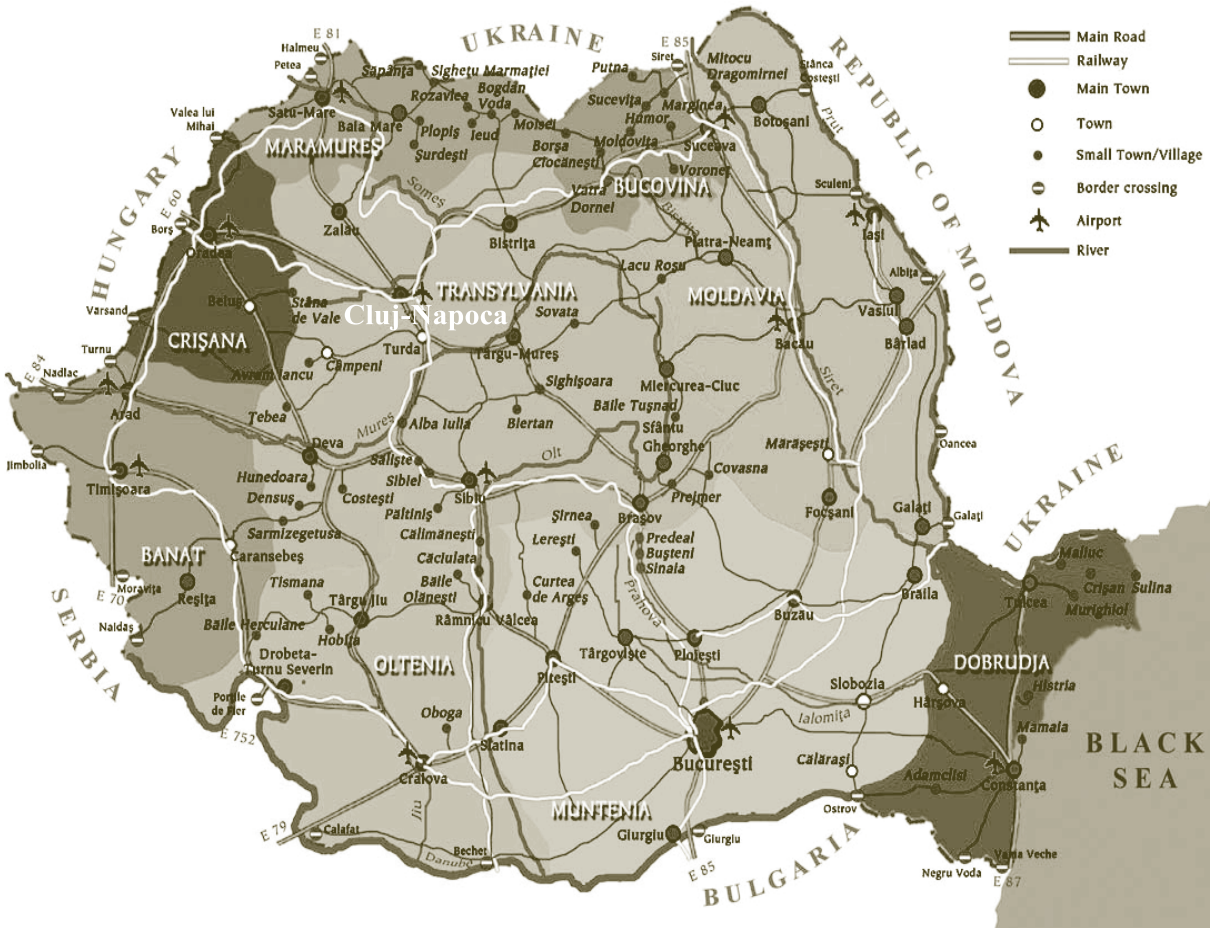
STUDIA UNIVERSITATIS
BABEŞ-BOLYAI



GEOGRAPHIA

1/2011

ANUL LVI **2011**

S T U D I A

UNIVERSITATIS BABEŞ–BOLYAI

GEOGRAPHIA

1

Desktop Editing Office: 51ST B.P. Hasdeu, Cluj-Napoca, Romania, Phone + 40 264-40.53.52

CUPRINS – CONTENT – SOMMAIRE – INHALT

Notes and Book Reviews – Note şi recenzii

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

SINKHOLES FORMATION HAZARDS IN ENVIRONMENT, CASE STUDY:SINKHOLES AND HAZARD IN HAMADAN PLAIN AND THE LAR VALLEY OF IRAN

AHMAD KHORSANDI[1], SEYED HOSSEIN GHOREISHI[1], MANIJE ABDALI[2], CACOVEAN HORIA[3]

ABSTRACT. – Sinkholes Formation Hazards in Environment, Case Study: Sinkholes and Hazard in Hamadan Plain and the Lar Valley of Iran. The Sinkholes or Dollins are special form of karst geomorphology that is result of the chemical erosion of the groundwater on the carbonate rocks. The Sinkholes formation causes many problems in urban area and other region. The case study of this research is Hamadan plain and the Lar valley sinkholes. The research methodology contains review of geology, structural geology, hydrogeological conditions, study of sinkholes situation, and their characteristics. The most important characteristics of sinkholes studied in this effect on their formation and its occurred or probable hazard. There are 39 sinkholes in different size in Hamadan plain, northwest of Iran and 9 sinkholes in Lar valley north of Iran. The results of the research shows that the sinkholes are formed in carbonate bed rocks and these rocks are covered by alluvial in Hamadan plain and Lake Sediment in the Lar valley. Major hazards of sinkholes in Hamadan plain and Lar valley are farmland and irrigation system damage, groundwater pump stations damages, risk in electrical power generators; water well mud increasing, water well collapse, villages damage risk and uncontrollable discharge of dam reservoir.

Keywords: *sinkholes formation, hazards.*

1. INTRODUCTION

The scope covered by this study includes two areas in the north of Iran (Lar Valley) and the Hamedan Plain in the northwest of Iran (fig. 1), where numerous sinkholes have been formed, creating a number of problems and risks. In the Lar Valley 9 old and young sinkholes have been formed in the lake's sediments, the largest of which has a diameter of 80 meters while the deepest reaches down to 23 m. In some areas of the Hamedan Plain, which expands over an area of 2450 km^2, 33 sinkholes have taken shape during a period of 12 years, the largest of which has a diameter of 31 m and the deepest extends down to 60 m. There have been a number of research and studies on the creation of sinkholes. The results of some studies are presented below:

[1] *Power and Water university of Technology (PWUT), Tehran, Iran. khorsandi@pwut.ac.ir*
[2] *Karaj High School, Karaj, Iran, amalek@chamran.ut.ac.ir*
[3] *OSPA Cluj, Cluj-Napoca, Romania, turda75@yahoo.com*

Sinkholes are karstic forms that geological aspect are cylindrical and conical shaped holes with dimensions ranging from one to tens of meters. The sinkholes are formed in one of the two following manners (B. Markoo, 1998):

a) Movement and discharge of surface materials from top layers along solution channels developed in basal carbonated rocks;

b) The collapse of upper rocky layers on large caves formed in the carbonated bedrock.

At least 140 sinkholes were formed from 1961 to 1986 in Orlando in USA (L. William, 1992).

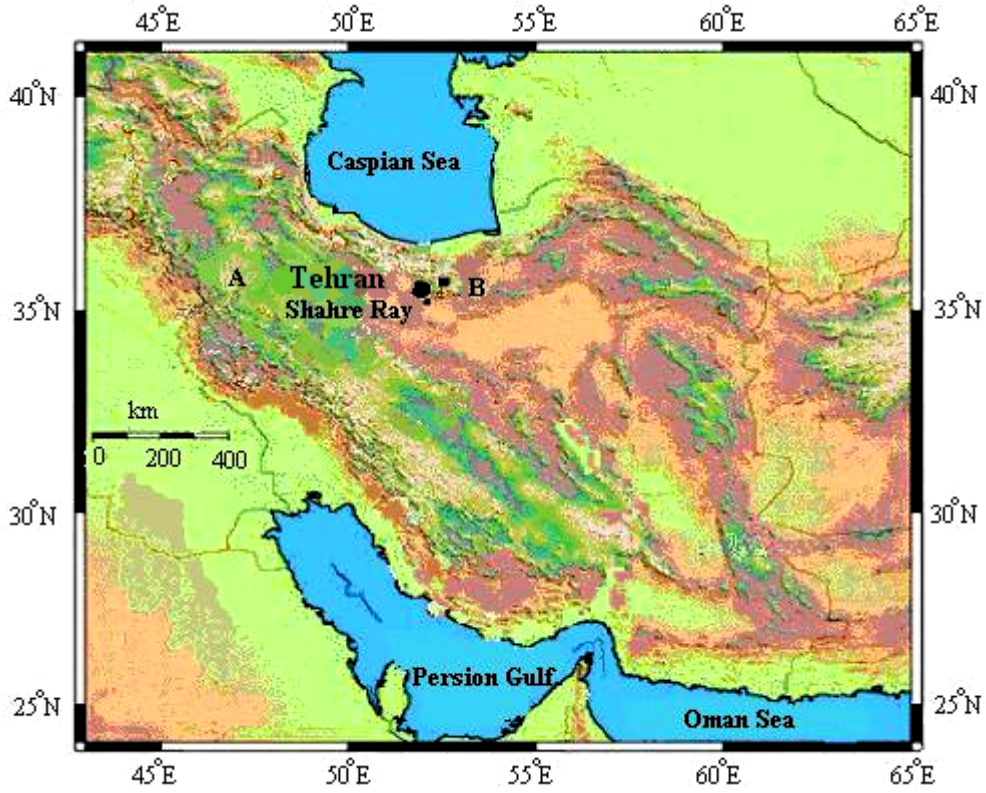


Fig. 1. The map of Iran and situation of Hamadan Plain in northwest (A) and the Lar region in north (B) (Khorsandi 2007).

During a series of research, parameters such as depletion of ground waters, oil and gas explorations, and the movement of rocks during mine operations and the drainage of marshes are the main causes for sinkhole formation (L. Pewe, 1990 and A. Waltham, 1989).

The model proposed by Waltham (1989) described the different types of sinkholes and their specifications in karstic and non-karstic soils.

The different types of sinkholes according to C. Ford et al (1989) classification have been described and their shaping conditions have been divided in three main groups.

According to Benson et. al (2003)'s assessments the risk of sinkholes in each region have been divided as low risk, medium risk and high risk areas.

B. Barry et. al (1991), G. Colshow et. al (1987) and C. Waltham (1989) have divided the sinkholes in 4 groups, explaining the underlying reason as the existence of carbonated rocks beneath the covering sediments. The tectonic conditions of Hamedan, their impact on sinkhole formation and the location of sinkholes along faults of carbonated rocks were described by G. Saadati (2003). The fault's crush zones and the high speed of carbonated rocks' decomposition in Hamedan Plain were considered by M. Haydari (2003) as the main causes of sinkhole formation.

The geological specifications of the bedrock in Hamedan Plain such as sand discharge and gas emission from the wells and rapid depletion of the ground waters point out to occurrence of sinkholes (Amiri, 2003). The occurrence of sinkholes in the region of Lar Dam and their location in relation to the faults have been described (A. Khorsandi, 2003). Moreover, studies have shown the location of the sinkhole as being the result of fault activity and a method to prove the active state of faults has been proposed based on the location of sinkholes (Khorsandi, 2007).

The zoning map of sinkholes risk in the region of the dam and their hazards were also presented in the context of enhancing the dam's safety (K. Hosseini, 1998).

The methodology of this research includes the geologic studies of the Hamedan Plain and the Lar Dam, their geological structure, the review of hydrological conditions, the study of sinkholes and their specifications and their eventual risks. The geological studies prove the existence of lime bedrock in the Hamedan plain and Lar Valley, while the studies of geological structure point to the existence of faults and fault networks. The condition of ground waters in the Hamedan Plain shows a constant drop of tables, while the changes in the groundwater tables in Lar Plain have been determined. The sinkholes of varying depth and diameter in Hamedan Plain and Lar Valley have occurred on deposits covering the limestone of maximum 100 m in thickness. The results show that occurrence of sinkholes in Hamedan Plain was hazardous for the following cases, sometimes resulting in damages and destructions:

- Rural and urban areas;
- Agricultural lands;
- Irrigation systems;
- Pumping stations;
- Power stations;
- Turbid well waters;
- Collapse of structures and buildings;
- Induced earthquake;
- Soil instability around structures;
- Villages damage.

In the region of the Lar Dam, the occurrence of sinkholes depicts the escape of water from the lake and the karstic phenomena beneath the dam's lake and body, jeopardizing the dam's stability.

2. GEOLOGY AND GEOLOGICAL STRUCTURE

The oldest geological formation in the margin of the Hamedan Plain includes the rotation of Jurassic – Mesozoic sandstone, shale, limestone and slate deposits with some variations showing in some areas. The Cretaceous includes the shale and lime marl deposits, and in the basal sections bulk orbitolin limes (K1 and K2) are observed (fig. 2A).

In the Cenozoic, the basal Miocene deposits include lime and marl and in some areas marl and lime marl (Qm) with abundance of nomolith fossils. In some cases these deposits form the plain's bedrock, with its lime and lime marl layers showing karstic specifications. In the Quaternary the old and young alluvial deposits (Q and Q1) of 50 to 150 m have covered the Hamedan Plain.

The geological structure of the Hamedan Plain has endured numerous phases from Jurassic to Quaternary, and the last phase of orogenic Alpine has caused the slope and folding of the Cenozoic deposits creating the current shape. The folded plains of Hamedan Plain are on a NW-SE direction and have been broken and moved by faults. Pyrogenous activities can be observed along the faults.

There is probably a buried fault in the Hamedan Plain extending to about 25 km, which has been determined by geophysical data and boreholes, in the lime bedrock. This was the path of the old Quaternary River, and currently the thickest alluvium has been measured on this fault. Some studies have shown the crush zone as effective in the formation of sinkholes (G. Saadati, 2003).

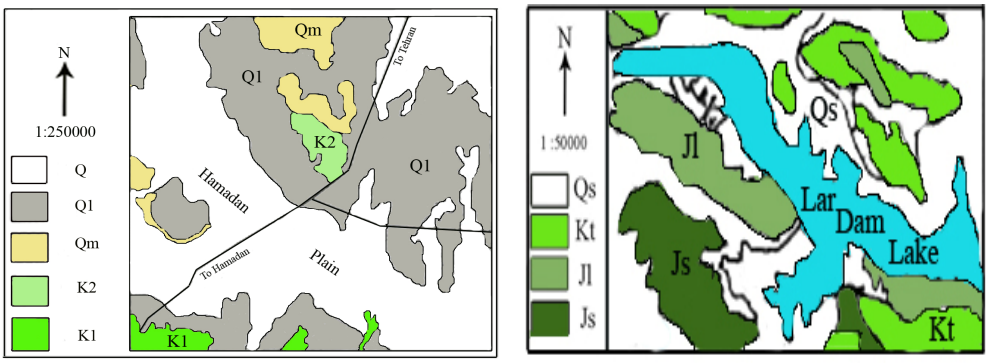


Fig. 2. Hamdan plain (A) and The Lar valley geological map (B)
(After geological survey of Iran 1994 and khorsandi 2007).

The geology in the area of Lar Dam includes outcrops of shale, sandstones, siltstone Jurassic conglomerates (Js), Jurassic limestone (Jl) and the Cretaceous limestone arête (Kt), which have outcrops on either side of the area. The thickness of the formations is larger to the south (fig.2B). The tuff, shale tuff and volcanic rocks (Et) are located after these with andesite rocks and pleio- quaternary (Qa) lava of the Damavand Volcano observed to the north and northeast of the area. In the Quaternary, lake deposits (Qs) of maximum 100 m in thickness were formed on the lime bed of Lar, with sinkholes shaping in them.

The geological structure of the Lar Dam region includes a syncline, to the south of which an overthrust fault has caused the drift of Jurassic geological formations on Cretaceous. To the northeast there is a number of lake faults, which continue on to the bedrock, with sinkholes formed along some faults (fig.3).

3. REVIEW OF HYDROLOGICAL CONDITIONS

The sources of water for agricultural and industrial activities and the potable water of the residential areas of Hamedan Plain are ground waters available in the alluvium. There is currently a legal prohibition on further exploration. The average thickness of the alluvium is estimated to be 100 m. The depth of groundwater reaches down to a maximum of 20 and a minimum of 10 m, and the direction of its flow is from northwest to southeast. During a 10-year period the groundwater table has dropped by about 10 to 13 m, causing the dryness of wells in some areas and the collapse of the bed until inside the lime bedrock, resulting in intake of water from the lime bedrock. In some of the mentioned wells, the volume of CO^2 in water is reported to be exceeding the natural limits (M. Amiri, 2003).

Based on available witnesses and documentations in the region of Lar Dam the groundwater is observed as pressurized and free. In the upstream of the Dam and at a distance of about 12.5 km in an area called Chel Cheshmeh, the groundwater is under pressure, depicting a pressurized aquifer of 100 m in thickness in the deposited materials. Nonetheless, the groundwater in Jurassic limes (Jl) neighbouring the mentioned area, is in the form of unconfined aquifer, having no connection with the adjacent deposits. The groundwater in the zone next to the dam, the groundwater is observed as unconfined in the lake deposits, having no hydraulic connection with the dam's lake.

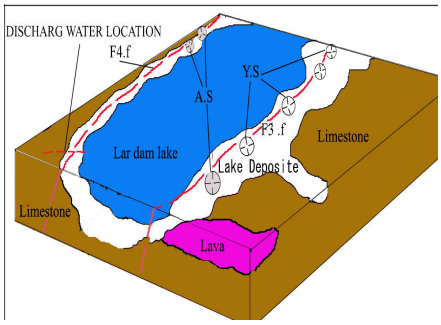


Fig. 3. Schematic digram of Lar valley sinkholes valley sinkholes.

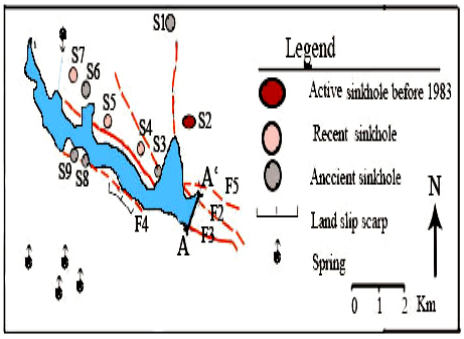


Fig. 4. Location of Lar and faults. A.S is old and Y.S is young sinkhol. (Khorsandi 2007).

The specifications of sinkholes:

- during a period of 15 years (from 1989 to 2004) around 32 sinkholes of various sizes were formed in the Hamedan Plain, which are located at different sites. The specifications of these sinkholes are presented in table 1;
- the diameters of the sinkholes vary between 2 and 100 m while their depths are between 1 and 60 m. The largest number of sinkholes is observed in the southern areas of

the Plain. These are collapse sinkholes, while in other areas they are of subsidence sinkhole and Ponor type.

In the region of Lar Dam, 9 old and young sinkholes were formed in the alluvium and the lake deposits (fig.4).

Areas influenced by the Hamedan sinkholes and subsidences extend to a minimum of 3 m and a maximum of 2000 m (table 1). In the region of Lar Dam,9 old and young sinkholes were formed in alluvium and the lake deposit. These sinkholes occurred from 1980 to 1989 or a period of 9 years after priming of the Dam. The specifications of sinkholes in Lar Dam region are shown in table 2. The crush zone of the faults and the high speed of carbonated bedrock decomposition in the Plain (M. Haydari şi colab., 2003).

There is a number of underlying reasons for sinkholes in the Hamadan plain such as:

- the tectonic condition of the plain, location of the sinkholes along the fault in the cabonateed rock (G. Saadati, 2003);
- the crushed zone of the fault, and the high speed of carbonated bedrock decomposition in the plain (Haydari, 2003);
- the geological specifications of the Plain's bedrock, the sand discharge from wells, the gas emission from wells, rapid drop in groundwater tables (M. Amiri, 2003);
-the rapid drop in groundwater and the intersection of the wells' drop cones;
- the circulation of pneumatolytic solutions in the karstic system of the Hamedan Plain's bedrock (M. Amiri, 2005);
- the collapse of the wells' beds and the increase in their depths until the karstic bedrock, as well as the infiltration of CO^2 to groundwater.

The factors influencing sinkholes in the Lar Dam region are:

- as a geologist Knill has associated the sinkholes to the faults passing beneath the dam (Wolofsky, 1973);
-Lar Consultants have associated sinkholes with karstic effects, stating the infiltration of bedrock by water as reason for their formation.
- the existence of karstic bedrock under the lake's deposits and the existence of a fault in the bedrock have been stated as reasons for sinkholes (A. Khorsandi, 2003);
- the influence of faults in forming and location of sinkholes, and determination of fault activity by sinkholes have been proposed in an article (A. Khorsandi, 2007).

4. RISK ASSESSMENT

The occurrence of sinkholes in the Hamedan Plain to date has caused problems in the agricultural lands and irrigation systems and has resulted in the turbidity of well water, gradual land subsidence, sudden collapses accompanied by terrifying sounds and tremor and finally the appearance of tension joints on the ground surface. Risks associated with sinkholes include the collapse of connection roads, specially the main Hamedan –Tehran road, the reduction of agricultural surface area, landslides in rural and residential areas, the collapse and landslide in the area of Hamedan power station and the risks of death and injury of residents. In the region of Lar Dam the sinkholes have occurred in the sedimentary soil of the lake accompanied by landslide and a terrifying sound. The location of the sinkholes in the sedimentary soils to the north of the lake depicts water escaping from the main factors i.e. karstic bedrock and faults. The risks in the region of the dam are associated with active faults passing beneath the Dam, which influence the occurrence and location of the sinkholes. Their movement during an earthquake will result in damages to the dam's structure.

Hamdan sinkhole and subsidence characters

Table 1

No.	Local name	UTM-X UTM-R	Diameter-Depth (m)	Date of formation
1	Bizinjerd	312370, 3876038	Di=4,De=2	1989
2	Hamekasi	313345, 3879084	Di=6.6,De=4	1992
3	Hamekasi	333255, 3879076	Di=11.8,De=3	1992
4	Hamekasi	313211, 3879101	Di=23,De=8	1992
5	Jahanabad	315319, 3883707	Di=23,De=17	1994
6	Jahanabad	315512, 3883472	Di=19.6,De=1.5	1994
7	Khanabad	295344, 3894429	Di=7,De=12	1995
8	Kord Abad	299573, 388866	Di=22,De=8	1995
9	Hamekasi	312885, 3875532	Di=3,De=1.5	1996
10	Hamekasi	312841, 3875380	Di=5,De=3	1996
11	Hamekasi	312849, 3875387	Di=3,De=1.5	1996
12	Negarkhaton	310917, 3890981	Di=4,De=4	1997
13	Hesar	279627, 3901716	Di=3,De=1	1998
14	Amirabad	289590, 3901017	----------	1999
15	Noabad	296997, 3889035	Di=24,De=60	1999
16	Saritape	328147, 3876434	Di=2,De=5	2000
17	Saritape	328155, 3876443	Di=1.5,De=1.5	2000
18	Famenin	315290, 3887200	Di=20,De=30	2001
19	Kord Abad	298819, 3888249	Di=31,De=50	2002
20	Hamekasi	313857, 3877387	Di=2.5,De=1.5	2002
21	Hamekasi	313833, 3873306	Di=35,De=5	2002
22	Hamekasi	313822, 3873060	Di=6,De=3	2002
23	Hamekasi	312849, 3875387	Di=100,De=4	2002
24	Hamekasi	313832, 3873060	Di=11,De=15	2002
25	Hamekasi	314552, 3877880	Di=10,De=20	2003
26	Kordabad	299452, 3888739	Di=25,De=20	2003
27	Gondajin	290945, 389667	Di=10,De=2	--------
28	Bezinjerd	313024, 3879519	Di=20,De=3	--------
30	Bezinjerd	311513, 3877458	Di=3,De=3	--------
31	Hamekasi	313832, 3873060	Di=50,De=5	-------
32	Hamekasi	313891, 3876783	Di=2.5,De=1	-------
33	Hamekasi	314376, 3877351	Di=30,De=2	-------
34	Hamekasi	313748, 3877647	Di=2.5,De=5	-------

The Lar valley sinkholes specification

Table 2

No	Symbol	Geographical Coordinates	Diameter-Depth m	Date of formation
1	S1	51,59.5- 35, 55.5	--------	Ancient
2	S2	51, 59.5- 35, 54.7	Di.=10,De.=5	1980
3	S3	52, 58.7- 35, 54	Di.=5,De=22	Ancient
4	S4	51, 58.7- 35, 54	Di=13 ,De=23	1988
5	S5	51, 57.7- 35, 54.5	Di=5,De=18	1988
6	S6	51, 57- 35, 54.9	Di.=80,De=4	Ancient
7	S7	51, 57.1- 35, 54.8	Di.=40,De=10	1989
8,9	S8, S9	51, 57- 35, 53.5	----------	Ancient

5. DISCUSSION AND CONCLUSIONS

There are different parameters involved in forming the sinkholes in Hamedan Plain and the Lar Dam region. Some of these are fixed and some variable as shown in the following chart. As observed, the fixed parameters include the geological conditions, which point to the existence of carbonated rocks and their groundwater containing covering deposits. The carbonated rocks also contain faults and fissures, karstic systems and groundwater.

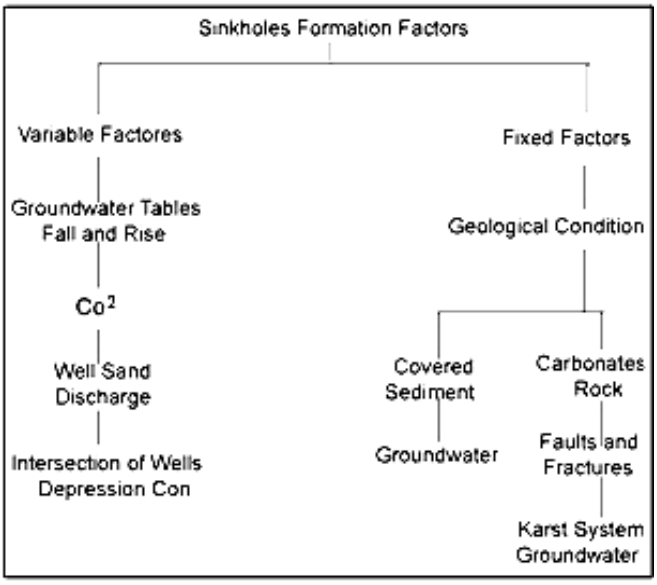


Fig. 6. Flow chart of sinkholes formation parameter in Hamadan plain and Lar valley.

The variable parameters are subsets of fixed parameters, particularly groundwater. These include the fluctuation of groundwater tables, characterized by sand discharge by wells, the intersection of the well drop cones and the infiltration of CO^2 gas. Despite fixed parameters in the Hamedan Plain and the region of Lar Dam, there is a potential risk of sinkholes, which depends on an activator setting off the variable parameters, including in particular the fluctuations of groundwater tables and subsequently other parameters.

It should be mentioned that sinkholes have appeared after the drop in groundwater tables in the Hamedan Plain, while the phenomenon has been observed following the priming of the dam and the rise of groundwater table in the lake's deposits. These have created a number of problems and risks in the Hamedan Plain and the region of Lar Dam. Therefore the stabilization of groundwater tables in the Hamedan Plain and the Lar Dam region could slow down and control the trend of sinkhole occurrence.

The results of the study show:

a) a total of 32 sinkholes have been formed to the northwest of the Hamedan Plain during a period of 1989 – 2004, while in an expanse of 9 years from 1980 to 1989, a total of 9 sinkholes were formed in the region of Lar Dam in the north of Iran;

b) the sinkholes in Hamedan Plain have occurred on the alluvial deposits of 100 m in thickness located on the lime bedrock, while in the region of Lar Dam, they are located on the lake deposits of 100 m in thickness formed on the lime bedrock;

c) the reason for sinkholes in the Hamedan Plain is the drop in groundwater table, while in the Lar Dam region they have occurred after the rise of groundwater tables and the saturation of lake deposits;

c) the consequences of sinkholes in the Hamedan Plain are problems in agriculture and irrigation systems and well discharges, which have affected the residents of towns and villages, the connection roads and industries;

d) the sinkhole crisis in the Lar Dam region somehow points out to the active state of the bedrock faults and lake deposits, which pass beneath the Dam's structure and are potentially critical.

R E F E R E N C E S

1. Amini, Hosseni K. (1998), *Karst area subsidence mapping, Case study: Lar Dam,* Proceeding 2ND international symposium on karst water resources I.R.Iran-Tehran-Kermanshah, (Persian).
2. Amiri, M. (2003), *The Relation Between Ghahavand–Famimini-Kbadarahang Plains Sinkholes with Bedrocks,* Proceeding of The Third Iranian Engineering Geology and Environment Conference. P 213-226 (Persian)
3. Barry, F.B. (1991), *On calculating the risk of sinkhole collapse*, Appalachian karst symposium. Radford Virginia.
4. Bensson, R.C., Lynn, P.G., Kaufmann, R.D. (2003), *Assessment the risk subsidence and collapse,* Proceedings of the Ninth Multi disciplinary Conference on sinkholes and the Engineering and Environmental impact of karst.
5. Culshaw, M.G., Wathman, A.C. (1987), *Natural and artifial cavities as ground engineering hazards*, Quartly journal engineering geology,vol. V, no. 20.
6. Ford, D.C., Williams, P.W. (1989), *Karst geomorphology and hydrology*. Uniwin Hayman. Winchester. Massachusetts.
7. Haydari, M., Khanlari, G.H., Bidokhti, A. (2001), *Study on Carbonates rock solution of Hamadan Power Generation.* Proceeding of the third Iranian Engineering Geology and Environment Conference.

8. Khorsandi, A., Takao M. (2007), *Fault Determination Due to sinkholes Array on Lar valley, Northeast of Tehran, Iran,* Acta Carsologica 36/1, 11-10, Postojna.
9. Khorsandi, A. (2003), *New observation of Lar Dam area tectonic (Faults) and their influence on sinkholes*, Proceeding of the third Iranian Engineering Geology and Environment Conference.
10. Markoo, B. (1998), *Storage Reservoir and deep Wells in Karst Regions*. A.A.Balkena.
11. Pewe-Tary, L. (1990), *Land Subsidence and Earth-Fissure Formation Caused by Groundwater Withdrawal in Airzona*, A Review Pages 218-233 in C.G.Higgins and D.R.
12. Waltham, A.C. (1989), *Groundwater Subsidence*, Department of Civil Engineering Trent Polytechnic.
13. Saadati, G., Mohamadi, M. (2003), *Tectonic of Centre Plains of Hamadan Sinkholes*, Proceeding of the third Iranian Engineering Geology and Environment Conference. (Persian).
14. Seibt, A., Haot, P., Naunann, D. (2000), *Gas Solubility in Formation Waters of The North Germany Bassin*, Implication for Geothermal Congress 2003 Kyusha Tohoku Japan. May 28-January.
15. William, L. (1992), *Hydrologic Factors Affecting New Sinkholes Development in The Orlando Area, Florida*, Groundwater .vol 30, no 6.
16. Wolofsky, L. (1973), *Lar Multipurpose Water Project*, Reservoir Retention: Consulting Geologist: Report To International Bank for Reconstruction and Development. Sep. App. B, Gibb 1982.
17. * Lar Consulting. 1988. *Lar area cavity and Holes*. Report N-1-11-6.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

ASSESSMENT OF WEATHERING INTENSITY ON BIHOR MOUNTAIN ROCKS

L. I. BUZILĂ[1], O. L. MUNTEAN[2]

ABSTRACT. – Assessment of Intensity of Weathering on Bihor Mountain Rocks. Weathering represents one of the most important processes of rock alteration "in situ". The intensity and the rate of weathering are under control of interaction between climatic, petrographic, topographic, and biotic factors. The analysis of the samples collected into the field in Bihor Mountain allowed the identification of several distinct types of weathering manifestation, materialized as different alteration crusts. In order to assess the intensity of weathering two categories of methods were used: 1) *absolute methods* and 2) *relative methods.* The gained results offered the possibility to highlight the manifestation's particularities of weathering within analyzed area.

Keywords*: weathering intensity, chemical index of weathering, Bihor Mountain.*

1. INTRODUCTION

Bihor Mountain represents the central unit of Apuseni Mountains, characterized by pronounced massiveness and the highest altitude (1848 m, Curcubăta Mare summit). The massif limits are outlined by a couple of valleys: Galbena and Crişul Pietros to the North, Arieşul Mare, Ghizghiț and Drăghița to the East, Leuca valley to the South, and partially, on the western side, Crişul Negru valley.

The presence of a nappes system (nappes of Codru and Biharia systems that overlay Bihor geological unit) gives the structural characteristic of the mountain (Berindei, 1971, Săndulescu, 1984).

Petrographical characteristic of Bihor Mountain is conferred by a mosaic rocks disposition; the main categories of rocks are represented by crystalline schists, granites and subsequently, by Permian-Mesozoic sedimentary strata.

Weathering processes are nonlinear phenomena, having various rates during time and different intensities, as a function of control factors that govern and generate weathering system. Terms as "*intensity*" and "*rate*" of weathering refers to two different concepts. *Intensity* means whole the weathered rock volume referred to the volume of fresh rock that generates it. Thus, weathering intensity refers to the alteration index of the rock measured at one time. This index can be relatively easy to calculate by comparison of the difference between quantities values of the weathered material and the fresh rock, when the weathered material is a result on transformation of in situ rock.

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, e-mail: liviu@geografie.ubbcluj.ro*

[2] *Babeş-Bolyai University, Faculty of Environmental Science, 400006, Cluj-Napoca, Romania, e-mail: liviu.muntean@ubbcluj.ro*

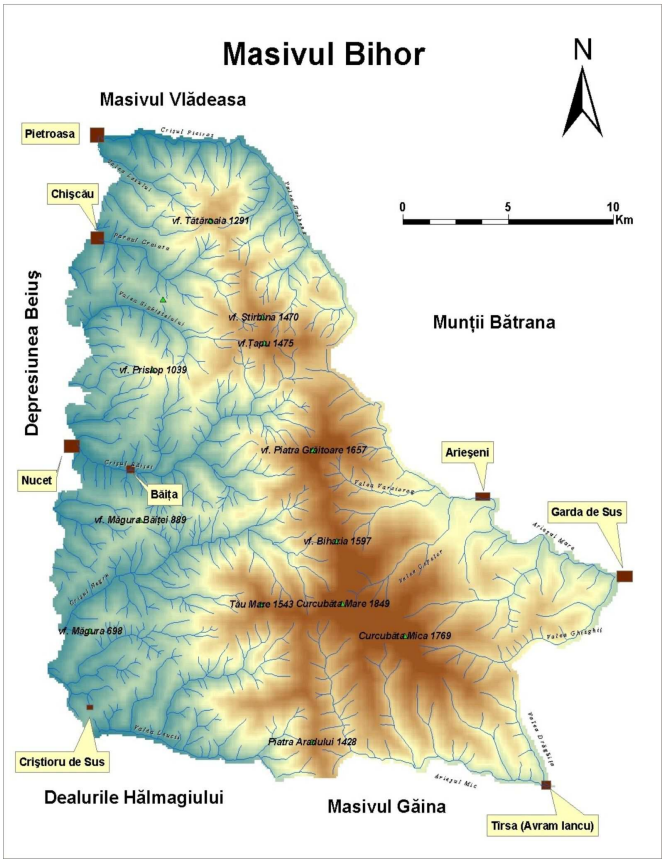


Fig. 1. Bihor Mountain and the neighbouring geographical units.

In exchange, *rate* of weathering encompass all modifications within a weathering system on a unit of time. Unlike intensity, weathering rate is more difficult to assess, because rate calculation imply to know the moment when the rock entered in weathering system. Ideal situation is when the exact moment of weathering processes triggering is well known for a certain area.

The modifications of weathering control factors in time are as result of the changes that the intensity and rate of weathering operates with in regolith. The regolith behaves as an open system having tendency to steady state equilibrium, but in which the control variables of the system determine a ceaseless modification of the state parameters. However, at mineralogical level, a sort of equilibrium can be noticed; thus there are mineralogical assemblies with very low rates of weathering over a long period of time. Such rates are specific for feralitic products formed in humid tropical zone Al_2O_3, Fe_2O_3, and other products SiO_2, goethite (FeO(OH)), kaolinite ($Al_2(OH)_4Si_2O_5$), etc.

