rice cultivated surfaces of approximate 8900 ha in 1990, the rice crops have decreased by approximate 75% in 2000 and by about 81% in 2006 (figure 6). This surface gradually diminished in the area of the wetlands of the Băilești Plain and the Bistrețului Meadow, currently being reduced to certain areas in the eastern part of the Bistrețului Meadow, near the confluence of the Jiu River and the Danube.

Fig 6. Temporal dynamics of the different land use surfaces (data processing CLC 1990, 2000 and 2006)

5. CONCLUSION

After analyzing the dynamics of the four categories of the land use, categories considered as playing an essential role in maintaining the ecological, climatic and social balance in the analyzed area, it may be observed a critical situation, especially in the case of the wetlands. All these major changes are the result of the interaction of aggressive anthropic interventions in the environment, of the improper land use and of the climatic factor. Thus, an anthropic intervention is absolutely necessary in order to improve the negative effects by restoring as much as possible of these areas.

Taking in consideration limitation the data sources, more precise quantification of changes would require making assessments based on the data sources other than remotely sensed ones. Nonetheless, our results highlight major changes in land cover / use pattern and, implicitly in the environment, in a relatively short period of time. All detected changes accentuate the clear trend of changing land use pattern towards more arid one and could suggest increasing aridity process in South Oltenia, which is seen in specialized researches as a result of quasi-natural global causes (climate change) and local anthropogenic causes (land use change).

ACKNOWLEDGMENTS

This paper has been financed through the contract POSDRU/86/1.2/S/57462, strategic project “Education and professional training in support of the economic growth
and the development of the knowledge-based society”, “Quality in the higher education”, co-financed by the European Social Fund, through the Sectoral Operational Programme for the Human Resources Development 2007-2013.

REFERENCES


Dumitraşcu Monica (2006), Modificări ale peisajului în Câmpia Olteniei, Editura Academiei Române, București.


Kuemmerle T., Muller D., Griffiths P., Rusu M., (2008), Land use change in Southern Romania after the collapse of socialism, Reg Environ Change, DOI 10.1007/s10113-008-0050-z


Prăvălie R., (2013), Climate issues on aridity trends of Southern Oltenia in the last five decades, Geographia Technica, 17 (1): 70-79.


*** European Environment Agency (eea.europa.eu).

*** geo-spatial.com.
MAKING SICILY GREENER: THE REGIONAL PLAN FOR PARKS AND RESERVES

Nunzio FAMOSO, Linda COTUGNO
University of Catania, Faculty of Literature,
Department of Humanistic Sciences, Piazza Dante, No. 32, 95124, Italy
Email nfamoso@unict.it, linda.cotugno@gmail.com

Abstract: The aim of this study is to focus on the protection of landscape in Sicily and therefore its parks and reserves are the core of this investigation. The Region of Sicily, conscious of the need to defend its territory, with the support of some legislative measures, since the ‘80s has gained a respectable position among the more advanced European regions in this field. However, despite the achievements of this intensive environmentalist trend, much remains to be done in the actual implementation of the rules in order to limit the degradation of the landscape and to start a program of environmental restoration.

Key words: landscape, protection, legislative measures, environmentalist trend, sustainable tourism

1. INTRODUCTION

Sicily is not just art and culture, but also nature and extremely diverse and attractive landscapes, where woods alternate with steppes, lakes with still active saline, perennial rivers with dry rivers. Some of them are settled long the coast, some on the hills or on the mountain ranges in rather inaccessible places and for this reason they are well preserved and they still keep their wild nature. Yet and fortunately after years of neglecting and destroying nature the Region of Sicily, the institution par excellence responsible for the environmental protection, starts to be aware of its own role in terms of landscape preservation.

Until the eighties Sicily does not look like a European region in terms of ecological sensitivity. In fact, while a strong ecological conscience spreads all over Europe through the establishment of parks and reserves, Sicily seems to sidestep this process of civilization.

The basis for the protection of such rich natural heritage were laid in 1981 with the Regional Law n. 98, when the nature reserves of Vendicari, Zingaro and Stagnone of Marsala were established. Due to the regional law n. 14 of 1988 and to the subsequent reserve national framework law 394/ 1991, 79 new protected areas (85.181 ha) were added. In the meantime, four regional natural parks (185.824 ha) have been set up: Etna, Nebrodi, Madonie and Alcantara.
An overview of the entire territory of Sicily (Fig. 1) gives an idea not only of how wide and varied the organization of environmental protection is, but also of how it is differently structured. As you can see, in fact, the protected areas are numerous and composed of parks, reserves, oases. The protection of the areas of environmental value established so far (nearly 13.2% of the whole Sicilian territory) is the responsibility of the Region, through the Land and Environment Department. State parks and state nature reserves still do not exist in the island, even though the establishment of the National Park of the Iblean Mountain is in progress. It is important to remember that the protected areas (reserves and parks) in Sicily are very heterogeneous. It is possible to find agricultural, pastoral and forestry activities inside the same protected area. Moreover, flora and fauna might be connected with human activities. For instance, birds are in many cases connected with human activities (grazing or cultivation of open field). That’s why only correct and sustainable agronomic, pasture and forestry activities may enhance the naturalistic value and the environmental function of an area (Bagliani M., Dansero E., 2011).

The purpose of this study is to present how the environmental regional plan aims to put in practice the guidelines underlined by the national framework law 394/91 and briefly introduces the four regional parks and the most recently established nature reserves. The focus is on the general condition of Sicilian landscape and on exploration of the possibility of implementing conservation strategies compatible with human needs, landscape preservation and sustainable economic development.
2. PRINCIPLES AND AIMS OF THE LANDSCAPE’S REGIONAL PLAN

Bill No 795, "Establishment, management and development of protected areas", prepared by the Regional Land and Environment Bureau has recently been approved by the Regional Government, headed by Raffaele Lombardo. The modification of the existing legislation was necessary in order to implement the basic principles of the national framework law 394/1991, to strengthen the results achieved so far and to make management more efficient. In addition, the aim is to provide additional operational tools for the managing authorities of nature reserves, to increase attendance at parks and reserves and to improve management of protected areas in order to sustain the cultural, social and economic development of the local communities.

The bill, aiming at reducing expenditure, provides for the abolition of the figure of vice-president, who currently plays merely ceremonial functions, but with a considerable financial burden borne by the parks; excludes the Cts (Technical and Scientific Committee), whose functions are absorbed by the technical departments of the park and, for regional and national matters, are transferred to the Crppn (regional Committee for the protection of natural heritage). Therefore the organs of the park are reduced to only three figures: the President, the Governing Council – whose function is administrative and strategic - and the Park Community, whose task is essentially consultative and without any cost to the parks.

The bill aims to put into practice the following principles: 1) Principle of sustainable development (Article 3 - c Legislative Decree no. n. 152 of 2006); 2) Principle of horizontal subsidiarity (Article 118 Cost); 3) Principle of procedural and organizational simplification; 4) Principle of progressive financial autonomy of local managers and self-responsibility in the management; 5) Principle of institutional collaboration; 6) Principles of transparency and participation

3. PRESERVATION AND ATTENDANCE AT THE REGIONAL PARKS

Etna Park was founded in 1981 and covers a surface wide 58,095 hectares. Its centerpiece is Etna, the highest active volcano in Europe and one of the largest in the world, which is a natural attraction for its eruptions and incandescent lava-flows. It is located along the eastern coast of Sicily, covers a surface of 1.600 square kilometres, has a perimeter at the base of 150 square kilometres and it is about 3.350 metres high. Its irregular shape is due to its natural development which is the result of the superposition of several collapsed volcanic layers (Fig.2). The most well-known among them is Valle del Bove, that is a large depression on the eastern flank of the volcano and represents a kind of reservoir in which lava flows are conveyed to. The volcanic activity is monitored by researchers from the National Institute of Geophysics and Volcanology. Over the past three

---

1 The volcano, in Roman times, was known as “Aetna”, while it was named “Aitne” by the Greeks; both names come from the Greek word “Aithein”, which means “to burn”. Another appellation given to the volcano, which is rarely used nowadays, is “Mongibello”. This term comes from the Latin word “Mons”, mount, and the Arab word “Gibel Uitland” which means mountain.
centuries, about seventy eruptions have been reported. Therefore, an average of one every five years. Nevertheless, the pattern of distribution of the eruptive activity in a space-time is considered quite irregular and therefore does not allow medium-term forecasts about possible developments. The most destructive and documented eruptions are three: in 1669, the lava destroys several cities, including Catania, and then flows into the sea; in 1928, the lava destroys the town of Mascali; in 1991, the eruption lasts 473 days; between 2001 and 2002, the most recent eruptions badly affect the tourism sector in Piano Provenzana and the volcanic ashes disrupt Catania air traffic.

However, the beauty of the Etna Park is not only the grandeur of eruptions and lava flows, but also the enchanting landscape surrounding the volcano and rich of sounds, smells and colors. The observer’s attention is surely attracted at a lower lever by the green of vineyards and the yellow of orchards and chestnut oaks, at a higher level by the dark colors of the forests of beech and birch (Fig.2), at the highest level by the black of the lava. Here, among bushes and ferns, it is possible to bump into a wild cat, fox, porcupines, weasels, dormice, just to name a few examples of the fauna. There are many birds that inhabit these places, from the peregrine falcon to the owl, from the sparrowhawk to herons and pigeons, the true queen is the superb golden eagle.

Due to the wide extension of the Park and the multitude of access, routes and footpaths, it is recommended to follow signs and have a guide, who is indispensable for some excursions. It is worth visiting the following routes: Piano Provenzano – Monte Nero-Monte Zoccolaro - Monte Nero degli Zappini - Monte Gallo – Rifugio della Galvarina-Case Pirao - Monte Spagnolo – Cisternazza (viable in about a day); the complete circumnavigation of Etna, Etna tour by Circumetnea train, Etna tour by car (viable in about five days).

Naturally the park territory is protected at different levels and precisely into the areas “A”, “B”, “C” and “D”. The “A” zone consists of blank spaces where human activity is very limited. It is used for sheep farming, for carrying out scientific investigations, for going on excursions and skiing. The Zone “B” consists of large natural areas, where at a low altitude a mix of houses and lands of farmers are located. The zone “C”, located near populated
centers, is an area where the usage of buildings and lands has been allowed in order to enhance the area.

The zone “D” is the area where the activities related to the achievements of the purposes of the park take place. There is also a fifth zone, the “C-high mountain”, situated in the “A” zone that includes the area of “Cantoniera” and “Piano Provenzana”. In the area of ”integral reserve” the nature still has its integrity, while out of it the development of the traditional economic activities is kept and preserved; in the area of "the protection of controlled expansion" which is considerably peopled, the economic development is consistent and respects landscape and environment. The territory of the Park of Etna extends from the peak of the volcano to its slopes and includes twenty ancient towns, worth visiting for their rich history and artistic heritage. Luckily, in the last few years, tourism has experienced a remarkable evolution, giving rise to a wide and varied range of goods and services. In addition to the traditional forms of tourism, the rural tourism, in line with the increased environmental awareness, is gradually promoting the local agricultural development in an integrated and sustainable way. Visits to vineyards and associated wineries and tasting the typical products are the main attractions for a target of medium-high level foreign and local people tourists. From one side to the other of the volcano tourist paths are designed through larger and smaller villages, along the coastline and the countryside, through vineyards and orchards. They are so much interesting for offering a new interpretation of the landscape, made up of culture and life stories. (Cotugno, L, 2012).

The region of Nebrodi was considered by Arabs as an "island in the island", thanks to its peculiar geological and natural features, found nowhere else in Sicily. With the establishment of the Nebrodi Park in 1993, consisting of 21 municipalities located in the area of Nebrodi, the Sicily Region recognizes and wants to re-evaluate a complex system of culture, history and environments. Indeed the park offers an agenda of policies and interventions aimed not only at preserving the area, but also at starting an active exchange of experiences between the 'peasant' culture and the urban culture. Therefore the tourism event is meant to be a moment of educational culture. The park includes the most important
and largest woodland areas of Sicily (about 50,000 hectares). The best-known arboreal species are *Fagus sylvatica* (situated in the most southern area of diffusion), *Quercus cerris*, and *Quercus suber*. It is also possible to find *Quercus ilex*, *Taxus baccata*, *Ilex aquifolium* and significant lacustrine and rocky environments. Both the vertebrate and the invertebrate fauna specimens are very rich.

**The Madonie Regional Park** is located between Palermo and Cefalù and in its 161.76 square kilometers of extension contains one of the most remarkable mountain ecosystems in the Mediterranean basin due to the rich diversity of its fauna and flora, which includes trees, chestnut and beech trees. Officially created in 1989, it hosts 15 municipalities², rich of historical patrimony and ancient traditions. Nearly all of them strictly observe and celebrate religious festivals, which over the years have been transformed into traditional town festivals. Sheep farming, production of excellent cheese, production of ceramics at Polizzi Generosa and Collesano, stone masonry at Geraci, production of wooden barrels, staircases and handles and weaving of willow baskets are among the most typical commercial activities of this area. Moreover, it is worth mentioning the producers of excellent olive oil at San Mauro Castelverde and Scillato and of delicious pastries and liqueurs at Castelbuono.

In order to enhance sustainable tourism several nature routes running through the park are accessible on horseback, on foot or by bike. All of them are easy to follow and are well signposted. In addition, the Park offers other opportunities: a 18 hole golf course have been recently constructed at Campofelice di Roccella; a new *Parco Avventura Madonie* has been opened in the middle of a dense wood near to Petralia Sopranca with various acrobatic paths in the trees, horse riding, archery, trekking and many other attractions; the seaside resort of Cefalù located on a coastline with numerous bays and small sandy beaches.

² Petralia Sottana, Isnello, Polizzi Generosa, Geraci Siculo, Collesano, Cefalù, Gratteri, Castelbuono, Caltavuturo, Scillato, Petralia Sopranca, Pollina, Castellana Sicula, Sclafani Bagni and San Mauro Castelverde.
The Alcantara Park was established in 2001, it covers the basin of the Alcantara river located on the northern slopes of the Etna volcano. Its name has an Arabic origin (Arabic: القنطرة, ‘the Bridge’) and refers to a bridge from Roman times found by the Arabs. Unfortunately, only a few ruins of this bridge are extant. The river, whose source is located in the Nebrodi Mountains near Floresta, crossing a series of imposing lava flows has created deep gorges characterized by their sheer sides and columns with prismatic bases. The columns surround the walls of the basalt canyon like organ pipes. It is possible to take a swim in the small pools and cascades created inside the gorges. The river environment boasts a unique and spectacular variety of flora growing along the banks of the river, such as willows, black alders, poplars and oriental plane trees.