Such equilibrium cannot be achieved outside of humid tropical zone. One example is podzolisation phenomena that characterize temperate cold and humid climate of mountain regions. As a result of deposits intense levigation on a side and elapsed time from the last glaciation's (about 10.000 years) on the other side, the equilibrium was not reached here. Bland, Rolls (1998).

2. MATERIALS AND METHODS

The collection samples points were chosen following some stages of research: *cartographical documentation phase*; *bibliography documentation phase* and *fieldwork phase*.

The justification of fieldwork point's selection was made taking into account many factors: petrographic, structural, topographic and biotic factors.

The selection and presentation of fieldwork points was based on petrographic criterion. There were chosen 12 petrographic categories and 37 fieldwork points from where were collected a number of 53 samples of weathered material and fresh rock.

The collecting of filed samples followed the procedures existing in scientific literature (Smith, McAlister, 2000). For the samples analysis were respected both procedures, work protocols existing in scientific literature and some techniques developed by the members of Weathering Research Group of School of Geography, Queens University of Belfast (Northern Ireland).

In order to assess the weathering intensity there are various methods which cover a large range of analysis from macroscopic observations till utilization of some analytical methods. Among these methods we distinguish: *absolute methods* and *relative methods,* Bland, Rolls (1998). For absolute methods we mentioned: *isovolumetric method* and *"benchmark" mineral method.*

Isovolumetric method – is one of the simple methods of measuring material losses induced by weathering processes. This method assumes that it is not volume modification between weathered rock and the fresh rock that generates it. Therefore this method can be successfully applied to the regolith that suffered a reduced alteration. That is the case of a numerous surficial deposits of Bihor Mountain. The method implies the comparison of oxides values from fresh rock and regolith. The difference, usually a loss of material from weathered sample, is a measure of weathered material volume formed in situ.

Benchmark mineral method – assumes chosen of a resistant mineral as standard for the evaluation of genetic relationship between fresh rock and regolith's weathered material that covers it. Al_2O_3 is often used as benchmark mineral because of its stability in relation with pH common values of weathered deposits. The method implies that Al_2O_3 ratio between fresh rock and regolith to be used for the calculation of losses volume of other elements from weathered deposit. Therefore we present some representative weathered profile from Bihor Mountain for which weathering intensity was calculate using Benchmark mineral method.

3. RESULTS AND DISCUSSIONS

The weathering intensity using benchmark mineral method

Table 1

	Fresh rock	**Saprolite**			
Samples	**28**	**27**	**Corrected figure for each oxide ratio**	**Loss from parent rock**	**Percentage change**
1	**2**	**3**	**4**	**5**	**6**
SiO2	70,06	62,57	37,59	-32,47	-46,35
Al2O3	11,06	18,41	11,06	0,00	0,00
Fe2O3	5,00	5,47	3,29	1,72	34,35
MgO	1,74	1,78	1,07	0,67	38,54
CaO	2,45	0,67	0,40	-2,05	-83,57
Na2O3	2,53	3,07	1,84	0,69	27,11
K2O	3,56	1,12	0,67	-2,89	-81,16
MnO	0,05	0,11	0,07	0,02	32,17
P2O5	0,09	0,17	0,10	0,01	13,48

	Fresh rock	Saprolite			
Samples	**31**	**30**	**Corrected figure for each oxide ratio**	**Loss from parent rock**	**Percentage change**
1	**2**	**3**	**4**	**5**	**6**
SiO2	60,03	42,78	33,09	-26,49	-44,87
Al2O3	9,60	12,41	9,60	0,00	0,00
Fe2O3	3,15	3,57	2,76	0,38	12,09
MgO	0,10	0,25	0,19	0,09	93,39
CaO	0,32	0,15	0,12	-0,20	-63,74
Na2O3	2,43	3,37	2,61	0,18	7,44
K2O	1,00	0,48	0,37	-0,63	-62,72
MnO	0,00	0,01	0,00	0,00	0,00
P2O5	0,17	0,35	0,27	0,10	59,26
	Fresh rock	**Saprolite**			
Samples	**44**	**43**	**Corrected figure for each oxide ratio**	**Loss from parent rock**	**Percentage change**
1	**2**	**3**	**4**	**5**	**6**
SiO2	79,80	44,26	33,38	-46,42	-58,17
Al2O3	17,80	23,60			
Fe2O3	0,33	2,86	2,16	1,83	563,07
MgO	0,03	1,20	0,91	0,88	269,04
CaO	0,04	1,05	0,79	0,75	1879,87
Na2O3	0,03	0,71	0,53	0,51	1904,00
K2O	0,18	7,84	5,91	5,73	3114,78
MnO	0,03	0,09	0,07	0,04	120,94
P2O5	0,20	0,20			
	Fresh rock	**Saprolite**			
Samples	**42a**	**42**	**Corrected figure for each oxide ratio**	**Loss from parent rock**	**Percentage change**
1	**2**	**3**	**4**	**5**	**6**
SiO2	60,92	16,04	9,14	-51,78	-85,00
Al2O3	3,72	6,53	3,72	0,00	0,00
Fe2O3	11,27	12,51	7,13	4,14	36,76
MgO	0,47	0,75	0,43	0,04	9,09
CaO	16,42	26,58	15,14	1,28	7,78
Na2O3	0,09	0,05	0,03	0,06	70,14
K2O	0,08	0,08			
MnO	0,10	0,17	0,10	0,00	0,00
P2O5	0,16	0,38	0,22	0,06	35,30

Columns 2 and 3 presents chemical constitution expressed in percentage of the rock and saprolite. For each analysed set of samples, Al_2O_3 is recording higher amount as a result of the lost of other oxides. The calculation is made applying the correction for each oxide, correction in which the benchmark is Al_2O_3 values of fresh rock and weathered material. It can be noticed important changes of SiO_2 values and basic cations oxides as well.

3. 1. Relative methods

Weathering degree assessment using these methods is based on some indices utilisation, which reflects percentage of stable oxides and those less stable from weathered deposits. Using the benchmark mineral method as criterion, all indices can be grouped in two categories: one category used as benchmark mineral alumina, whereas the other used tourmaline (a complex aluminosilicate).

The most approaches were made on the assumption that alumina remain stable during the weathering processes. Also the method is based on the supposition that elements are found as oxides. The calculation of weathering losses using some indices within the chosen profiles (Chittleborough, 1991).

3. 1. 1. Chemical index of weathering

$$C.\ I.\ W.\ \ [\frac{Al_2O_3}{(Al_2O_3 + CaO + Na_2O)}]x100$$

C. I. W. values for analysed samples

Table 2

Samples	Calculated values	Samples	Calculated values	Samples	Calculated values
S1	82,34	S19	28,78	S36	44,39
S2	75,92	S20	89,81	S37	87,73
S3	89,79	S21	96,67	S38	76,99
S5	92,68	S22	97,61	S39	97,40
S6	80,95	S23	87,61	S40	86,43
S7	52,60	S24	89,70	S41	90,09
S8	56,41	S25	88,12	S42	19,69
S9	13,72	S26	56,43	S42 a	18,39
S10	31,06	S27	83,13	S43	93,07
S11	45,01	S28	68,96	S44	99,63
S12	62,70	S29	98,52	S45	92,39
S13	47,82	S30	77,90	S46	86,95
S14	3,40	S31	77,76	S47	81,47
S15	80,84	S32	70,51	S50	26,78
S16	89,61	S33	72,17	S51	23,61
S17	98,66	S34	86,91	S52	-
S18	98,03	S35	59,63	S53	67,39

3. 1. 2. Chemical index of alteration

$$C.\ I.\ A.\ \ [\frac{Al_2O_3}{(Al_2O_3 + CaO + Na_2O + K_2O)}]x100$$

C. I. A. values for analysed samples

Table 3

Samples	Calculated values	Samples	Calculated values	Samples	Calculated values
S1	70,66	S19	28,44	S36	29,13
S2	68,11	S20	79,03	S37	53,01
S3	68,32	S21	76,11	S38	74,22
S5	62,00	S22	80,15	S39	59,36
S6	70,39	S23	85,99	S40	80,26
S7	48,13	S24	78,06	S41	65,82
S8	48,06	S25	72,52	S42	19,65
S9	13,51	S26	49,60	S42 a	18,32
S10	30,83	S27	79,14	S43	71,09
S11	29,33	S28	56,44	S44	98,61
S12	40,23	S29	81,36	S45	72,52
S13	47,14	S30	75,61	S46	81,73
S14	3,39	S31	71,92	S47	75,67
S15	29,77	S32	66,18	S50	26,76
S16	42,27	S33	60,71	S51	23,59
S17	82,20	S34	79,81	S52	-
S18	91,19	S35	42,10	S53	55,07

Both the chemical index of weathering and the chemical index of alteration allow measurement of deposits weathering degree by comparison between Al_2O_3 and the other more soluble "products". On the course of a deposit alteration, Ca, Na, K, are washed down, so then the altered the materials are, the higher the ratio between Al and the other products is. The tables show the difference in respect of weathering intensity for various samples.

3.1.3 Weathering index of Reiche (1943), modified by Vogel (1975)

$$M.\ W.\ P.\ I.\ [\frac{(Na_2O + K_2O + CaO + MgO)}{(Na_2O + K_2O + CaO + MgO + SiO_2 + Al_2O_3 + Fe_2O_3)}]x100$$

M. W. P. I. values for analysed samples

Table 4

Samples	Calculated values	Samples	Calculated values	Samples	Calculated values
S1	10,19	S19	20,65	S36	17,27
S2	11,43	S20	5,09	S37	6,58
S3	12,78	S21	5,40	S38	10,04
S5	8,75	S22	5,13	S39	6,74
S6	9,71	S23	6,98	S40	3,43
S7	19,13	S24	6,01	S41	8,22
S8	18,99	S25	5,72	S42	43,91
S9	22,81	S26	8,65	S42 a	18,35
S10	22,86	S27	7,13	S43	13,25
S11	6,25	S28	10,66	S44	0,29
S12	5,96	S29	5,80	S45	7,86

S13	3,67	S30	6,75	S46	8,35
S14	94,90	S31	5,02	S47	10,67
S15	7,56	S32	6,25	S50	59,02
S16	6,35	S33	9,10	S51	54,48
S17	6,07	S34	8,09	S52	9,30
S18	2,70	S35	11,93	S53	11,07

3. 1. 4. Voight ratio (Voight, 1927; Roaldset, 1972)

$$V = \frac{(Al_2O_3 + K_2O)}{(MgO + CaO + Na_2O)}$$

Voight ratio values for analysed samples

Table 5

Samples	Calculated values	Samples	Calculated values	Samples	Calculated values
S1	2,51	S19	0,39	S36	1,03
S2	1,67	S20	7,00	S37	8,92
S3	1,93	S21	17,97	S38	2,32
S5	6,44	S22	27,11	S39	15,17
S6	2,60	S23	3,91	S40	2,54
S7	0,79	S24	8,86	S41	11,12
S8	0,88	S25	5,42	S42	0,24
S9	0,16	S26	1,09	S42 a	0,22
S10	0,41	S27	3,54	S43	10,63
S11	1,28	S28	2,18	S44	186,13
S12	1,95	S29	52,41	S45	13,40
S13	0,80	S30	3,42	S46	4,31
S14	0,02	S31	3,72	S47	3,36
S15	6,75	S32	2,22	S50	0,26
S16	8,28	S33	1,67	S51	0,20
S17	22,99	S34	3,71	S52	-
S18	22,00	S35	1,67	S53	2,02

3. 1. 5. *Ruxton ratio (Ruxton 1968)*

$$R = \frac{SiO_2}{Al_2O_3}$$

Ruxton ratio values for analysed samples

Table 6

Samples	Calculated values	Samples	Calculated values	Samples	Calculated values
S1	4,66	S19	7,99	S36	12,27
S2	4,99	S20	4,62	S37	11,79
S3	5,87	S21	4,84	S38	2,82
S5	6,21	S22	3,87	S39	8,66
S6	4,20	S23	2,41	S40	12,05
S7	4,93	S24	3,23	S41	4,67
S8	5,34	S25	6,30	S42	2,46
S9	18,76	S26	12,52	S42 a	16,38

S10	6,06	S27	3,40	S43	1,88
S11	37,06	S28	6,33	S44	4,48
S12	25,21	S29	2,78	S45	3,40
S13	30,69	S30	3,45	S46	2,17
S14	0,67	S31	6,25	S47	2,30
S15	28,87	S32	7,54	S50	1,67
S16	19,99	S33	7,90	S51	3,07
S17	2,65	S34	3,14	S52	-
S18	3,30	S35	10,09	S53	6,47

In this case, the alteration intensity was calculated on the base of proportion between Al and Si oxides. Among the most spread compounds of Earth's crust, Al and Si compounds are most stable for normal pH conditions. Information about alteration degree of weathered deposits is offered by proportion of Al and Si. If this proportion is reduced, that means a strong alteration of the materials.

4. CONCLUSIONS

The degree, in which the rocks and superficial deposits materials were affected by weathering, especially by alteration, can be evaluated using two indices, the intensity and the rate of weathering processes.

The results obtained using the benchmark mineral method shows low and medium alteration stages of the rocks and weathered materials.

Relative methods allowed the evaluation of the degree of weathering by using indices that highlight the ratio between stable oxides and those less stable from weathered deposits. The calculation was made for many samples and the results obtained indicate again low and medium values of alteration for rocks and weathered materials. These values characterize mountain areas where the alteration products are continuously evacuated from the weathering system. Therefore, the occurrence of intense altered deposits is rare, while low and medium weathered deposits are dominant.

REFERENCES

1. Berindei, I. (1971), *Munții Bihorului. Morfostructura,* în Lucrări Științifice, seria Geografie, Oradea.
2. Bland, W., Rolls, D. (1998), *Weathering, an introduction to the scientific principles*, Arnold Publisher, UK.
3. Chittleborough, D.J. (1991), *Indices for weathering of soil and paleosols formed on silicate rocks*, Australian Journal of Earth Sciences 38, 115-20.
4. Krauskopf, K.B. (1967), *Introduction to geochemistry*, McGraw-Hill Publisher, New York.
5. Săndulescu, M. (1984), *Geotectonica României*, Editura Tehnică, Bucureşti.
6. Smith, B. J., McAlister J. J. (2000*), Sampling and pre-treatment strategies for the chemical and mineralogical analysis of weathered rocks*, Zeitschrift fur Geomorphology, N.F., Suppl.-Bd. 120: 159-173, Berlin, Stuttgart.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

POROLISSUM GEOSITE. MORPHOLOGY, ARCHAEOLOGY AND TOPOGRAPHY

I. A. IRIMUŞ[1], F. FODOREAN[2], D. PETREA[1], I. FODOREAN[1]

ABSTRACT. – Porolissum Geosite. Morphology, Archaeology and Topography. Porolissum, the northest Roman city of Dacia, that derives its name from the Dacian settlement of Porolisson, was built mainly on Pomet hill, close to Moigrad village. It comprised the large *amphiteatrum castrense*, access gates, temples of different Gods, an aerial aqueduct coming from Meseş, a large necropolis, therms, a series of other public and private buildings and auxiliary fortresses. The Roman road that went along the north-western border of Dacia Porolissensis, that started at Bologa and ended at Porolissum, was of great importance in the area, being used even in the 19th century.

Keywords: *Geosite, Roman roads, cartography, archaeological topography, morphology, territorial characteristics, construction.*

1. INTRODUCTION

The Roman settlement of Porolissum is to be found on the teritorry of villages of Moigrad (commune of Mirşid), Brebi, Viile Jacului, Jac (commune of Creaca) and of suburban settlement of Ortelec (falling in the administration of Zalău municipality), following the morpho-tectonic contact between Meseş Mountains and Almaş-Agrij Depression. From the point of view of petrography, the morpho-tectonic contact separates the magma rocks of Pomet (502 m), Citera and Cornişte a (493 m) – Moigrad (513.9 m) Knolls, represented by riodacites, from the Neogene deposits of the depression (sandstone, clay, marne, sands, conglomerate, limestone).

Tectonic aspects are defined by *Parameseş* Fault, which outlines to the west the contact with the tectonic basin of Şimleu, while the Fault of Moigrad, defines the eastern limit, separating the area from the Transylvanian Basin (by Agrij and Almaş depressions). The valley of Ortelec overlies on a graben area, called the Meseş Gate (*Poarta Meseşeană)*, which defines the northern limit of the Meseş mountains, while the valleys of Pomet, Jac and Lunca Brazilor, represent the hydrographic limit, bordering the Roman settlement of Porolissum.

The wide opening of Agrij Depression favours the presence of climatic characteristics which are specific to high hills and plateaus. They define a complex topoclimate in the geographical porolissensis area, with a slight local influence on the regime of climatic elements, as a result of the sheltered position given by the presence of Meseş Mountains (a slight föehn effect appears).

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, e-mail: irimus@geografie.ubbcluj.ro*

[2] *Babeş-Bolyai University, Faculty of History and Philosophy, 400084, Cluj-Napoca, Romania, e-mail: fodorean_f@yahoo.com*

Mean annual air temperature is about 8,5º C (-3^0 C being winter's mean temperature, while summer's mean temperature is 16^0 C); the annual rainfall exceeds 700 mm/year, over 140 rainy days being registered each year.

Total solar radiation ranges between 115 and 175 Kcal/cm^2/year. The mean number of sunshine hours is about 1900 to 2000 hours per year, while the mean duration of cloudiness is below 100 days/year.

2. THE MORPHOLOGY OF POROLISSUM GEOSITE

The morphology of the mountainous area of Pomet and Citera, where the buildings of the Roman settlement are placed, is defined by large interfluvial hilltops, having a bridge-like structure, also called *podirei* by the local population, that contrasts with the valleys of Ortelec, Lunca Brazilor, Pomet, Jac, Ursoaia, and Agrij by a relative altitude of 80-250 m. The altitudes in the interfluvial area exceed 500 m , that being more specifically the case of Moigrad – Pomăt (Bisericuța Peak, 502 m) – Citera interfluve, (Moigrad knoll having an absolute altitude of 513, 9 m).The average altitude of Agrij Depression is 250 m.

The geographical features of the location of Roman settlement of Porolissum have certain common elements with the north-eastern part of Meseş Mountains, defined by a high degree of fragmentation (ranging from 2,25 to 3,0 km/km^2), a medium declivity of 27, 5 ‰, terraced slopes, structural terraces and cultivation terraces, that appear locally in the basins of Ortelec, Ursoaia, Pomet, Lunca Brazilor, Jac and Agrij valleys. Flood plains and interfluvial areas, favoured by the reduced slope (3- 7‰), are among the most important areas in terms of development of human activities. Terraces have appropriate features in terms of tectonic and neo-tectonic stability, hydro-geological resources, favourableness in designing extended rural settlements and of clear opening to the neighbouring areas, allowing them to be monitored and observed, thus recommending themselves as appropriate to developing communal activities (urbanistic, agriculture, tourism and transport).

Both favourableness and restrictiveness of the geographical area of Sălaj were considered by the Roman builders and geodesists when placing castra, roads or customs (pieces of the Roman camp's walls are still well preserved on the top of third left terrace of Agrij river at Buciumi and Românaşi, while the Romita camp was settled on the second terrace of Agrij valley).

Most of the buildings of Porolissum settlement, both civil and military, are concentrated in the interfluvial area of Pomet, that covers an area of over 100 ha. The relative altitude of 200-250 m, the absence or presence of forests where artificial clearings were created, offered a large open view to the south, for the soldiers of the Roman camp, reaching up to Vlădeasa Mountains to the west and north west, through the "Meseş Gate" up to Şimleu Knoll and Cosnici Knoll, and towards east and north-east to the valley of Someş and Agrij Depression. The quasi-horizontal levelling surfaces of Pomet or Citera favoured the settlement of large buildings, such as the amphitheatre, the Roman custom, and houses for about 25 000 soldiers and civilians.

The declivity of this area (ranging from 20 to 45 %) offers appropriate conditions to ensure the defensive role of the Roman camp at the northern border of the Roman Empire, by building strong fortifications at reduced costs.

3. THE ARCHAEOLOGY AND TOPOGRAPHY OF ROMAN SETTLEMENT OF POROLISSUM

Porolissum is the northest Roman city of Dacia, situated on the north-western *limes* of the province. Its name comes from the one of the Dacian settlement of Porolisson,

mentioned by the geographer Ptolemeu. A *viscum militaris* appears around the two auxiliary castra build on "Măgura Moigrad" hill immediately after the conquest; the largest of them is on "Pomet" hill, and the smaller one on "Citera" hill.

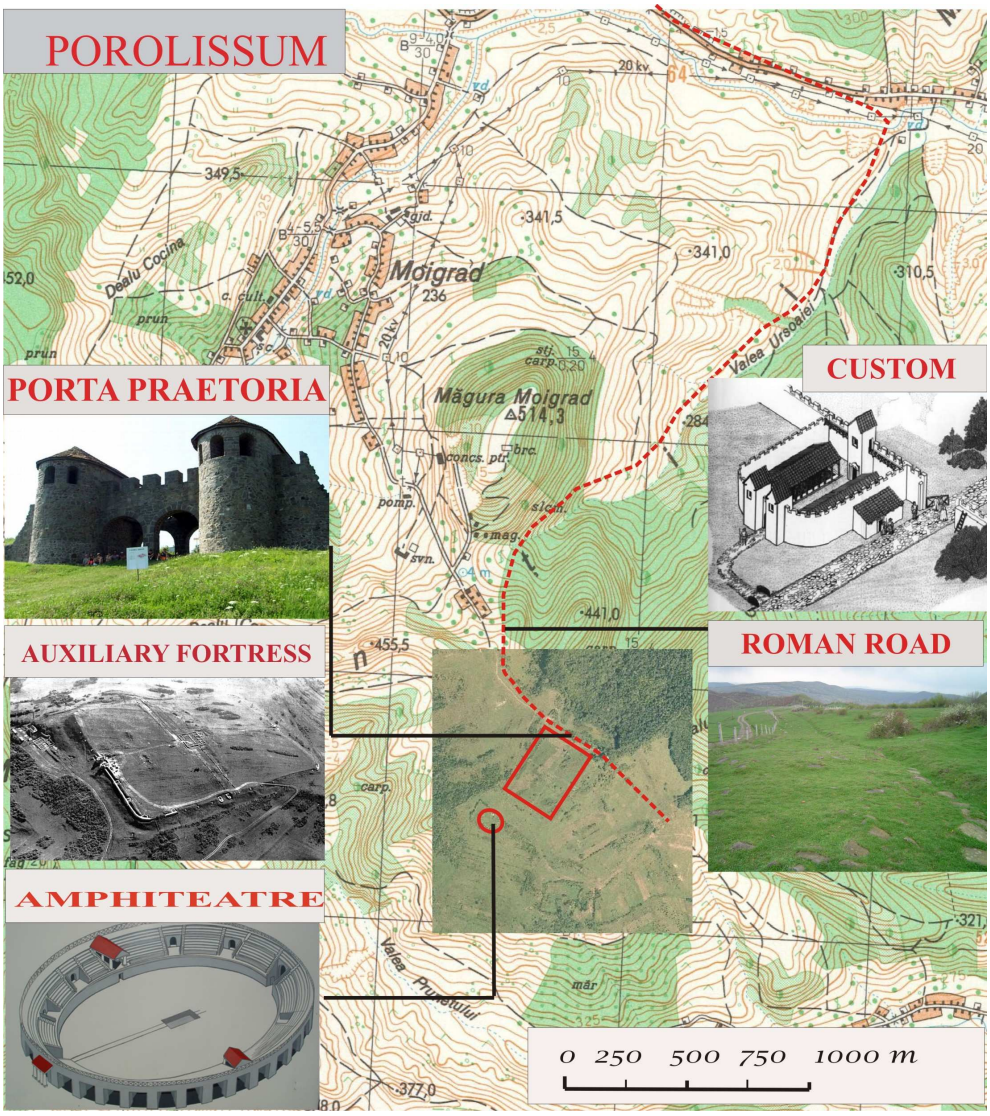


Fig. 1. The geosite and geoarchaeological site of Porolissum – set-up and structure.

Being set on Dacia's border, the city was protected on the side of *barbaricum* by defensive walls, earth mounts, towers and burgs. It developed primarily along the Roman road that crossed the settlement and passed by the *praetoria* gate of the large Pomet camp. The southern limit of the city was set around the Roman customs area, 300 m south-west of the camp, and it extended eastwards on a distance of about 100 m. A series of buildings

were identified in this sector, north and eastwards of the camp: houses, shops, a temple dedicated to *Iupiter Optimus Maximus Dolichenus*. Also, the terrace found southwards from *porta decumana* of Pomet camp, where civilian buildings and the amphitheatre were found, was intensely humanized. Archaeological diggings at *Porolissum*, led to the discovery of an important building, the custom house, of the large *amphiteatrum castrense* destroyed by the passing of time (*vetustate dilapsum)* and rebuilt in stone during Antonius Pius's reign in 157 A D, and of the two stone walled castra; temples of different Gods, an aerial aqueduct coming from Meseş, a large necropolis where both rituals of burial and cremation were performed, therms, and a series of public and private buildings were all researched here. Important archaeological material was thus brought to light, including inscriptions, coins, fibulae, tegular material etc.

A large agglomeration of military troops resulted from the border position the settlement had: *cohors V Lingonum, cohors I Brittonum milliaria, cohors I Augusta Ituraeorum, cohors I Hispanorum quingenaria, cohors III Campestris, numerus Palmyrenorum Porolissensium sagittariorum* are mentioned to have temporarily stayed at Porolissum, as well as the vexed in *XIII Gemina, VII Claudia, VII Gemina* and *III Gallica* legions did.

Though an important military and economic centre, Porolissum received the rank of *municipium* only during Septimius Severus's reign, as the inscriptions of *municipium Septimium Porolissense* confirm. However, it never reached the status of *colonia*.

The massive presence of troops implied a large number of citizens, especially during the *municipium* period, when the city's population, counting both military and civilians, could reach 20 000 -25 000 people. Among the leaders of the city, besides the *ordo decurionum*, citizens gathering also played an important role, mentioned as *respublica municipii Septimii Porolissensium* on epigraphs.

The direction of the Roman road inside the military complex of Porolissum is SE-NW going round the military camp on Pomat Hill on its north-western side. Its existence was mention already in the second half of the 19th century, in 1859 A Cosma was writing that "Traian's road at Pometu is still used today in most places; in the forest of Moigrad it passes by Brăişte". K Toma mentioned that "...the road that links the villages ,called by the population "Traian's road", can be seen southwards of Măgura". I Martian added: "that road that can be still seen today at Moigrad leads on one way to the top of Meseş up to Ciuta and on the other one up to Tihău... the above mentioned road called by the local people "Traian's road" leaves the vallum romanum at Moigrad and passes by the commune of Sacu (Jac)". A Buday wrote about the same road: "...the Roman road, still used today, is set on the north-western foot of the hill, and goes westwards to the northern slope of "Bisericuța" (Little Church). This road appears also on the military map since it can be easily used. But the crossroads is not marked, and neither is the secondary road that leaves the main road to follow the edge of the forest under the north-eastern slope of "Bisericuta" at the border between Wesselenyi and Czell estates, at about 200 m, at the base of the peak. The last road, surrounds „Bisericuta" on its easthern and southern sides and disappears on the southern side of the peak, probably in the Roman camp. Today it can no longer be used, but the road's path and the bifurcation can be identified for a certain length".

The large camp of Porolissum is set at about 500 m south of Moigrad village and at about 100 m from the isolated houses of Tamba family, in the area where a range of hills separates the archaeological territory from the village on its north and north-western side, the range including the Hill of Porcar, Comorii Hill, Ferice Hill, Ursoaia Hill and Goronişte Hill. When reaching *decumana* gate of the large camp the road goes up, following the north-

eastern direction on a 200 m length, takes a wide curve, and after another 130 m , crosses nearly perpendicularly the defensive earth mount that is interrupted at this point, same point where N Gudea thought that a gate and a *burgus* existed. Up to this point the road follows the top of the hill that appears between Iertaşul Mare to the north-east and the village's pasture to the north-west. At the point where it crosses the earth mount, the Roman road leaves the archaeological complex through the northern entrance set between Ferice and Ursoaia Hills. Research was first performed on the main axis of the road in 1939, and in 1958. Considered from north to south, the Roman road accesses the complex, follows a smooth slope towards the camp, and mounts a rather steep slope up to the terrace where the Pomet camp is to be found. From the northern edge of this terrace the road follows a horizontal path, parallel to the north-eastern side of the camp. The second part, south-east of the camp, passes on the fairly narrow terrace (just 20 m wide), and the road is set on its south-eastern side. The terrace has a slight inclination towards south-east; it is horizontal only at its eastern end, where it meets the terrace placed in front of the north-eastern side of the camp. The road descends from the gate towards east, on a smooth slope.

Nicolae Gudea made a good synthesis of the data regarding the Roman road's path inside the military complex of Porolissum, establishing that the Roman Road came from the passage on Sărata Valley, and went by Băişte at the foot of Măgura Hill, entered the complex towards the camp and definitely entered the camp by the *porta praetoria*; one of its divisions continued from the gate towards south-east. *Via principalis* went out by the *porta principalis dextra*, and turned eastwards in front of the gate, towards Citeră. 200 m eastwards of Bisericuță the roads met, and probably, from this point on the main road followed the direction of the slope, towards Jac, passing by the cemetery of Ursoieș, where M Macrea identified it. From the cemetery, the road was parallel to the valley of Pomăt up to Agrij Valley. Undoubtedly the secondary roads inside the complex must have been more numerous. The large stones, typical for the roads can be found scattered on the whole complex, moved by the tractors' plows, suggesting in some places the existence of the road".

The Roman road that went along the north-western border of Dacia Porolissensis, and started at Bologa and ended at Porolissum, was of great importance in the area.

Meseş Mountains represented in Ancient times a natural barrier used wisely by the Romans, both as *limes* and *defensive post.*

REFERENCES

1. Bărbulescu, M. (coord.), Bărbulescu, C., Fodorean, I., Fodorean, F., Husar, A., Mihăilă, C., Nemeth, E., Nemeti, I., Nemeti, S., Pîslaru, M., Sălăşan, M., Zotic, V. (2005), *Atlas-dicționar al Daciei romane* [Publicațiile Institutului de Studii Clasice, 6], Cluj-Napoca, Edit. Tribuna, 2005, ISBN 973-87263-5-2, *s.v. Porolissum*.
2. Cocean, P. et al (2004), *Planul de Amenajare a teritoriului Regiunii de Nord-Vest (PATR). Coordonate majore*. Editura Presa Universitară Clujeană, ISBN –973-610-284-X.
3. Fodorean, F. (2001), *Observații în legătură cu infrastructura şi suprastructura drumurilor romane din Dacia Porolissensis*, în *Revista Bistriței* 15.
4. Fodorean, F. (2002), *Precizări privind metodologia de cercetare a drumurilor romane*, în *Analele Banatului* 9

5. Fodorean, F. (2003), *Contribuții la reconstituirea rețelei rutiere din Dacia romană. Rolul și importanța toponimiei în cercetarea drumurilor antice*, în Revista Bistriței 17.
6. Fodorean, F. (2003), *Tabula Peutingeriana and the province of Dacia*, în Acta Musei Napocensis 39-40/1.
7. Fodorean, F. (2005), *Drumurile la romani*, Cluj-Napoca. Ed. Napoca Star.
8. Fodorean, F. (2005), *Le strade della Dacia romana (I)*, în *Quaderni Catanesi di studi antichi e medievali*, N.S. 3.
9. Fodorean, F. (2006), *Drumurile din Dacia romană*, Ed. Napoca Star.
10. Fodorean, F. (2006), *Viae militares în timpul lui Traian*, în vol. *Dacia Augusti Provincia. Crearea provinciei*. Actele simpozionului desfășurat în 13-14 octombrie 2006 la Muzeul Național de Istorie a României (ed. de Teodor, E. și Țentea, O), București.
11. Fodorean, F. (2007), *Drumul roman imperial Sarmizegetusa-Subcetate. Studiu topografic și arheologic*, în vol. *Dacia Felix. Studia Michaeli Bărbulescu oblata*, Ed. Tribuna, Cluj-Napoca.
12. Fodorean, F., Fodorean, I. (2005), *Drumul roman Gherla-Sic. Studiu geomorfologic, arheologic și topografic*, în Studia Univ. Babeș-Bolyai. Geographia 50/1.
13. Fodorean, F., Ursuț, D. (2001), *Considerații teoretice privind drumurile de limes din provincia Dacia Porolissensis*, în vol. Studia archaeologica et historica Nicolao Gudea dicata. Omagiu profesorului Nicolae Gudea la 60 de ani, Zalău.
14. Gudea, N. (1989), *Porolissum. Un complex arheologic daco-roman la marginea de nord a Imperiului Roman. Volumul I (Cercetări și descoperiri arheologice până în anul 1977)*, *ActaMP* 13.
15. Gudea, N. (1996), *Porolissum. Un complex daco-roman la marginea de nord a Imperiului Roman. II. Vama romană. Monografie arheologică. Contribuții la cunoașterea sistemului vamal din provinciile dacice*, Cluj-Napoca.
16. Irimuș, I.A, Petrea, D., Rus, I., Cocean, P. (2008), *Landscape vulnerability induced by meteorological, geomorphical and antropical processes in Transylvania depression*, Studii și Cercetări, s. Geology-Geography, nr. 13, Bistrița.
17. Irimuș, I.A, Petrea, D., Surdeanu,V., Fodorean, Fl., Pop, O. (2009), *La reconstruction des paleo-paysages transylvains a partir des routes et des castres romains de Dacia Porolissensis*. Vol.„Geo-Archaeological Aspects of Rivers and River Plains", Belge.
18. Irimuș, I.A. (2002), *Riscuri geomorfice în regiunea de contact interjudețean din nord – vestul României*, în " *Riscuri și catastrofe* ". Editor Sorocovschi, V., Editura " Casa Cărții de Stiință " Cluj Napoca, ISBN 973-686-296-8.
19. Irimuș, I.A. (2006), *Vulnerabilitate și riscuri asociate proceselor geomorfologice în planningul teritorial*. Rev. Riscuri si catastrofe, Anul V, nr.3/2006, Edit. Cărții de Știință, Cluj-Napoca.
20. Irimuș, I.A., Fodorean, F., Petrea, D., Rus, I., Cocean, P., Pop, O., (2009), *The role of relief in the planning of roads and in the arrangement of the roman castra in Dacia Porolissensis*, Studia Universitatis „Babeș-Bolyai" Geographia, Anul LIV, nr. 2-2009, Ed. Cluj University Press, ISSN: 1221-079x, Cluj-Napoca.
21. Mac I., Irimuș, I.A (1998), *Geomorphological Homologies in the Mountains from Northwestern and Southeastern parts of Transylvanian Depression*, în vol."*Geomorphology of the Carpatho-Balcan Region*", Edit. Corint, București.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

NOISE AND AIR QUALITY ASSESSMENT IN AN URBAN TISSUE. CASE STUDY: ŞTEFAN CEL MARE STREET, BUCHAREST

MARIA PĂTROESCU[1], CR. IOJĂ[1], DIANA ONOSE[1], G. VANAU[1], ADINA CUCU[1], ROXANA CĂRCĂLE[1], CRISTIANA CIOCĂNEA[1]

ABSTRACT. – Noise and Air Quality Assessment in an Urban Tissue. Case Study: Ştefan cel Mare Street, Bucharest. The improvement of the air quality in urban ecosystems constitutes an essential objective of the European Union's environmental politics, considering that 52% of the urban population is exposed to over the maximum admissible limits of air polluting concentrations. The paper aims to assess the impact of environmental degradation sources on airborne dust and noise level in the residential areas around *Ştefan cel Mare Street*. To achieve this objective, 16 sampling points were chosen and measurements of equivalent sound level (Leq) and particulate matter (PM) concentrations were realized between May 25 and June 12, 2009. The values were correlated with the characteristics of functional areas (oxygen-generating surfaces, built areas, road network), of air quality pollution sources (structure and intensity of road traffic, condition of buildings, number of evacuation chimneys) and of the receivers of environmental problems (population, sensitive functional areas, vegetation). The study emphasizes that the area crossed by *Ştefan cel Mare Street* is characterised by affected living conditions, as high levels of noise and PM concentrations have a notable influence over 7,350 inhabitants and three hospitals of national importance. Therefore, reduction of pollution level in this area through fountains, pollutants filtration systems from the ventilation systems and a series of measures on the environmental degradation sources (interdiction of heavy traffic, rehabilitation of buildings) are necessary.