Access to the park is located near Motta Camastra at Fondaco Motta and from this point it is possible to descend into the gorge to the riverbank on foot via a long pathway or, upon payment, via a series of private lifts. In the summer the Circumetnea railway offers a tourist package which includes a guided tour of the Alcantara Gorges. Another feature worthy of a visit are the so-called "Gurne" of small lakes which are formed by the river near to Francavilla di Sicilia.

4. THE NATURE RESERVES

It was due to the regional law n.98/1981 that the Nature Reserves were established in Sicily. This law provided also the definition of ‘reserves’, classified as “sea or land areas of vast dimensions, with significant morphological, palaeontological, biological and aesthetic properties”. The first reserve established was the Zingaro Nature Reserve, named "Mother Reserve" of all the protected areas in Sicily. To adopt this law it was not easy at all. The economic resources were few and the bureaucratic procedures to access funding were quite slow. Moreover, lack of interest towards environmental issues was widespread among the whole society and the land speculation was very high. The nature reserves have remarkably increased in number in the last half century and due to the Regional law, 10/6/1991 79 new nature reserves have been established, extending to about 82,500 ha (Angelini A., 1999).

The study aims now to examine the most recently founded nature reserves and all the strategies adopted to guarantee a correct use of them:

Carburangeli Cave Nature Reserve was founded in 1996. Located in Carini, in the territory of Palermo, it is characterized by interesting karst phenomenons. Throughout the centuries rare specimens of stalagmites and stalactites were created by the constant dripping of the water. Its scientific importance is enhanced by the rare group of bats which inhabits the Reserve. Guided visits are organized by Legambiente and it is recommended booking in advance. In order to safeguard the very delicate underground environment, it is allowed, only to very small groups, to visit just the first chambers of the cave and for no more than 90 minutes.

On its way to the sea, past the north of Mount Etna, the river flows through the municipalities of Randazzo, Mojo Alcantara, Francavilla di Sicilia, Motta Camastra, Castiglione di Sicilia, Graniti, Gaggi, Calatabiano, Taormina and Giardini-Naxos.
Making Sicily greener: The regional plan for parks and reserves

Grotta Conza Total Nature Reserve was established in 1995. Located in the territory of Palermo, it extends over an area of 4 hectares largely populated by the Mediterranean bush. Its geological importance is enhanced by the presence of limestone carbonate rocks. The cave can be visited all year round after authorization by the managing body, Italian Alpine Club Sicily, which organizes guided visits. However, it is important to request from the reserve office at least one week before the date of the visit. Only small groups of 5 to 20 excursionists are admitted for one hour tour.

Grotta di Entella Total Nature Reserve was founded in 1997. Located in the territory of Palermo, it offers a splendid environment that includes a man-made lake. It is close to archaeological-historical cities Elima and Entellina and provides a critical habitat for a rich wildlife, among which is the falco peregrinus. The managing body, Italian Alpine Club, organizes guided visits and provides speleological helmets. Since just small groups are allowed to visit it, it is strictly recommended to book in time at the reserve office.

Trapani and Paceco Saltpans Special Nature Reserve was established in 1995. Located in Trapani, it is a splendid naturalistic attraction, well known for its salt pans, big expanses of low water created by man in shallow parts of the sea. Therefore, the landscape is absolutely peculiar for its bright white salt piles, got from the sea water by using solar and windy power. Human works, water and old windmills are naturally tied up. The managing body, WWF Sicily organizes guided visits along a signposted itinerary through the saltpan ecosystem, rich of several bird species present at different times of year.

Monte Conca Nature Reserve was established in 1995. Located in the territory of Caltanissetta, it constitutes a complete and still active surface and subterranean karst system, and it shows the whole range of morphologies, the main ones of which are dolines, blind valleys, furrowed fields, potholes, resurgences and caves. The cave has the particularity, typical of calcareous caves, of developing through spectacular waterfall wells, with little pools at the bottom. The cave can only be visited by expert speleologists. The managing body organises guided visits to be booked at the reserve offices.

Monte Pellegrino Special Nature Reserve was established in 1995. Located in Palermo, this reserve is a beautiful area with rocky mountains, a wide range of flora and fauna and several caves. The mountain at its highest point reaches 600 metres and it rises like a monolith of carbonated limestone. The 134 caves and cavities in its walls are of major speleological and palaeontological importance for the important prehistoric finds made inside them. In order to enhance a sustainable tourism through its four marked itineraries guided visits are organized for groups of maximum 15 people.

Monello Cave was founded in 1998. Located in the province of Syracuse, the cave is of major geological, speleological and biological importance. It is in the eastern area of the Iblei mountains, in the district of the Perciata cave (in the local dialect the latter name means “punctured”). It has a general development of 540 metres and in it there is rich and important cavern fauna with some species characteristic of this type of environment. Inside it there is a series of chambers with spectacular concretion morphologies in various shapes. On the surface and outside, the reserve area affords the type of natural environment typical of the “Quarries” in the Iblei. The managing body, C.U.T.G.A.N.A., organizes guided visits inside the cave. The visit involves medium difficulty, and takes about two hours.

All of the above mentioned protected areas, in order to ensure their safety, must follow certain rules and regulations. Inside the caves, for example, it is expressly forbidden
to use gas lamps or acetylene, while it is allowed to use electric ones; to abandon and deposit waste, to smoke, to touch and remove mineralization, concretions and rock samples, etc. As regards the protected zone of the reserves (zone B) it is forbidden to construct new buildings which might spoil the habitat, to demolish or reconstruct existing homes, to put up prefabricated buildings or trailers; to do any industrial activity, to install greenhouses, to hunt, destruction, to remove or damage plants of all kinds, etc. On the contrary, it is allowed to do traditional agricultural and livestock farming, to clear the fields by burning the stubble.

5. CONCLUSIONS

Without any shadow of doubt the Sicilian Region has initiated a process of environmental protection through the creation of about one hundred nature reserves and four wide regional parks. However, the project of making Sicily greener has been encountering many difficulties such as procedural and management ones that may undermine the efforts made so far by institutions, environmental associations and ordinary citizens. Surely, a proper land and landscape management needs a choral contribution from owners, managing entities, local and regional authorities in the correct use of the available resources. The quality of life certainly affects the current quality of the landscape and therefore education interventions should be expanded trough schools and young people (Alaimo F., 2005).

Bearing in mind that preservation of nature should be at first place and then sustainable development, it is obvious that the elimination of some major elements of landscape disturbance might attract sustainable tourism. In particular, rural tourism is a valuable and productive phenomenon capable of giving development opportunities to the areas surrounding parks and reserves. Moreover, it might help overcome the problem of limiting the economic activity in the protected environmental areas. In this direction it is possible to promote the recovery of rural buildings and to reconcile farm with tourism. Indeed, it might bring benefits to farmers (supplementing their income with complementary activities) and to users (satisfying their need for rediscovering traditions and relax in rural areas).

Combining nature conservation policies with economic and long lasting quality development is a great challenge that requires attention and research. Unfortunately research activities often depend on the availability of funds. Finally, all the evidence suggests that on one hand knowledge is the basis of planning, while on the other hand obtaining incentives is certainly an element that could determine a great change in the management of parks and reserves.

REFERENCES

Making Sicily greener: The regional plan for parks and reserves

Famoso N., (2005), Mosaico Sicilia, Cuecm, Catania.
Maisini S., (1997), Parchi e riserve naturali, Giuffre, Milano.
THE MAIN PHYSICAL-GEOGRAPHICAL CHARACTERISTICS OF THE LUGOJ HILLS AND THEIR CARTOGRAPHIC REPRESENTATION

Ionuţ-Dan ZISU
West University of Timişoara, Romania, Department of Geography
Email: ionut.zisu@cbg.uvt.ro

Abstract

The Lugoj Hills represents a part of the Western Hills of Romania, the Banat Hills sector, and they are found entirely within the Timiş County’s territory. In terms of methodology they appealed on a cartographic data base represented by the sheets of the geologic, geomorphologic and pedologic maps (on scale 1:200,000). For the main Lugoj Hills morphometric indicators characterization it was used the terrain digital elevation model (DEM) on 30 meters spatial resolution. The hypsometric parameters (slope, aspect and landscape vertical fragmentation) have been derived from this DEM, by the help of ArcGIS 9.3 software. Further, their calculation and interpretation was made. The map with the Lugoj Hills use of land has been obtained by derivation from Corine Land Cover 2000 (CLC 2000), which is the European reference dataset for land use. The geology from this area is defined by the presence of the crystalline schists which are strongly faulted and divided into blocks on which the Neozoic sedimentary formations, represented by the gravels, sands, clays and marls, have been submitted. The main geomorphologic parameters (hypsometry, declivity, relief energy) make that the analyzed area to be included into the middle hills category through which it is made the transition to the plain field from the western part of Romania. From thermic and pluviometric point of view, the studied place has a moderate continental temperate climate, with oceanic and subtropical influences, with not so warm summers and pretty mild winters. Regarding the hydrography, the Lugoj Hills present a radial network with the origins into the mountain area and which straightens to the main collectors – Bega, in the north, and Timiş, in the south-west. The land use in the studied area is quite diversified. Presently, it is observed that the natural vegetation is found only on the surfaces where the relief conditions or the soil humidity excess have not allowed cultivating the land. In terms of pedology, different subtypes of preluvisoils, luvisoils (luvisoils class) and fluvisoils (protoisoils class) are predominant in Lugoj Hills.

Key words: Lugoj Hills, morphometry, DEM, land use, luvisoil.

1. INTRODUCTION

The Lugoj Hills are a part of the Western Hills of Romania, the Banat Hills sector, and they are found entirely within the Territory of Timiş County in its eastern side (fig. 1), being situated about 50 km from Timişoara. This hilly space has a surface of 619 km², representing 7.11 % from Timiş County area and 0.25 % from Romania area.
The main physical–geographical characteristics of the Lugoj Hills

The analyzed relief unit is presented in specialized literature under different names: Lugoj Hills (Vespremeanu, E., 1998; Posea, Gr., 2002, 2005), Făget Hills (Coteţ, P., 1973), Ruscăi Hills (Roşu, Al., 1973), Surduc Hills (Ianoş, G., 1995, 1997), Bucovâţ Hills (Pop, G., P., 2005) etc. From these appellations it was chosen the most used and eloquent name, that of Lugoj Hills, in the detriment of the most rarely met ones and with a limited knowledge.

The Lugoj Hills present a pronounced asymmetry, being almost divided in two parts by the Surduc Height. For this reason, Ianoş, G., (1997) separates them in two subunits: Lugoj Hills – west of Surduc Peak and Făget Hills – east of this mountain extension.

It still persists much confusion regarding the regionalization of the depression section situated between the southern part of Apuseni Mountains and the northern part of Poiana Ruscă Mountains, where the Lugoj Hills are also found. This space is unclear delimited and the subdivisions are created after quite arbitrary criteria, Vespremeanu, E., (1998, p. 12) saying that “the limits of the subunits are quite blurred and difficult to draw”. Even so, the limit between the hilly area and the Poiana Ruscă Mountains frame is clear, non creating special problems in delimiting the relief subunits. After analyzing the specialized literature and the cartographic materials related to it, the course of Bega River was established as northern limit of the Lugoj Hills.

In the eastern side, the separation between the Lugoj Hills and Lâpugiu Hills is marked by the Holdea-Coşeviţa col area, reported in the specialized literature by many authors (Vespremeanu, E., 1972, 1998; Posea, Gr., 2002, 2005; Pop, G., P., 2005).

Analyzing on the field the topography, it was observed that the western limit goes until the Timiş-Bega Chanel and Gruni village.
2. MATERIALS AND METHODS

In the second part of the last century, in our country cartographic materials were made, on scale 1:200,000, in the domains geology, geomorphology and pedology for the entire area of Romania. So, the most of the physical-geographical information for the Lugoj Hills has been extracted from the sheets of these maps. The data has been also completed with some other existing materials.

Each of these three maps is composed from 50 individual sheets which respect the arrangement and the nomenclature of the Gauss-Krüger projection on scale 1:200,000 (fig. 2). Besides the Gauss-Krüger nomenclature, each map sheet has related a unique number (between 1 to 50 – the counting of the sheets being made from north to south and from west to east), and also the name of the most important locality within the map. It must be mentioned that for the sheets of the Geomorphologic map no number is assigned.

Fig. 2: The location of the Lugoj Hills on the map’s sheets on scale 1:200,000.

The map sheets on which the Lugoj Hills are found have been processed by scanning, georeferencing and mosaicking and after that the main geologic, geomorphologic and pedologic units have been extracted by digitizing using the ArcGIS program.

The terrain digital elevation model (DEM) on 30 meters spatial resolution has been used for characterization of the main morphometric indicators from the Lugoj Hills area. For this DEM, the parameters hypsometry, slope, aspect and landscape vertical fragmentation have been derived using the ArcGIS 9.3 software. The next step was their calculation and the results interpretation.
The meteorological data recorded in different time periods at the weather stations from Lugoj, Făget and Timişoara were used for the climatic and hydrologic characterization of the study area.

The map with the Lugoj Hills use of land has been obtained by derivation from Corine Land Cover 2000 (CLC 2000), which is the European reference dataset for land use. The CLC 2000 classification system includes 44 distinct classes grouped on 3 hierarchical levels. The satellite data base which led to realizing the CLC 2000, known by the name IMAGE 2000, was formed from images type LANDSAT ETM+ (http://earth.unibuc.ro/download/datele-corine-landcover-reprojectate-in-stereo70).

3. RESULTS AND DISCUSSIONS

3.1. The geological characteristics of the Lugoj Hills

The most information about the Lugoj Hills geology was obtained from the existing cartographic materials and from those auxiliary to them. On the Geologic map of Romania, on scale 1:200,000, the Lugoj Hills area is found on the sheets 24-Timişoara and 25-Deva (fig. 2). Each sheet has an external document (a book with a B 5 format) where there are presented the explanatory texts regarding the lithological and paleontological formations' content, their distribution and some considerations about the geologic evolution of the territory.

There is also a series of more detailed geologic maps, made on scale 1:50,000. By the sheets of this map the coverage of the entire territory of the country is wanted, but this project is still ongoing because, until now, the printing of only a third part of the sheets was made. The territory of the Lugoj Hills is located on 7 sheets from which only 4 have been printed until now.