Keywords: *air quality, environmental degradation sources, noise pollution, particulate matter, oxygen-generating surfaces, urban ecosystem, Bucharest, Romania.*

1. INTRODUCTION

The air quality of large urban ecosystems is affected by intensive and diverse human activities (J. Breuste et al., 1998; F. de Leeuw, 2002; D. Bălteanu and Mihaela Şerban, 2005; B.R. Gurjar et al., 2008; P. Edussuriya et al., 2009). Big cities have a large number of different industrial units (C. Borrego et al., 2006; I. Marinescu, 2006; CCMESI, 1993-1994), an intense traffic circulation (Z. Samaras and S.C. Sorensen, 1999; Maria Pătroescu et al., 2003-2004; V. Plângău et al., 2009), high density of built areas (A. van del Elshout et al., 2008), accelerated evolution of construction activities (Cr. Iojă, 2008), each of these being considered important sources of noise and pollutants. Land use changes, especially related with oxygen-generating surfaces decreases (Maria Pătroescu et al., 2003-2004), in the topoclimatic conditions or in the consumption patterns of human communities (W. Rees, 1997; D. Bălteanu and Mihaela Şerban, 2005), show the diversity of the factors conditioning the spatial and temporal evolution of air quality in urban agglomerations.

[1] *University of Bucharest, Center for Environmental Research and Impact Studies (CCMESI), 1 Nicolae Balcescu Blvd., Sector 1, Bucharest, Romania, ccmesi@yahoo.com*

In the European Union, the air pollution and noise level are covered by the *Convention on Long Range Transboundary Air Pollution* (CLRTAP) in Gothenburg Protocol, the *EU National Emission Ceiling Directive* (NECD) and the *EU Environmental Noise Directive*. These documents are meant to regulate actual environmental problems given the fact that air pollution and noise affect approximately 52% of the urban population of the European Union (European Community, 2009), and the risk on the human health is very high (S. Baker et al., 2001; D. Buburuz et al., 2009).

The researches related with air quality assessment in urban ecosystems were focused on identifying the role of different parameters which affect the distribution and dispersion of pollutants and noise, such as building geometry (C. Borrego et al., 2006), buildings condition (C.M. Kovacs, 2006), heat stratification (B.R. Gurjar et al., 2008) or mobile sources characteristics (Z. Samaras şi S.C. Sorensen, 1999; J.J. Baik et al, 2007; V. Plângău et al., 2009). Canyon type boulevards need special attention because they create favourable conditions for the accumulation of pollutants and persistence of high noise levels, while the number of inhabitants and urban functions directly exposed are very high (J.J. Baik et al., 2007; P. Kumar et al., 2008). Airborne dust and noise pollution are universal environmental problems in urban habitats where diversity of sources and dispersion conditions favor frequent exceeding of maximum admissible limits (C. Borrego et al., 2006; B.R. Gurjar et al., 2008; D. Buburuz et al., 2009).

Paper objectives are focused on the assessment of spatial and temporal dynamics of PM concentrations and noise level on *Ştefan cel Mare Street*, Bucharest.

2. STUDY AREA

Bucharest represents one of the Romanian cities with complex environmental problems, as frequent exceeding of the maximum admissible limits for air quality indicators, including noise (ARPM Bucharest, 2009). PM concentrations register over the annual limit values (40 $\mu g/m^3$) for most air quality monitoring stations (Cr. Iojă, 2008), and noise levels surpass the maximum admissible limits (STAS 10144/80; Ministry Law 592/2002) on many main streets. This situation does not have only human causes (extension of built surfaces, increase in traffic intensity, accelerated reduction of oxygen-generating surfaces, especially green ones, development of construction works, degradation of buildings) (Violette Rey et al., 2007), but is also determined by the existence of some natural characteristics which favour the growth in importance of these problems: presence of loess deposits easy to brittle, long periods of calm air and limited aquatic surfaces (Maria Pătroescu et al., 2002, Cr. Iojă, 2008).

Located in the central northern area of *Bucharest, Ştefan cel Mare Street* is a second technical category street and is part of the inside road ring. It has a general Western-Eastern orientation, only between the crossroads with *Lizeanu Street* and *Obor* the direction changes towards North West – South East. *Ştefan cel Mare Street* represents one of the most important inside city transit ways for traffic flows in Bucharest (Maria Pătroescu et al., 2002, 2003-2004). With a length of about 2.1 km and a medium width of 32 m (the distance between adjacent buildings is 55 m) this street is covered with asphalt concrete and is in very good technical conditions.

Functionally, the area crossed by *Ştefan cel Mare Street* is mainly a residential area (fig. 1). The first line of buildings is mainly formed by 8-10 level blocks of flats which act like a barrier, preventing or reducing the spread of environmental problems into the

nearby residential areas (B.R. Gurjar et al., 2008). The line of blocks is interrupted by 4-6 level collective residential buildings dating from 1930-1945 period (CCMESI, 1993-1994), green spaces or secondary streets. In the area there are some administrative buildings: *Police* Headquarters, *Romtelecom* Company and also sensitive spaces like *"Colentina*" Hospital (885 beds, 32,000 patients annually), "*Sfantul Stefan*" Hospital (200 patients annually), *Floreasca* Emergency Hospital (119 beds, 7,400 patients annually) or *Dinamo Sport Club* (a capacity of 15,300 seats), which draw important traffic flows. Therefore, *Floreasca* Emergency Hospital alone draws an annual additional flow of about 27,000 ambulance trips, fact that raise important noise problems.

Oxygen-generating urban surfaces (Maria Pătroescu et al., 2002, 2003-2004) in the form of green spaces which limits themselves at *Circului* Park and the access area (**17.9** ha), *Colentina* Hospital garden (**8.9** ha), collective residential gardens which cover a small surface (about **1,000** m^2), tree lines (4-5 trees in 100 m, with discontinuous distribution) and the fountains from the *Obor crossroads* (CCMESI, 1992, Maria Pătroescu et al., 2002).

3. METHODOLOGY

Particulate matters (PM) concentrations were measured using ***Casella CEL*** PM counter and the equivalent noise level (Leq) using ***CIRRUS – CR:74*** sound level meter with ***MK 202A*** microphone, on hourly time frame (08.00-20.00), between May 25 – June 12, 2009. PM was measured in $\mu g/m^3$. Leq was measured in dB(A), screening the 50-100 dB(A) range, intermediary response (Maria Pătroescu et al., 2004, E. da Paz and P. Zannin, 2009).

Fig. 1. Functional zoning in **Ştefan cel Mare Street** area.

There were **16** monitoring points, **11** in crossroads and intermediary positions along ***Ştefan cel Mare Street***, **5** behind the first line of buildings (Fig. 1). Gathered data were assessed using national standard regulations: legislative norm no. 592/2002, Bucharest Master Plan and STAS 10144/1 – 80. PM data was also used to calculate the EPA Air Quality Indicator (AQI) (A. van den Elshout et al., 2008; Cr. Ioja, 2008).

Traffic intensity and structure was determined for the **11** monitoring points situated alongside the avenue through an inventory of the number of vehicles by categories (automobile, mini bus, bus, lorry, ambulance, tram) (Maria Pătroescu et al., 2002). Vehicles count was performed between 08.00 – 20.00, weather conditions being clear sky, temperature 21-32 °C, low wind and 30-40 % RH. Traffic data (intensity and structure) was used to estimate PM probable quantities according to MOBILE 6.2, PART5 and European Union methods (Z. Samaras and S.C. Sorensen, 1999, F. de Leeuw, 2002). R.A.R. - Romanian Automobile Registry statistics regarding vehicle fuel type in Bucharest (2009) show a 60.9% gasoline, 37.3% diesel and 1.8 % LPG percentage distribution, considered a premise in our study.

Influence factors for PM concentrations and Leq (air conditioning units, green spaces) were inventoried and mapped alongside the study area and in its proximity. Building facades condition was also evaluated using a 5 classes classification, from very good (**1**) to very poor (**5**).

PM concentrations and Leq spatial distribution were mapped using ArcGis 9.3, ArcMap and ArcCatalog by *polynomial locale* feature (P. Longley, 2005). Bucharest geo referenced cadastral maps 1:5.000 were used to draw the base map.

4. RESULTS AND DISCUSSION

4. 1. Air pollution sources

The main factors affecting air quality (Z. Samaras and S.C. Sorensen, 1999) in the study area are *mobile sources*, as traffic that is extremely congested on this route. Average speed on ***Ştefan cel Mare Street*** is **35** km/h, dropping below **20** km/h at rush hours and rising to **40-50** km/h during nights and weekends.

Traffic is distributed on 3 lanes per direction and there are 2 tramway tracks. The circulation is fragmented by 6 signal-controlled crossroads. In Obor area there is another traffic flow going through a tunnel whose inclination determines as a side effect the increase of pollutants concentrations in the air (P. Edussuriya et al., 2009).

Road traffic is responsible for both the increase of pollutants concentrations in the atmosphere (L. Wang et al., 2004) and a high noise level (E. da Paz şi Zannin, 2009). PM generated by the friction between the surface of the rubber wheel and the road, the clutch and brake manoeuvres, is highly dangerous for human health due to their physical and chemical characteristics (W. Rees, 1997; European Commission, 2009).

The study area is a residential one, without *industrial active sources* of emissions (Cr. Iojă, 2008). *Point sources* of emissions that affect air quality are varied, including construction, major repair and renovation actions, degraded or abandoned buildings (for example *Moara lui Assan* (Fig. 1); residential blocks with facades in poor condition, etc). The large number of air conditioning and apartment heating units further damage the air quality (L. Wang et al., 2004), as do wood and fossil fuels heating units in single-family houses in the proximity of the study area (Viitorului, Lizeanu and Vasile Lascăr areas), RATB city's public transport company depot and underground infrastructure air vents (subway, equipments etc). Street maintenance (reconditioning, sweeping, washing) and green spaces poor administration add PM in the air.

4. 2. Determinants of Leq and PM variation

Traffic structure is relatively homogenous during daylight hours, with an average flow of 3,888 vehicles per hour (**2,254** in *Obor crossroads* and **5,880** at *Obor tunnel* exit). Automobiles represent over **90%** of vehicle total number. Public transportation by tram (lines 34, 46) (**30-40** per hour) and bus (lines 330, 335) (**20 – 30** per hour) have a more orderly time distribution.

The facades of the buildings in bad condition are a very important cause for low air quality, considering the quantity of PM that gets airborne through building dehydration by intense solar exposure, poor quality and aged materials (C. Borrego et al., 2004; I. Marinescu, 2006). Most of the residential buildings were built between 1960 and 1970 and are in different stages of degradation (21% of the facades of buildings are in severe degradation condition and 60% in good condition). We consider that up to 4-5 levels of the building facades alongside the road, traffic pollutants have a significant degrading effect. Single-family homes behind the first line of buildings are also in severe degradation condition and need to be taken into consideration when assessing PM concentrations in the study area.

The start of a public financed program of thermal insulation for blocks of flats has some positive influence on the monitored parameters, as 15% of the residents of *Ştefan cel Mare* area live in such apartments. Frequent washing (2 times per week) and street sweeping (daily) also contribute to decrease PM concentrations (Maria Pătroescu et al., 2002).

4. 3. PM spatial and temporal distribution

The main source of PM in cities (B.R. Gurjar et al., 2008) is road traffic which generates the highest concentrations along the roads. Concentrations are influenced by weather conditions. Calm air and prolonged draught favouring the accumulation of PM (J.J. Baik et al., 2007).

Average PM concentration is **43** $\mu g/m^3$ (± 25) with considerable spatial variation. The highest hourly values, exceeding by far the maximum admissible limit, were recorded between 08.00 – 10.00 in *Obor crossroads* (**256** $\mu g/m^3$; *Obor tunnel* exit – **145** $\mu g/m^3$) and *Lizeanu* (**62** $\mu g/m^3$) measurement points (fig. 2). Values drop in the central section of the boulevard, where there are green spaces with positive effect on PM concentrations (lowest value – **15** $\mu g/m^3$). Values increase towards the crossroads with *Floreasca Street* (**31** $\mu g/m^3$) and *Dorobanți Street* (**28** $\mu g/m^3$) (table 1).

Measurements made in the 12.00-14.00 intervals tend to show lower values than the morning recordings. In this time frame, the highest values were registered in the central part of the study area (**94** $\mu g/m^3$– crossroads with *Calistrat Grozovici street*). After 16.00, the frequency of high values drops and some of the lowest PM concentrations are recorded (under 30 $\mu g/m^3$), the probable cause being the more dynamic weather.

The PM spatial distribution model we realised shows that, from 16.00 to 20.00, over 60% of the length of *Ştefan cel Mare Street* is within the legal limits for PM concentrations in urban ecosystems.

Inside the residential zone, behind the first line of apartment blocks, PM concentrations are much lower than on the *Stefan cel Mare Street* axis, proving that traffic flow is the main source of PM and the fact that the first line of relative high and consistent buildings has a blocking effect.

Air quality indicator **AQI** presents an average of **107** (±63), that translates to unhealthy air quality, potentially causing lung disease, building and vegetation degradation (A. van den Elshout et al., 2008). With the exception of *Lascăr* and *Dinamo* monitoring points, where AQI values are consistently under the average, the other monitoring points are showing high values frequently, over the severely polluted air quality threshold (**300**). The section *Obor* to *Lizeanu* is particulary concerned, as PM dispersion is difficult due to the altimetry and configuration of the buildings (P. Kumar et al., 2008) (table 1).

If we set aside *Obor crossroads*, there is a 0.65 correlation coefficient between traffic flow intensity and PM concentrations, confirming again the hypothesis that traffic flow is the main source of PM in the study area. There is a similar level correlation coefficient between traffic flow and the maximum AQI level, proving that high intensity road traffic translates to poor quality air (C. Borrego et al., 2006).

PM spatial distribution and traffic flow alongside Stefan cel Mare Street

Table 1

Monitoring point	Average vehicles per hour	PM (µg/m3)	AQI		Traffic flow PM estimates (g/h)		
			Average	Maximum	MOBILE6.2	PART5	EEC
1. Obor	2,254	**103**	257,5	640	-	-	-
2. Tunnel	4,708	**70**	174,0	363	42,7	22,5	37,2
3. Lizeanu	4,012	44	109,0	155	33,5	17,6	29,2
4. Cârţan	3,640	31	78,0	140	38,1	20,0	33,2
5. Grozovici	4,146	**51**	128,0	235	41,2	21,7	35,9
6. Lascar	4,024	18	45,0	95	41,2	21,7	35,9
7. Circului	4,330	49	123,0	223	44,9	23,6	39,2
8. Tunari	4,456	28	70,0	113	61,7	32,5	53,8
9. Dinamo	3,590	17	43,0	65	30,6	16,1	26,7
10. Floreasca	3,360	31	78,0	143	23,6	12,4	20,6
11. Dorobanţi	3,700	28	70,0	100	30,0	15,8	26,2
Average	3,838	43	107,0	206	387,5*	203,9*	337,9*
SD	663	25	63,0	166	15	8	13

* PM total quantity generated exclusively by mobile sources on *Stefan cel Mare Street* (per year and per hour in kg); PM –Particulate matter concentration (maximum admissible limit – 50 µg/m^3); EEC – European Commission.

The PM quantity generated by the traffic flow on *Ştefan cel Mare Street* assessment shows a daily output of **203.9** to **387.5** grams, underlining the substantial role of traffic flow as a degrading air factor. The daily PM values do not correlate with hourly measurements (**0.19**). This situation is due to the easier PM dispersion in open spaces (*Dinamo* Stadium, *Police* Headquarters, *Colentina* Hospital) and to the proximity of one and two level house area that further add PM into the air.

Obor crossroads to *Lizeanu Street* section of *Ştefan cel Mare Street* is a "*canyon type boulevard*" (P. Edussuriya et al., 2009). Here, problems related to air quality get worse; as there is a poor air circulation and traffic flow emissions concentrate. PM measured concentrations and PM estimated traffic flow output are correlated (**0.79**), a specific feature of sections of canyon type boulevards (J.J. Baik et al., 2007).

Building a fountain in *Obor crossroads* (*Ştefan cel Mare-Colentina*) was regarded as a way to diminish the negative impact of poor air quality, but the conjugated effect of two traffic flows (surface and underground) and boulevard configuration (direction, high buildings continuity) prevented it from fully achieving its goal.

PM concentrations negative consequences in the study area are explained by their dual origin: traffic flow and buildings' facades erosion containing extremely toxic chemical compounds as VOCs, sulphur dioxide, soot, heavy metals (S. Baker et al., 2001). Road tree lines improper maintenance is a source of PM, needing chemical evaluation if heavy metals particles are presumably present, as these tend to accumulate in soils.

4. 4. Noise pollution

The noise exposure limit is exceeded during daytime throughout the entire length of *Ştefan cel Mare Street*. Highest values were recorded (fig. 2) in the main crossroads (*Dorobanţi Street* – over **76** dB(A), *Dr. Calistrat Grozovici Street* – **76.5 – 77.6** dB(A)), where the traffic flow is intense or traffic congestion forms. Monitoring points far from crossroads, as *Obor tunnel* exit, recorded high values (**73** dB (A) average in the late evening and **77.7** dB(A) at noon). The specific point mentioned is a section where vehicles accelerate or circulate in high speed. When road traffic is fluid or slows down, the noise level drops (E. da Paz and P. Zannin, 2009) (fig. 2).

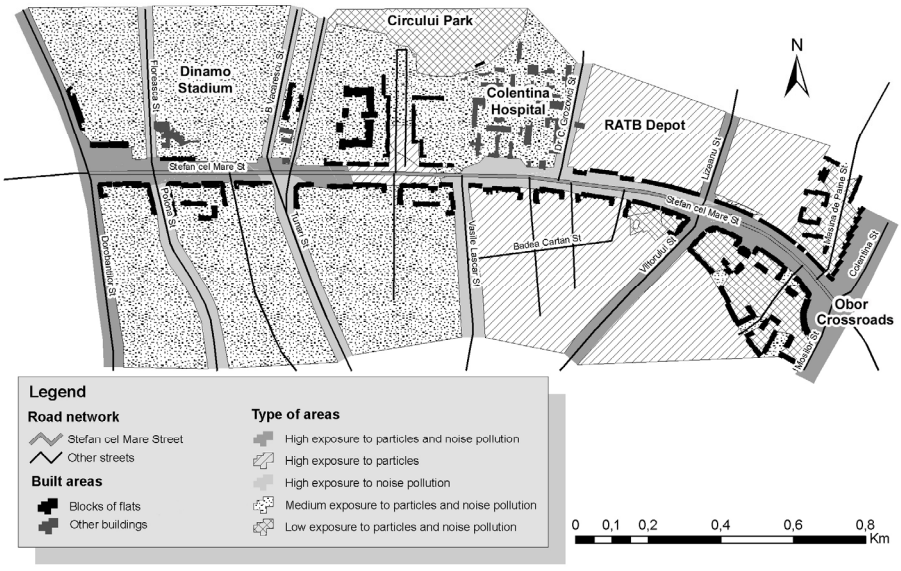


Fig. 2. Population and sensitive functions exposure to particulate matter and noise pollution in *Ştefan cel Mare* urban tissue.

Along *Ştefan cel Mare Street*, sections with high noise level prevail. From 08:00 to 12:00, almost **10%** of the boulevard length presented noise levels over **76 dB(A)**, while **40%** of this road length's shown **73 – 76.2** dB(A). Only 1/3 of *Stefan cel Mare Street* length corresponds within legal norms during the study period.

On this boulevard, an important factor influencing the noise level is the frequency of ambulances (5 to 10 per hour), three major hospitals being located here.

Behind the first line of block of flats, noise level is much lower compared with the boulevard axis. The gap is **10-15** dB(A). Noise levels drop inside green areas, these having a sound blocking effect (we recorded a **15** dB(A) gap from *Aleea Circului* monitoring point to the 100 m inside park monitoring point).

Although traffic flow intensity increases towards the evening, noise level is lower due to slow circulation speed (traffic congestion). Noise level does not depend on *Ştefan cel Mare Street* traffic flow intensity, but rather on its fluency, manoeuvres conduit and vehicle technical state.

5. CONCLUSIONS

Ştefan cel Mare Street represents an environmental quality critical area because of frequent exceeding of the maximum admissible values for air quality indicators (especially the pollutants emitted by road traffic) and noise level. The position of ***Ştefan cel Mare Street*** within an area characterized by a moderate manifestation of the heat island phenomenon increases the chances of emergence of photochemical smog compounds.

Low air quality and high noise level effects are visible in the health state of the population (about **7,350** inhabitants), the efficiency of sensitive functional areas (hospitals, sports club, administrative buildings), the quality of the green spaces (increased frequency of tree drying) and the quality of the buildings (degradation of façades). The population is affected both by the pollutants generated by sources located in the proximity of the residential areas and inside houses. The intensity of the damaging impact is directly related to the duration and magnitude of the exposure (S. Baker, 2001).

Special measures are necessary to be taken on ***Ştefan cel Mare Street***, especially in *Obor crossroads* area, the entrance/exit of *Obor tunnel*, the crossroads with *Floreasca Street* and *Dorobanţi Street* areas, all of these crossroads being dominated by high blocks of flats. The population residing in these areas is affected by both a decrease of the inner and outer habitat quality and a diminution of the health state. Increased isolation against the external environment and investments in air conditioning, air filtering and ventilation systems, thermal and phonic isolation systems are to be recommended.

For improving the environmental quality in the area crossed by ***Ştefan cel Mare Street***, it is necessary to expand the *residential thermal and phonic rehabilitation* program, to increase the tree line density, to introduce air filters in the underground infrastructure ventilation systems and to improve the traffic fluency using timed traffic lights. These measures are in accordance with the Local Environmental Action Plan of Bucharest and with the Sustainable Development Strategy of District 2.

The correlation between environmental conditions and resident population health is required to constitute the subject of future researches, realized by multidisciplinary teams and on a longer timeline.

6. ACKNOWLEDGEMENTS

The study was conducted in the framework of **PN II Parteneriate 92-088 ECOLOC** – *Management of environment quality in residential spaces in urban areas due to climate changes* and **PN II IDEI 1925** *Methodology of assessing environmental quality in residential spaces from metropolitan areas* (contract 1012/2008) Ministry of Education and Research grants. We are thankful to Centre for Environmental Research and Impact Studies (CCMESI), for access to equipments and previous rapports.

REFFERENCES

1. Baik, J. J., Kang, Y. S., Kim J. J. (2007), *Modeling reactive pollutant dispersion in an urban street canyon*, Atmospheric Environment, 41(5).
2. Baker, S., Driver, J., McCallum, D. (2001), *Residential Exposure Assessment. A Sourcebook*, Kluwer Academic Press, New York.
3. Bălteanu, D., Şerban, Mihaela (2005), *Modificările globale ale mediului. O evaluare interdisciplinară a incertitudinilor*, Coresi Press, Bucharest.
4. Borrego, C., Martins, H., Tchepel, O., Salmim, L., Monteiro, A., Miranda, A .I. (2006), *How urban structure can affect city sustainability from an air quality perspective*, Environmental Modelling & Software, 21(4).
5. Breuste, J., Feldmann, H., Uhlmann, O. (1998), *Urban Ecology*, Springer, Berlin.
6. Buburuz, D., Brega, V., Bobeică, V., Fasolă, R. (2009), Air quality and legal mechanisms for the quality assurance in the Republica Moldova, Revista Studia Universitaria, Seria Geographia, nr. 3.
7. Edussuriya, P., Chan, A., Ye A. (2009), *Urban Morphology and Air Quality in Dense Residential Environments in Hong Kong. Part I: District Level Analysis*, Atmospheric Environment.
8. van den Elshout, A., Léger, K., Nussio, F. (2008*), Comparing urban air quality in Europe in real time: A review of existing air quality indices and the proposal of a common alternative*, Environment International, 34(5).
9. Gurjar, B.R., Butler, T.M., Lawrence, M.G., Lelieveld, J. (2008), *Evaluation of emissions and air quality in megacities*, Atmospheric Environment, 42(7).
10. Iojă, Cr. (2008), *Mijloace şi tehnici de evaluare a calităţii mediului în aria metropolitană a Municipiului Bucureşti*, Bucharest University Press, Bucharest.
11. Kovacs, C. M. (2006), *The urban infrastructure and the quality of residential areas in Cluj Napoca*, Studia UBB, Geographia, 2.
12. Kumar, P., Fennell, P., Britter, R. (2008), *Effect of wind direction and speed on the dispersion of nucleation and accumulation mode particles in an urban street canyon*, Science of The Total Environment, 402(1).
13. de Leeuw, F. (2002), *A set of emission indicators for long-range transboundary air pollution*, Environmental Science and Policy, 5.
14. Longley, P., Goodchild, M., Maguire, D., Rhind D. (2005), *Geographical Information System and Science*, John Wiley & Sons, New York.

15. Marinescu, I. (2006), *Disfuncţionalităţile mediului urban al municipiului Craiova*, Craiova University Press.
16. da Paz, E., Zannin, P. (2009), *Urban daytime traffic noise prediction models*, Environmental Monitoring and Assessment, Springer, Dordrecht.
1. 17.Pătroescu, Maria, Iojă, Cr., Necşuliu, R., Popescu, V. (2002), *Locul şi rolul componentei căi de comunicaţie în evaluarea stării mediului din planurile urbanistice generale şi zonale Studiu de caz: PUZ arealul aferent nodului intermodal Obor*, Annals of Craiova University, Geography, 5.
17. Pătroescu, Marria, Iojă, Cr., Necşuliu, R., Brăilescu, Cristina (2003-2004), *The quality of oxygen-generating surfaces. The green areas of Bucharest. A case studies*, Revue Roumaine de Geographie, Romanian Academy Press, 47-48.
18. Pătroescu, Maria, Iojă, Cr., Popescu, V., Necşuliu, R., (2004), *Noise pollution generated by road traffic in Bucharest*, "Towards more attractive urban transportation", CODATU XI, Bucharest.
19. Plângău, V., Buburuz, D., Fasolă, R. (2009), *The determination of auto transport impact on urban agglomeration*, Revista Studia Universitaria, Seria Geographia, nr. 3.
20. Rees, W. (1997), *Urban ecosystems: the human dimension*, Urban Ecosystems, 1(1).
21. Rey, Violette, Ianoş, I., Groza, O., Pătroescu, Maria (2007), *Atlas de la Roumanie*, RECLUS, Montpellier.
22. Samaras, Z., Sorensen, S.C. (1999), *Mobile sources,* in Fenger, J., Hertel, O. şi Palmgren F. (eds), Urban Air Pollution – European Aspects, Kluwer Academic Publishers, Dordrecht.
23. Wang, L., Pereira, N., Hung, Y. (2004), *Advanced Air and Noise Pollution Control*, Humana Press, New Jersey.
24. *** (1992), *Evaluarea metodologiei de apreciere a gradului de favorabilitate a factorilor fizico-geografici pentru dezvoltarea durabilă a aşezărilor umane*. CCMESI – Scientific Rapport, Bucharest.
25. *** (1993-1994), *Studiu (pilot) de restructurare ecologică a unui ansamblu urban din zona centrală Bucureşti (ansamblul Ştefan cel Mare – str. Viitor – str. Vasile Lascăr*), CCMESI, Scientific Rapport, Bucharest.
26. *** (1999), *Council Directive 1999/30/EC of 22 April 1999 Relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air*, European Commission.
27. *** (2001), *Directive 2001/81/EC, on national emissions ceilings (NECD) for certain atmospheric pollutants*, European Commission.
28. *** (2009), *EUROSTAT Structural Indicators related to urban air quality: Urban population exposure to air pollution by particulate matter*, European Communities.
29. *** (2009), *Environmental state report in Bucharest-Ilfov Development Region*, Regional Environmental Protection Agency Bucharest, Bucharest.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

RECENT MORPHODYNAMIC CHANGES OF THE MIDDLE COURSE OF THE BARCAU RIVER VALLEY (NORTH WESTERN ROMANIA)

L. BLAGA[1] , RODICA PETREA[1], D. PETREA[2]

ABSTRACT. – **Recent Morphodynamic Changes of the Middle Course of the Barcău River Valley (North Western Romania).** The issue regarding the evolution of Barcau valley, installed at the contact between the crystalline unit of Plopis Mountains and the marginal sedimentary basin of Simleu in north-western Romania, in conjunction with the environmental context of the Crişuri hydrographic basin, in which it is hierarchically integrated, has raised over time many discussions and assumptions. This article intends to reflect the spatial and typological changes issued in the river bed, based on cartographic material and DTMs (digital terrain models) available, using the overlaying technique. The results are then correlated with values of liquid and solid flow, and with anthropogenic interventions by sector. Two types of sectors were highlighted: sectors with stable morphodynamic and areas of extreme morphodynamic instability, where one can observe minor changes in bed configuration, which is naturally associated to changes in the geometry of perennial morphology and in the minor bed type.

Keywords: *sectors of maximum morphodynamic liability, coefficient of sinuosity, meandering.*

1. INTRODUCTION

The Barcău morfohydrological system is located in NW Romania, and is hierarchically integrated into the Crişuri hydrosystem with a basin area of 6095 km^2, with 2006.04 km^2, within the Romanian territory. The river has its origin in the Triassic age limestone plateau Ponor through several karst springs that form the Tusa valley. Its total length is 208.35 kilometers, of which 134 km are in Romania.

Along its complex route, the river drains the waters coming from the Plopiş mountains, the Şimleu Depression, the Western Hills and the Western Plain (fig. 1). The complexity of its spatial evolution is due not only to migration, meanders and frequent weaving of the river bed, which can be highlighted in the time scale taken into account in this paper, but also to different valley sector types defined by adaptation to structure, which are present in the section Tusa – Marca. Thus, within the Tusa suspended depression basin, the valley is subsequent and located on the fault line. The following valley sector in the Tusa defile clearly highlights its overimposition character, also valid for the defile between Preoteasa and Subcetate. Between the two valley segments the Preoteasa depression basin stretches, and within this basin, the river has a subsequent character. From Subcetate Valcău de jos, the river has a consequent character. The Boghiş – Zăuan – Marca sector has

[1] *University of Oradea, Department of Geography, Tourism and Territorial Planning, Oradea, Romania, blagalucian2008@yahoo.com, petrearodica@yahoo.fr*
[2] *"Babeş-Bolyai" University, Faculty of Geography, Cluj-Napoca, Romania; dpetrea@geografie.ubbcluj.ro*

the subsequent character, being placed on the fault line, while Marca defile is epigenetic and antecedent.

The Barcău watercourse analysed in this study is 90.5 km long, between the municipalities of Sălard and Nuşalau. The analyzed river sector offers a good overview of the river geomorphosystem's general features, by presenting a wide variety of different sectors, each with a procedural behaviour, reflected in the perennial morphology and the minor bed type.

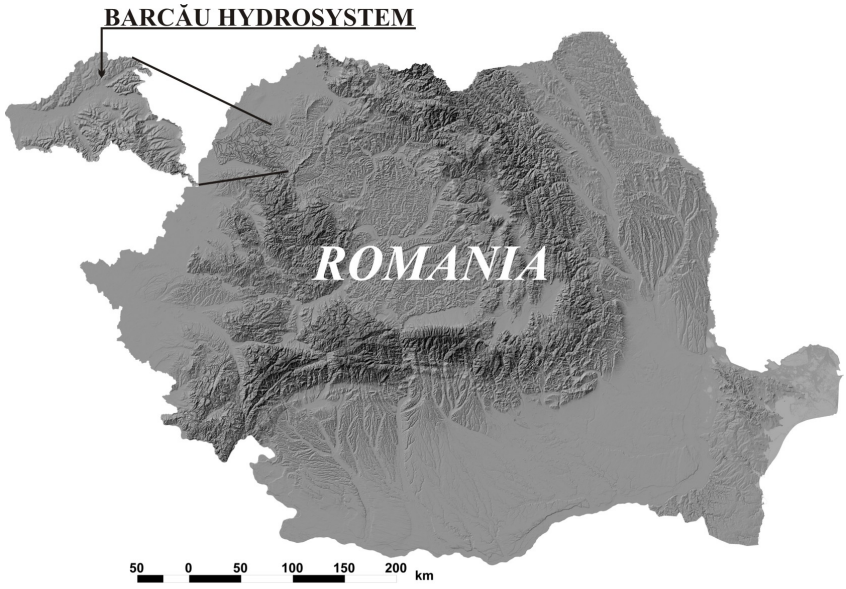


Fig. 1. The Barcău hydrographical basin. Spatial location.

2. DATA SOURCES AND METHODOLOGY

For interpretation, we relied on the following documentary sources: Austrian maps, 1:25000 scale, issued during the third Austrian-Hungarian military topographic surveys campaign from the late 19th century, the full range of cartographic materials published by the Military Topographic Directorate, topographic and cadastral plans, 1:5000 and 1:10 000 scale, edited by ANCPI; aerial photographs of 0.5 m resolution, recent SPOT satellite images, elevation models derived from topographic documents mentioned, DTMs based on ASTER scenes. In addition, we used data on liquid and solid flow from Nuşfalău and Marca hydrometric stations, as well as information collected directly on field.

Based on raster image sources, several vector data sets were obtained using GIS software packages (ArcGIS 9.3, Global Mapper). The obtained vector data sets describe both the riverbed's layout and associated river morphology, during more than 100 years, with three benchmark time intervals (1860 - 1870, 1980 - 1984, present), of which the first two periods correspond to topographic surveys used within this paper.

Subsequently these data were processed and interpreted by overlay techniques to achieve the main goal of our scientific approach, which is to illustrate the spatial and typological changes in Barcău riverbed, in conjunction with specific geomorphologic processes specific to the floodplain and to the adjacent sectors, the latter being synthesized by geomorphologic maps on each area taken into the analysis.

Clearly, as shown below, the placement of a certain riverbed sector into a particular pattern, namely the assessment of evolutionary trends, was made according to typologies circulated in the speciality literature, such as Brice et al. (1978), Schumm (1985) and Church (1992, quoted by Maria Rădoane, 2004).

The processing of information also took into account the errors and mistakes arising from re-engineering old maps (i.e. Austrian maps) and those arising from rescaling all image data. Thus we purposely neglected the areas with small size deviations and those irrelevant in terms of space.

In order to explain the phenomenology's approach we used the most important factor, according to the specific time period, in liquid and solid flow control: anthropic factor, in conjunction, naturally, with other control variables of the hydraulic flow. Anthropogenic interventions in the area were assessed within the meaning of ideas expressed by Rinaldi (2003).

3. RESULTS AND DISCUSSIONS

On the whole, the 90.5 km long riverbed of Barcău river falls into a meander type winding coefficient (Cs) of 1.64, and the lateral deviations of the actual riverbed (migrations), compared to1860 - 1870, varies between 180 m and 1.5 km. We mention, in the present paper, that we shall take into consideration the threshold value of sinuosity coefficient according to Chang (1979), which shows that for a riverbed to be considered a meander route Cs > 1,3, because it correlates better with results obtained by us in this direction.

Comparative analyses on microscalar level revealed only two categories of riverbed sectors:

3. 1. Stable sectors, where at the end of 19th century, so far there has not been observed any change in the plan – spatial configuration of the minor riverbed, with nearly perfect overlap of the route. Note to not be perceived incorrectly, that the morphology is not ephemeral. In this category falls the segment of riverbed set in crystalline at Marca, the sector of lowland downstream Sălard, which has undergone drainage works which began 150 years ago, and surprisingly, the sector in the vicinity of Marghita, a complex area with many neotectonic unfoldings and deviations, but also highlighted on the old maps.

3. 2. Sectors of maximum morphodynamic instability, three, where there are obvious watercourse changes, as observed in the presented cartographic materials. They were named after the localities in their vicinity (fig. 3):

- Nuşfalău – Zăuan;
- the downstream defile Marca – Suplacu de Barcău;
- Sâniob – Sălard;

3. 2. 1. The Nuşfalău – Zăuan Sector.

It is part of the sinuous riverbed type, with gravel and lateral holms with a tendency to flow towards meandering (limited meandering, according to Kondratiev, respectively Snişcenko), in the second half of the sector, while in the first part one may observe the tendency

of rivercourse straightening, anthropically constrained. There are no important differences from 1860 to present day as regards the length of the minor riverbed (table no. 1), thus the value of the sinuosity coefficient reaches small variations: 1,3 – 1,4, noting that the higher value for Cs, that of 1,4 was registered in the 80s, afterwhich there occurs a slight reduction of it.