From this reason, for creating the Lugoj Hills geologic map (fig. 3), it was used as input data those extracted from the sheets on scale 1:200,000. These sheets were scanned and after that introduced in the ArcGIS software where they were georeferenced and mosaicked. Further, the surface type elements were digitized.
The most ancient formations, belonging to the Upper Proterozoic and Paleozoic, are not very spread and they are represented by the epimetamorphic crystalline schists from Danubian and Getic domains and the mezometamorphic ones from Danubian domaine. They are disposed on the southern part, on the contact of the hills with Surduc Ridge.

Giuşcă et al. (1967) state that the banatitic magmatic bodies from the western and south-western part of Poiana Ruscă Mountains were putted in place at the beginning of Paleogen. From those, in the Lugoj Hills it can be found porphyritic diorites in the eastern part of Drinova locality. Intrusive rocks can be found also in the crystalline schists at Hăuzeşti (pyroxenes diorite) and at Zolt (diorite). A few small rhyolites patches appear in the south-eastern part, in the area of the localities Româneşti and Tomeşti.

Lugoj sedimentary basin was formed during the Neogen due to the sinking of the older formations along some fracture systems. Neogene subsequent volcanic eruptions started to be manifested from Miocene (Badenian). These eruptions gave birth to the magmatic formations situated between the northern part of Poiana Ruscă Mountains and the southern part of Apuseni (Gherasi et al., 1968). From these formations, in the studied hilly area, it can be found a portion of Sarmatian quartz andesites with amphiboles and biotite situated in the western part of Pietroasa village.

According to Oncescu, N., (1965), in the western part of Mureş basin, south from Ilia, a Tortonian entering deposits is located. These deposits are transgressive arranged over various formations previous to Miocene. They go until the north-eastern part of the Lugoj Hills, eastern from Homoijdia locality (the most part of them) and in the western and north-western part of Coşeviţa village. Gherasi et al. (1968) specify that these Tortonian deposits
The main physical–geographical characteristics of the Lugoj Hills

are formed from a various litologic range: breccia, conglomerates, gravels, sands, marls, loamy marls, coal remains, limestones, gypsum and pyroclastics.

The southern and eastern part of the Lugoj Hills is covered by Pliocene and Panonian materials composed from a succession of sands, loamy sands, marls and clays disposed on a gravels and sandstones layer. Drăgulescu et al. (1968) consider that the sands have the largest development and they present various colors, from yellowish-reddish to whitish gray.

The same authors consider that, during the Panonian period, the region would have been affected by the intense negative movements. This fact is reflected in the considerable depth of the formations which varies between 800 and 1,600 meters.

Gillet (1944, cited by Gherasi et al., 1968) affirms that the presence of the Pontian in the Lugoj Hills area is known for a long time especially through the faunal species from Criciova. Hucă and Stăniloiu (1961, cited by the same authors) specify that another fossiliferous site was discovered at Bucovâț. Dreissena auriculata Fuchs, Dreissena simplex Fuchs, Congeria balatonica balatonica Partsch, Congeria balatonica protrava Brus, Phyllocardium complanatum Fuchs, Limnocardium vicinum Fuchs etc. are known from these two fossiliferous points.

The new subsidence movements were registered starting from Quaternary. They were highlighted especially in the western part of the Lugoj Hills, where the rivers Bega, Timiş, Glăviţa, Lighitiş, Biniş, Hezeriş, Eruga gather convergent.

The Upper Pleistocene is represented by the alluvial deposits composed from gravels, sands and clays. These deposits have reduced thickness, between 3-10 m, and represent the low, upper and high terraces.

The alluvial accumulations of the high terrace, which have been attributed to the basal part of the Lower Pleistocene, are composed from boulders, gravels and sands in the petrographic composition of which enter quartzites, gneiss, micas, granodiorites, limestones and sandstones. The depth of the deposits varies between 4-6 m. The high terrace’s upper Pleistocene deposits mostly occur along the Bega River (Drăgulescu et al., 1968).

The fluvial deposits of the low terrace composed from gravels and sands are assigned to the Lower Holocene.

The recent alluvial meadows, formed from sandy clays, sands and gravels, belong to Upper Holocene. The deluvial deposits on the forehead terraces had been reported also to the Upper Holocene.

The regional metamorphism appears on the small areas, being represented by the phyllites and sericite-chlorite schists situated in the central-eastern part and by the limestones located on a narrow strip at the contact with the mountain frame between the localities Zolt-Baloșești and Românești-Pietroasa.

3. 2. The geomorphologic characterization of the Lugoj Hills

The existing cartographic materials are very helpful for presenting the geomorphologic characteristics of the Lugoj Hills. Buza, M., (1997) mentions that during the period 1976-1990, at the Geography Institute, the General geomorphologic map of Romania, on scale 1:200,000, composed from 50 sheets, was made. The Lugoj Hills territory is located on the map’s sheets Timişoara (L-34-XXII) and Hunedoara (L-34-XXIII) (fig. 2). Each map sheet has also an ample explanatory material.
The Lugoj Hills area was extracted from the two map sheets (fig. 4), following to be extracted by digitizing the main morphografic units using the program ArcGIS.

Quite many inaccuracies can be remarked between the two surfaces especially in terms of the color tints which don’t fit very well. This is due to hand made of the sheets which compose the Geomorphologic map of Romania (on scale 1:200,000). It can be observed also many concordances resulted firstly by using approximately the same signs in legend.

Analyzing the Geomorphologic map, the main relief types met in the Lugoj Hills can be observed. The most part of the area is occupied by the erosion fluvial relief. In the western part, the Lugoj Hills are strongly eroded by the torrent organisms. In the south-western part, on the alignment of the hills Nevrincei, Ibrilonţ, Herezişului, Zăcătoare and Comoara (from west to east), it is observed an area with many gullies, pipping tunnels and ravines.

The fluvial accumulation relief is present in the lowest parts, appearing in the floodplain of the main river networks (Bega, Timiș, Glăvița, Sâraz, Gladna, Biniș, Vădana).

Many dejection cones can be met in the region where the rivers go out from the hilly space to the areas with much lower slope (meadows). They appear mostly in the north-western part occupied by the Țipari-Nedea-Sudriaș hills and in the north-eastern part of Lugoj town.

The eastern part of the Lugoj Hills is characterized by a more highly fragmented relief then in the western sector. The sculptural denudation relief is characterized by main and secondary rounded peaks, situated in the highest southern parts of the hills and in the eastern part of Curtea village.
The accumulation denudation relief is found in some sectors from the southern and eastern part of the studied hilly area. Some eroded piedmont formations can be observed in the highest part, at the contact with the neighboring mountain frame.

The Lugoj Hills present a pronounced asymmetry, being almost divided in two parts by the crystalline Surduc Height (fig. 4). These hills have the aspect of some extended and large ridges with east-west direction and their altitude varies between about 100 m, in Bega meadow, and about 400 m, at the contact with the mountainous area.

In the north-western part, the hills go down to the Bega River meadow by a system of 2-3 large and very flat terraces, covered with fine-textured materials.

The mountains tectonic uplift from the beginning of Quaternary (Wallachian phase orogenesis) intensified the surface erosion which blurred the break lines. In the same time, some rivers like Gladna and Glăvița, attracted by the western subsidence, modified their initial course (to the north) going to the west, north-west.

The crystalline penetration into the hilly area and also the numerous gulf type depressions from here give to the hills a look of spurs similar to the Subcarpathians ones (Mazăre, V., E., 2006).

The presence of some crystalline and igneous cores formed from clorito-sericite schist is explained by Badea et al. (1986) by the Lugoj Hills position at the edge of the Poiana Ruscă Mountains. These zones impose itself in relief because of the ridges aspect which dominates with 100-200 m the piedmont hills level from surrounding. An example in this sense is Drinova dioritic hillock (373 m).

3.3. The morphometric characteristics of the Lugoj Hills

3.3.1. The hypsometry of the Lugoj Hills

With an average altitude of approximately 190 m, the Lugoj Hills integrate into the middle class hills (200-500 m) (fig. 5).

The minimum altitude is 98 m and it is recorded in the western part of the Bega River meadow. The maximum altitude of the Lugoj Hills measures 408 m, being recorded in Zăcătoarei Hill which is located in the western part of Firdea locality, at the contact with the Surduc Ridge.

Analyzing the Lugoj Hills hypsometry, it observes that the altitudinal steps increase progressively from about 100 m, from the meadow low areas situated in the north-western part, to about 400 m on the contact with the mountain frame from south-east.

From the histogram of the Lugoj Hills hypsometric classes (fig. 6) it can be observed that the most part of this relief unit (more than 60 %) records altitudes lower than 200 m.

Nearly 35 percent of the analyzed area (34.54 %) is between 200 and 300 m altitude and 3.62 % belongs to the altitudinal step contained between 300-350 m. Only a few small areas are situated on altitudes higher than 350 m. They represent less than 1 % from the entire surface of the Lugoj Hills (fig. 5, 6).
3.3.2. The relief declivity in the Lugoj Hills

The spread of the most important geomorphologic process which act in the Lugoj Hills area differ according to the main slope classes’ distribution.
According to the Lugoj Hills slope map (fig. 7), the mean slope gradient is 4.93°. This fact can be observed more clearly regarding the slope classes areas histogram (fig. 8) which shows that the highest frequency appears for the 0-2° class (27.2 %). This one together with the one between 2-4° characterizes more than 50 % (53.64 %) of the studied territory. These classes, with very small slopes, are characteristic for the low alluvial areas situated especially in the northern and western part of the Lugoj Hills.

The declivity grows progressively, like in the hypsometry case, from the low north-western areas, situated in the meadow, to the south-eastern one located at the contact with the Poiana Ruscă Mountains frame (fig. 7).

Analyzing the Lugoj Hills area slope classes’ distribution, it can be observed that about 87 % of this space is framed between 0-10°, corresponding to the weak to moderately sloped surfaces. The slopes moderately to strongly inclined, between 10-20°, have a frequency about 12 % and those with pronounced declivity (> 20°) occupy the surfaces under 1 %.

The slopes more inclined denote a higher denudation potential in the south-eastern areas especially in the condition of a friable lithology, formed, mainly, from Panonian gravels, sands, marls and clays.

The higher declivity is recorded in the south-eastern part of the Lugoj Hills, on the right shore of the Bega Poieni River, between the localities Pietroasa and Românești. The maximum slopes inclination (46.74°) is reached in the same area, on the south-eastern side of the La Vii Hill (381 m), located near Pietroasa at the confluence of Slăveasca valley with Bega Poieni River.

Fig. 7: The slopes map of the Lugoj Hills.
3.3.3. The Lugoj Hills slopes aspect

For characterization the slope aspect of the Lugoj Hills, the map of the slope orientation (fig. 9) and its corresponding histogram (fig. 10) was made.

---

Fig. 8: The Lugoj Hills slope classes distribution.

Fig. 9: The Lugoj Hills slope orientation.
According to the graphs which show the Lugoj Hills relief orientation, it can be observed that the slope aspect is very balanced. Even so, analyzing how is made the distribution of the exposition classes (fig. 10), it can be noticed that the most part of the slopes is orientated to the west and north-west.

In terms of the Lugoj Hills slopes aspect (fig. 11), it remarks that a little over half of them (51.89 %) are shady and half shady, while 48.11 % are in the sunny and half sunny side.

3. 3. 4. The Lugoj Hills relief vertical fragmentation
The energy of the Lugoj Hills relief was calculated using the method of the cartograms with 1 km² area (fig. 12). According to the results generated by this method, the mean landscape vertical fragmentation is 49.67 m, the values varying between 0 and 164 m.

The frequency histogram (fig. 13) shows a predominance of the values between 0-45 m (49.73 %), followed by the intervals between 45-60 m and 60-75 m, with similar proportion, 13.32 %, respectively 13.18 %. The values higher than 75 m have a quite significant percent which reaches to almost a quart (23.97 %).

The meadows of the Bega and Timiş rivers and their affluences are characterized by the lowest values of the landscape energy (< 15 m), while the high values (> 120 m) are specific to the regions located at the edge of the mountain frame.

Fig. 12: The map of the Lugoj Hills relief vertical fragmentation.
3.4. The characterization of the main aspects of climate

From the thermal and rainfall point of view the studied zone has a moderate continental temperate climate with oceanic and subtropical influences. The summers are not very warm and the winters are pretty mild. The tropical maritime air invasions are frequent during the winter due to the cyclones which move from Mediterranean Sea to the north-east over the Pannonian Basin. They produce the increase of the air temperature in the hilly studied area (Clima R.P.R., 1962).

Multiannual average air temperature in the Lugoj Hills area is about 10.75°C. Annual value of the aridity „de Martonne” index is 33.3 (exoreic regime). The hydroclimatic annual index records the value 100 which is characteristic for an equilibrated hydrologic balance (Mazăre, V., E., 2006).

For the thermal regime of soils, it is observed that during the months February-March it has a slowly increase following closely the air temperatures evolution. Mazăre V., E., (2006) states that the arable layer exceeds consistently 5°C at the beginning of the second decade of March and 10°C in the first decade of April.

Annual average amount of precipitations in the Lugoj Hills area is 679.1 mm (fig. 14) and the potential evapotranspiration, calculated using the Thornthwaite relation, is 676.1 mm.
The dominate winds are from the east, south-east and north-west directions. The relief configuration from this area imposes to the wind the directions which coincide to the valleys axis. The wind regime from the Lugoj Hills is determined by the particularities of the general circulation of the atmosphere and in a small way by the aquatic surface particularies.

The wind annual average speed is between 2.6-3 m/s. The highest monthly averages are recorded within the ranges February-April and October-November (3-4 m/s), with a slow decrease from May until September and in December (2-2.5 m/s).

3. 5. The hydrographic characterization of the Lugoj Hills

Starting with Quaternary new subsidence movements are recorded. These movements are highlighted especially in the western part of the Lugoj Hills where the rivers Bega, Timiş, Glăviţa, Lighitiş, Biniş, Hezeriş, Eruha converge. In the same time, some rivers like Glăviţa, attracted by the western subsidence, modified their initial course which was to the north and they redirected to the west, north-west.

Resuming the ideas of Ficheux, R., (1937) and Pop, G., (1948), Mihăilescu, V., (1966) supports the hypothesis of a Mureş River course, during the Quaternary period, to the south through the col area Coşeşti-Holdea. He names this area „Lăpușiu and Beghei corridor”. The argument that supports the author’s idea is given by the reduced role played by the Mureş River in modeling of Lipova piedmont platform.