The explanation for this observation is to be found in the values of the solid flow (Q_s) on this sector. From the data analyses at Nuşfalău station between 1987 – 2007 (fig. 2), one may observe that in 2001 the solid flow in suspension decreased, reaching values under 1kg/s, constantly maintaining itself under this value.

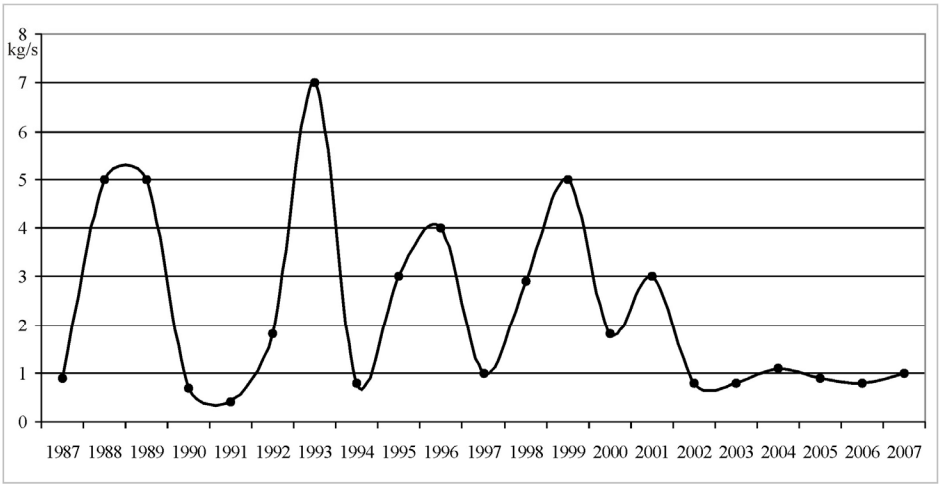


Fig. 2. Nuşfalău Hydrometrical Station. The diagram of the yearly average solid flow.

Coefficient of sinuosity values

Table 1

Sectors	Period	Lenght (km)	Straight – line distance (km)	Coefficient of sinuosity
Nuşfalău - Zăuan	1860 - 1870	10,09	7,57	**1.33**
	1980 - 1984	10,63	7,57	**1,4**
	Present	10,1	7,57	**1,33**
The downstream defile Marca - Suplacu de Barcău	1860 - 1870	3,6	2,22	**1,62**
	1980 – 1984	3,88	2,22	**1,74**
	Present	3,99	2,22	**1,79**
Sântmireu - Sălard	1860 - 1870	19,74	12,54	**1,57**
	Present	14,8	12,54	**1,18**

The width of the riverbed from 1980 till present day maintains itself between 6 and 9 m, its banks being composed of pelitic and psamito-psefitic deposits (the right bank is formed of pannonic sandy clay, while the left one is composed of gravel and holocene sand).

As regards the spatial mobility, one may clearly notice the riverbed's migration to the right (fig. 3), with values of deviations over more than 100 years, varying between 182 and 288 m.

3. 2. 2. The downstream defile Marca – Suplacu de Barcău Sector

After crossing the crystalline cutwater at Marca, the minor riverbed of Barcău reframes itself in the alluvial type, the transience between the two sectors (riverbed semi-controlled by rocks, in the Marca defile and downstream alluvial riverbed) is highlighted by slope failures in the longitudinal profile of the river (fig. 4).

The sector has meanders, and under evolutional analysis, one may notice a tendency toward the increase of the meandering coefficient, from 1,62 in 1860 – 1870, to 1,74, in 1980 – 1984, respectively 1,79, at present.

There also occur simple symmetrical loops (fig. 4), but the majority are asymmetrical loops together with composed loops, with values of the radius of curvature and the sinuosity coefficient ranging from 15 – 53 m, respectively 1,33 – 2,6 (table 2). At the level of three loops of meander belonging to the "goose neck" type, there is a tendency to self-captation. As regards the ways of migration of the loops, predominant is the migration to extension, with values between 15 – 25 m against their location between 1980 – 1984, with a slight tendency towards translation.

As regards the causes of meandering, it is due to a combination of natural and anthropic conditions, that is the defile at Marca extends, fastened in metamorphic rocks of various degrees of alteration), respectively because of heavy building material exploitation in quarry (the quarry at Marca) and in gravel pit (downstream the defile).

The width of the minor riverbed varies between 7 and 30 m (it is larger near the loops), the river banks are exclusively developed in alluvial deposits (sand and gravel).

It is the only sector, of those analyzed, where the tendency is toward left deviation, with a maximum of 181 m since 1860.

Morphometrical parameters for the downstream defile Marca - Suplacu de Barcău sector

Table 2

Crt. no.	Meander loop radius (m)	Loop cord (m)	Loop height (m)	Coefficient of sinuosity	Loop flatten
1	23.09	43.77	16.14	1.38	3.76
2	46.52	86.18	28.89	1.24	3.71
3	53.20	93.00	28.62	1.50	4.85
4	21.14	42.04	20.56	1.51	3.10
5	23.34	45.90	20.78	1.43	3.16
6	19.79	39.34	18.34	1.52	3.25
7	53.60	103.10	42.08	1.49	3.64
8	15.29	25.40	13.27	1.51	2.89

9	38.85	68.00	26.38	1.33	3.44
10	21.10	38.90	8.18	2.14	10.20
11	29.50	52.40	31.20	1.87	3.15
12	24.19	44.65	33.90	2.60	3.43
13	45.56	85.00	28.34	1.55	4.66
14	15.80	25.50	14.50	1.70	2.99
15	21.47	31.00	14.80	1.46	3.06

3. 2. 3. The Sâniob – Sălard Sector

It is the sector with the most extended changes, the lateral deviations are to the right and 500 m away against the derelict secondary watercourse which seemed to be functional between 1980-1984, respectively 1,52 – 1,55 km, against the watercourse in 1860 (fig. 5). On the cartographic material from the end of 19th century it looks like a riverbed with primary anastomosing (riverbed divided into two branches, according to the terminology of Church and Gilbert, quoted by Ichim et. al., 1989), the interlacing coefficient obtained by relating the total length of the riverbed's courses pertaining to Barcău from the area, to the value of the length of the main watercourse, being 1,57. Due to the river works (mainly embankment) done on the left river bank, there is a tendency to straighten the watercourse by isolating the secondary watercourse which transforms it self into a segment of derelict riverbed, thus the sinuosity coefficient is 1,18 at present. Within the water meadow area there are other traces of morpho-hydrologic remoulding, in the form of barrows, loops, local terraces, abandoned courses, etc., which show ample plan – spatial restructuring occurring on the sector at present.

Currently, in a natural way, the riverbed morphodynamic is associated, in all the studied sectors, with other geomorphic processes such as: rolling combined with underground water washing of the psamitic material (sandy) in quarries, trickles, small rotational slides etc.

4. CONCLUSIONS

The geomorphologic processes on the middle watercourse of Barcău are part of a general morphodynamic pattern which results in a tendency of local straightening of the segments of riverbeds and the general migration to the right of the main watercourse (except for the segment of meander located downstream of Marca).

If the effects of the processes are relatively similar, their causes (conditioning) at present are different:

- in Nuşfalău - Zăuan sector more important is the hydrologic flow of the tributaries which flows down from Plopiş Mountains, as regards the cause of the phenomenon of deviation to the right, noting that the structure of the drainage network is asymmetrical in the area;

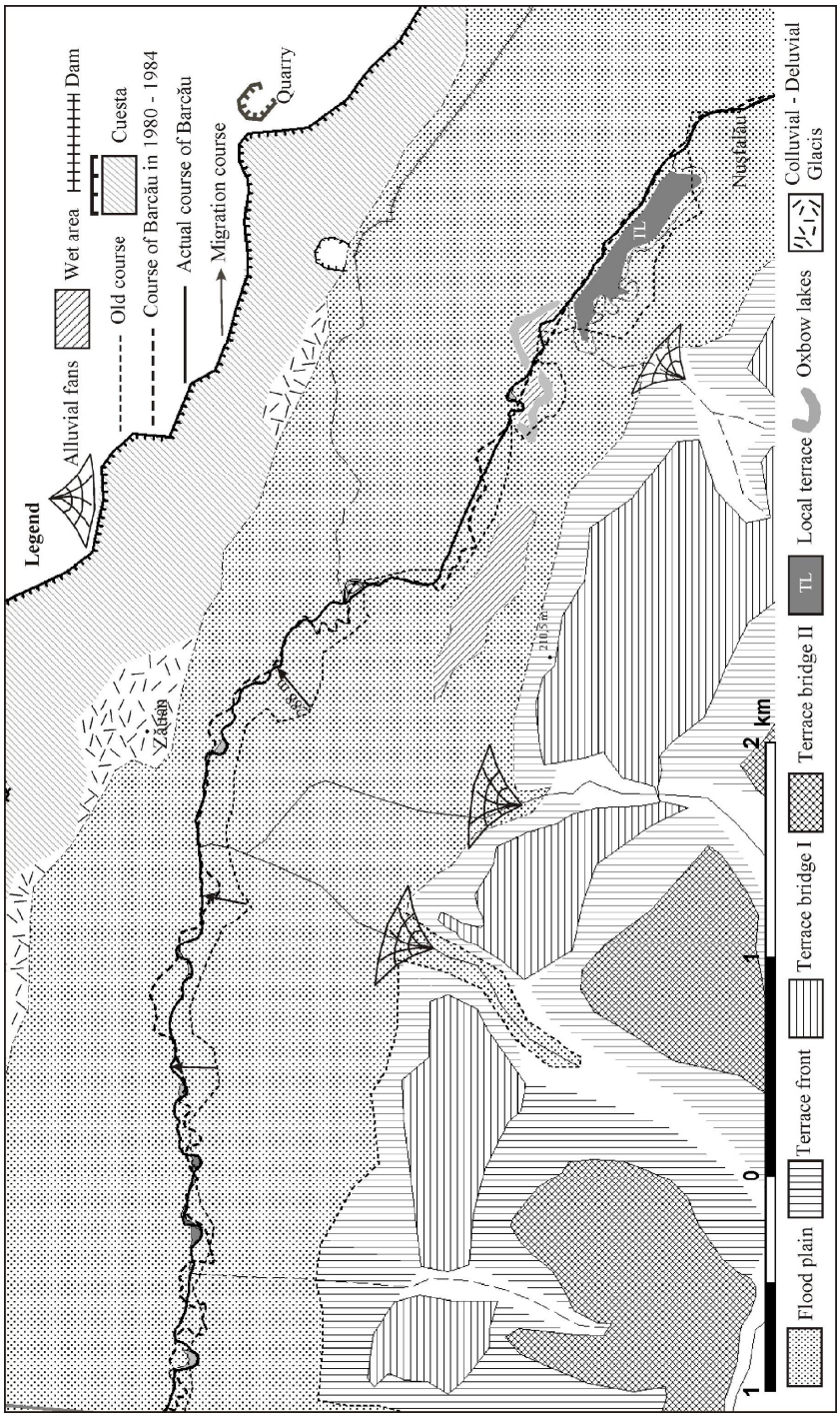


Fig. 3. The Nușfalău – Zăuan Sector. Geomorphological Map.

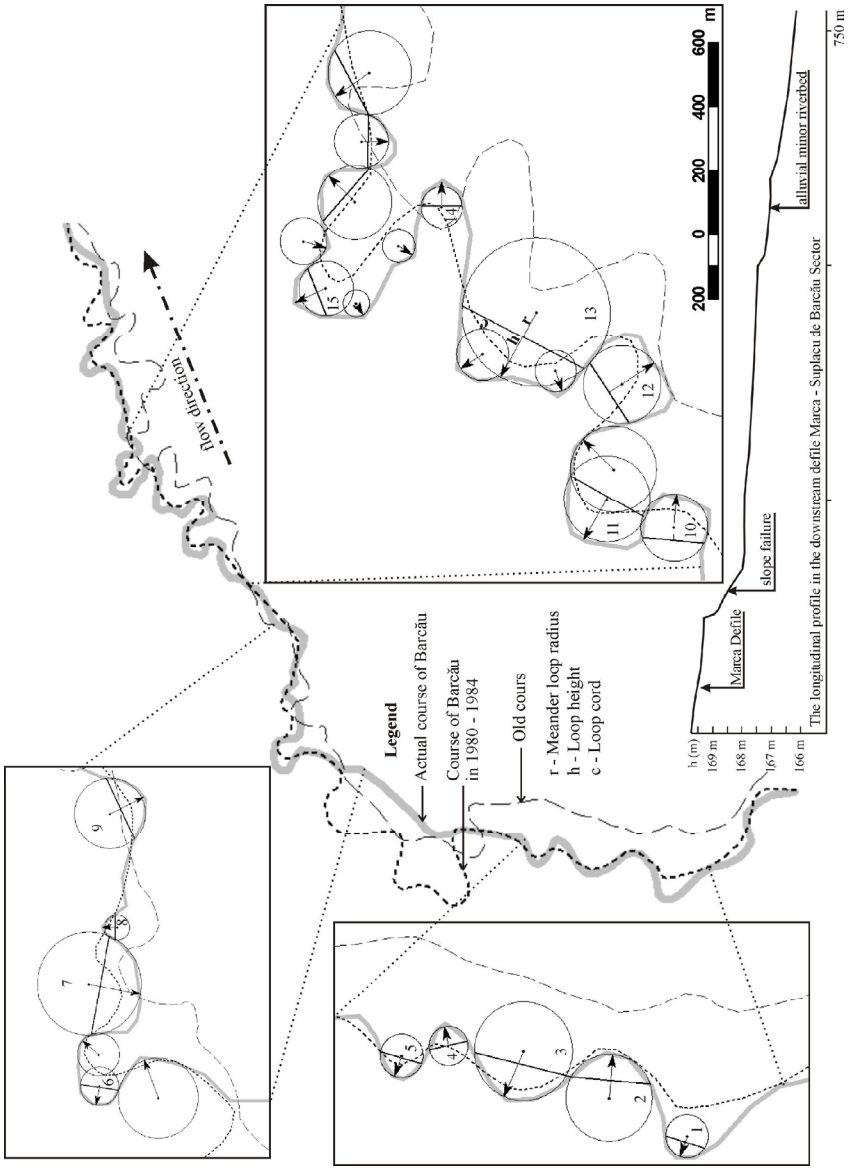


Fig. 4. Geomorphological Plan for the downstream defile Marca - Suplacu de Barcău Sector.

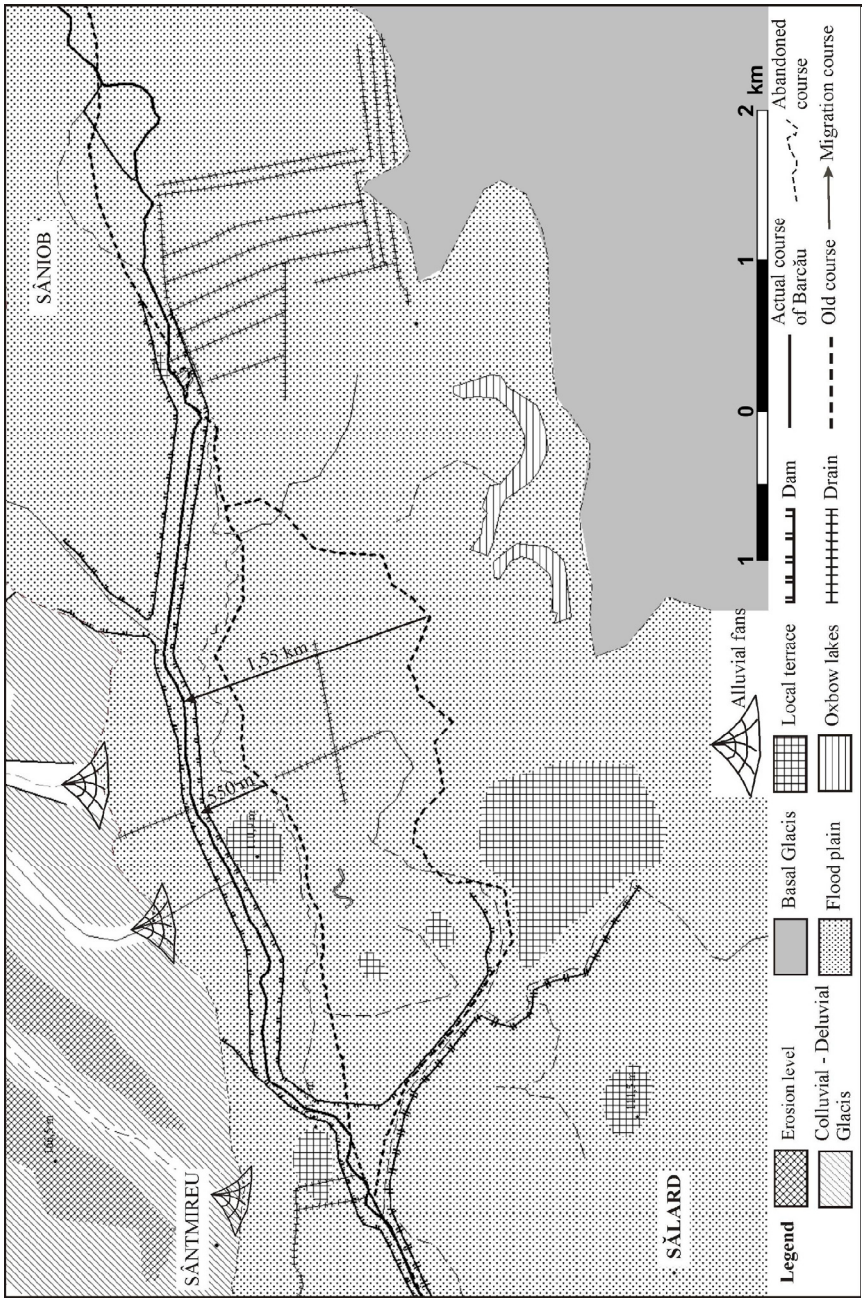


Fig. 5. The Sâniob - Sălard Sector. Geomorphological Map

- in Marca - Suplacu de Barcău sector there is a classical conjunction of river overflowing from the gorge sectors; here we have the local hydrodynamic and morphological conditions which disturb the general tendency of migration of Barcău; furthermore we mention that here the fluvial morphodynamic will undergo major changes because of the road works for the "Transilvania" motorway which evidently will occur downstream and in relay;

- in the Sântimreu - Sălard sector the morphodynamics is practically controlled by the anthropic interventions carried out by damming in and canalization work on the main course in the low plain; explanation: the damming in made possible the alluvial bed survey from the riverbed by sedimentation, the local basic level for the sector is thus modified and the river migrates on its own deposits;

- the general tendency of moving towards right is conditioned at the historical time scale of neotectonic movements, respectively by the subsidences from Marghita and Nusfalau, a fact which is already known in the field literature and spatially motivated in this material, but the time lapse taken into account does not allow interpretations on the topic;

- the riverbed stability in the area near Marghita is somehow surprising but the sector's attracting the hydrological system through subsidence and the time factor explain this situation in a convenient way;

5. ACKNOWLEDGEMENTS

This contribution presents results from research projects: PNII, PCE ID 450, nr. 404/2007 and PN II 667/2008. The authors acknowledge to anonymous reviewer for their thoughtful suggestions and comments.

REFERENCES

1. Brice, J. C., Blodgett, J. C. (1978), *Counter measures for hydraulic problems at bridges*, Vol. 1, Analysis and Assessment. Washington D.C., Federal Highway Administration.
2. Chang, H. H. (1988), *Fluvial Processes in River Engineering*, John Wiley & Sons, New-York.
3. Church, M. (1992), *Channel morphology and typology*. In: C. Callow and G. Petts (Eds.), The rivers handbook: Hydrological and ecological principles. Blackwell, Oxford.
4. Ichim, I., Bătucă, D., Rădoane, M., Duma, D. (1989), *Morfologia şi dinamica albiilor de râu*, Edit. Tehnică, Bucureşti.
5. Rădoane Maria (2004), *Cercetări de geomorfologie aplicată pentru cunoaşterea modificărilor la nivelul albiilor de râu,* Analele Universității „Ştefan cel Mare" Suceava, Secțiunea Geografie, Anul XIII – 2004.
6. Rinaldi, M. (2003), *Recent channel adjustments in alluvial rivers of Tuscany, central Italy*. Earth Surface Processes and Landforms 28 (6).
7. Schumm, S. A. (1985), *Patterns of alluvial rivers*. Annual reviews of Earth and Planetary Science 13: 5–27.
8. Surian, N., Cisotto, A. (2007), *Channel adjustments, bedload transport and sediment sources in a gravel-bed river, Brenta River, Italy*. Earth Surface Processes and Landforms 32.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

PRECIPITATION ANALYSIS USING MANN-KENDAL TEST AND WASP CUMULATED CURVE IN SOUTHEASTERN ROMANIA

ADINA-ELIZA CROITORU[1], BRÎNDUŞA CHIOTOROIU[2], IOANA IANCU[3]

ABSTRACT. – Precipitation Analysis Using Mann-Kendal Test and WASP Cumulated Curve in Southeastern Romania. As one of the most important climatic elements, precipitation data were used in order to analyze the general trends in the amount of precipitation for a period of 30 years, in 4 weather stations of South-Eastern Romania: Constanța, Medgidia, Sulina and Tulcea. They are located in different areas of a dry region, Dobrudja: on the shore, inside the land, on the Danube River banks and at the discharge point of the Danube River into the Black Sea. Mann-Kendall test and Sen's slope estimation for trends detection and the cumulated curve of Weighted Anomaly of Standardized Precipitation for fluctuations were applied for the first time to analyze precipitation data sets in the studied region. As a main conclusion, three of the four analyzed locations (Constanța, Medgidia and Tulcea) show similar behaviour while for Sulina different results were found both for Mann-Kendall test and Sen's slope estimation and for WASP cumulated curve. Thus, for Sulina, decreasing trends are specific for the most part of the data series, while increasing trends characterize the great majority of the data sets for the other three stations. The analysis of fluctuations shows a decreasing trend until 1994-1995, followed by some small fluctuations with general increasing trends until the end of the period, for the three above-mentioned stations. For Sulina data series, a general upward trend was identified until December 1997 and after that an abrupt decrease until June 2004.

Key-words: *precipitation, trends, Mann-Kendall test and Sen's Slope estimates, cumulated curve of Weighted Anomaly of Standardized Precipitation, Southeastern Romania*

1. INTRODUCTION

Most of the studies on the precipitation fluctuations in Romania took into account the entire territory of the country and that is the reason why only few weather stations of the South-Eastern region were considered (Dobrudja). This region is considered as one of the dryest in Romania with the mean duration of the dryness and drought phenomena of about 6 months (from April to October) in the eastern parts of the region and on the Black sea coast (Bogdan, O. and Niculescu, E., 1995).

The main purpose of several studies on the precipitation trends in Romania was to establish a correlation with the NAO phases. Thus, change points and Quasi Biannual Oscillations for precipitation data series were identified for Romanian territory (Busuioc, A. and

[1] *Babeş-Bolyai" University, Faculty of Geography, 5-7, Clinicilor Street, 400006, Cluj-Napoca, Romania, e-mail: croitoru@geografie.ubbcluj.ro.*
[2] *Constanta Maritime University, 104 Mircea cel Batran Street, 900663 Constanța, Romania, e-mail: b_chiotoroiu@yahoo.com.*
[3] *Dobrogea Regional Meteorological Center, 300, Mamaia Blvd., Constanța, Romania.*

Von Storch H, 1996, Paul, P. and David, B., 2006). Using different periods in the second half of the XXth century and at the beginning of the XXIst century, some authors consider that the positive phase of the NAO and the reduction in blocking activity may be one of the causes generating decrease trends in winter precipitation in Romania (Tomozeiu, R. et al., 2005) or only in the extra-Carpathian region, including our study area, too (Ghioca, M., 2006).

The precipitation trends in Romania for the 1891-1996 period were analyzed by Busuioc, A. et al. (2008). The authors identified a pronounced interdecadal variability, an intensification of deficit over the southern regions after 1961. Also, the same authors found a decreasing trend for Sulina, especially after 1961, and an increasing one for Constanța.

Based on the isohyets maps for the Dobrudja region, Păltineanu, C. et al. (2000) identified the main differences between the coastal and „mainland" parts of the Dobrudja Plateau. Thus, the marine breeze influence on the precipitation distribution during the warm season. The most important annual precipitation amounts were observed in the highest parts of the plateau, in the North-West.

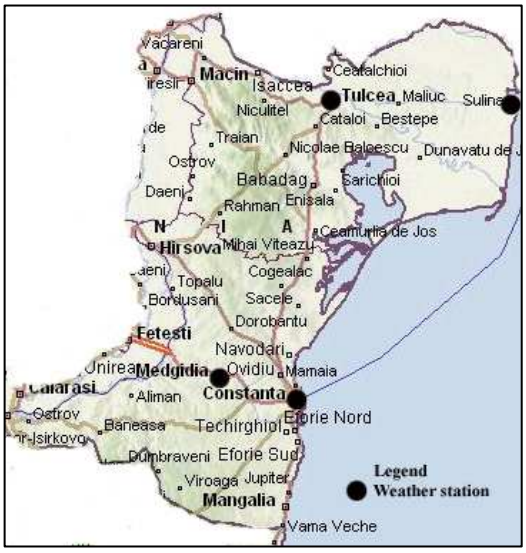
Karagiannidis, A, et al. (2009), based on the use of the Mann-Kendall test, showed the decreasing trend of the number of extreme precipitation cases/year in Europe after 1963. These extreme precipitation events may be related to the mid-latitude cyclonic systems. Heavy precipitation that have fallen in different Romanian regions, including the south-eastern part, were assigned to Mediterranean disturbances crossing Romania or the Black Sea (Bordei-Ion, E., 1983).

The main purpose of this study is to identify trends and fluctuations in precipitation data series recorded in four weather stations from South-Eastern Romania. The methods presented in this paper have not been used until now to study the precipitation trends and fluctuations in Dobrudja region.

2. DATA AND METHODS

2. 1. Data

Data recorded in four weather stations form South-Eastern Romania were used for this study: Constanța, Medgidia, Tulcea and Sulina. They are located in different areas and cover all kind of surfaces (shore, continental, river bank and contact of river with sea) as presented in figure 1 and table 1.



In all these weather stations, the precipitation amounts have been measured with the IMC pluviometer (designed by the National Meteorological Institute) until the installation of the automatic stations. After the installation of the automatic weather stations, the precipitation amounts have been measured using the IMC pluviometers only during the cold season (from the 1st of November to the 31st of March).

Fig.1. Location of the weather stations in Dobrudja (source: http://www.romanianaccommodation.ro/Menu/Map3.html)

The geographical coordinates of weatherstations in the analyzed area

Table 1

Station	Latitude	Longitude	Height (m)
Constanța	44.12°N	28.38°E	12.80
Medgidia	44.14°N	28.15°E	64.05
Sulina	45.09°N	29.45°E	2.69
Tulcea	45.11°N	28.49°E	4.36

The analyzed data sets cover 30 years (1979-2008). They were provided both by National Meteorological Administration for the *Globe* national research project (National Programme 4 – Collaborative projects, 2007-2010) and also by European Climate Assessment database (Klein Tank AMG et al., 2002). To calculate trends, 17 data series were considered for each location (12 monthly series, 4 seasonal series and one annual series) while for fluctuations, monthly data were used.

2. 2. Methods

2. 2. 1. Mann-Kendall test and Sen's slope methods

For detecting and estimating trends in the time series, an Excel template – MAKESENS (Mann-Kendall test for trend and Sen's slope estimates) – developed by researchers from the Finnish Meteorological Institute (Salmi, T. et al., 2002) was used. In Romania, the same method and software were also used with good results to identify trends in different data series (temperature, precipitation, fog) (Holobâcă, I. et al. 2008, Mureşan, T. and Croitoru, A., 2009, Ghioca, M., 2006).

The procedure is based on the nonparametric Mann-Kendall test for the trend and the nonparametric Sen's method for the magnitude of the trend. The Mann-Kendall test is applicable to the detection of a monotonic trend of a time series (Mann, H.B., 1945, Kendall, M.G., 1975). The Sen's method uses a linear model to estimate the slope of the trend and the variance of the residuals should be constant in time.

The MAKESENS soft performs two types of statistical analyses:

- the presence of a monotonic increasing or decreasing trend, which is tested with the nonparametric Mann-Kendall test;

- the slope of a linear trend estimated with the nonparametric Sen's method (Gilbert, R.O, 1987).

Both methods are here used in their basic forms. At the same time, they offer many advantages: missing values are allowed and the data needed are not conform to any particular distribution; the Sen's method is not greatly affected by single data errors or outliers.

The Mann-Kendall test is applicable in cases when the data values x_i of a time series can be assumed to obey the model

$$x_i = f(t_i) + \varepsilon_i \,, \tag{1}$$

where: - *f(t)* is a continuous monotonic increasing or decreasing function of time;

- the residuals ε_i can be assumed to be from the same distribution with zero mean. It is therefore assumed that the variance of the distribution is constant in time.

Then the null hypothesis of no trend, H_0, is tested in order to accept or reject it. The x_i observations are randomly ordered chronologically, against the alternative hypothesis, H_1, where there is an increasing or decreasing monotonic trend.

Because the range of data is longer than 10, the test statistic Z (normal approximation) is computed. The statistic Z has a normal distribution. The absolute value of Z can be compared to the standard normal cumulative distribution to identify if there is a

monotone trend or not at the specified level of significance. An upward (increasing) or downward (decreasing) trend is given by a positive or negative value of *Z*.

First the variance of *S* is computed using the following equation (2), which takes into account that ties may be present:

$$VAR(S) = \frac{1}{18}\left[n(n-1)(2n-5) - \sum_{p=1}^{q} t_p (t_p - 1)(2t_p + 5) \right] \quad (2)$$

- q is the number of tied groups;
- t_p is the number of data values in the p^{th} group.

Than the values of *S* and *VAR(S)* are used to compute the test statistic *Z*, as is presented in (3):

$$Z = \begin{cases} \dfrac{S-1}{\sqrt{VAR(S)}}, if S > 0 \\ 0, if S = 0 \\ \dfrac{S+1}{\sqrt{VAR(S)}}, if S < 0 \end{cases} \quad (3)$$

In MAKESENS the tested significance levels α are 0.001, 0.01, 0.05 and 0.1.

To estimate the true slope of an existing trend (as change per year) the Sen's nonparametric method is used. The Sen's method can be used in cases where the trend can be assumed to be linear. This means that *f(t)* in equation (1) is equal to:

$$f(t) = Qt + B \quad (4)$$

where:

- *Q* is the slope;
- *B* is a constant.

To get the slope estimate *Q* in equation (4) the slopes of all data value pairs are calculated using the formula:

$$Q_1 = \frac{x_i - x_k}{j - k} \quad (5)$$

where, $j > k$.

If there are *n* values x_j in the time series, we get as many as $N = n(n-1)/2$ slope estimates *Qi*. The Sen's estimator of slope is the median of these *N* values of *Qi*. The *N* values of *Qi* are ranked from the lowest to the highest and the Sen's estimator is

$$Q = Q_{[(N+1)/2]}, \text{ if } N \text{ is odd} \quad (6)$$

$$Q = \frac{1}{2}\left\{ Q_{(N/2)} + Q_{[(N+2)/2]} \right\}, \text{ if } N \text{ is even.}$$

2. 2. 2. Cumulated curve of Weighted Anomaly of Standardized Precipitation

Climatic standardized anomaly represents a world wide used method in climatology, both for significant results it gives and for easy calculation purpose. The method was succesfuly used especially for precipitation by many authors in Europe (Kutiel, H., Paz, S., 1998, Maheras, P. et al., 1999, Lyon, B., 2006) and in Romania (Cheval S. and

Dragne, D., 2003, Croitoru, A. 2006). Standardized Precipitation Anomaly (*SPA*)- the most common name of the methods - is calculated as:

$$SPA = \frac{x_i - \overline{x_l}}{\sigma_l} \tag{7}$$

where:

$$\sigma_l = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \overline{x_l})^2}{n-1}} \tag{8}$$

- *SPA* – Standardized Precipitation Anomaly;
- *i* – one term in the range of data (month) of the same type for *SPA* is calculated;
- x_i – precipitation amount for *i* month;
- $\overline{x}_l$- multiannual average amount of precipitation of *l* month;
- σ_l- standard deviation of *l* month.
- *n* – the number of terms in the range;

Recently , weighted anomaly of standardized precipitation (*WASP*) is calculated.

This index gives an estimate of the relative deficit or surplus of precipitation for different time intervals ranging from 1 to 12 months.

WASP is based solely on monthly precipitation data (http://iridl.ldeo.columbia.edu). To compute the index, monthly precipitation departures from the long-term average are obtained and then standardized by dividing by the standard deviation of monthly precipitation. In order to avoid the huge influence of *SPA* recorded during the driest or the wettest months of the year, the standardized monthly anomalies are then weighted by multiplying by the fraction of the average annual precipitation for the given month (computed as average of the multiannual average monthly amounts).

$$WASP = SPA \cdot W = \frac{x_i - \overline{x_l}}{\sigma_l} \cdot \frac{\overline{x_l}}{\overline{\overline{x_a}}} \tag{9}$$

- *WASP*- Weighted Anomaly of Standardized Precipitation;
- *SPA*-standardized precipitation anomaly;
- *W*- fraction of the month compared to the annual value;

$$W = \frac{\overline{x_l}}{\overline{\overline{x_a}}} \tag{10}$$

- $\overline{x_l}$ - multiannual average of the precipitation amount for the month considered;
- $\overline{\overline{x_a}}$ -the annual average of precipitation amount for the multiannual period:

$$\overline{\overline{x_a}} = \frac{1}{12} \cdot \sum_{j=1}^{12} \overline{x}_{lj} \tag{11}$$

- *j* -1,2,.....,11,12 - months.

WASP cumulated curve is usually used to determine the accumulation of precipitation water excess or deficit from one period to another. Usually, in Romania, a very high or a very low amount of precipitation occurs isolated inside a longer period with

an opposite trend. In this situation, one single month can't cancel the effects of the entire period characterized by anomalies with opposite signs, but with lower values.

Using *WASP* cumulated curve, one can identify the intervals when precipitation in excess accumulate from one month to another or, by contrary, when missing precipitation „accmulate" giving long dry periods. Thus, the ascending curve is assimilated to a continuous increasing accumulation of water (in soil, in big reservoirs etc.) coming from precipitation, while a descending curve is considered a loss of water in the systems.

When the curve crosses the *Ox* axe (the *WASP* cumulated value is equal to 0), it is considered a quality change, meaning that the wet or dry period diminished until 0 and a dry, respectively wet period begins.

To get values for WASP cumulated curve, formula (12) is used.

$$a_n = \sum_{i=1}^{n} WASP_i \tag{12}$$

- *WASP* – Weighted Anomaly of Standardized Precipitation;
- n – number of terms in the range;
- a_n – *WASP* cumulated value for i term in the range and it is equal with the sum of all previous values added to *WASP* value of the considered month.

3. RESULTS

Annual amounts of precipitation in the area range from 231 mm, recorded in Sulina, to 461 mm, recorded in Tulcea.

Generally, all the stations show a temperate continental precipitation behavior, with the maximum during summer, but the vicinity of the Black Sea and of the Danube River influences the distribution of the precipitation during the year. Thus, the difference between winter and summer months is not very high as in other regions of the country (Croitoru, A., 2006, Dragotă, C.S., 2006, Bogdan, O. et Marinică, I., 2007). February is the driest month in the whole area, with no more than 25 mm/month (table 2). The wettest month varies from June, in the "continental" part (Medgidia), till August (Sulina) and November (Constanța). The maximum amounts from June and November have been also identified by Păltineanu et al. (2000). According to the same authors, they may be associated with the maximum activity of the Mediterranean cyclones, crossing Balkans, Romania and the Black Sea.

The maximum monthly amounts vary very much from one station to another and they do not exceed 62 mm/month. At the same time, the most important difference between summer and winter precipitation was also recorded inside the continental area (Medgidia and Tulcea).

For trends detection, 17 data sets were considered for each of the four locations.

Computed for 30 years, trends in precipitation are quite different in the analyzed area. Thus, most series with increasing and decreasing trends are recorded on the shore, at Constanța, and respectively, at Sulina (Table 3).