Vespremeanu, E., (1972) calls the depression entering drained by Bega River with the name Mureş Gulf. In this way, he supports the Mihăilescu’s hypothesis (1966, 1969) regarding the paleocourse of the Mureş River.
The main physical–geographical characteristics of the Lugoj Hills

Analyzing the courses of the Mureș and Bega rivers, Coteț, P., (1973) makes some remarks about their role in the relief area genesis and modeling. Also, he affirms about the intermountain Mureș corridor that is located actually along the Bega River. So, his conception is integrating to the hypothesis claimed by the previous studies.

At present, the Lugoj Hills have a radial hydrographic network which has its origins in the mountain area and which goes to the mains collectors – Bega (S=2,241 km²; L=168.6 km), in the northern part, and Timiș (S=5,248 km²; L=241.2 km), in the south-western part (fig. 15). This rivers network fragments the hills quite intensely especially in the eastern part where are the rivers Icuiu, Năndreasca, Homojdia, Bega Poieni and Vădana, but also in the southern part where Hăuzeasca valley is located.

Between the localities Românești and Răchita, Bega creates a large arc of circle (fig. 15) with a low meadow, very slow inclined and very asymmetric on the left side in the sector between Margina and Răchita. This fact is due to the pushing of the Bega River by its numerous tributaries which come from the mountain area (Ujvári, I., 1972). From those the most important are Carpen, Șopot, Vădana, Zopana, Bălaşina and especially Gladna (Riu) with Sărăz which is the biggest tributary of Bega. Badea et al. (1986) observe that the Bega meadow has a width of 4-6 km near Marginea village which is double near Răchita.

Some old courses of the Bega River can be identified on its meadow. They are parallel with the actual course and they are flowing into the Bega tributaries, like Vădana, or they have large divagations, like Șopot.
In the western part of the Lugoj Hills, Bega is accompanied on the left side by a number of streams which flow parallel. From these ones the most important is Glăvița which flows in Timiș-Bega alimentation channel.

The south-western part of the Lugoj Hills is bordered by the Timiş River which collects the streams Nădrag, Slatina, Măguri and Tapia. Nădrag River succeeds to depose on the plain side a large cone of dejection between the localities Jdioara and Criciova, imposing so a local deviation of the Timiş meanders (Badea et al., 1986).

The natural rivers network was strongly anthropogenically modified in the low area. It can be remarked the channeled and dammed course of Bega which starts from Balinț village and continues on the Serbia’s territory until the flow into Tisa River.

The course of Timiş was also very much anthropogenically influenced starting from the second part of the 18th century by the construction of the Coșteiu-Chizătău Channel which make the connection between this river and Bega. Some streams from the western part, like Eruga, Biniș with Lighitiș and Hezeriș and Glăvița, flow into this channel (fig. 15).

The geomorphologic configuration from the confluence between Munișel and Gladna made possible to place here a permanently water storage which has the name Surduc (fig. 15). The construction of the accumulation lake dam started in 1972 and the filling in 1976. Surduc Lake has 362 ha surface and an available water volume of 24.225 millions m$^3$. It represents the most important water accumulation from the hydrographic basin of Bega River and the biggest lake from Timiş County. Harabagiu and Teodorescu (1999-2000) consider that the Surduc Lake clogging rate is 2%/year and it will be completely clogged on 500 years.

Surduc accumulation is the only permanent lacustrine surface from the Lugoj Hills area.

3. 6. Biovegetal characterization of the Lugoj Hills

According to its structure, the forests from the studied area are composed from different oak species like Quercus polycarpa and Quercus petreaea, Norway maple (Acer platanoides), field maple (Acer campestre), ash (Fraxinus excelsior), silver lime (Tilia tomentosa) and even sour cherry (Prunus avium).

On the large valleys, with groundwater near to the surface and with lateral drains, it can be found isolated tree clumps formed from different species of willow (Salix alba and Salix fragilis) and black poplar (Populus nigra) and from the shrub species we have the dog-rose (Rosa canina).

The shrub vegetation is well developed and it makes the transition to the characteristically species from the low areas. Besides the dog-rose, already mentioned, it can be found the blackthorn (Prunus spinosa), hazelnut tree (Corylus avellana), wild privet (Lygustrum vulgare), bladdernut (Staphylea pinnata), wayfaring tree (Viburnum lantana) and dog wood (Cornus sanguinea).

Mazăre, V. E., (2006) notices that on the higher places, at the transition from the plain to the hill, the common meadow-grass (Poa pratensis) is the dominant species. Other grasses can be found together with it: steppe fescue (Festuca valesiaca), perennial ryegrass (Lolium perene), orchard grass (Dactylis glomerata), couch grass (Agropyron repens). Also, it can be found some legume species represented by different clover types: white
The main physical–geographical characteristics of the Lugoj Hills

clover (Trifolium repens), red clover (Trifolium pratense), black medic (Medicago lupulina).

The swards vegetation is composed mainly from monocotyledonous grass species like common bent (Agrostis tenuis) and horse grass (Festuca rupicola). In association with this it can be met the mountain clover (Trifolium montanum), the yarrow (Achillea millefolium), the hoary plantain (Plantago media), the sage species called purple rain (Salvia verticillata), yellow lucerne (Medicago falcata), the pheasant's eye (Adonis vernalis), the centaury (Centaurea orientalis), the dewberry (Rubus caesius) etc.

In the depression forms it is met the barnyard grass (Echinocloa crus-galli), the dandelion (Taraxacum officinale), the comfrey (Symphytum officinale), the buttercup (Ranunculus sp), the commun rush (Juncus effusus).

The plant species most commonly grown in the Lugoj Hills area are the wheat (Triticum), the corn (Zea mays), the barley (Hordeum vulgare), the soy (Glycine max), the clover (Trifolium), the alfalfa (Medicago sativa) and the oat (Avena sativa).

A strong expansion of different fern types (Pteridophyta spp.) is remarked in some parts. These plants can be spread even on the entire slopes like for example in the hills near Coșevița or in Cozma Hill near Drăgășinești. The fern are plant species with rhizomes, being for this reason very resistant. Also these plants adapt and multiply easily having an excessive development. That is way they are harmful species which invade and replace the indigenous vegetation and affect the agricultural crops.

3.7. The Lugoj Hills main soil characteristics

A large pedocartographic project was developed in our country during 1963–1993 out of which the Soil map of Romania, on scale 1:200,000, composed from 50 individual sheets, resulted. Actually, this material represents the most complete series of soil maps made on medium scale for the entire area of Romania.

The Lugoj Hills are found on the sheet 24-Timişoara (a small portion from the north-western part) and on the sheet 25-Deva (the largest part of the area) (fig.2).

Besides the cartographic materials which present the soils spatial distribution for the entire country level, regional or county level soil maps have been also made. The Lugoj Hills area was contained within the Banat and Timiş County soil maps.

All these cartographic materials serve as support for creating the new data bases and maps made in digital format by the help of different computer programs (ArcGIS, IDRISI etc.).

The figures 16 and 17 present two such soil maps. The first one was effectuated after the Banat soil map (on scale 1:200,000) made in 1994 by Ianoș together with his collaborators from Timişoara Soil Science and Agrochemistry Service. The second one was made after the sheets 24-Timişoara and 25-Deva of the Romania soil map (on scale 1:200,000). The necessary operations for its obtaining were supported by scanning the maps obtained by conventional means and their introduction in ArcGIS 9.3 software where they have been georeferenced. Further, the different soil units’ polygons were digitized.
Fig. 16: The Lugoj Hills soil map obtained after the Banat soil map (on scale 1:100,000).