But, while for the first case, the statistically significance is characteristic only for one month, September, for the second situation, there are 5 data series that experience negative statistically significant trends (June, July, winter, summer and annual data sets). For both stations, the rainiest month shows statistically significant trends, but with opposite signs: positive for Constanța and negative for Sulina. There are only two series recorded in Sulina with increasing trends (March and September) and they are not statistically significant.

Monthly, season and annual precipitation values (1979-2008)

Table 2

Series	Constanța	Tulcea	Medgidia	Sulina
J	28.2	27.3	24.0	14.6
F	21.2	23.1	19.9	12.4
M	37.7	32.6	26.1	17.0
A	32.8	34.1	33.3	14.3
M	37.0	39.0	43.5	17.1
J	38.8	**61.6**	**59.9**	27.3
J	32.6	51.2	54.8	17.8
A	39.8	35.6	40.8	**27.6**
S	40.4	44.0	46.0	22.3
O	31.8	33.5	31.5	17.7
N	**48.7**	42.2	35.1	24.8
D	34.7	37.4	29.8	18.0
Annual	423.8	461.5	444.8	231.0
DJF	84.1	87.8	73.7	45.0
MAM	107.5	105.6	102.9	48.5
JJA	111.2	148.5	155.6	72.8
SON	120.9	119.6	112.5	64.8

Considering also statistically significant trends it is remarkable that data sets with negative trends are found only in Sulina (5). Among them, the annual decreasing in the precipitation regime is very strong, with a rate of 37.5 mm/decade. It is determined mostly by June, July, summer and winter data series. The significance level varies from 0.1 for July and winter to 0.5 for annual, June and summer series.

Sen's slope estimate of precipitation trends in Southeastern Romania for the period 1979-2008 (°C/decade)

Table 3

Series	Constanța		Tulcea		Medgidia		Sulina	
	Q	Significance level	Q	Significance level	Q	Significance level	Q	Significance level
J	1.30		-0.05		-0.76		-1.67	
F	0.93		-2.09		-2.25		-1.60	
M	**5.83**		**4.17**		**4.83**		**3.23**	
A	0.00		1.00		-0.81		-1.50	
M	1.27		0.00		0.83		-5.33	
J	**-3.77**		**-8.85**		**-8.92**		**-7.60**	*
J	**-0.91**		**-2.71**		**-3.33**		**-6.38**	+
A	-1.00		7.81		0.57		-4.74	
S	**16.88**	**	**15.25**	*	**18.35**	**	**2.40**	
O	-2.33		1.40		2.76		-3.22	
N	**-2.33**		**-0.33**		**-0.87**		**-4.00**	
D	3.25		3.55		4.78		-3.23	
Annual	33.57		22.18		41.56	+	-37.50	*
DJF	4.38		-3.30		0.93		-6.01	+
MAM	15.27		4.69		8.27		-2.71	
JJA	**-4.25**		**-1.00**		**-0.75**		**-17.26**	*
SON	14.71		20.83	+	27.79	*	-9.00	

Legend: ** - α = 0.01; * - α = 0.05; + - α = 0.1; values in bold represent generalized trend (increasing or decreasing) in the area.

For the other analyzed locations, statistically significant trends were recorded only for positive slopes and vary from one case to three cases per location and the significance level is between 0.1 and 0.01.

From the total amount of 17 series, only 5 have the same kind of slope in the whole area: June, July, September, November and summer data series.

Using *WASP* cumulated curve, one can remark that Sulina weather station has again a very different behavior compared to the other stations (fig. 2).

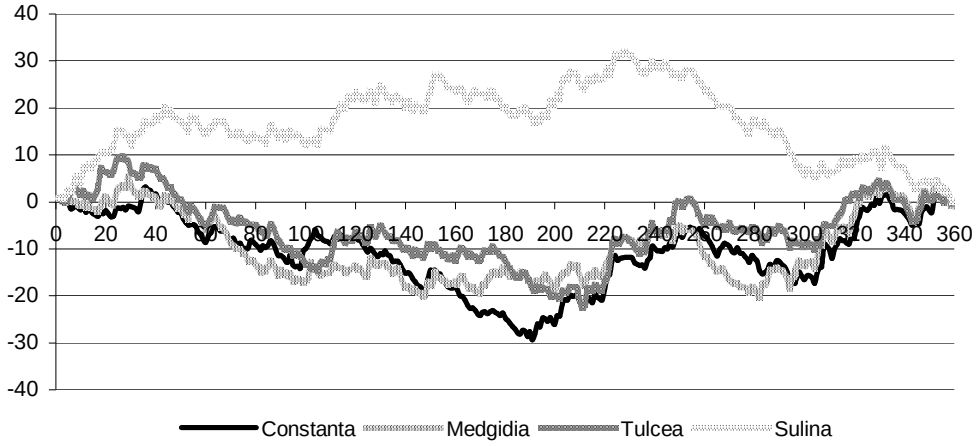


Fig. 2. WASP cumulated curve.

While the three curves corresponding to Constanța, Medgidia and Tulcea have similar aspect, with decreasing trends until 1994-1995 (terms 180-200 on *Ox*), followed by some fluctuations, but with general increasing trends, Sulina data series experience a general increasing trend until December 1997 (term 228 on *Ox*) and then an abrupt decreasing until June 2004 (term 306 on *Ox*).

From that point on, the fluctuations are similar to the other three stations until the end of the analyzed period and it is characterized by small fluctuations. The general decreasing trend persists at Sulina, while the general increasing trend is characteristic for the other three locations.

4. DISCUSSIONS

The two stations located on the shore show very different behavior in precipitation amounts. For instance, at Constanța the most data series show increasing trends, even if they are not all statistically significant. At Sulina, only two data series have upward trends. More, Constanța observations look much more like the other two stations located inside the continent.

Actually, Sulina weather station can be considered as a special situation in the area: for all time-series, precipitation amounts are less than half compared to those recorded in the other locations. On the other side, the abrupt decreasing slope of annual data series is, most probably, due to the last years of the analyzed period. Previous studies (Dragotă, C.S., 2006, Clima României, 2009), considering amounts recorded between 1961-2000, indicate

a multiannual amount, more than 16 % higher than that recorded for the period considered in this paper (268.5 mm compared to 231.0 mm).

These results agree with those obtained by Busuioc et al., 2008, who identified a decreasing trend at Sulina, especially after 1961, comparing to the increasing trend at Constanța.

5. CONCLUSIONS

The two methods used show similar results:

- Constanța station behaves similarly to Medgidia and Tulcea in the most part of the analyzed issues and very different from Sulina, even if they are both located on the shore;
- Sulina is a special situation both as the value of the amounts of precipitation which are less than half compared to the other stations and considering trends for the 17 data series which are predominantly decreasing;
- the other three stations indicate more positive trends than negative ones;
- there are only 6 data series with the same trend for the whole area (four negative ones and two positive ones);
- the *WASP* cumulated curve method shows also a different behavior of Sulina compared to the other three locations.

The authors intend to apply these methods to precipitation series from other weather stations in the Dobrudja region, especially to those located southward, since the area is considered to become the most arid region in Romania (Bojariu, R., 2009).

REFERENCES

1. Bogdan, Octavia, Marinică, I. (2007), *Hazarde meteo-climatice din zona temperată: geneza şi vulnerabilitate cu aplicaţii la România*, "Lucian Blaga", Sibiu.
2. Bogdan, Octavia, Niculescu, Elena (1995). *Phenomena of dryness and drought in Romania*, Revue Roumaine de Géographie, 39.
3. Bojariu, Roxana (2009), *Romania, afectată de reducerea resurselor de apa* (interviu acordat ziarului Evenimentul zilei, 4 mai 2009), http://www.resursenaturale.org/ romania-afectata-de-reducerea-resurselor-de-apa, Accessed on January 31, 2009.
4. Bordei-Ion, Ecaterina (1983), *Rolul lantului alpino-carpatic in evolutia ciclonilor mediteraneeni*, Editura Academiei, Bucuresti.
5. Busuioc, Aristița, Boroneanț, Constanța, Baciu, Mădălina, Dumitrescu, Al. (2008), *Observed temperature and precipitation variability in Romania* (PowerPoint presentation), http://meteo.hr/SEECOF08/day2/2-19.pdf, accessed on February 1, 2010.
6. Busuioc, Aristita, Von Storch, H. (1996), *Changes in the winter precipitation in Romania and its relation to the large-scale circulation*, Tellus, 47, 4.
7. Cheval, S., Dragne, Dana (2003), *Deviația standard*, în Indici şi metode cantitative utilizate în climatologie, Editura Universității din Oradea.
8. Croitoru, Adina-Eliza (2006), *Excesul de precipitații în România*, Editura Casa Cărții de Ştiință, Cluj-Napoca.
9. Dragotă, Carmen Sofia (2006), *Precipitațiile excedentare în România*, Editura Academiei Române, Bucureşti.

10. Ghioca, Monica (2006), *Spatial and temporal variability of Romanian precipitation and river flows on winter period in connection with the North Atlantic Oscillation*, Balwois conference, http://balwois.com/balwois/abstract.php?id=559, accessed on January 30 2010.
11. Gilbert, R.O. (1987), *Statistical methods for environmental pollution monitoring*, Van Nostrand Reinhold , New York.
12. Holobâcă, I.-H., Moldovan, F., Croitoru, Adina-Eliza (2008), *Variability in Precipitation and Temperature in Romania during the 20th Century*, Fourth International Conference, Global Changes and Problems, Theory and Practice, 20-22 April 2007, Sofia, Bulgaria, Proceedings, Sofia University "St. Kliment Ohridski", Faculty of Geology and Geography, "St. Kliment Ohridski" University Press, Sofia.
13. Karagiannidis A., Karacostas T., Maheras P., Makrogiannis T. (2009), *Trends and seasonality of extreme precipitation characteristics related to mid-latitude cyclones in Europe*, Advances in Geosciences, 20, (www.adv-geosci.net/20/39/2009, accessed on January, 30, 2010).
14. Kendall, M.G. (1975), *Rank Correlation Methods*, 4th Edition, Charles Griffin, London.
15. Klein Tank AMG and Coauthors (2002), *Daily dataset of 20th-century surface air temperature and precipitation series for the European Climate Assessment*, Int. J. of Climatol., 22, 1441-1453. Data and metadata available at http://eca.knmi.nl.
16. Kutiel, H., Paz, S. (1998), *Sea Level Pressure Departures in the Mediterranean and Their Relationship with Monthly Rainfall Conditions in Israel*, Theor. Appl. Climatol., 60.
17. Lyon, B. (2006), *Robustness of the influence of El Ni˜no on the spatial extent of tropical drought*, Advances in Geosciences, 6.
18. Maheras, P., Xoplaki, Elena, Paz, H (1999), *Wet and dry monthly anomalies across the Mediterranean Basin and their relationship with circulation*, 1860-1990, Theoretical and Applied Climatology, 64.
19. Mann, H.B. (1945), *Non-parametric tests against trend*, Econometrica, 13.
20. Mureşan, Tatiana, Croitoru, Adina-Eliza (2009), *Considerations on Fog Phenomenon in the North-Western Romania*, Studia Universitatis Babeş-Bolyai – Geographia, LIV, 2.
21. Paul, P., David, B.S. (2006), *Analysis of the hystorical precipitation sums of Sulina station by means of power spectra in relation to Sibiu station and NAO and SOI indexes*, Geographia Technica, no. 2.
22. Păltineanu, Cr., Mihăilescu, F., Seceleanu, I. (2000), *Dobrogea. Condiţii pedoclimatice*, ExPonto Publisher, Constanţa.
23. Salmi, T., Määttä, A., Anttila, Pia, Ruoho-Airola, Tuija, Amnell, T. (2002), *Detecting trends of annual values of atmospheric pollutants by the Mann-Kendall test and Sen's slope estimates –the Excel template application MAKESENS*, Publications on Air Quality No. 31, Report code FMI-AQ-31.
24. Tomozeiu, Rodica, Ştefan, Sabina, Busuioc, Aristita (2005), *Winter precipitation variability and large-scale circulation patterns in Romania*, Theoretical and Applied Climatology, 81.
25. Administraţia Naţională de Meteorologie (2009), *Clima României*, Editura Academiei Române, Bucureşti.
26. http://iridl.ldeo.columbia.edu. Accessed on February 2, 2010.
27. http://www.romanianaccommodation.ro/Menu/Map3.html. Accessed on February 2, 2010.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

VALENCES OF THE GEOSPATIAL IDENTITIES AND THE PREPARATION OF THE UNITARY MODERN DEVELOPMENT

I. MAC[1]

ABSTRACT. – Valences of the Geospatial Identities and the Preparation of the Unitary Modern Development. At 90 years from the setting up of the first Romanian university in Transylvania (1 October 1919, Cluj-Napoca), it can be asserted that this institution answered to the urge for progress and modern development in this part of Europe. The framework for such an important step was achieved through some geo-economic mutations that affected the traditional geospatial identities in Transylvania. The economic and social transformations in the period around the 1859 Unification and those that preceded and followed the I World War brought changes in the traditional activities within the geoidentities. In this way, *"tăreni"* (peasants), *„bârseni"* (inhabitants of the Bârsa Country), *„mărgineni"* (inhabitants from the Sibiu border villages), *„câmpeni"* (inhabitants of plain areas), *„pădureni"* (inhabitants of the Pădureni district, a forested area in Hunedoara County) etc. were urged to alternate their traditional activities with some new ones, industrial, commercial or cultural. In the same context, mutations appeared both in teaching conducting and education; the emphasis turned slightely from preceptors and clerics to professors and engineers. The new university was assigned with this mission. Our analysis is based on the following assertion: "Humankind lives geographically and expresses itself historically". In this respect, a geographical-historical overview of life organization throughout time in Transilvania is given. Its stability over time, human resources, material production, the Romanian language or the eagerness towards learning are among the most valuable geospatial identities valences. Gradually, the geospatial identities change their status, somehow confirming that "history is a moving geography".

Keywords: *living, geoidentity, change, education reform, professional mutations.*

1. SHORT ANTHROPOGEOGRAPHICAL OVERVIEW

Our presentation should not be taken as an unforbidden interference in some fields strictly reserved to specialists, but an essential historical substantiation of the issue we wish to reach to: the necessity of a Romanian university in Cluj and its burdens nowadays and along its 90 years of work. Consequently, the information will have direct reference to Transylvania and indirect to the entire Romania; the reffered information could be preeminently assigned to historical geography. Unfortunately for the Romanian geography and especially for the Transylvanian one, the research in this field is extremely limited. There are plenty of historical works, but they approach quite restrictively aspects of spatial integration, while they relate extensively "the disputes" between various rulers that came here usually from abroad.

[1] *"Babeş-Bolyai" University, Faculty of Geography, 400006 Cluj-Napoca, Romania, mac@geografie.ubbcluj.ro*

Our presentation is based on the assertion that might be considered a guiding one:

"Humankind lives geographically and expresses itself historically".

Living is not an abstract fact, it is materialized through what people use and produce. The expression comes from the force of interrogations: when, how, how much and why? Self – interrogations suppose long term answers and a form of human expression: what is the manner to achieve this?

The authentic geographical living led man to inhabit the space around him. Not accidentally, the great geographer Friderich Ratzel subdivided the surface of the Earth into three categories, according to the degree of inhabitance and human production, in his "Anthropogeographie" (1909):

- the ecumene - the inhabited areas with productive and trade activities;
- the subecumene - the areas with scarce population and reduced production and trade activities;
- the nonecumene - the uninhabited areas.

The forms of inhabitation are multi-spectral, but the human settlement remains the basic expression of the habitat organization, no matter the temporal or the spatial dimension. In the way the house, as an element of the habitat, is not isolated in space, but integrates itself with the other houses in the creation of a primary community, the shelter, the bower, the hamlet, the village or the territorial group, so do the settlements unite and, with the associated lands, join into superior rank entities.

The ethnographical studies, through their most remarkable authors, consider that the village with isolated houses, the scattered village, remains the initial and the longer type of habitation in Transylvania.

After stating all above about place, habitation, settlement or groups of settlements, we stir a historical question: which were and how were the superior entities called? Despite facing the difficulty to surpass the threshold of the superior, uniform and unitary hierarchies, it is our duty to ask history for possible answers.

The territorial entities are human geographical components with a long presence, they are long standing, having met the approval of the state for hundreds of years.

The rural community is the fundamental structure of continuity and unity which has resisted the vicissitudes of the spatial and organizational movement of peoples. At least in the case of Transylvania, an essential geographical fact is to be underlined - the old rural community was established (Sarambei, N., 1993) in accordance with the land configuration.

The size of the rural community (demographic density, land use) and then its development towards superior forms of territorial organization depended on the geographic factor. Referring to Transylvania, remarkable historical personalities used to say: "Higher concentration of villages appeared in the Carpathian depressions, in the rivers upper basins or even in their lower sectors or in plain forested areas". To these territories and settlements we would add the areas (strips of land) at the contact between various kinds of landforms, the land of the "border people".

The first political structures in Transylvania and not only were based on the territorial community. By unifying these communities from economical, military, judicial or spiritual reasons, into unions of communities, called by N. Iorga "*Popular Romanias"*, superior structures appeared. The respective structures were called *"cnezate"*, being at their

turn affiliated to a superior entity called *"ţară"* or "country": *"The country lived by itself, village by village, valley by valley, with "juzi", local dignitaries with judicial and administrative prerogatives and with a voivode leading the county"* (N. Iorga, 1995). From the term *"jude"* derived the term *"judeţ"*, the Romanian word for "county". The moral and juridical aspects, the behavior within the territorial community and in relation with the environment were legitimated through some customary rules. They can be compared with an unwritten juridical "tally", inoculated in the lives of the inhabitants. As the historians say, more countries joined to form voivodates. Historical sources, like Gesta Hungarorum, the anonymous notary's chronicle of king Bella III, mention that there were three political structures in Transylvania in the 10th century: Menumorut's Voivodate with the Biharia fortified town, Gelu's Voivodate, the duke of Romanians, situated in the Transylvanian Plateau (Dabaca fortress) and Glad's Voivodate, including the Banat region between the Mures and the Danube. Other territorial structures are mentioned in the surroundings of Alba Iulia.

The borders of the voivodates were natural: mountainous ridges, hilly units, deep valleys, steep rocky slopes, marshes etc., providing them with strategic value. This was an extra reason for *"the countries or voivodates to keep their autonomy, putting up a hard resistance to the Hungarian advance"* (Jinga, V., 1995).

The centralized Romanian feudal states were the result of the absorption by these territorial units (countries) of other territorial political structures around them.

"The country – like territorial political structures from the entire Romanian space are, through their constitution and evolution, a specific feature of the Romanian history and at the same time a certification of the unitary and synchronous development of the Romanian people". The transition from "country" to '"state" was thus achieved" (Sarambei, N., 1993).

The short overview in the geographical - historical organization leads us gradually to other moments up to the establishing of the feudal organization in Transylvania that took place after the 15th century. The consequence of such an organization consists in the Romanians progressive leaving of the traditional geographical frame and also of the social – political one. The setting up of the Romanian nobility in Transylvania and the Romanian administration of some territories demanded for new knowledge. It is clearly stated that the "*jude*" held the position of issuing documents of internal need within counties.

What characterizes first the whole Romanian nobility is the respect for culture. Innovations were easily assimilated, as they were considered a mean of social democracy.

People could notice an avid search for learning, for material support or diffusion. The search for education perpetuated vigurously, which explains the raise of "the educators" from the Romanian communities, those founders of language, institutions, culture, who were aware of the necessity of superior academic institutions.

The romantic historical writings identified certain forms of group or community conscience even in the first centuries of the Middle Ages. The phenomenon increased as a result of the economical and social changes of the following centuries.

After this short historical- geographical incursion that focused mainly on the spatial and social organization, we will reflect to the meaning of the term geospatial identity with special reference to the syntagm (motto): "History is a moving Geography" (according to Johan Gottfried von Herder). The historical maps mirror not only places, position, but also a kind of movement. The maps allow the reconstitution of the communities' progress or regression phases.

2. GEOSPATIAL IDENTITIES: CONTENT AND SIGNIFICANCE

According to the historical and juridical geography, the geospatial identities are human territorial entities consisting of natural places (sites) and humans, the first category providing the second with material and environmental support. The well-known statement *"man joined nature and blessed the place"* expresses in a very suggestive and profound manner the essence of the geospatial identities, no matter their shape, size or organizational position.

Such "unions" benefit from some specific expressions, which induced in time territorial (regional) differences that led to the appearance of the geospatial identities. As we have previously asserted, well – known historical and then juridical terms were used for them: *"jupânate", "cnezate"*, provinces, regions, counties, districts etc. Through spatial and structural unions, some geospatial identities earned in time the attribute "country" (as the Moților Country or others as Zarand, Făgăraș, Silvania, Lăpuș, Năsăud, Maramureș etc.).

These geospatial identities were preeminently rural, even if some polarization centers developed (market towns). The village, the household arrangements – mirror of their inhabitants' occupation, people and their customs and skills to create things (constructions, tools) synthesize the quality of these identities. In general, villages keep their people and even strengthen them. Daily events together make a local history. The spiritual mentors of the geospatial identities were called "tribunes" – skillful or wise men that have got educated not from books but from experience or from the elder people, teachers trained in various centers (Blaj, Sebes, Gherla etc.) or clerics. The role of different religious cults was extensively studied by historians. It would be worth to investigate also the location and name creation of such identities, as they were very different in size, while their names, excepting the term "country", contain words of folk origin. The Apuseni Mountains represent a model of geographical – spatial identity, the Banat region benefits from quite similar specificity features, while the Hațeg region imposes itself amongst the identities with great tradition.

3. IDENTITY VALENCES

We considered necessary to emphasize the valences of the geographical – spatial identities at the point they were established, in order to be able to detect the afterwards changes. This topic is extremely vast, but in the context of our topic, some elements are worth to be noted briefly.

The valences of these identities constituted the field of the geography of places. This discipline synthesizes numerous elements: location (mountain, hill, alluvial plain, central or peripheral); the natural components of the territorial system (climatic, hydrographic components, vegetation, fauna, soils etc.), representing the living resources; the people and the products they created along the centuries; people's activities or occupations (sheep and cow breeding, handicrafts etc.). If we resume the collocation "how many geographies does a man carry?" we may assert that the valences result from three geographies: the inherited and hereditarily inserted geography, that we may also call "biological geography", the geography earned in time by the members of the community through all their activities undertaken in their living or neighboring space; the learnt geography, acquired through the contact with experienced people and later with teachers. In this way, wisdom, experience and receptivity to the new provided geoidentities with the most valuable valence they might be

endowed with - stability in time, persistence despite vicissitudes, both natural (floods, droughts, severe cold etc.) or anthropological – social (revolts, rebellions, wars etc.). The faith in immortality, as in the case of the Dacians, may also be invoked to explain this stability.

The geographical – spatial autonomy was born through experience and needs, so the autarchic economy was somehow urged to diversify and bifurcate. Decline begins in some identities because of the aggressiveness of those from other territories (invasions, conquerors driven by different reasons to rule new territories and take hold of goods).

Other geographical – spatial identities become stronger through education, production, trade, establishing new multifunctional centers (market towns, consolidated districts) that we could call "central places", according to Christaller's theory, towards which people, economy and administration gravitate.

Beside this stability in time, we also have the human resource that expresses itself through biological vigor and active living. The demographic valence also bears the material (economical) valence. The productive and trade activity leaves its mark on the geographical – special identities. There is a general material production within each identity, but the specific production has a special resonance. In this respect, we can mention the cultivation of plants practiced by the *"țăreni"* (peasants) (Vuia, R., 1920), the exploitation and processing of wood (*"pădureni"* - woodsmen), sheep breeding (*"oieri"* - shepherds) and the processing of some associated products (milk, wool, meat).

The most important valence of the geographical – spatial identities, the "queen" of all, is the Romanian language, the folk one and then the cultivated one by teachers and clergy. The inhabitants of the identities, no matter the organizational level, even in "countries" and "kingdoms", could communicate, support each other and enlarge their living spaces through linguistic communication.

Language played a major role in the formation and manifestation of the cultural – artistic valence.

The authentic folk culture kept the ancient values created by the inhabitants of different geographical – spatial identities. Up to nowadays we still assimilate things from the cultural treasure of the identities that in time are embodied in our national cultural treasure.

Through language and culture, ancient wisdom and experience could develop and stratify on social levels until the top of the existence column that characterized the Romanian people.

4. UNIVERSITY ASPIRATION

The economic and social transformations in the period around the 1859 Unification and those that preceded and followed the I World War, brought changes in the traditional activities within the geoidentities. In this way, *"țăreni"* (peasants), *„bârseni"* (inhabitants of the Bârsa Country), *„mărgineni"* (inhabitants from the Sibiu border villages), *„câmpeni"* (inhabitants of plain areas), *„pădureni"* (inhabitants of the Pădureni district, a forested area in Hunedoara County) etc. were urged to alternate their traditional activities with some new ones, industrial, commercial or cultural. In the same context, mutations appeared both in teaching conducting and education; the emphasis turned slightly from preceptors and clerics to professors and engineers.

Gymnasiums, high schools, colleges and even universities were founded in some central places of the identities (Cluj, Sebeş, Blaj, Târgu Mureş, Năsăud, Alba Iulia, Zalău, Caransebeş, Hațeg , Braşov etc.).

In this way the cultural traditions, the wish for learning and prosperity. also demanded an institutional restoration. Beginning with 1848, the Transylvanian Romanians asked for a Romanian university. This aspiration fulfilled once Transylvania united with The Romanian Kingdom in 1918, so today we can celebrate nine decades since the Romanian university was established in Cluj. We shouldn't forget that the wish to enlighten the majority of the population through school was legitimated by the Education Reform in 1918 whose motto was: "turning face towards villages" (People's school, second edition, 1923).

Rector Andrei Marga, in his speech at the 80th anniversary of the foundation of the Romanian university in Cluj, emphasized:

"*The university in Cluj is based on a long evolution of the attempts to establish a superior studies institution in Transylvania – an attractive area for the western Europeans and an arena for religious and later for political confrontations that marked the history of our continent".*

Compared to what happened in the long process of university evolution in Cluj, a process marked by the temporary existence of some colleges (1565), high schools (1784), faculties, Hungarian universities, the Romanian university established on 1st October is gradually urged to fit to the imperatives of the modern development.

The seeds of progress must be planted again in the fertile soil of our united country. But who should do it? The university graduates. This thing is stipulated in the opening lesson of Alma Mater called *"The duty of our life"*, held by Vasile Pârvan. In this way, the Romanian university in Cluj appears as a proof of an evolution and as a necessary historical affirmation.

Its geographical spatial function was perceived by the founders and servants of the institution and, as a result, in 1924 the "University Extension" is founded under the coordination of Professor Virgil Bărbat, with the aim of spreading the university science and culture as wide as possible, the modern spatial–geographical identities being also focused.

Beside training and university education, it has been permanently involved in the scientific research, among the followed objectives being worth mentioning:

- an important contribution to satisfying the actual needs of economy, at local and national level;
- scientific and cultural development of the country and enriching the society's values;
- training generations of specialists in different fields.

Remarkable personalities of the university science and culture, who initially studied abroad (Berlin, Wien, Budapest), contributed to the establishing of the university institution: Sextil Puşcariu, Vasile Pârvan, Victor Babeş, Emil Racoviță, Vasile Bogrea, Alexandru Borza, George Vâlsan, Augustin Maior, Onisifor Ghibu, Dumitru Popovici , Ion Breazu etc.

In such an academic institution, the cooperation between geography and history was beneficial not only for the Transylvanians, but for the whole country. The geographical school in Cluj gradually evolved, its major outcome being the foundation of the Institute of Geography (27th May 1920).

From the very beginning, the French scientist and geographer Emmanuel de Martonne (1873-1955), an expert in the geography of our country, had an important role in the development of Geography at the University of Cluj. Beside Emm. de Martonne, it is worth mentioning another personality of the French geography, Robert Ficheux (professor at the Geography Institute in Cluj between 1935-1938), a passionate researcher of the Romanian spatial divisions.

But the foundation of the geographical school in Cluj belongs to the scientist George Vâlsan, the main representatives of the didactic training and scientific research being: Vasile Meruțiu, Sabin Opreanu, Tiberiu Morariu, Ştefan Manciulea, Romulus Vuia, Laurean Someşan and others. The Institute of Geography functioned until 1948. After this period, geography in Cluj followed different academic formulas that were awarded with numerous appreciations in specialty periodicals. The true geographical university institution in Cluj, the Faculty of Geography, is established only in October 1994. This moment on, the changes in the geographical field led to a great variety in the university training and to the foundation of an appreciated scientific research.

REFERENCES

1. Christaller, W. (1933), *Die Zentralen Orte in Suddeutschland*, Fischer, Jena, translated by C.W. Baskin, Central Places in Southern Germany, Prentice-Hall, Englewood-Cliffs, N.J., 1966.
2. Cocean, P., Filip, S. (2008), *Geografia Regională a României*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
3. Iorga, N. (1943), *Conferinţe şi prelegeri,* Vol. I, Bucureşti, Monitorul Oficial şi Imprimeriile Statului.
4. Iorga, N. (1938), Istoria Românilor, Vol. I-X, Bucureşti.
5. Jinga, V. (1995), *Probleme fundamentale ale Transilvaniei,* Edit. Muzeului Județean de Istorie Braşov.
6. Mac, I. (2008), *Geografie Normativă,* Edit. Presa Universitară Clujeană, Cluj-Napoca.
7. Manciulea, St. (2002), *Aşezările româneşti din Ungaria şi Transilvania în sec. XIV-XV*, Edit. Sarmis, Cluj-Napoca.
8. Marga, A. (2000), *Universitatea „Babeş-Bolyai" – dezvoltare şi consolidare*, Cluj-Napoca.
9. Marga, A. (2004), *După unsprezece ani (1993-2004), Eleven Years After (1993-2004),* Edit. Presa Universitară Clujeană, Cluj-Napoca.
10. Mehedinți, S. (1994), *Terra. Introducere în geografie ca ştiinţă*, Ediția a II-a, Edit. Enciclopedică, Bucureşti.
11. Meruțiu, V. (1929), *Județele din Ardeal şi Maramureş până în Banat*, Institutul de Arte Grafice Ardealul, Cluj-Napoca.
12. Morariu, T., Posea, Gr., Mac, I. (1980), *Regionarea Depresiunii Transilvaniei*, SCGGG, XXVII, 2, Bucureşti.
13. Neagoie, S. (1980), *Viaţa universitară Clujeană*, vol. I şi II, Edit. Dacia, Cluj-Napoca.
14. Oancea, D. (1979), *Despre ţară şi ţări,* SCGGG, XXVI, Bucureşti.
15. Opreanu, S. (1939), *Die Szekler. Eine völkische Minderheit inmitten des Rumänentums*, Edit. Druck von Krafft & Drotleff, Sibiu.

16. Opriş, I. (1988), *Protejarea mărturiilor cultural-artistice din Transilvania şi Banat după Marea Unire,* Edit. Ştiinţifică şi Enciclopedică, Bucureşti.
17. Pascu, Şt. (1983), *Ce este Transilvania? Was ist Siebenburgen?,* Edit. Dacia, Cluj-Napoca.
18. Ratzel, F. (1882), *Anthropogeographie*, Stuttgart.
19. Rusu, A. (1993), *Nobilimea românească din veacul lui Iancu de Hunedoara*, în Pagini Transilvănene, Nr. 1.
20. Şarambei, N. (1993), *Statele începătoare*, în Pagini Transilvănene, Nr. 1.
21. Totelecan, S. (2003), *Vecinătatea în Munţii Apuseni – Disoluţii comunitare,* Napoca Star and Argonaut, Cluj-Napoca.
22. Vâlsan, G. (1922), *Învăţământul geografic la Universitatea din Cluj*, Lucrările Institutului de Geografie, Vol. I, Cluj-Napoca.
23. Vâlsan, G. (1922), *Elementul spaţial în descrierea geografică*, în Lucrările Institutului de Geografie, Vol. II, Cluj-Napoca.
24. Vuia, R. (1924-1925), *Ţara Haţegului şi Regiunea Pădurenilor*, în Lucrările Institutului de Geografie, Vol. II, Cluj-Napoca.
25. Vuia, R. (1928), *Muzeul etnografic al Ardealului*, Bucureşti.
26. Vuia, R. (1937), *Le village roumaine de Transylvanie et du Banat*, 1979, Universitatea "Babeş-Bolyai" Cluj-Napoca.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

ENVIRONMENTAL ASSESSMENT AS PART OF THE TERRITORIAL PLANNING DOCUMENTATION. CASE STUDY, HÂRTIBACIU VALLEY

I. VESCAN[1], S.F. FONOGEA[2]

ABSTRACT. – Environmental Assessment as Part of the Territorial Planning Documentation. Case Study: Hârtibaciu Valley. The strategic environmental assessment is a procedure recently implemented within the process of setting up the territorial planning documentations. The purpose of this procedure is to guide the regulations within the territorial planning documentation according to the existing environmental regulations. It is an iterative procedure, within which the stipulations of the plans and programmes are analysed and corrected, taking into account the opinion of the regulating authorities, of the local authorities and of the public. In this paper, we would like to provide an image of the manner in which such a strategic environmental assessment has been performed for a Zonal Plan – Hârtibaciu Valley. The analysed area, delimited according to administrative criteria and considered as a project region, generally comprises the catchment area of Hârtibaciu Valley and is part of Hârtibaciu Plateau natural region. From the point of view of the natural features, the area is characterized by a noticeable extension of grasslands and hay fields, and the existence of two protected areas, included in Natura 2000 category: "Middle Olt – Cibin – Hârtibaciu" and „Sighişoara – Târnava Mare". These elements provide the necessary characteristics for Hârtibaciu Valley to be declared a "sustainable ecological region", provided that fair objectives and development measures are implemented, in accordance with the environmental legislation.

Keywords*: plans, programmes, environmental impacts, assessment, environmental quality, Natura 2000 network, monitoring, environmental report.*

1. INTRODUCTION

In this paper, we would like to provide an image of the manner in which a strategic environmental assessment (SEA) has been performed for a territorial planning documentation, the Zonal Territorial Arrangement Plan (PATZ) – Hârtibaciu Valley, in this case.

The analysed area, delimited according to administrative criteria and considered as a project region, generally comprises the catchment area of Hârtibaciu Valley and is part of Hârtibaciu Plateau natural region. From the point of view of the natural features, the area is characterized by a noticeable extension of grasslands and hay fields, and the existence of two protected areas, included in Natura 2000 category: "Middle Olt – Cibin – Hârtibaciu" and „Sighişoara – Târnava Mare". These elements provide the necessary characteristics for

[1] *Babeş-Bolyai University, Faculty of Geography, 400006 Cluj-Napoca, Romania, vescan@geografie.ubbcluj.ro*
[2] *Babeş-Bolyai University, Faculty of Geography, 400006 Cluj-Napoca, Romania, sfonogea@geografie.ubbcluj.ro*

Hârtibaciu Valley to be declared a "sustainable ecological region", provided that fair objectives and development measures are implemented, in accordance with the environmental legislation.

As a result of the initiative of Hârtibaciu Valley regional microassociation of socio-economic development and of the Ministry of Regional Development and Dwelling, a PATZ documentation has been drawn up. Following the procedures stipulated by the Romanian environmental legislation (concordant with the European one), a strategic environmental analysis has been drawn up. After consulting materials which refer to the procedure of applying the SEA, we structured a theoretical part which aims at marking out the contents of the practical approach.

2. WHAT IS SEA?

The strategic environmental assessment – SEA – is a term used to describe the process of environmental assessment for plans and programmes (P/P). In Romania, the term "Environmental Assessment for Plans and Programmes" (EMPP) is used instead of "Strategic Environmental Assessment" (SEA).

The environmental assessment for plans and programmes (EMPP) has the purpose to identify and analyze the effects on environment of plans and programmes during the drawing up of the plan and before it is sanctioned.

The results of the environmental assessment must be presented in an environmental report. The conclusion of the plan or programme project, the settlement of the field and level of detail of the information that must be included in the environmental report and the analysis of the significant effects on environment of the plan or programme are made within a panel. The EMPP procedure is finalized when the environmental notice is issued by the competent public authority for environmental protection, based on the plan or programme project and the environmental report.

SEA is a proactive instrument, which does not have the same limitations as those that might be met by the environmental assessment performed in the stage of project composition. EIM influences too late the decision-making process and only acts as a reaction instrument. For instance, when EIM is made up for a project, we already have the answers to the high-level questions concerning the place or type of development that should be applied and EIM may focus only on the measures to reduce and improve the impact. Particularly, an efficient strategic environmental analysis may present the following advantages:

- the achievement of a sustainable management from the point of view of the environment;
- the improvement of the quality of the process of making up the policy, plan or programme;
- the increase of the efficiency of the decision-making process;
- the strengthening of the leadership system and of institutional efficiency;
- a better base for EIM on projects;
- a facility for cross-border cooperation.

The Directive 2001/42/EC of the European Parliament and of the Council, which refers to the assessment of the effects of certain plans and programmes on the environment ("the SEA Directive"), entered into force on July 21, 2001. This Directive compels the public authorities to consider whether their prepared plans or programmes meet the purpose

of this Directive and therefore if an environmental assessment of these proposals needs to be performed according to the procedures of the Directive. The 2001/42/EC Directive was introduced in the Romanian Legislation by the Government Decision 1076/2004 regarding the establishment of the procedure of performing the environmental assessment for plans and programmes (published in the Official Gazette, part 1, no. 707, of August 5, 2004).

3. THE STAGES OF SEA PROCESS

The strategic environmental assessment is a staged and iterative process. We will shortly present the stages underwent by the SEA procedure.

Classification. The purpose of the classification stage is to determine whether or not SEA should be applied in the case of a certain P/P. All plans and programmes dealing with territorial and urban planning (PPATU) make the object of classification.

Defining the field. In this stage, one determines the inclusion field and the level of detail of the assessment (and therefore of the environmental report). The inclusion field of the assessment defines for example the environmental aspects or issues to be comprised in the analysis, the geographical territory to be assessed (because the impact area can be larger than the plan imprint), the procedure to follow according to specific planning process, the consultation with the competent authorities and the public for each PPATU, the potential alternatives to be analysed and the requirements for monitoring.

The PPATU assessment. This stage might be divided into specific parts according to the methodological approach and the field stated in the framework methodological Guide and to the detailed procedures already specified for the corresponding PPATU, but it should also include:

- the assessment of the present situation, of the tendencies and possible evolutions if PPATU is not implemented;
- the environmental assessment of certain parts of PPATU (proposed high-priority objectives, measures, activities, projects, options etc), including the assessment of the cumulative effects of the entire PPATU;
- the assessment of the proposed programme to supervise development and environment (including the identification of relevant environmental indicators) and the arrangements concerning the report.

The making up of the environmental report. The environmental report is a document which summarizes all the results and conclusions of the assessment and presents all the alternatives of development, as well as the manner of selection of the least harmful option/ alternative for the environment.

The consultation of the competent authorities and the public. The consultation with the competent authorities and the public participation is usually performed several times during the SEA process and it should take place all along the assessment. The results of the consultation should be taken into account in the environmental report and when making the decision regarding the PPATU subject to assessment. They should be included in the PPATU, whenever necessary.

Decision making. The holder of PPATU should take into consideration the results of the assessment, as well as the conclusions determined during the process of consulting with the public when it makes the final decision concerning the PPATU.

Monitoring. The effects on environment during the implementation of the PPATU should be monitored and registered. Ideally, the environmental monitoring system and mechanisms should be a part of the general system of monitoring the PPATU implementation. The mechanisms of environmental monitoring should be specified in the environmental report. If significant adverse effects are identified, corresponding actions of remedy or attenuation should be performed.

4. THE WORKING METHOD

The panel (GL) set up for every SEA plays an important pat in *defining the field*. Within the GL, the PPATU holder and SEA accredited experts must play a leading part in defining the field. As a consequence, they should be in charge of the drawing up of the documents which will be discussed within the GL and of the drawing up of the report which defines the field. The stage of field definition is made up by 6 steps:

- the identification of the main elements of the PPATU;
- the identification of other international, national and local strategic documents that might be relevant for the PPATU;
- the determination of the environmental aspects that should be assessed;
- the identification of the environmental criteria that are relevant for assessment;
- the identification of the reasonable alternative means of achieving the strategic objectives of the PPATU;
- the planning of the SEA process in such a way as to correlate with the PPATU process.

The purpose of *PPATU assessment* is to identify, discuss and assess the impact and probable effects on environment of the PPATU. It starts with the consolidation of the alternative development options and continues with the selection of the preferred alternative. This alternative should be feasible and at the same time sustainable from the point of view of the environment.

The *Environmental Report* should summarize all the previous stages of the SEA process. The report, together with the assessed PPATU, should be subjected to a process of consultation. As a result, the report should provide all the relevant information. It should not only present the conclusions and results of the SEA, but also explain the chosen approach and methods (especially the manner in which alternative options have been analysed and discharged) to provide a general and clear image of the SEA to the main interested factors.

Regarding the involvement of the public, four levels may be distinguished, according to the level of intensity and interaction:

- Communication/report = one-way information flow, from the holder to the public. Information and notification represent pre-requisites of a meaningful IP. The simple communication of information is not a sufficient measure to involve the public in the SEA;
- Public consultations = exchange of information between the holder and the public. In this way, the public responds to the initiatives drawn up by the SEA or PPATU teams. The consultation provides the opportunity for the public to express its opinions regarding the proposal and its impact, but not to propose other new alternatives;
- Participation = the public may initiate alternative proposals and ideas by interacting with the SEA and PPATU teams. This is a more interactive process, which

embarks the public upon solving the problems. During this process, discussions take place and people try to reach a consensus;

- Negotiation = the public is involved in establishing the conditions of PPATU approval and implementation. This type of IP usually takes place between the main factors involved in PPATU implementation, by face-to-face discussions between PPATU and SEA teams and the main interested factors, trying to reach a consensus concerning the actions to be performed.

Generally, the purpose of SEA in relation with *decision making* is to ensure the taking into consideration of the environmental report and of the opinions expressed in the consultation process during the PPATU preparation and before it is sanctioned.

In fact, in Romania, the decision-making process concerning all PPATUs has two stages: the decision from the point of view of the environment, or the environmental notice and the final decision concerning the PPATU, or the approval of the PPATU, according to the law.

Regarding the *environmental monitoring of the PPATU implementation*, several elementary principles should be taken into account:

- the nature of monitoring is different for different types of PPATU which concern the development of a variety of sectors, taking in consideration that they may have very diverse effects on environment. Also, the sensitivity of the environment will vary according to place (for example, the PPATU environmental imprint and impact area);

- taking into account the larger field of a PPATU compared to that of a project, it is often difficult to prove an environmental cause-effect direct relationship at the level of the PPATU, although the measures of PPATU implementation and the change of environmental conditions (expressed by indicators) may often be statistically correlated;

- when PPATU revision starts, one should take into account the results of the monitoring.

5. STUDY CASE - HÂRTIBACIU VALLEY „SEA”

At the beginning of the strategic environmental analysis for Hârtibaciu Valley, we have critically focussed on the suggestions in the PATZ that, by their implications, do not concord with the maintaining and reinforcing interests of the quality of “reservoir” of biodiversity of the investigated territory. Obviously, the desire to preserve this territory does not have to trigger a conflict between the local organisms in order to achieve territorial cohesion and the long lasting economical resuscitation of the area (the proof is the founding of the *socio-economical development regional micro association* for Hârtibaciu Valley, with representatives from Agnita, Alțâna, Bârghiş, Brădeni, Bruiu, Chirpăr, Iacobeni, Marpod, Merghindeal, Mihăileni, Nocrich, Roşia şi Vurpăr). For this very purpose there was a very strict *fixing of the relevant environmental objectives* and of constraining suggestions, where there was inconsistency in the perspective look on territorial development.

The concept of sustainable development is strongly connected to that of the quality of life, including the achievement of three main objectives: economical welfare, social stability and environmental protection. Roughly speaking, we can choose as main objective declaring Hârtibaciu Valley as *sustainable environmental region*, having in mind two strong supporting reasons: on one side, the analysed area presents an important environmental potential (80% of its surface are protected areas), on the other side it has a vast biodiversity, with local protected areas (the geo environmental area called „Mihăileni Canion”) and also protected areas that are part of

the environmental network Natura 2000 (ROSCI0132 Oltul Mijlociu - Cibin – Hârtibaciu, ROSCI0227 Sighişoara-Târnava Mare şi ROSPA0099 Hârtibaci Highland). This objective comprises several others that will make the point for further discussion.

The main objective is the *biodiversity and landscape protection* that can be achieved through correctly applied rules:

- the correct management of the protected areas, by installing functioning regulations (according to OUG 236/2000, Law 345/2006, MAPAM Order 496/2005);

- the promoting of different forms of traditional agriculture, the cultivation of eco products (bio agriculture) and including these facts into the cultural life and the tourist offer in the area);

- the involvement of the local authorities in media promoting actions, education and informing of the population (editing and broadcasting informing materials in order to promote eco tourism).

The second objective focuses on *the improvement the quality of life of the population and the sustainable land development of this region*. The measures necessary to reach this objective have minimal strict rules to follow:

- a high degree of technical infrastructure (the water system, the town sewer system);

- territorial cohesion and interconnectivity between human settlements;

- diversifying the economical activities and growing the income of the population.

The third objective is represented by *the improvement of the environmental factors (water, air, soil)*. For this purpose, we have to implement the Directive 96/62/CE (concerning the air quality) and Directive 91/271/CE (concerning urban waste water treatment and ensuring a correct management of the waste water treatment sludge). By 2015, Romania has to comply with the construction of sewer systems and waste water treatment plants in towns bigger than 10,000 inhabitants and by 2018 in towns with a population between 2,000 and 10,000 inhabitants. Moreover, still by the end of 2015, all the towns having more than 10,000 inhabitants have to have nutrient concentration reduction stations). These are some of the measures necessary to achieve this objective:

- putting up a system of monitoring the quality of the air in the investigated area;

- putting up the waste water treatment plant in Agnita and putting up a sewer system and a waste water treatment system in the rural area, as negotiated in Chapter 22 – Environment;

- reducing the pollution of the soil and of the underground water caused by the excessive use of chemical fertilisers and pesticides.

The last important environmental objective is represented by *the control of producing and depositing the industrial and urban garbage in Agnita and the surrounding rural area*. In order to achieve this objective, the measures proposed in PATZ, the chapter on strategic development, are thoroughly suggestive:

- building up a waste sort-out and packing plant inside the transfer plant in Agnita;

- closing up and reshaping of the depositing areas in the rural space (Alțâna, Beneşti, Ghijasa de Sus, Bârghiş, Apoş, Pelişor, Ighişul Vechi, Zlagna, Vecerd, Brădeni, Retiş, Țeline, Bruiu, Şomartin, Gherdeal, Chirpăr, Veseud, Iacobeni, Stejăriş, Netuş, Noisat, Movile, Marpod, Merghindeal, Dealu Frumos, Mihăileni, Metiş, Nocrich, Hosman, Fefeldea, Țighindeal, Ghijasa de Jos, Roşia, Daia, Nou, Caşolț, Cornățel, Nucet şi Vurpăr) and putting up collecting points in these areas, by connecting them to the transfer plants;

- reducing the quantity of the deposited urban waste (organising and supporting educational programs and raising the awareness of the population on the importance of minimising the production of human wastes and of collecting them properly);

- implementing the Code of agricultural practice and collecting, depositing and putting to controlled use of the wastes in agriculture.

6. SYNTHESIS OF THE STRATEGIC ASPECTS IN PATZ WITH INFLUENCE UPON „SEA"

Comments upon the measures proposed in PATZ refer to those chapters that, by the nature of their content, can induce a conflict opposed to the initial objective. Thus, inside the *Strategy of Development for Hârtibaci Valley*, there have been followed *general strategic objectives*, as well as *sector strategic objectives (in each area)*. In the latter case, we have operated a scoop, according to the level of impact, and such we have obtained a prioritising of the main environmental problems.

In the case of *"Strategic objective 1: Hârtibaci Valley as a region of systemic region program"*, we have reservations towards the following proposition: "a more profound articulation of the structure of the territorial system, in view of increasing its reliability, flexibility and resilience towards the challenges of today development phenomenon. The main stream must be towards the region's coming out of the shades produced by the surrounding development efforts, by the multiplication and diversifying of the transportation means that cross it, especially on the North-South axis. The crossing of Transilvania highway in the eastern extremity of the region is of great importance, determining reorientation of the mass, energy and interest fluxes towards the respective area".

In the case of *"Strategic objective 2: The efficient connection of Hârtibaci Valley to the surrounding territorial systems, with the same or with superior rank (regional and national) by infrastructure connected to the great transportation corridor"*, the following propositions must be reevaluated:

- "transversally, Hârtibaci Valley will be crossed by A3 highway (Transilvania) Turda – Târgu Mureş – Sighişoara – Făgăraş – Braşov, which, as a result of the junctions to some rural settlements (Noistat, Netus, Movile) will lead to their inevitable development, thus making them become important local poles (Brădeni)";

- "the interconnection in the south-west of this system to A1 highway is to be saluted (Nădlac – Arad – Timişoara – Lugoj – Deva – Sibiu – Piteşti – Bucureşti – Lehliu – Feteşti – Cernavodă – Constanța, according to Law 362,21.09.2006 referring to the PATN – National Territorial Development Plan, Section I, Transportation networks, appendix 1, Highways, since it would connect its southern and southern-western side, now being constructed. At the same time, the functions of some rural settlement could be further developed and the economical exchanges of merchandise and services could be strengthened by the apparition of connection points (such as Poienita, Nucet)";

- "the interconnectivity can also be achieved by the Pan-European IV multiple transportation corridor (Dresda/Nürenberg – Praga – Viena/Bratislava – Budapesta – Arad – Bucureşti – Constanța/Craiova – Sofia – Salonic/Plovdiv – Istanbul), that appeared nearby, in the south-west. Thus has become obvious the importance of Sibiu's overregional pole. The presence of this important neighbouring place allows for the diversification of the merchandise transportation and a development of the transit tourism". On the other hand, such as appears in PATZ, the stimulation of the economic competitiveness is reached by the apparition of the transeuropean transportation network (TEN-T) that laps over the secondary development corridor Făgăraş-Sibiu.

- "the railways in this territory are a primary focus for the local authorities, and thus appeared the railway connecting Sibiu to Agnita, with great opportunities towards the intensification of tourism. Yet we consider that the consolidation of the halt stations along the railway (apparently dealt with in the railway infrastructure modernisation projects), the rearranging of the depositing areas and the annexes of the stations and the conceiving of some feasibility projects in order to build railways that pass through Hârtibaci Highland are as many solutions for an efficient integration into the national and European development flow".

The suggestions inside the two strategic objectives are part of the relevant environmental objective that we touched upon at section II. The reservations priory expressed deal with hypothetical misunderstandings concerning the environmental objective dealt with at section I. Thus, increasing the connectivity degree between this region and the surrounding areas and consolidating connections between different regions can lead to a deep fragmentation of the analysed territory, with repercussions on the protected areas and sites. The efforts with new road infrastructure and with the improvement of the deserted railways have a deep impact on the environmental components and the fauna in that area. They have to respect the legal regulations and have to keep up with the migration corridors of the species that live here.

As for the sector strategic objectives, we are mainly interested in the measures comprised in the chapters *The functional structure of the territory* (subchapter *The technical infrastructure of the territory*) and *Economics* (subchapters *Agriculture* and *Industry*).

Thus, *"Strategic objective 6: Insuring basic and connected infrastructure and the conditions necessary for a sustainable development of the economy and the improvement of the life quality"* in the subchapter *Technical infrastructure of the territory*, at point *6.1. The improvement of the life quality by correct use of the water resources, insuring the water necessary and developing the water supply network*, talks about the following: "the accumulation of complex importance uphill of Mihăileni Gorges". Mihăileni Gorges is a local interest protected area, a spectacular geo morphological structure in the village of Mihăileni, characterised as a natural geological monument (3rd category-g IUCN), with a surface of 15 ha, declared in HCL 12/1994 and then included in L 5/2000 (PATN – Protected Areas section).

The suggested intervention, even if it is focussed on insuring the water necessary for a better economical development of the area, has some negative consequences for the environmental equilibrium of the site. The expansion of the water networks has to be followed by a development of the sewer system and of the waste water treatment plants (an extremely difficult situation in Hârtibaciu Valley and also in the whole rural area).

In "the red light" from the first prime stage of *the proposals for the development of the infrastructure of transportation, communication and public utilities (electrical power and gas)* there is the following idea underlined: "the development of the neighbouring access roads between settlements. The neighbouring roads represent a special category of connecting roads between human settlements of shortest distance. The neighbouring roads do not belong to the public roads category and they are the responsibility of the town halls in the administrative territory. These roads overlap mostly with the main agricultural and forest roads and they are made of plain dirt. Modernising them by putting stone on them and bordering them with ditches for the evacuation of the rain water can be a good solution for the growth of the communication potential, locally, as well as for the pulling out of the isolation of some periphery settlements and for their economic exploitation by the development of agricultural farms." This measure can be amended from the point of view of the growth of the fragmentation of the territory, although the aim is to enhance the level of territorial cohesion.

Likewise, it is important to be cautious and to correctly evaluate the consequences of the measures stipulated in the stage I-b, urgent interventions (2012-2013, "the yellow light"):

- proposal for classification as secondary national road and modernisation to category 3+ of the county road DJ 105D in order to turn it into a national road of regional importance;
- proposal for classification as secondary national road and modernisation to category 3+ of the county road DJ 141 in order to turn it into a national road of regional importance;
- proposal for classification as county road and developing a neighbouring road between DJ 106 Nocrich – DJ 106 S Vulpăr;
- proposal for classification and development of neighbouring roads in the villages in order to shorten the access distances between the settlements. Thus, it is proposed to classify the neighbouring roads in access communal roads: "e*xtension (continuation) of DC 36 from Ghijasa de Sus and connecting it to DC 39 and classifying as communal road of the neighbouring road meant to shorten the connection between DJ 106 and DC 39 in order to ease the access to Ghijasa de Jos. This proposition will lead to the shortening of the access distance with 3,410 m as compared to the actual distance".*

The objectives and the measures spoken about inside the subchapters *Agriculture* and *Industry* must sustain the cultural landscape and enhance the forms of ecological agriculture specific to the region. Expanding the biological certification for the land and also for the animals represents a sustaining factor of the first relevant environmental main objective formulated at the beginning of this work. A subject for critical debate is the following suggestions in PATZ, from the chapters mentioned before:

- "optimising the fish breeding (Brădeni) and developing new fish farms (Hosman)";
- "sustaining diverse and relevant hunting assets for Hârtibaciu Valley, with high atractiviness for the tourits: deer, wildhog, hare, pheasant".

Promoting the hunting grounds has to take into consideration the nesting places of the different endangered species. It is necessary to thoroughly map those places that are inhabited by endangered species, hunting being forbidden by law in these areas. Developing new fish breeding farms cannot be carried out without the efficient quantification of the consequences of landscape and functional mutations. At the same time, the accumulation at Brădeni should preserve its actual stage of development and exploitation, shifting towards the integration into a scientific tourism by developing here a centre for bird and animal monitoring.

REFERENCES

1. Benedek, J. (2004), *Amenajarea teritoriului şi dezvoltarea regională*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
2. Cocean, P., coord. (2010), *Planificarea şi amenajarea teritoriului zonal*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
3. Grecu, Florina (1992), *Podişul Hârtibaciului. Elemente de morfohidrografie*, Edit. Academiei, Bucureşti.
4. Manoliu, M., Ionescu Cristina (1998), *Dezvoltare durabilă şi protecţia mediului*, Edit. HGA, Bucureşti.
5. Pop, Gr. (2001), *Depresiunea Transilvaniei*, Edit. Presa Universitară Clujeană, Cluj-Napoca.

6. *** (2004), *Hotărârea nr. 1076 din 8 iulie 2004 privind stabilirea procedurii de realizare a evaluării de mediu pentru planuri şi programe*, Publicată în Monitorul Oficial, Partea I nr. 707 din 5 august 2004.
7. *** (2006), *Ordin nr.117 din 02.02.2006 pentru aprobarea Manualului privind aplicarea si realizarea evaluarii de mediu pentru planuri si programe*, Publicat în Monitorul Oficial, Partea I nr. 186 din 27 februarie 2006.
8. *** (2007), *Ghid privind evaluarea de mediu pentru planuri si programe de amenajare a teritoriului si urbanism*, Ministerul Mediului şi Dezvoltării Durabile.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE GEOGRAPHICAL-HISTORICAL PROVINCES OF ROMANIA

GR. P. POP[1]

ABSTRACT. – The Geographical-Historical Provinces of Romania. There are a large number of cases, especially in the Romanian mass-media, when recorded events are not exactly located in their rightful territorial place. This imprecise information which in some cases, represent the news headlines, may become really annoying for the viewer, especially when they are constantly repeated. This paper was written in order to support the news editors in mass media and other scientific fields, to give an accurate geographical location of different activities, events, and phenomena, which are the object of mass media news, in the geographical and historical provinces of Romania. Concerning the above mentioned information, it can be noticed that there seems to be no problem regarding the geographical and historical provinces in the East (Moldavia), South-East (Dobrudja) and South of Romania (Muntenia and Oltenia). On the other hand, in the central and western parts of Romania, a shadow is cast over the boundaries of the provinces, and this is what the paper is supposed to clarify. These provinces are defined, on one hand, by *geographical features* (morphology, climate, drainage, vegetation, soil, soil and mineral resources, population and settlements, human activities and the products obtained by the inhabitants of different territories) and, on the other hand, by *historical facts*, that have happened throughout the time, which helped clarifying the shape and the geographical location of the provinces, especially in the central and western parts of Romania. Eight historical and geographical provinces are well defined within Romania: *Transylvania* (in the centre of Romania), *Banat, Crişana, Maramureş* (the western part of Romania), *Moldavia* (in the East), *Dobrudja* (in the South-East), *Muntenia and Oltenia* (in the South).

Keywords: *Romania, geographical-historical provinces, Transylvania, Banat, Crişana, Maramureş, Moldavia, Dobrudja, Muntenia, Oltenia.*

1. INTRODUCTION

The purpose of this study is to *identify* and *define* the geographical-historical provinces of Romania. It is our point of view that this should lead to the reduction (or even removal) of imprecise information (it is better not to say mistakes, as it is inappropriate to blame those working in this field) and it is usually recorded in written, audio and audio-visual mass-media (newspapers, radio, television, etc), and even in the conversation, in folklore, during different cultural, scientific and sporting events.

In order to obtain the answers to this problem, it is our wish to reach gradually a fair solution, according to the reality of the geographical and historical features, regarding the regional components of the Romanian territory, defined as **geographical-historical provinces**, from our point of view. Without a further justification of our perspective, we stress the fact that every place, smaller or larger, has its *own territorial reality*, due to the specificity of its *physical-geographical* features (geology, landforms, climate, drainage, soils, vegetation and fauna) and *human-geographical* features (population, settlements, then the complexity of activities

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, grigor@geografie.ubbcluj.ro*

developed by man - agriculture, industry, transports, trade, tourism and social activities respectively). One should add also, as a fundamental part, the manner of *evolution of the human presence and the manifestation of social-historical phenomena* since ancient times until today.

2. APPROACHES TO THE ANALYZED ISSUE

This issue raised my interest – without having a direct contact with it – about half a century ago (1964) when, as a young assistant and secretary of the Degree Commission at the Faculty of History and Geography of Cluj Pedagogical Institute, I had the opportunity to ask the president of the commission, **Ştefan Pascu, member of the Romanian Academy**, a question regarding the name of **Transylvania** from a territorial point of view. He was also the dean of the Faculty of History at that moment. The professor answered me very seriously this way: *defined in a broad sense*, Transylvania comprises (means) the territory within the Carpathians and the entire space of the western part of Romania (lowlands, hills and mountains). In *a strict sense*, Transylvania is the area within the Carpathians, while the provinces of Banat, Crişana and Maramureş lie along the western side of our country. After this answer, another question of mine followed: if I have to operate with a definition for the entire central and western space of Romania, should I use the name **Transylvania in a broad sense**, and if I have to use the names of Transylvania, Banat, Crişana and Maramureş for those territories, should I write **Transylvania in a strict sense**? The discussion ended normally, with a few words of the professor: "leave it; you want to be too smart for this period!".

The following years of my activity did not involve, for a long period of time, direct investigations concerning this issue. However, it should be underlined that in all situations I operated according to the territorial-geographical and social-historical logic when defining the second-level compartments of the Romanian territory, that is, the **Geographical-Historical Provinces**: Transylvania, Banat, Crişana, Maramureş, Moldavia, Dobrudja, Muntenia (Greater Wallachia) and Oltenia (Lesser Wallachia). The first of them, ***Transylvania***, as it is mentioned in quite many scientific sources, is the ***heart of Romania***, followed by Banat, Crişana and Maramureş on the western side of the country, Moldavia in the East, Dobrudja in South-East, Muntenia and Oltenia in South. All of them except for Dobrudja (which is the land of the Danube and the sea) are harmoniously supported by the ring of the Carpathians - Transylvania within the mountain space, and the other provinces surrounding the mountains.

After many years of teaching and scientific activity in the field of *Human Geography of Romania*, during the following years, even since 1990, there were many opportunities to further investigate this issue. Among these, we take into account the following:

- the writing and publishing of many studies regarding the *national structure of the population of Romania*, based on the 1992 census (published in Studia UBB, 2, Geographia, printed at the end of 1992) and the 2002 census (Romanian Review of Political Geography, 1-2, Oradea, 2004), and studies in the field of *Electoral Geography*, concerning the numerous elections (papers published in 1991, 1992, 1997, 2001, 2006 and 2010). In the latter year, independent studies approached aspects concerning the Parliamentary, European Parliamentary and Presidential elections;
- in the same context, one should also include the important geographical contributions to two studies concerning the History of Romania, that is 1. Romania. Unitary geographical framework, and 2. Transylvania, Banat, Crişana and Maramureş (1997) and Transylvania, Banat, Crişana and Maramureş. Geographical features (2003);

- in these two cases, the aspects regarding the analysis of the *Geographical-Historical Provinces of Romania* were more accurately highlighted, as important books of mine concerning the Regional Geography of Romania had been published (*The Romanian Carpathians and Subcarpathians*, the first edition in 2000 and the second edition in 2006, *The Transylvanian Depression* in 2001, *Romania. The Western Hills and the Western Plain*, in 2005).

The above-mentioned situations allowed us and even made us try *to bring to normality the definition of the Geographical-Historical Provinces of Romania*, thinking about the best manner to solve the uncertainties. However, there are no problems in the eastern (Moldavia), south-eastern (Dobrudja) and southern (Muntenia and Oltenia) parts of Romania. On the other hand, there are a number of deficiencies in this regard in the central and western part of Romania. For that reason, this paper approaches mainly the central and western territories.

In order to reach the geographical territorial reality and the proper historical specificity to define the Geographical-Historical Provinces, which is not a simple problem as one might easily admit, we followed (not to say monitored) the manner of defining the components of central and western parts of Romania in mass-media (a central radio station, a regional radio station and two daily newspapers, a central one and a local-regional one)[1]. As a result of this analysis, the place names (toponyms) of Ardeal, Ardeal *combined with Transylvania, then Transylvania, Banat, Crişana and Maramureş* came out.

3. NAMES (TOPONYMS) SELECTED FROM THE FOLLOWED SOURCES

During the above-mentioned monitoring, we selected the most significant situations, which might be grouped as follows: **place names (toponyms) of Ardeal, place names (toponyms) of Ardeal in different combinations with Transylvania, Banat, Crişana, Maramureş or one of the other four Romanian provinces (Moldavia, Dobrudja, Muntenia and Oltenia), and the names (toponyms) of the Geographical-Historical Provinces of Romania according to the geographical and historical territorial reality**.

3. 1. Place names (toponyms) of Ardeal

In order to reach a certain degree of generalization concerning the name of **Ardeal**, we have selected a few examples from the available sources:

- "**Litigation at the boundary of Ardeal**. Negotiations. The heads of Harghita and Neamț counties met yesterday (July 2, 2009, our note) in the resort of Lacu Roşu to establish the administrative limits in the area of Bicaz Gorges";

- <***Ardeleni (people of Ardeal)*** **who "live" the Hungarian way.** Analysis. Hundreds of people of Arad, Satu Mare and Bihor gave up their houses in Romania in favour of those in Hungary. They prefer to commute to their jobs. Faur family, husband Mihai and wife Monica, together with their son Cozmin, commute daily between their home in the Hungarian village of Dombegyhaz… and the job and school in Arad>;

- **"Women of Ardeal go to Hungary to give birth.** More and more women of Ardeal, especially from the counties of Arad, Bihor, Timiş and Maramureş, choose to give birth in the Hungarian clinics. The safety of a birth without complications is the main reason why Romanian women choose the maternity wards of Hungary";

- **"Good morning** at … radio station, the hottest morning show in Ardeal (September 14, 2009)". This slogan was constantly repeated in the next period (the last time

[1] *For reasons of decency, we do not mention the respective mass-media. However, we stress that we are fully able to provide complete information regarding this approach if necessary.*

we heard it was in December 2010), in the above-mentioned form, or in reversed form: "The hottest morning show in Ardeal, good morning at … radio station";

- **"The plum brandy is boiling in the stills of Ardeal…**When hoarfrost is approaching, Ardeal is boiling. In the villages, one can smell the pure fruit on the streets, and tows of smoke are rising from the stills. It is brandy time. When the brandy starts boiling in the stills, nothing can remove the people of Ardeal from the fire";

- **<They shared the points.** "U" Cluj and FCM Tg. Mureş finished in a tie the most disputed match of the round (in November 2009, our note). Each of the two teams which have the pretension to promote dominated one half of the match, which deserved the title of the derby of Ardeal in the second league>;

- **"The top of the most beautifully adorned cities.** 1. Braşov. 17.62% of the readers of *www.adevarul.ro* consider that the city at the foot of Tâmpa is the most beautifully embellished city in Romania. Here, the pedestrian area of the City Hall Square is illuminated by tens of garlands, but the attraction of the historical centre is the 25 meter high fir tree. 2. Cluj-Napoca. 14.64% of the readers' votes went to the capital of Ardeal. Unirii Square of the city centre was arranged this year (December 2009, our note) according to a model from Vienna, with a skating rink, a stage where concerts take place every evening and a diorama presenting the birth of Jesus";

- **<He repairs the history of Alsace in northern Ardeal**. Exclusive. At Sighetu Marmaţiei, the French Patrick Kautzmann searches for the graves of Alsatian soldiers disappeared in World War II. For Patrick Kautzmann (50 years old), a native of Hochfelden, France, the finding of the graves of Alsatian soldiers disappeared in World War II is more than a passion. "It is our duty to honour our ancestors. And for this, we first have to find them", says the Frenchman…>;

- **"Baia Mare, the most polluted city in Ardeal.** The city of Baia Mare is classified third, after Bucharest and Galaţi, in the top of the most polluted urban agglomerations of our country. The environmental specialists of Baia Mare recorded last year (2009, our note) that the maximal allowed values for the sulphur dioxide and the total atmospheric dust were exceeded in more than 100 situations";

- **<Jorj "calls" for Boc to come home.** The president of the city organization, Mircea Jorj, asks the Prime-Minister Emil Boc to resign honourably… The leader of the social-democrats from Cluj blames the Prime-Minister – apart from the deplorable state of the country – for the thousands of not honoured promises, the lack of coherence in the act of governing, the "treason" of the people of Ardeal generally and the voters of Cluj especially, as well as the "servility" to Traian Băsescu and the political clientele of the DLP… When you were in the opposition, you talked a lot about the flaws of the Dâmboviţa politics. However, not only the verbal discharge unspecific for the people of Ardeal differentiate you from us, but also the capacity to immediately embrace the cynicism and impatience of those who always have the feeling that they deserve everything in this world… A few moments of calm and thinking in the manner of Ardeal is what we ask of you, Mister Prime-Minister. These moments may still save the country. Go home, out of respect for your ancestors, Mister Prime-Minister from Ardeal… Do you really consider us all fools, Mister Prime-Minister? Have you already forgotten that for us, the people of Ardeal, pride and dignity, as well as the honour of our word, represent our outmost important values, which made us stand up firmly in good and bad times? Once you swore with your hand on the Bible, that you would not sell our beliefs, and the next day you put them on the market. The people of Ardeal do not forget treason, Mister Prime Minister. The people of Ardeal can understand those who are not very capable, they can be patient with those not very experienced, but they can not accept servility>;

- **Petru Rareş, honoured at Cristeştii Ciceului.** At Cristeştii Ciceului, a settlement which is a part of Uriu commune, Bistiţa-Năsăud County, the formal ceremony of inauguration of the bust of Petru Rareş took place on 14-15 of August 2010. On this occasion, many scientific papers were presented, such as "Braşov, a revolving bridge in the relationship between Moldavia and Ardeal", "Linguistics interferences between Moldavia and Ardeal", "Ethno-cultural features in the relationship between Moldavia and Ardeal" etc.

3. 2. Place-names (toponyms) of Ardeal in different combinations with Transylvania, Banat, Crişana, Maramureş or one of the other four Romanian provinces (Moldavia, Dobrudja, Muntenia and Oltenia)

Just like in the previous situation, in order to support our approach, we briefly bring into discussion some examples corresponding to this subchapter:

- "**The shepherds of Ardeal can not sell their lambs.** ISSUES. The absence of the identification systems in the sheep flocks could leave the consumers without lamb meat for Easter, and the shepherds with an economic deficit. In most of the Transylvanian counties, the Veterinary Health Departments did not offer enough brands and without these the lambs can not be sold";
- "**Running water, a luxury for some of the people of Ardeal.** Absence. There are at least 159,000 people without running water in each county of Transylvania. This issue is not solved not even in the largest city of the region, Cluj-Napoca, where on Valea Chintăului Street one lives the same way as in the Middle Ages";
- **"From the kangaroo country back to the vampires` country. Via Sydney.** A technician dentist, from the Australian capital, very fond of the Romanian traditions, organizes the Transylvanian tour…**The tour of Ardeal for the Australians.** Now, the Australian company provide four day or one week tours of Transylvania, offering accommodation in authentic households of some families…";
- **The modern Transylvanian painters, presented to the world**. The youngest art gallery of the city at the foot of Feleacu Hill organizes an outstanding auction. " This event is a premiere of the auction, that will take place at the beginning of the next week, which proposes a number of paintings signed by important 20th century painters from Ardeal, who are classified as painters of "Cluj School" and "Baia Mare School";
- **"The palaces of Ardeal, murdered by indifference and indolence**. More than 500 residences of the nobility of Banat, Crişana, Transylvania and Maramureş are forgotten and left in dereliction, although they are declared historical monuments";
- **"Sojourn for all tastes in the Olt Valley.** The area which connects Transylvania with Muntenia is known for the large variety of tourist attractions… No matter if you come from Ardeal or Muntenia, the 50 kilometer long Olt canyon, carved by the river Olt in the Southern Carpathians, provides a wild view of unique beauty";
- **"Romanian, a foreign language.** DIFFERENCES. The people of Ardeal taken in Moldavia watch in amazement to those who talk. The same happens to the people of Muntenia or Oltenia, although theoretically they all speak the same language". In the map at page 26, the provinces are very accurately shown: Transylvania, Banat, Crişana, Maramureş, Moldavia (Bukovina is mentioned in the North), Dobrudja, Muntenia and Oltenia. In the North, the dialects of Banat, Crişana, Maramureş and Moldavia are represented, while the dialect of Muntenia is shown in the South (Dobrudja, Muntenia and Oltenia). "The dialectologists say that there is no linguistic unity in Ardeal, a dialect used in all Transylvania: in the South-East they speak like in Muntenia, in North like in Maramureş, in North-East similar to Moldavia, in West they use a dialect close to that of Crişana, and in South-West, to that of Banat";

- **"TIFF, the surprise from the heart of Ardeal.** In 2002, the first edition of the Transylvanian International Film Festival (TIFF) made its debut in the cinemas of Cluj-Napoca";
- **The monograph of the saint monastery of Nicula.** "Not many people know that Nicula is one of the oldest monastic settlements of the Romanian space. Attested in documents since 1552, it celebrates now four and a half centuries of existence, spiritual living and missionary achievement here, in the chest of Transylvania, like a heart beating in silence, and speaks while struggling. Hard times came over it, as they came all over Ardeal, but it stayed unflinchingly, like the oaks that guard it – some possibly having the same age – with their heads lying in the sky and their roots in the ground. Nicula is the icon of the nation";
- **<Parts of Ardeal stroke roots in Dobrudja.** The names of two villages of Constanța County – Abrud and Hațeg, in the commune of Adamclisi – keep the memory of the colonists from Ardeal who settled there more than one century ago. Several families have been brought from Transylvania in the area of Adamclisi, in three colonization waves. The traditions of the people from Ardeal are lost, as they mixed with those of the Turks and Tartars. More than one century ago, after Dobrudja became once again a part of Romania, Romanians were settled in the Turkish villages. Most of them were "mocani" (highlanders) from Ardeal. The commune of Adamclisi in Dobrudja, famous for its historical remains from the times of Romans and Dacians, comprises two villages, Abrud and Hațeg. Their names make one think of the towns of Transylvania bearing the same name>;
- **"The Union of the People of Ardeal and Banat launched its candidate for the Mayor of Cluj-Napoca.** The Union of the People of Ardeal and Banat (UAB), which for the moment is only a movement with political intentions, launched on Friday (December 3, 2010, our note), the candidate for the Mayor of Cluj-Napoca. The UAB candidate for the 2012 local elections … Emil Aluaș declared on Friday at a press conference that the UAB will be registered as a political party by 2012, the year of the local elections and that branches are about to be established in the 16 counties of Ardeal and Banat by Pro West Foundation";
- **"At Dej, the oldest sweet shop in Ardeal.** The oldest sweet shop in Transylvania is found at Dej. At the "Green Wood", confectioners still prepare sweets according to recipes dating from the middle of the 19th century";

3. 3. Place-names (toponyms) of the Geographical-Historical Provinces of Romania according to the geographical and historical territorial reality

Unlike the other two cases presented above, this situation totally matches the scientific demands for a logical and real definition of the different territorial compartments of Romania. Generally speaking, they are the following: **Transylvania, Banat, Crişana, Maramureş, Moldavia, Dobrudja, Muntenia and Oltenia.**

In order to demonstrate this, we selected a certain number of examples out of more than 120 available works regarding this issue:

- The decree-law no. 3631 of December 11, 1918, published in the Official Bulletin no. 212 of December 13, 1918, concerning the union of Transylvania, Banat, Crişana, Sătmar and Maramureş with the ancient Kingdom of Romania, is ratified and given the power of law, while the Law concerning the Agrarian reform in Transylvania, Banat, Crişana and Maramureş was issued on September 12, 1919;
- The issue brought into discussion is frequently presented in an appropriate manner in the *weather forecasts* (Dumitru Baltă, Adevărul). For instance, "in Romania, the air circulation will be from the North in Moldavia, the North-East in Dobrudja, from the East in

Muntenia, Oltenia, Transylvania, Crişana and Maramureş, and from the South in Banat" (April 2, 2009, p. 35). "The weather will be cloudy and precipitation will fall in most of the country. These will be in the form of snow in Banat, Oltenia, Crişana and Transylvania, rain, sleet and snow in Moldavia and Maramureş, and mostly rain in Muntenia and Dobrudja" (February 13, 2010, p. 19). "In the area of our country, pressure will drop especially within the Carpathian arch. It will be mostly cloudy in the West, North and centre of the country. Mainly during the day, there will be extensive showers in Maramureş and Crişana, locally in Banat and Transylvania, and in isolated places, in northern Moldavia" (December 7, 2010, p. 34).