Fig. 17: The Lugoj Hills soil map obtained after the Romania soil map (the sheets 24 and 25) (1:200,000 scale map).
Both maps present a series of advantages and disadvantages. First of all, their information must be adapted to the new soil classification system recently come into use in our country (SRTS-2012).

Some detailed soil areas can be observed on the map created after the one on scale 1:100,000. However, large forest areas also appear on this map. These forest areas haven’t been mapped when this map was made because only the agricultural land was taken into account.

The soil units from the Lugoj Hills area were classified into several soil classes and types. 6 soil classes with 11 types resulted for the map on scale 1:100,000 (fig. 16) and also 6 soil classes, but with only 8 types, resulted for the map on scale 1:200,000. Although it appears some differences between the information from these two maps due to the working map scale, from both maps it can be observed that different subtypes of preluvisoils and luvisoils (luvisoils class) and fluvisoils (protisoils class) are predominant in the Lugoj Hills area.

3. 8. The analysis of the land use and the settlements function from the Lugoj Hills

The map with the Lugoj Hills use of land (fig. 18) was obtained by derivation from the European reference dataset for land use Corine Land Cover 2000 (CLC 2000), which is.

Fig. 18: The use of land in the Lugoj Hills area.
Large forest areas are extended on the higher fields from the southern and south-eastern part of the Lugoj Hills (fig. 18). Some bush transition parts, specific especially to the areas that have been grubbed before, are also found in the low area which is occupied by the fields used mostly in agriculture.

The orchards, with a significant spread in the south-central part, are especially composed from plum tree (*Prunus domestica*), apple (*Malus domestica*), sour cherry (*Prunus cerasus*), walnut (*Juglans regia*) and mulberry (*Morus*). The vine (*Vitis vinifera*) is cultivated on the quite reduced surfaces which are situated in the southern area between Tapia and Lugoj and in the perimeter of the localities Jureştî-Boteştî-Drinova.

Unirrigated arable lands, located with predilection in the low meadow areas, are cultivated with cereal plants (corn, wheat, barley, oat) and with soy.

The natural pastures can be found only in some small areas from the north-eastern part of Măguri village. They were replaced by the secondary grasslands which have a quite large development and an uneven spread in the Lugoj Hills area. A few swampy areas are located in the Timiş meadow due to the divagant course of this river, but also to the high groundwater level from this part.

The surface occupied by the localities is 27.1 km² which means 0.31 % from the Lugoj Hills area. 56 settlements are completely or tangential located in this relief unit. They are classified as follows: 2 towns (Lugoj and Făget), 12 communes (Mănăştiur, Dumbrava, Margina, Pietroasa, Curtea, Tomeşti, Fîrdea, Traian Vuia, Birna, Criciova, Costeiu and Balînt) and 42 villages (fig. 19).

**Fig. 19:** The Lugoj Hills settlements category and their territorial distribution.
4. CONCLUSIONS

The Lugoj Hills belong to the Western Hills of Romania, the Banat Hills sector, and they are found entirely within the Timiş County’s territory. This relief unit presents a pronounced asymmetry, being almost divided in two parts by the Surduc crystalline height. For this reason, some authors present them as two subunits.

This hilly area was individualized by the accumulation of some large Pleistocene and Holocene sedimentary deposits with different granulometric composition which were carried and submitted over the Tortonian and Panonian preexisting formations by the rivers descending from the mountain area. The Lugoj Hills foundation is composed from crystalline schists which are strongly faulted and compartmented in blocks.

The Lugoj Hills represent well individualized geomorphologic units because of their peripheral position to the mountain space, their deposits structure and their altitude (about 190 m - average altitude). This relief unit is included into the middle hills category through which it is made the transition to the plain field from the western part of Romania.

The main morphometric characteristics of the Lugoj Hills change progressively from the low north-western part to the highest south-eastern one.

From the thermic and pluviometric point of view, the studied area has a moderate continental temperate climate, with oceanic and subtropical influences. The summers are not so warm and the winters are pretty mild.

The Lugoj Hills have a radial hydrographic network which has its origins in the mountain area and which goes to the mains collectors – Bega, in the northern part, and Timiş, in the south-western part. The course of the rivers from this space was very much influenced by the Quaternary subsidence movements.

In terms of pedology, the luvisoils class with different preluvisoils, luvisoils and even planosoils subtypes is predominant in the Lugoj Hills. Along with these soils there are also met, in the low areas, on the quite large surfaces, soils formed due to the humidity excess (fluvisoils, stagniscoils and gleysols) and eutricambisols as well. Some isolated areas with vertisols, anthrosols, lithosoils and tehnosoils are longer found.

Regarding the biovegetal factor, presently it is observed that the natural vegetation is met only on the areas where the relief conditions or the soil humidity excess doesn’t allow cultivating the land. The plant species most cultivated in the Lugoj Hills area are wheat, corn, barley, soy, clover, alfalfa and oat.

The land use in the studied area is quite diversified. The large forest area of the Lugoj Hills is formed especially from oak species. The orchards, with a significant spread in the south-central part, are composed from plum tree, apple, sour cherry, walnut and mulberry. The vine is cultivated on some reduced surfaces from the southern area.

Unirrigated arable lands, located mostly in the low meadow areas, are cultivated with cereal plants and soy.
REFERENCES


Florea, N., Munteanu, I. (coordonatori), (2012), Sistemul Român de Taxonomie a Solurilor (SRTS), „Sitech” Publisher, Craiova.


Mihăilescu, V. (1966), Dealurile și Câmpile României, „Editura Științifică” Publisher, București.

Mihăilescu, V. (1969), Geografia fizică a României, „Editura Științifică” Publisher București.

Onescu, N. (1965), Geologia României, „Editura tehnică” Publisher, București.

Pop, G. P. (2005), Dealurile de Vest și Câmpia de Vest, „Orașul” University Publisher.

Posea, Gr. (2002), Geomorfologia României. Relief-tipuri, geneză, evoluție, regionare, „România de mâine” Foundation Publisher, București.

Posea, Gr. (2005), Geomorfologia României. Relief-tipuri, geneză, evoluție, regionare, ediția a II-a revizuită și adăugită, „România de mâine” Foundation Publisher, București.

Roșu, Al. (1973), Geografia fizică a României, „Editura Didactică și Pedagogică”, Publisher, București.

Ujvári, I. (1972), Geografia apelor României, „Editura Științifică” Publisher, București.


Vespremeanu, E. (1998), Pedimente, pianormuri şi glaciisuri în Depresiunea Mureşului de Jos, „University” Publisher, Bucharest.


*** (1967), Harta geologică a R. S. România, sc. 1:200.000, 24, Timișoara, L-34-XXII.

*** (1967), Harta geologică a R. S. România, sc. 1:200.000, 25, Deva, L-34-XXIII.

*** (1988), Harta geomorfologică a R. S. România, sc. 1:200.000, Timișoara, L-34-XXII.

*** (1989), Harta solurilor R. S. România, sc. 1:200.000, 24, Timișoara, L-34-XXII.

*** (1990), Harta solurilor României, sc. 1:200.000, 25, Deva, L-34-XXIII.