- **<Anniversary symposium 1929-2009. "Romulus Vuia" National Ethnographic Park, 11-12 June 2009** (Manager of the Ethnographic Museum of Transylvania, Maria-Simona Munteanu, Făclia, 13-14 June 2009, p. 6). This is an excellent work concerning the concept of approaching the geographical-historical provinces of central and western Romania: "The founders of the Ethnographic Museum of Transylvania, famous scientists like Emil Racoviță, Sextil Puşcariu, George Vâlsan, Emil Panaitescu, Romulus Vuia, supported by the historians Nicolae Iorga and Vasile Pârvan, but also by the well-known French geographers Emmanuel de Martonne and Robert Ficheux, conceived the museum as a real institute of research to study all the cultural, national and spiritual phenomena of the ethnographical areas of Transylvania, as well as Banat, Maramureş and Crişana, in comparison and confluence with the ethnographical areas of Moldavia, Muntenia, Oltenia and Dobrudja, seen as a cultural whole entity of Romania". In the following, it says: <The study and reflection of the social, economic and cultural realities of the ethnographical areas of Transylvania, the enrichment and development of the museum heritage of "Romulus Vuia" National Ethnographic Park with more than 150 household units, constructions, peasant technical installations etc, have placed and classify the **outdoor section** of our museum among the first in the country with regard to the size of the collections and the major research issues. Apart from the issues concerning the ethnogenesis, continuity and perenniality of the habitat in Transylvania, the permanent demonstration of the unity in variety of the popular civilization and spirituality, the museologists and researchers of our institution studied at the same time the whole complexity of cultural phenomena regarding the life together with national minorities in the territory of Transylvania, Banat, Maramureş and Crişana>;

- **Names of cultural institutions and events** ("Transylvanian Wreath" Orchestra, Transylvania Jazz Festival, "Transylvanian Boy Dance" Festival, Transylvanian Longing Folk Ensemble, Transylvania International Film Festival, Transylvanian Plain Folk Festival, Transylvanian Quartet, the Orchestra and Chorus of Transylvania State Philharmonic, Transylvania Cultural Centre, Transylvania Fest Festival, "Transylvanian Voices" Choral Ensemble, "Dance in the Plain" Inter-County Festival, Transylvania Trio – Instrumental Trio Festival, Transylvania Guitar International Festival etc.) and **other situations** (Transylvania University of Braşov, Expo Transylvania, Transylvania Bank, "Transylvanian Cross" Distinction, "Transylvanian Dragons" 811 Manoeuvre Battalion belonging to the 811 Infantry Battalion of Dej etc);

- **The main wine varieties by regions, in Romania.** Banat, Dobrudja, Moldavia Crişana-Maramureş, Muntenia-Oltenia, Transylvania (Ştefan Both, Mariana Iancu, What are the boasts of Romanian vineyards this year, Adevărul, October 6, 2009, p. 6);

- **Ten years of heritage conservation, in images.** "Mihai Eminescu" Trust (MET), under the high patronage of His Royal Highness, Prince Charles of Wales, reached ten years of existence. On this occasion, it organizes an exposition in the Tailor's Tower in Cluj. The exposition includes photographs made in Transylvania, that present the conservation, valorization and restoration of heritage, especially of the Saxon villages of Transylvania. They are proud

of the peasant households and barns built around the fortified churches, which remained almost unchanged since the Middle Ages, keeping an unaltered image of the Transylvanian village. (Adevărul de Seară, October 23, 2009, p. 3);

- **December 1, 1918 – The Union of Transylvania with Romania.** This is a very comprehensive and well-documented work regarding the union of the Romanian geographical-historical provinces and the formation of Greater Romania. It renders, synthetically, <After the resolution of the Union was presented in front of the crowd, Gheorghe Pop de Băseşti declared "The National Meeting over". This is the way in which a great solemnity ended, consecrating a great victory of the whole Romanian nationhood. Chişinău, Cernăuţi, Bucharest – which welcomed its king coming back from exile on the same day of December 1, 1918 – and Alba Iulia are all the fortresses of the Romanian nation where decision was taken to reunite the Romanian people, by the union of the Romanian provinces of Bessarabia, Bukovina, Transylvania, Banat, Crişana and Maramureş> (University Professor Ioan Boja, Ph.D., Făclia, 28-29 November 2009, p. 1 and p. 4);

- **Vegetables, 50% more expensive in the stores.** Mihaela Transilvăneanu (36 years old, from Bacău), the owner of a vegetable store in Castellon, is complaining about the prices (Laura Chivu, Adevărul de Seară, December 10, 2009, p. 10);

- **<About the "sickle of the beauties" and other values of the Traditional Heritage.** Yesterday, the opening of one of the most impressive temporary expositions in recent times took place at the Transylvanian Ethnographic Museum of Cluj-Napoca. It presented **Ethnographical Areas of Transylvania: Pădureni and Haţeg Land.** One should mention that, by this, the Museum ... initiates a series of temporary expositions which would present the main ethnographic areas of Transylvania. Their purpose is to highlight both the common background of the material and immaterial popular culture and the specific peculiarities of some areas that are well-defined geographically and toponymically>. Then, the paper written by Maria Simona Munteanu, manager of the Ethnographic Museum of Transylvania, mentions the fact that the setting up of the museum started from the collection of 1260 objects and 1660 photos made by Romulus Vuia, in the area of Pădureni and Haţeg Land, in 1922. The two areas communicate by means of Strei Valley with the Mureş Corridor, by the Iron Gates of Transylvania with Banat, and by Merişor Pass with Jiu Valley and Oltenia (Michaela Bocu, Făclia, January 20, 2010, p. 7);

- **Saxons from all over the world gather at Bistriţa.** "On the streets of Bistriţa, the German language came again into its own rights, after tens of years of absence. The annual meeting of Saxons from all over the world, traditional event which is organized for the first time at Bistriţa has already brought in the old borough hundreds of Transylvanian Germans" (Simona Bozbici, Adevărul, September 18, 2010, p. 9);

- **Ethnographical areas of Transylvania: Nösnerland (Bistriţa Saxons).** This is a temporary exposition, opened on October 12, 2010, at the Ethnographical Museum of Transylvania. This event continues the series of events dedicated to the main ethnographical areas of Transylvania. The area taken into consideration, comprising 33 villages initially inhabited by Saxons, grouped around the city of Bistriţa, was named **Nösnerland** by the local Saxons (who were settled in this area since 1150). The Saxons of this area formed a community with specific features: the larger fruit production in Transylvania, cultural permeability in the contact with other ethnic groups. The Saxons had the role of cultural agents of Central Europe in Transylvania, by means of the guilders who specialized in the German space (Făclia, October 13, 2010);

- **Prince Charles advertises Romania.** Great Britain's Prince Charles promotes Transylvania in a video clip broadcast in the USA. The images are part of the campaign entitled "Transylvania - heritage and future", organized by "Mihai Eminescu" Trust, the Romanian Embassy at Washington and the Romanian Cultural Institute in New York (Adevărul, October 20, 2010, p. 3);
- **Cluj Radio Station, November 1, 2010, 6.10 am,** Alina Vigoniuc: today is All Saints Day, celebrated all over the country, but especially in Transylvania, Banat, Crişana and Maramureş.

4. SYNTHESIS REGARDING THE APPROACHED ISSUE

The general monitoring of the names (toponyms) of the major territorial components of Romania, the geographical-historical provinces, it comes out that, generally speaking, the issue is properly solved for the eastern part - **Moldavia**, the south-eastern part – **Dobrudja**, and southern part – **Muntenia** and **Oltenia**. There are however a number of significant deficiencies regarding central and western Romania. This paper approaches mainly these areas.

As a result of this fact, we stressed the manner of presentation of the names (toponyms) of the provinces in the central and western part of Romania in a number of selected examples, above. According to the demand of the readers, it is possible for the author to make available many other similar examples. Several significant aspects come out, as following:

- the definition of the geographical-historical provinces is rendered, generally, in the three forms mentioned above: *Ardeal, Ardeal in different combinations with Transylvania, Banat, Crişana, Maramureş or one of the other four Romanian provinces* (Moldavia, Dobrudja, Muntenia and Oltenia), and then the names (toponyms) of the geographical-historical provinces according to the geographical and historical territorial reality;
- regarding the *name (toponym) of Ardeal*, its origin is explained in different manners usually by people who have no sufficient contact with the territorial reality where it is applied. As a consequence, the previous examples cannot render with enough clarity to which part of the central or western Romania this name can be applied, and confusions are significant. Moreover, without getting into much detail, once a person is asked to identify himself/herself, at the level of geographical-historical province (which classified second, while the first is Romania, the third is the county, then the settlement, with certain peculiar cases)[1], if he/she answers that he/she is from Ardeal, when asked to identify the corresponding territory, he/she starts shrugging the shoulders. As a matter of fact, confusions in this matter go from attributing the name of Ardeal to the territory within the Carpathian space, to this area and other components in western Romania, or all these together (see the above-mentioned examples);
- in the second situation, ***Ardeal in different combinations with Transylvania, Banat, Crişana, Maramureş or one of the other four Romanian provinces (Moldavia, Dobrudja, Muntenia and Oltenia)***, the use of the names are mostly inconsistent with the geographical and historical reality, as many strange combinations are recorded (Ardeal/Transylvania, Transylvanians/Ardeleni, Ardeal/Banat, Crişana, Transylvania and Maramureş, Ardeal/ Muntenia, Ardeal/Transylvania, Dobrudja, Ardeal/Banat, Ardeleni/ Bănăţeni etc.);

[1] *For instance, the author identifies himself as Romanian, Transylvanian, from Cluj (county) and also from Cluj (residence), from Calna (origin, the village of Calna, Vad commune, Cluj County; moreover, at the level of the village I am "susan", from the upper half of the village, while the villagers of the lower half are "joseni", and one villager from there is "josan").*

- the names (toponyms) of the Geographical-Historical Provinces according to the geographical and historical territorial reality, the third situation approached in this paper, represents the proper definition of the spatial components in the central and western part of Romania. **Transylvania** generally corresponds to the Transylvanian Depression and the surrounding Carpathian space (crossed by Someş, Mureş and Olt). **Banat, Crişana and Maramureş** lie along the western side of Romania, represented from West to East by the *Western Plain* (the plains of Banat, Crişana and Someş), the *Western Hills* (of Banat, Crişana and Silvano-Someşene), the western slopes of the Western Carpathians (Banat, Poiana Ruscă and Apuseni Mountains) and then parts of the *Northern Group of the Eastern Carpathians* (Oaş, Gutâi and partly Ţibleş Mountains), Maramureş Depression, the western slopes of Maramureş Mountains, the northern slopes of Rodna Mountains etc. The approached issue is defined well enough by the examples provided above.

Fig. 1. The geographical-historical provinces of Romania and the county seats.

The entire complex set of analyzed issues, taking into account the correctness of those who approached the issue concerning the definition of the second level territorial components, provide the opportunity to emphasize the existence of *eight geographical-historical provinces* in Romania (level one), characterized by, one can say, an almost perfect spatial distribution.

Thus, in central Romania lies the heart of Romania (as it is frequently named), **Transylvania**, with ten out of the 42 administrative-territorial units of the country: the counties of Cluj (Cluj)[1], Sălaj (Zalău), Bistrița-Năsăud (Bistrița), Alba (Alba Iulia), Mureş (Târgu Mureş), Harghita (Miercurea-Ciuc), Hunedoara (Deva), Sibiu (Sibiu), Braşov (Braşov) and Covasna (Sfântu Gheorghe), followed by **Banat** with the counties of Arad (Arad), Timiş (Timişoara) and Caraş-Severin (Reşița), **Crişana**, with Bihor County (Oradea) and **Maramureş**, with the counties of Satu Mare (Satu Mare) and Maramureş (Baia Mare). The four provinces correspond with the landform units mentioned above (fig. 1).

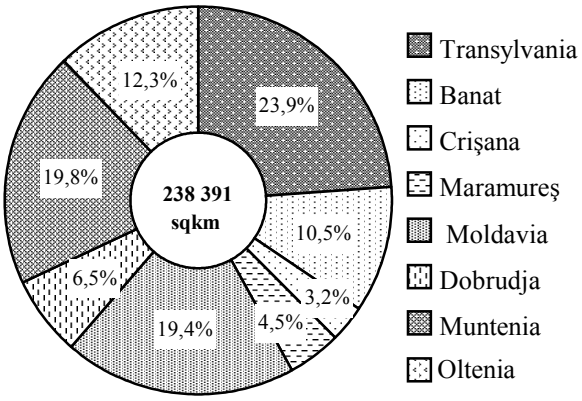


Fig. 2. The weight of the areas of the geographical-historical provinces compared to the area of Romania, in 2007.

The eastern part of Romania, which corresponds from the point of view of orography to the Moldavian Plateau, the Moldavian Subcarpathians and most of the eastern slopes of the Eastern Carpathians, is comprised in the **geographical-historical province of Moldavia**, which includes eight paired counties, which are from North to South: Suceava (Suceava) with Botoşani (Botoşani), Neamț (Piatra-Neamț) with Iaşi (Iaşi), Bacău (Bacău) with Vaslui (Vaslui) and Vrancea (Focşani) with Galați (Galați). In the South-East, the counties of Constanța (Constanța) and Tulcea (Tulcea) form the province of **Dobrudja**, which corresponds to the Dobrudja Plateau and the Danube Delta from the point of view of landforms.

Area, number of inhabitants and density of population of the geographical-historical provinces of Romania, in 2007

Table 1

Crt. no.	Geographical-historical provinces	Area sq km	%	No. inhabitants	%	Inhabitants/ sq km
1	Transylvania	57056	23.9	4248350	19.7	74.5
2	Banat	24971	10.5	1452158	6.7	58.2
3	Crişana	7544	3.2	594131	2.8	78.8
4	Maramureş	10722	4.5	879270	4.1	82.0
5	Moldavia	46173	19.4	4733710	22.0	102.5
6	Dobrudja	15570	6.5	968971	4.5	62.2
7	Muntenia [1]	47143	19.8	6381124	29.6	135.4
8	Oltenia	29212	12.3	2279849	10.6	78.0
	Romania	**238391**	**100.0**	**21537563**	**100.0**	**90.3**

[1] *Ten counties and Bucharest City.*

[1] *The county seats are written between the brackets.*

Concerning the large territory in the South of Romania, seen from a very general perspective, one may notice that it covers the southern slopes of the Southern Carpathians, and partly those of the Curvature Carpathians, then the Getic and Curvature Subcarpathians, the Getic Plateau, the plains of Muntenia and Oltenia, down to the Danube. These territories are part of the geographical-historical provinces of **Muntenia**, with the counties of Argeş (Piteşti), Dâmboviţa (Târgovişte), Prahova (Ploieşti), Buzău (Buzău), Teleorman (Alexandria), Giurgiu (Giurgiu), Ilfov (Bucureşti), Călăraşi (Călăraşi), Ialomiţa (Slobozia), Brăila (Brăila) and Bucharest City, and **Oltenia**, with the counties of Gorj (Târgu Jiu), Vâlcea (Râmnicu Vâlcea), Mehedinţi (Drobeta-Turnu Severin), Craiova (Craiova) and Olt (Slatina).

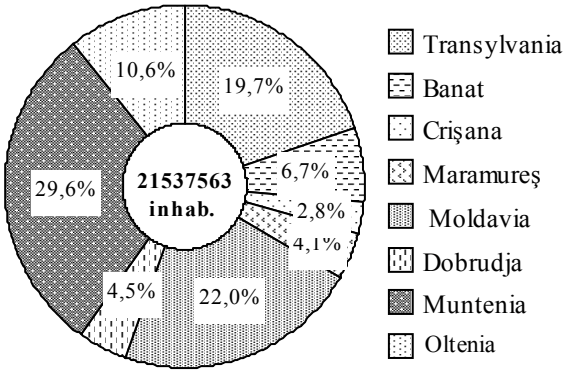


Fig. 3. The weight of the number of inhabitants, by geographical-historical provinces of Romania, in 2007.

In order to have a general view on the geographical-historical provinces of Romania, it was considered necessary to highlight two fundamental features of the analyzed territorial units, *the area and the number of inhabitants*, rendered in *absolute and relative values*. In normal relation to these, we also took in consideration the distribution of population, rendered by the population density (inhabitants/sq km) (table 1).

Regarding the first feature – *the area* – it comes out that the highest weight, reaching almost one quarter of the Romanian territory (238391 km^2), belongs to Transylvania (23.9%), followed by Muntenia (19.8%, of which 0.1% or 228 km^2 belong to Bucharest City), Moldavia (19.4%), Oltenia (12.3%) and Banat (10.5%). The values are below 10% for the other provinces, and the lowest one is recorded in the case of Crişana (3.2%), which is made up by only one county, Bihor (tab. 1 and fig. 2).

In the case of the second feature – *the number of inhabitants* – at the level of the year 2007 one notices the presence of quite different relative values from one province to the other. The highest weight is recorded in Muntenia (29.6%, of which 9% or 1,931,838 inhabitants, are in Bucharest only), followed, in decreasing order, by Moldavia (22%), Transylvania (19.7%), Oltenia (10.6%), Banat (6.7%), Dobrudja, Maramureş and Crişana (tab.1, fig. 3).

The relationship between the number of inhabitants and area highlights the degree in which people are distributed across the geographical-historical provinces, expressed by *population density* (inhabitants/sq km), which is quite different from one situation to the other.

So, compared to the national average of 90.3 inhabitants/km^2, recorded in 2007, the highest value is registered in Muntenia (135.4 inhabitants/km^2). The value changes significantly if the density is calculated separately for Bucharest City (8473 inhabitants/km^2) and then Muntenia with the other ten component counties (94.8 inhabitants/km^2). Apart from the situation of Muntenia, population density values above the national average are recorded only in Moldavia (102.5 inhabitants/km^2), while they decrease in the other provinces: Maramureş (82 inhabitants/km^2), Crişana (78.8 inhabitants/km^2), Oltenia (78 inhabitants/km^2), Transylvania (74.5 inhabitants/km^2), Dobrudja (62.2 inhabitants/km^2) and Banat (58.2 inhabitants/km^2).

The analysis of the geographical-historical provinces of Romania at the level of *their geographical distribution* within the country, based on area and population indicators, leads to the fact that the provinces of central and western Romania (Transylvania, Banat, Crişana and Maramureş) cover 42.1% of the area of Romania (238,391 km^2) and 33.3% of the population (21,537,563 inhabitants). The eastern province of Moldavia covers 19.4% and has 22% respectively, the south-eastern province of Dobrudja 6.5% and 4.5%, while the southern provinces (Muntenia, with 10 counties and Bucharest City, and Oltenia) with 32% and 40.2%.

5. CONCLUSIONS

The issue approached in this paper involves the opportunity to emphasize several general issues regarding the second-level territories, considering Romania as level one:

- the territories taken into consideration are *geographical-historical provinces*. Their comprehension under this name is supported by the geographical position within Romania, the *physical-geographical features* (morphology, climate, drainage, vegetation, fauna, soils, soil and mineral resources) and *human-geographical features* (population, settlements, the whole range of human activities). On top of all these conditions, one adds the complexity of *historical facts* taking place since the beginning of mankind until today;
- in time, on the basis of the above-mentioned determining factors, the **names (toponyms)** of the different compartments of the country took shape, the present-day geographical-historical provinces. As it comes out from the previous analysis, they are rendered in a generally accepted manner in the East (Moldavia), South-East (Dobrudja), and South (Muntenia and Oltenia) of the country. In central and western Romania, because of certain views, not always consistent with the reality of the determining factors, there are rather significant deficiencies, stressed properly in the examples mentioned above in this paper;
- in a rather large number of articles available to the mass-media consumers, the relatively frequent definitions of Ardeal and Ardeleni (people of Ardeal) include the entire territory of the central and western Romania or only to parts of this territory. Then, the definition of *Transylvania* and *Transylvanians* also comprises the space within the Carpathian arch and the western side of Romania, or some components of the territory at issue;
- of course, contrary to that, mass-media draws up and broadcasts to those interested many articles which properly define, on the basis of the determining factors mentioned above, the geographical-historical provinces of the central and western Romania, **Transylvania** in the former, and **Banat, Crişana and Maramureş** in the latter, from South to North;
- it must be said, then, on one hand, that the territories comprising central and western Romania cannot be defined, together, under the name of *Transylvania*, because in a cross section from West to East (Chişineu Criş – Ştei – Turda – Târgu Mureş – Sovata – Gheorgheni, for instance), the landforms are represented by the Western Plain, the Western Hills, Apuseni Mountains, Transylvanian Depression and then Gurghiu Mountains. In this situation, according to the simplest reasoning, it is not allowed to state that we deal with a territory beyond the forest. On the other hand, for the same reasons, the space under discussion can neither receive the name (toponym) of *Ardeal* etc.

Generally speaking, taking into account the facts analysed above (as there were and will be many other approaches to this issue), one should emphasize two situations that necessarily compel recognition:

- one should accept that the second-level components of the Romanian territory (as level one is Romania and the counties form the third level) are to be named **geographical-historical provinces**. There are eight such provinces, distributed in a proper and functional manner: **Transylvania**, in the central part, *the heart of Romania*, then from South to North, along the western side, the provinces of **Banat, Crişana** and **Maramureş. Moldavia** lies to the East of Transylvania, **Dobrudja** in the South-East (between the Danube and the Black Sea), and the provinces of **Muntenia** and **Oltenia** in the South;

- in order to remove the numerous deficiencies regarding the use of names (toponyms) of the central and western territories of Romania, the toponym of **Ardeal** should be gradually *abandoned*, as it does not cover any territory of Romania. The situation is demonstrated, among other cases, by the fact that different people who use this name, when questioned about the nominal materialization of the corresponding space, start looking in all directions, shrug their shoulders or stare to the person asking.

REFERENCES

1. Pop, Gr. (1991), *The National Structure of Romania's Population*, Studia UBB. Geographia, 2, Cluj-Napoca.
2. Pop, Gr., Bodocan, V. (1991), *Opţiuni electorale pentru alegerea primarilor în Banat, Crişana-Maramureş şi Transilvania*, Studia UBB. Geographia, 2, Cluj-Napoca.
3. Pop, P. Gr. (1992), *Romania. An Electoral Geography (September-October, 1992)*, Studia UBB. Geographia, XXXVII, 1-2, Cluj-Napoca.
4. Pop, P. Gr. (1997), *România. Geografie Electorală (Noiembrie, 1996)*, Studia UBB. Geographia, Anul XLII, 1-2, Cluj-Napoca.
5. Pop, Gr. (1997), 1. *România. Cadru geografic unitar; 2. Transilvania, Banat şi Crişana-Maramureş, Unităţile de relief din Transilvania, Banat şi Crişana-Maramureş*, în Istoria României. Transilvania, vol. I, Edit. "George Barițiu", Cluj-Napoca.
6. Pop, P. Gr. (2000), *Carpaţii şi Subcarpaţii României*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
7. Pop, P. Gr. (2001), *Depresiunea Transilvaniei*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
8. Pop, P. Gr. (2001), *România. Geografie Electorală (noiembrie-decembrie, 2001),* Revista Română de Geografie Politică, Anul III, nr. 1, Edit. Universităţii din Oradea.
9. Pop, P. Gr. (2003), *Transilvania, Banat, Crişana şi Maramureş. Caracteristici geografice, Istoria Transilvaniei, vol. I (Până la 1541)*, Institutul Cultural Român, Centrul de Studii Transilvane, Cluj-Napoca.
10. Pop, P. Gr. (2004), *Structura etnică a populaţiei României, în anul 2002*, Revista Română de Geografie Politică, Anul VI, nr. 1-2, Edit. Universităţii din Oradea, Oradea.
11. Pop, P. Gr. (2005), *România. Dealurile de Vest şi Câmpia de Vest*, Edit. Universităţii din Oradea, Oradea.
12. Pop, P. Gr. (2006), *România. Geografie Electorală (Noiembrie-Decembrie, 2004)*, Studia UBB. Geographia, LI, 1, Cluj-Napoca.
13. Pop, P. Gr. (2010), *The Parliamentary Elections in Romania (November 30, 2008),* Studia UBB. Geographia, Anul LV, 1, Cluj-Napoca.
14. Pop P. Gr. (2010), *European Parliament Elections in Romania, 7 June 2009*, Revista Română de Geografie Politică, Romanian Review on Political Geogoraphy, Year XII, no. 2, November 2010, Edit. Universităţii din Oradea, Oradea, 2010.
15. Pop P. Gr. (2010), *Presidential Elections in Romania. First Round (November 22) and Second Round (December 6),* Studia UBB. Geographia, 2, Anul LV, 2010.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE COUNTIES OF TRANSYLVANIA AND PARTIUM. A HISTORICAL-GEOGRAPHICAL PERSPECTIVE

CS. M. KOVÁCS[1]

ABSTRACT. – The Counties of Transylvania and Partium[2]. A Historical-Geographical Perspective. The administrative organization of the state territory has always been one of the most important means of the state to exercise its power. The evolution of the territorial administration since the Modern Age shows on the one hand the ways in which the central power tried to reinforce its control over the smaller territorial units, the towns and villages of Transylvania, on the other hand the fight of the local units and authorities in order to maintain their traditional autonomy and more recently to gain new rights on the field of local autonomy. The cartography of the counties along the centuries also shows the attempts of the central power to divide the various ethnic and religious communities of Transylvania in order to control them more easily, and more recently to reinforce the assimilation of the ethnic minorities.

Keywords: *county, chair, district, province, region, autonomy, administrative reform.*

The administrative organization of the state territory has always been one of the most important means of the state to exercise its power, both from the point of view of current (military, legal, fiscal, religious) affairs and from that of long term political strategies. At the beginning of the Modern Age the Romanian Countries under turkish sovereignty (Transylvania included) were keeping largely their administrative units formed since the Middle Ages. Among these, the most important were the *counties,* like in the great majority of European countries. As basic units of the military administration, with major fortified cities as centers, they also had important other functions, such as economical (tax paying), legal and even religious functions, because many of them coincided with the dioceses or with the smaller ecclesiastical districts. Apart from the counties, in Transylvania there were also the *Saxon and Szekler chairs* as specific units of the medieval nations' autonomy, disposing of important and jealously defended privileges.

The geopolitical changes of the late 17th century altered significantly the frontiers in Southeasten Europe and within them the role of the administrative units inherited from the feudal period. If in the era of Turkish domination the role of the counties and chairs was restrained to fiscality and to the current local affairs within the frames of a relatively large

[1] *„Babeş-Bolyai" University, Faculty of Geography, 400009, Cluj-Napoca, Romania, csaba@geografie.ubbcluj.ro*

[2] The name *Partium* was used to designate the territories from Eastern Hungary attached to the Principality of Transylvania in the 16th century. Their rulers and frontiers constantly changed, remaining only a few counties after 1660. Abolished as an administrative unit in 1876, the name Partium was used after 1920 for the teritories situated to West of historical Transylvania, including the parts of Banat, Crişana, Satmar and Maramureş that came to Romania conformly to the peace treaties of Versailles.

autonomy of the Principality of Transylvania, after the Habsburg conquest they came into the attention of the new Austrian central administration, representing at the same time one of the most important resistance forums for the Hungarian Estates of the Realm against the centralizing tendencies of Habsburg absolutism.

In the first half of the 17th century, the territory of the Principality of Transylvania, to which once were attached not only the counties of Maramureş, Crişana and Banat (the so-called *Partium*), also included 7 counties from Upper Hungary (among which Satu Mare) following the peace treaties of Nikolsburg (1621) and Linz (1645). But after prince George Rákóczi II's unfortunate adventure in Poland and the following Turkish intervention, this territory was reduced to minimum after the Turks took the cities of Ineu, Lugoj, Caransebeş (1658) and Oradea (1660) and then the Habsburgs accepted these losses by the peace of Vasvár (1664). Beyond the ancient territory of the mediaeval province, it still included the counties of Maramureş, the Land of Chioar, Middle Solnoc, Crasna, a stripe of northern Bihor until Debrecen and the eastern part of Zarand, the rest of Crişana and Banat being under turkish rule within the vilayets of Oradea and Timişoara (fig. 1). Prince Michael Apafi I (1661-1690), though had the longest reign among all the princes of Transylvania, could not improve this situation, making only efforts to maintain the fragile balance between the Habsburg and Ottoman empires. The international situation became even more complicated after 1672, when the Turks took from Poland Kameniec (the greatest city in Podolia), and after count Imre Thököly became leader of the anti-Habsburg (kurutz) rebels who, with the support of the Turks and of the French king Louis XIV, started to take over the cities of Upper Hungary and declared himself in 1682 prince of a newly formed Turkish vassal principality. But the geopolitical context was to change soon, after the failed Turkish assault on Vienna (July-September 1683) and especially after the Habsburg conquest of Buda (September 1686), following which the largest part of Hungary was conquered and Transylvania occupied by the Austrian imperial troops.

The occupation of Transylvania in 1686 resulted in the almost complete abolition of the autonomy Transylvania enjoyed during the last one and a half century. However, after the Ottoman counteroffensive of 1690 and thanks to the diplomatic efforts of chancelor Nicholas Bethlen, the Estates of Transylvania obtained an honorable compromise by the Leopold Diploma (enacted the next year), which provided for Transylvania an even more favourable status than that of Hungary within the Empire (declared a hereditary province in 1687). The provisions of the Diploma, which became the legal basis of the Habsburg supremacy for the following decades, didn't recognize the sovereignty of Transylvania and were repeatedly broken ever since 1693, but provided a certain level of autonomy within the frames of the Empire.

The peace treaty of Karlowitz (1699) fixed for the first time (at the level of the settlements and on the map) the new frontiers of South-Eastern Europe: thus Hungary and Transylvania were incorporated into the Habsburg Empire, minus the province of Banat, still under Turkish occupation for another 19 years. Soon after the peace treaty the first border guard regiments were founded as administrative units along the Turkish-Austrian frontier, with a slavic (Serbo-Croatian) predominance at first. The unity of the former Kingdom of Hungary was not restored, Transylvania and the Partium participating as separate provinces. The antihabsburg liberation war conducted by prince Francis Rákóczi II (1706-1711) took partially place in Transylvania, but it didn't bring any major change to the administration, especially because the greater part of the territory was rapidly occupied

by the imperial troops. The peace treaty of Satu Mare (1711), though admitted the defeat of the kurutz movement, was not an unconditional surrender, but realized a new historical compromise between the Hungarian Estates and the Court of Vienna, maintaining the dual monarchy, i.e. hereditary, but restoring some traditional feudal institutions such as the Parliament and the autonomy of the nobles' counties. The peace treaty inaugurated at the same time a long period of political and military stability which (with the exception of the Tartar invasions of 1717 and 1736) provided a favourable frame for the economic development of Hungary and Transylvania.

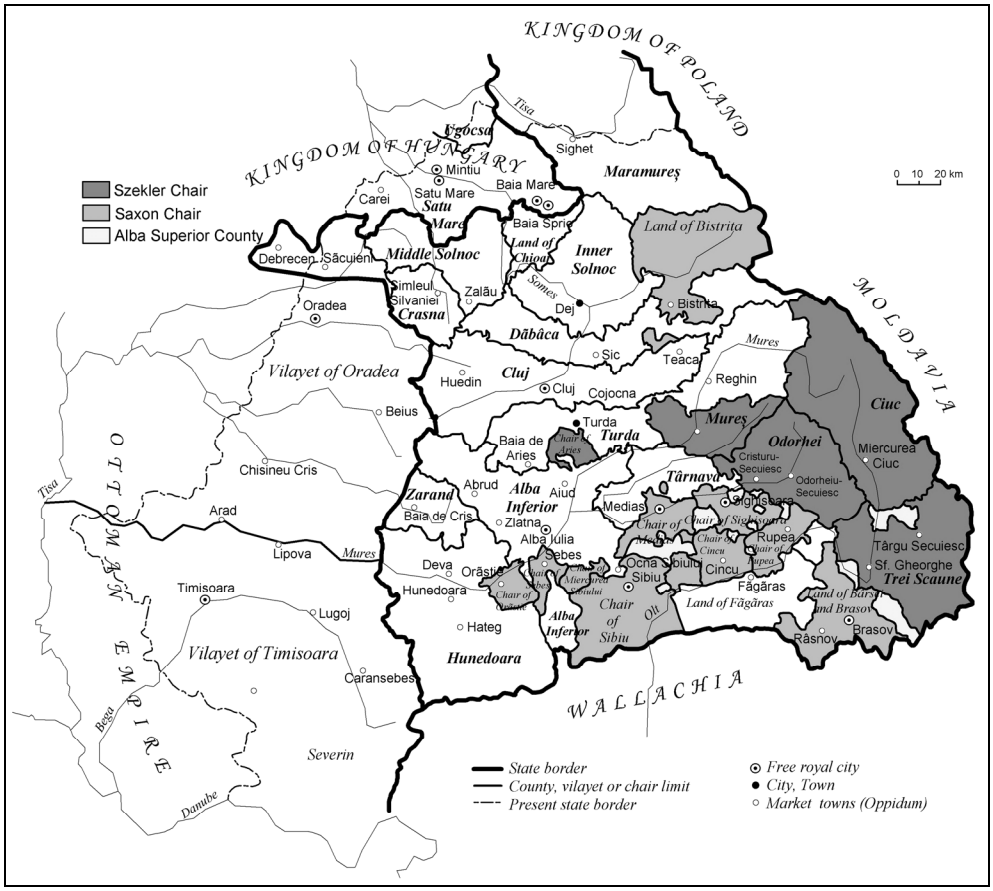


Fig.1. The Principality of Transylvania after the Peace of Vasvár (1664). Source: A. Szabó M., 2006.

The strategic importance of Transylvania was proven during the Turkish-Habsburg wars of the 18th century. The first one, concluded by the peace of Passarowitz (1718) had as consequences not only the coquest of Banat, but also the annexation of northern Serbia and Oltenia (Little Wallachia), the last two provinces being lost in the next war, in 1739, by the

treaty of Belgrade. The frequent wars and the permanent Turkish threat left their mark on the administrative organisation of the newly conquered territories of the Empires, thus the military criterium was primordial. Transylvania was under severe military supervision ever since the beginning of the century, relaxed gradually after 1711: in 1712-1713 the Gubernium was restored, the military and fiscal problems directly subordinated to the Imperial Chamber. The main role in the decision making was played by the *Ministerialkonferenz in rebus Transylvanicis,* under the leadership of prince Eugene of Savoy between 1711 and 1736 (Zs. Trócsányi, 1988). The *Pragmatic Sanction* (the imperial decree meant to ensure the succession to the throne by females too), imposed in 1722, firstly on Transylvania, then on Hungary too, represented the legal base for the political relationship between the central power and the provinces of the Empire until 1848. For the Principality of Transylvania, the heredity was proclaimed only in 1744, then in 1765 it became a Great Principality (Grossfürstenturm).

The situation of the *Partium*'s territories remained ambiguous between 1711 and 1732, as from the general administration's point of view they remained attached to Transylvania, but fiscally they belonged to Hungary. This situation took an end in 1732, when a decree of emperor Charles VI divided the province into two parts: the counties of Maramureş, Arad and the western part of Zarand were reincorporated to Hungary, while the eastern part of Zarand, Middle Solnoc, Crasna and the Land of Chioar were attached to Transylvania, only the latter territories being named *Partium* after this date.

Typical creations of the military administration, the border guard districts were in their majority separated from the southern parts of the Kingdom of Hungary, having as declared purpose the defense against the Ottoman threat. The districts of Mureş and Tisa (in the vicinity of the Vilayet of Timişoara), abolished only in 1750, were in contact with present Romanian territories. Although the Banat of Timişoara was annexed in 1718, it wasn't reincorporated into Hungary until 1788, being administered directly from Vienna. In its southern part they organized the German, Illyrian (Serbian) and Romanian border guard districts. Between 1762 and 1766 the border guard districts were organized also in Transylvania (the district of Năsăud and the Szekler districts). The administrative division and the spatial segregation resulting from this had not merely military, but political reasons, aiming the division among different ethnic groups and the separation within the same ethnic communities, on the basis of the principle *divide and rule (divide et impera)*.

Under the Habsburg's domination, one of the most important elements of the territorial administration remained the *autonomous nobles' county.* The role of the county as defender of the nobility's rights became obvious especially after the peace of Satu Mare, when it was the most solid and effective institution of the Hungarian Estates. The nobles' county had among its responsibilities the administration and the justice at middle territorial level, but it also contributed to the accomplishment of military assignments. As the tax collecting was also among the counties' attributions, they had the power of supervising the decisions of the central government or even refuse their execution, so the absolutistic experiments regularly failed on the resistance of the counties. The central organ of the autonomous county was the *general assembly,* under the leadership of a lord lieutenant (prefect) named by the emperor. The administrative jurisdiction of the counties included also the market towns and the communes. The market towns (*oppidum*) were under secular or ecclesiastic nobiliary jurisdiction, but some of them were depending directly on the

Imperial Treasury (Chamber). The *communes* depended much more on the great landlords, having though a certain level of self-government (L. Katus, 2007).

The fourth „estate" disposing of representation in the parliament were the *free royal cities*, whose number increased significantly during the 18th century, so Transylvania was numbering 11 free royal cities in 1846. These belonged directly to the royal jurisdiction, but the previously formed democratic institutions of the urban self-government degraded progressively all along the 18th century: the leadership of the cities was gradually seized by an oligarchy represented by the rich bourgeoisie or the so-called patricians. The *General Assembly* gradually lost its role and was even abolished in many cities, its place being taken by the *External Council,* whose members were elected by the *Internal Council* (which controlled the city effectively), formed by the mayor, judge, captain of the guards, notary and juries. The president of the council was usually the judge, more rarely the mayor of the city.

The administration of the territory of Transylvania at the middle and lower levels was based on the territorial segregation of the *three nations.* On the Hungarian nation's territories (the 8 counties and the Land of Făgăraş), as well as in the Partium, the administrative organization of the counties was similar to those from Hungary (fig. 2). The five *Szekler Chairs* were leaded by the freely elected grand royal judges. The *Saxons' territorial self-government* was divided into 9 chairs and 2 lands (districts). The judges and the counsellors were elected by the Saxon „Nation". The president of the *Saxon University*, the common institution of the Saxon Nation, was the royal judge of Sibiu (the *comes* of the Saxons), elected by the Saxon cities. Besides the free royal cities, there also were in Transylvania the so-called *nobiliary cities,* disposing of common liberties (idem).

The most important administrative reforms of the 18th century were implemented during the rule of emperor Joseph II, who usually introduced the reforms in the spirit of the enlightened despotism, from above, in a self-willed manner. Though in 1790 (before his death) he was forced by the great nobles to withdraw most of his reforms concerning the Hungarian crown territories, his attempt to put the administration of the Empire on new, modern basis deserves all the attention. Among the most important reforms concerning our country's territory were: the unification of the Chancellor's Offices of Hungary and Transylvania, the introduction of the German official language and the decree for the first census of the population. Because of the „insolent and stupid" resistence of the Hungarian nobles to these reforms, the emperor decided to abolish the organs of the States' self-government. The introduction of the „*new order"* in the administration started in 1794 in Transylvania, when after the *abolition of the Saxon and Szekler chairs,* they organized 11 counties in the Great Principality. In the next year Hungary was divided into *10 districts,* and Transylvania into 3 (with Sibiu, Cluj and Făgăraş as capitals of district), leaded by imperial commissioners. For the introduction of the new fiscal system an exact evaluation of the lands and of their revenues was needed, that is why in 1786 they started the first cadastral survey in the Empire (Zs. Trócsányi, 1988).

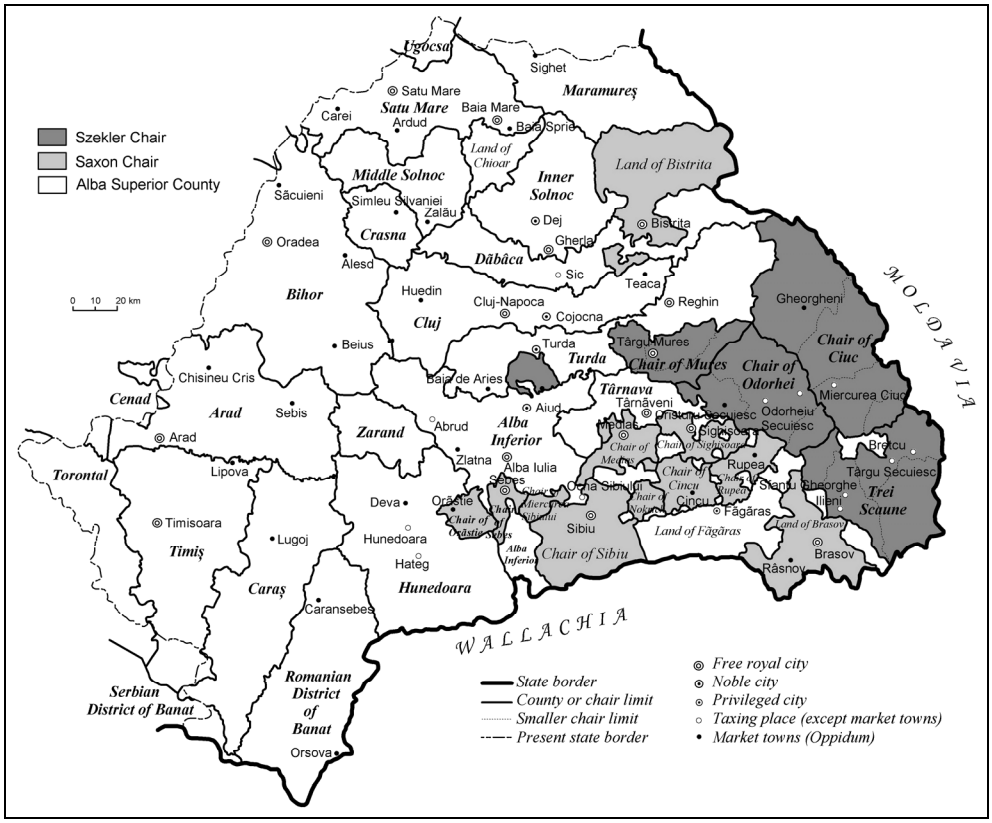


Fig. 2. The administrative units of Transylvania, Banat, Crişana, Satmar and Maramureş in the late 18th- early 19th centuries. Source: A. Szabó M., 2006.

The next wave of reforms was started in the 1830's, when the struggle for the introduction of the constitutional monarchy and for the widening of the provinces' autonomy also started in the Parliament. In the field of the territorial administration, by the law XXI/1836 the remaining territory of the Partium was separated from Transylvania and reattached to Hungary. During the Parliament of May 1843, important administrative reforms were proposed, such as: the democratization of the free royal cities' representation in the Parliament, the organization of the market towns' and communes' self-government, the reform of the counties' assemblies and of the elections for the legislative organs etc. Unfortunately none of these initiatives was materialized by adopted laws, partly because of the great nobles' opposition and partly because the main conflict between the centralists and the pro-reform opposition concerned just the attributions and the future of the counties. The Parliaments previous to the 1848-1849 Revolution also debated the problem of the unification of Transylvania to Hungary, demanded especially by the Estates of Hungary, but not supported by those of Transylvania, because the situation of the protestants was much more favourable in Transylvania than in Hungary. The Saxons were against it from

the very beginning, and the opinion of the Romanians didn't count, because they didn't have any representatives in those times' Parliament, their demands of acceptance as the fourth nation of the Estates of Transylvania being previously denied. The Parliament of Transylvania was firstly reunited in 1834, but the pro-reform opposition was much weaker than in Hungary, thus the priorities of the debates concerned not the social reforms, but the defense of the nobles' rights (L. Katus, 2007).

During the Revolution of 1848-1849, the political and administrative status of the counties from the Tisa Plain, Banat and Transylvania closely followed the situation of the Hungarian state, gradually separating from the Habsburg Monarchy. The law VII/1848 claimed the unification of Transylvania to Hungary, but its execution was subordinated to the position of the Parliament of Transylvania in the matter. Among the new laws adopted several concerned the modernization of the administration and of the electoral process.

After the defeat of the Hungarian Revolution, emperor Franz Joseph imposed a neoabsolutistic government which remained in power until 1859, aiming among other objectives the new division of Hungary and the administrative reorganization of the territories remained within the kingdom. In order to accomplish the first objective, a new province was organized starting from November 1849, called the "Serbian Vojvodina and Banat of Timişoara", made of the counties of Bács-Bodrog, Torontal, Timiş, Caraş and two districts of Szerém. The administrative reorganization of September 1850 (finalized in 1853) separated not only the land of Croatia and Slavonia, but also Transylvania with the reattached Partium and the border guard provinces. The Szeklers' border guard regiments were suppressed already since 1849, followed by the Romanian regiments in 1851. The rest of Hungary was divided into 5 districts, with the headquarters at Sopron, Pressburg, Kaschau, Oradea and Pest-Buda, leaded by district lieutenants. The leadership of the counties was represented by „county chiefs", the smaller districts were leaded by judges, just like the market tows and communes (Gy. Szabad, 1987).

The territory of Transylvania during the neoabsolutistic period was reorganized into six districts: three Romanian, two Hungarian and one Saxon. The Saxon district, with Sibiu as center, included the former Saxon chairs and districts, plus some territories attached from the Counties Alba Superior and Inferior, Hunedoara and Târnave. The District of Cluj included the former counties of Crasna, Inner Solnoc, Turda, Cluj, Dăbâca and the Szekler chair of Arieş. The District of Reteag was made of the northeastern parts of the counties Inner Solnoc, Cluj, Turda and Dăbâca, the District of Alba Iulia by the counties Hunedoara, Zarand, Alba Inferior and Târnave, and the District of Odorhei by the former Szekler Land, namely the chairs of Odorhei, Mureş, Ciuc and Trei Scaune. The smallest district was that of Făgăraş (Land of Olt), inhabited by Romanians. The leadership of the districts and subdistricts was accomplished by military commanders who were representing the executive power, each of them having a local civilian commissioner to solve the problems of the civilians. Between 1849 and 1853 the administration was considered as temporary and was repeatedly modified, but after 1853, though it was declared definitive, it resisted less than seven years (Z. Szász, 1988).

The Crimean War and the military defeats in the Italian provinces forced the emperor Franz Joseph to promulgate in 1860 the *October Diploma,* then in 1861 the *February Patent,* by which the self-government of the lands and provinces of the Empire was restored, just like that of the counties, chairs and free royal cities. Consequently Transylvania was redivided into 10 counties, 5 Szekler chairs, 9 Saxon chairs and districts,

including 11 free royal cities and 18 privileged settlements. The Partium and the Serbian Vojvodina were reattached to Hungary, though the leaders of the Romanians demanded firstly the establishment of a Captainship of Banat, then the unification of Banat to Transylvania. Compared to the previous situation this was more advantageous for both lands, but the Diploma was still rejected by Hungary, which demanded the reintroduction of the 1848 Constitution, and by the Estates of Transylvania too who (through the Hungarian nobles) were this time demanding the reunification to Hungary. In exchange, in the Transylvanian Parliament (boycotted by the Hungarians' representatives) the Saxon and Romanian deputies promulgated the October Diploma and the February Patent.

The instauration of the Austro-Hungarian dualism in 1867, which was also the first lasting constitutional regime in the history of Hungary and Austria, brought important changes into the status of Hungary and Transylvania, as it declared again the reunification of the two lands. The administrative reorganization of 1876-1877 was seriously hitting the autonomy of the counties: at the top of the counties' leadership, besides the lieutenants, other representatives of the central power were also placed and all the administrative units that were not included into the counties (the Partium, the Saxon and Szekler chairs, the border guard districts) were abolished. The Partium was finally suppressed in 1876: the eastern part of Zarand county was attached to Hunedoara, the former counties of Crasna and Middle Solnoc (plus the Agrij district from Dăbâca) formed the new county of Sălaj, and the Land of Chioar was divided between the counties of Satu Mare and Solnoc-Dăbâca. On the territory of historical Transylvania 15 counties were formed (fig. 3). Their administration was conducted by the lieutenant elected by the county assembly, and that of the smaller districts by elected judges. Though the autonomy of the counties was reduced during the dualistic period, their assemblies remained, besides the Parliament, the most important officially recognized political debate forums.

The next important changes of the administrative organization took place only after the unification of Transylvania and of the lands of Eastern Hungary to Romania. Taking into consideration the important (ethnic and socio-economic) heterogeneity of the provinces of Greater Romania, the administrative reorganization started in 1920 was finished only in 1925. The 76 counties inherited from the previous political formations were grouped into 10 *historical provinces:* Banat, Basarabia, Banat, Bucovina, Crişana, Dobrogea, Maramureş, Moldova, Muntenia and Transylvania. Following the 1925 promulgation of the *Law for Administrative Unification* on the basis of the new Constitution of 1923, Romania was composed of 71 counties. The former counties of Transylvania kept in their great majority not only their old limits, but even their names (translated into Romanian). Exception was made by the counties of Banat, where Caraş and Severin were separated, the Romanian part of Torontal county was attached to Timiş, and the district of Nădlac (from the former county of Cenad) to Arad. Another significant change was made in 1930 at the three counties of the north-west: Sălaj was extended until the Hungarian frontier, including the districts of Carei (from Satu Mare county) and Valea lui Mihai (from Bihor), aiming the division of a predominantly Hungarian-inhabited region in the close vicinity of the new frontier. As a compensation, the county of Satu Mare received the communes of Ugocsa belonging to Romania (Halmeu, Turulung, Turţ, Gherţa, Bătarci, Tarna Mare) and the district of Copalnic-Mănăştur (from the former county of Szolnok-Doboka, which became Someş). Other corrections of the county limits made until 1930 (compared to the situation of 1920) were: the districts Teaca and Urmeniş from Cluj county

were attached to Mureş, the district of Sebeş from Sibiu to Alba, the district of Ocna Sibiului from Alba to Sibiu, the district of Blaj from Alba to Little Târnava, the district of Bran from Făgăraş to Braşov, the district of Cincu from Greater Târnava to Făgăraş, the surroundings of Transylvanian Buzău from Trei Scaune to Braşov, the northern part of the district of Tulgheş from Ciuc to the district of Topliţa in Mureş county.

Fig. 3. The administrative units of Transylvania, Banat, Crişana, Satmar and Maramureş in the late 19th- early 20th centuries. Source: A. Szabó M., 2006.

The significantly increased national territory and the high number of the counties made necessary the organization of larger administrative units, with regional character, for which several law projects were elaborated. As a first step, the *general administrative inspectorates* were set up in 1926 as organs of guidance and control without juridical personality which functioned, with some interruptions, until 1948. By the *Law for the organization of local administration* of August 3, 1929, they created seven centers for administration and local inspection called *local ministerial directorates,* as institutions for

the administrative deconcentration and integration, generally corresponding to the historical provinces: I. Muntenia (with the capital in Bucharest), II. Bucovina (Cernăuți), III. Basarabia (Chişinău), IV. Transilvania (Cluj), V. Oltenia (Craiova), VI. Moldova (Iaşi), VII. Banat (Timişoara). The fall of the national-peasant's government and the takeover of the power by the N. Iorga government on April 18, 1931 made questionable the problem of the local ministerial directorates' functioning, thus they were suppressed on July 15, 1931.

The *Administrative Law* of August 14, 1938, aiming the consolidation of the monarch's power and of his discretional control over the state administration, created *10 lands* as new larger regional territorial divisions (fig. 4): The Land of Olt (with headquarters at Craiova), Bucegi (Bucureşti), the Land of the Sea (Constanţa), Lower Danube (Galați), Nistru (Chişinău), Prut (Iaşi), Suceava (Cernăuți), Mureş (Alba Iulia), Someş (Cluj), Timiş (Timişoara). These units had juridical personality, the counties remaining simple administrative circumscriptions of control (I. S. Nistor, 2000). The attachement of the counties of Braşov and Trei Scaune to the land of southern Romania (Bucegi) represents another attempt to divide and segregate territories inhabited in significant proportions by ethnic minorities.

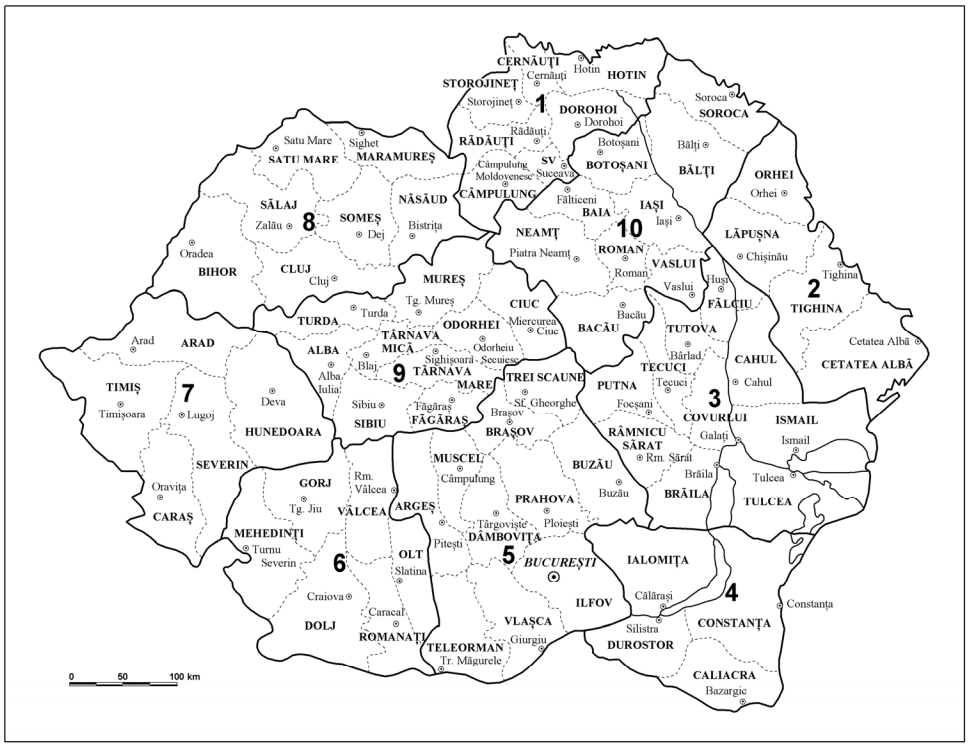


Fig. 4. The administrative units of Romania in 1938. Lands: 1. Suceava; 2. Nistru 3. Lower Danube; 4. Land of the Sea; 5. Bucegi; 6. Olt; 7. Timiş 8. Someş; 9.Mureş; 10. Prut.

During the Hungarian occupation of 1940-1944, the new authorities took over all the counties annexed by the second Vienna Award, but kept the majority of the post-1925 limits unchanged, except for those situated at the frontier, where the former counties were restored in their old limits (like the county of Ugocsa), plus the districts of Carei and Valea lui Mihai were reattached to the counties of Satu Mare and Bihor respectively.

The communist regime instaured after the abolition of the monarchy (December 30, 1947) quickly started the demolition of the traditional administrative structure and the introduction of the Russian system of organization by regions. By the *Law no. 5* of September 8, 1950 they organized 28 regions, divided into 200 districts. The *Decree no. 12* of January 10, 1956 reduced the number of regions to 16, whose names were partially modified following the *Law for the Amendment of the Constitution* of December 27, 1960 (idem). The 16 regions who survived 8 more years were: Argeş, Bacău, Banat, Braşov, Bucureşti, Cluj, Crişana, Dobrogea, Galați, Hunedoara, Iaşi, Maramureş, Mureş Hungarian Autonomous Region, Oltenia, Ploieşti and Suceava. The leadership of the regions and districts was formed by the Communist Party's first secretaries, who were dictating to the presidents of the regions and districts the political measures taken in Bucharest, so there was no local autonomy of any kind. Besides the absolute centralization, the biggest disadvantage of the region's system was that the leading nomenklatura was distributing at its own ease the scarce financial resources allocated by the central government, prefering usually the regional centers, while the smaller towns and rural areas were mostly neglected.

Starting with 1965 the regime of Ceaşescu was moving away from the pro-soviet policy, trying to approach the western powers. One of the consequences of this policy was the abolition of the regions' system, sanctioned by the *Administrative Law of February 16th 1968,* which made Romania come back to the counties' system. The basic administrative territorial unit became the new *communes,* formed usually by merging two or more former communes, thus including several settlements. The territory of Romania was divided into *39 counties*, comprising *47 municipalities, 189 towns* and *2706 communes.* As the new counties are usually larger than those before 1950, their limits do not correspond to the traditional county limits. As a consequence, many former county capitals (Sighet, Dej, Turda, Târnăveni, Sighişoara, Odorhei, Făgăraş, Lugoj, Caracal, Câmpulung, Giurgiu, Călăraşi, Râmnicu Sărat, Tecuci, Bârlad, Huşi, Roman, Fălticeni, Câmpulung Moldovenesc, Rădăuți, Dorohoi) did not regain their central administrative functions, being often marginalized within the new counties, but compensated with the title of municipality. The cartography of the new county limits was justified by a more uniform repartition of the major physical geographical units and resources, just like by the better perspectives of a „harmonious territorial development" in the conditions of a planned economy. In the same time, the design of the new county limits was often aiming (quietly of course) the division and segregation of the lands inhabited in the majority by ethnic minorities (especially Hungarians). Within the scope of this policy they attached several communes from eastern Transylvania to the new counties of Moldavia, and they divided traditional ethnographic minority areas, such as the Huedin Basin (Kalotaszeg) between Cluj and Sălaj, or the area of southern Codru-Cehu Silvaniei (Tövishát), with very sinuous county limits, between Satu Mare, Maramureş and Sălaj counties.

During the rule of Ceauşescu, they made only one major change in the cartography of the counties established in 1968: that was in 1981, when the former territory of the counties Ilfov and Ialomița was redivided into four parts, creating three new counties

(Giurgiu, Călăraşi and Ialomiţa) and the Ilfov Agricultural Sector situated at north of Bucharest and which is since 1997 the 41st county of Romania, the smallest in surface but largest in population (more than 2 million). Other smaller changes consisted in mergers of some more communes, minor corrections of some county limits, the proclamation of new towns and municipalities and the abolition of the suburban communes' category.

The *Law no. 2* of April 18, 1988 *concerning the improvement of the administrative territorial organization* was aiming a radical transformation of the settlements' network, especially by a drastic reduction (with 380) of the number of communes, as an expression of the application by force of the "rural systematization". This meant the liquidation (often by bulldozer) of hundreds of villages considered as non-viable, a measure that caused general consternation not only within the country, but also abroad, and contributed (among other factors) to the fall of the communist system.

The political and economical changes following the events of December 1989 made soon their effect on the administrative system of Romania, even if the 1968 county limits were not modified. The new Constitution of 1991 proclaimed the *principle of decentralization,* fixing also the new responsibilities of the county councils and prefects. The *Law of local public administration no. 69* of November 26, 1991 treats in the detail the functions and competences of the local organs of power and it generally admits the *principle of local autonomy* too. As a consequence of the new administrative reform, the mayors, the communal, county, city and municipal councils are benefiting of increased powers, materialized in the existence of their own budget (financed mainly from local taxes), just as the ownership of numerous and important lands and estates.

However, the political and civil organizations formed after 1989 brought repeatedly into the public attention the defaults of the present administrative system. In this way, between 1990 and 1995 an important claim was formulated for the restoration of the counties before 1950 within a campaign leaded by the *League of the Abusively Abolished Counties,* but their objectives were mostly unrealistic, taking into consideration the small surface of some of the ancient counties and especially the profound changes produced in the last half of century in the settlements' network and in the territorial development.

On the other hand, the movement for territorial autonomy within the ethnic Hungarian community is becoming more and more claiming (especially in the counties inhabited by the Szekler communities), categorically rejected by every government and president since 1990. The position of the Democratic Union of Hungarians in Romania (DUHR) was at the beginning ambiguous, because in the 90's, for political reasons, the question of territorial autonomy was not included into the official program of the Union. As a consequence, there was a split within the organization in 2003, the groups separated from the radical whing (leaded by the reformed bishop László Tőkés) forming the National Hungarian Council of Transylvania, the National Szekler Council and the Hungarian Civic Union. Though the territorial autonomy (namely of the Szekler Land) would follow the norms and models already existing within the European Union (the mostly cited models are those of the German autonomy in Souhern Tirol and that of the ethnic Swedes of Finland), the main obstacles are the fears concerning the federalization of Romania, the reference to the quality of unitary national state mentioned in the Constituion, and the preoccupation about the fate of ethnic Romanians in the planned autonomous region. Having in view the recent evolutions of the ethnic problems in the former communist states, the fears connected to the territorial autonomy seem to be at least understandable.

The failure of solving this problem is at the same time the fault of the mentioned pro-automomy organizations' leaders, who repeatedly (and anachronically) are pointing on the traditions of autonomy in Transylvania, then often claim the restoration of the former Hungarian Autonomous Region (or a variant of it including only the territories inhabited by the Szekler), which had in fact nothing to do with the real autonomy. Following the opinions and the pressions from the members of the Hungarian minority, the DUHR recently included in its program the obtaining (in a more distant perspective) of the territorial autonomy, within the frames of the European process of territorial reorganization and development, claiming even the change of the development regions formed in 1998. However, the claim for the territorial autonomy (considered one of the most important means against the assimilation of ethnic Hungarians) has not only political motivations, but also economical, as in the case of the Szekler Land the general opinion is that the central governement neglected for decades (on purpose) the proper development of the economy and of the infrastructures in the region. So a territorial autonomy would offer (through the own budget and with the help of foreign investors) much better perspectives for development. In any case, the actual political climate doesn't allow even reasonable debates on this matter, so it will take some time until the political elites will understand and accept that the regional autonomy (not only for the Hungarian minority) is a necessity of European development and it doesn't mean a threat for the unity of Romania.

Within the process of joining the European Union, the *Law for regional development in Romania* no. 151 of July 16, 1998 decided the setup of the *development regions,* of the *National Council for Regional Development,* of the *National Agency for Regional Development* as an executive organ of the previous one, and also of the *regional development agencies* in each development region. In this frame, the counties of Romania were grouped into 8 development regions, of which 3 in Transylvania and Banat, 1 in Moldavia and 4 in southern Romania. At the request of the local or county councils and on the basis of the documents presented by the regional development agencies, the regional development councils can ask the National Council to propose for the government to declare certain areas *defavourized zones,* in order to sustain them economically by specific instruments (idem). Though the development regions do not have yet real administrative powers, they are still playing an important role in the strategic development of the territory.

REFERENCES

1. Kovács, Cs. M. (2009), *The Upper Tisza Region. Changing Borders and Territorial Structures.* Historical Regions Divided by the Borders. Region and Regionalism No.9 vol. 1, University of Łódź, Silesian Institute in Opole, Silesian Institute Society, Łódź-Opole.
2. Katus, L. (2007), *Magyarország a Habsburg Monarchiában 1711-1918 (Hungary in the Habsburg Monarchy 1711-1918),* Magyarország története*,* Akadémiai Kiadó, Budapest.
3. Nistor, I. S. (2000), *Comuna şi judeţul. Evoluţia istorică,* Edit. Dacia, Cluj-Napoca.
4. Szabad, Gy (1987), *Az önkényuralom kora (The Age of Absolutism),* Magyarország története 6/1. 1848-1890, Akadémiai Kiadó, Budapest.

5. Szabó M., A. (2006), *Erdély, Bánság és Partium történeti és közigazgatási helységnévtára (The Historical and Administrative Nomenclature of the Settlements from Transylvania, Banat and Partium),* Arcanum Kiadó, Budapest
6. Szász, Z. (1988), *Az abszolutizmus kora Erdélyben (The Age of Absolutism in Transylvania),* Erdély története 1830-tól napkainkig, Akadémiai Kiadó, Budapest.
7. Trócsányi, Zs. (1988), *Felvilágosodás és ferenci reakció 1771-1830 (Enlightment and Francisian Reaction),* Erdély története 1606-tól 1830-ig, Akadémiai Kiadó, Budapest.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

GEODEMOGRAPHIC PROBLEMS IN THE REPUBLIC OF MOLDOVA AND IN ROMANIA AFTER 1990

OANA-RAMONA ILOVAN[1], ELENA SOCHIRCĂ[2]

ABSTRACT. – Geodemographic Problems in the Republic of Moldova and in Romania after 1990. The general development of the Republic of Moldova and of Romania revealed a number of similarities in population development in the transition period (first of all, population decrease). At the same time, a number of other factors, such as the geographical position and historical factors revealed a range of differences.

Keywords*: social and economic changes, demographic decrease, natality.*

1. INTRODUCTION

We started this paper from the many arguments quoted in literature supporting the idea that: *"... planning development depends on good knowledge of population's structure, increase, and vital statistics"* (21st May 1975) – Rafael Salas, Executive Manager of the UN Fund for Population (A. Haupt, T. Kane, p. 7). At the same time we took into account the numerous voices that claimed that the nowadays demographic situation was a serious one in both East European countries while using collocations such as *"demographic side-slip, serious demographic situation, massive depopulation, major demographic danger, the necessity of immediate intervention"*. For instance, researchers considered for the Republic of Moldova that *"... the country's future is a dark one..."* (C. Matei *et al.*, p. 37) and in the case of Romania they said that we should take into account *"the imperative of a national strategy for population"* (V. Gheţău, 2007, p. 40).

The demographic evolution of the Republic of Moldova and of Romania has a lot of common features determined by geographic neighbourhood and by common features in what the social and economic development was concerned beginning with the 1990s. Both countries coped with the same geodemographic issues such as an increase of population, natality decrease, mortality increase, increasing demographic ageing, etc.

In the case of both countries the reason for their present and future demographic collapse was similar: *"... demographic decline as a result of significant population's natality decrease and mortality increase, followed by a dramatic increase of people's emigration to the West and East"* (C. Matei *et al.*, p. 6). According to the paper *Cartea Verde a Populaţiei in Romania* (The Green Book of the Population of Romania) (p. 1), the population of Romania decreased *"because of the alteration in the structure of the three components of*

[1] *"Babeş-Bolyai" University, Faculty of Geography, Department of Regional Geography, Cluj-Napoca, Romania, e-mail: ilovanoana@yahoo.com.*

[2] *Tiraspol State University, Faculty of Geography, Department of Human Geography, Regional Geography and Tourism, Kishinev, Republic of Moldova, e-mail: esochirca@yahoo.com.*

population's dynamics – natality, mortality, and out-migration". A constant, in the case of both countries was the discussion on getting beyond the aging threshold, meaning the limit of 12% of those who were over 60 de years of the population's total: *"The old population is a population with a relatively high proportion of old people, with a high average age, and, therefore, with low increase potential"* (C. Matei *et al.*, p. 42).

Taking into account all the above mentioned arguments also often quoted in the geographic literature and not only, our paper focused on an analysis of the present demographic decline in the Republic of Moldova and in Romania (the general context of the present demographic situation; the impact of natality and mortality on the demographic decline; the impact of the people's out-migration on the demographic decline), it enumerated the consequences of the demographic decline and solutions for slowing it, having as references the latest and most relevant papers on the demographic situation in the two countries (as listed in the *references*) and on our previous research in the field of demography (O.-R. Ilovan, 2007a, 2007b, 2009, E. Sochircă, 2008, 2009, 2010).

2. THE DEMOGRAPHIC DECLINE

Among the common problems of the two countries, we identified the following: negative migratory increase; ageing population; depopulation; the age and sex structures caused insignificant changes for the present, but very important ones on a long term; increase of rural population (only 41.3% was the urban population), in the case of the Republic of Moldova. All these problems had their explanation in a comparative analysis of the circumstances in both states, of the conditions that determined the appearance of a demographic decline, by taking into account how those conditions influenced natality, mortality, and emigration.

2. 1. General context of the present demographic situation

European families, in general, had lately representatives of four generations, phenomenon present also in Romania and in the Republic of Moldova. Life expectancy at birth increased in Romania (the average life span increased from 69.56 years in 1988-1990, to 72.22 years in 2004-2006: 60.74 years for men and 75.80 years for women) and in the Republic of Moldova. Life expectancy at birth was higher for the population of Romania (table 1).

Life expectancy at birth for the population of Romania and of the Republic of Moldova

Table 1

Country (2010 est.)	Total population	Male	Female	R. c. c. c. w
Romania	72.71 y.	69.22 y.	76.43 y.	121
Republic of Moldova	71.09 y.	67.39 y.	75 y.	135

Source: *World Factbook*, www.cia.gov

R. c. c. c. w. = Rank of the country in comparison with the other countries of the worldd; y. = years.

Nevertheless, beside the increase of the life expectancy at birth true for the two countries as well as for the other European ones, one should look for the causes of population ageing in the Republic of Moldova and in Romania in the demographic policies of the two states in the second half of the 20th century. For Romania was charac-

teristic natality increase determined by the political decisions during the communist regime, but those still could not influence the demographic behaviour or natality on a long term basis as the trend for high natality stopped when the restrictive conditions regarding contraception stopped. On the contrary, starting with 1992, the natural increase had negative values. Under those circumstances, beginning with 1990, the population of Romania decreased with a yearly average rhythm of 0.15‰ (*Cartea Verde a Populației României*, p. 5). Thus, the two countries revealed the features of demographic transition characterised not only by (especially) fertility decline, but also by changes in people's mentality as shown in the attitudinal and behavioural changes towards marriage, cohabitation, divorce, and children born outside marriage. Marriage, as a demographic phenomenon (nuptiality), underwent changes revealed in the higher age of those getting married for the first time if we compared the trends until now, followed in most cases by postponing or delaying the first birth. In Romania, we noticed the increase of the average age for giving birth to the first child (from 22.3 years in 1990 to 25.2 years in 2006), as well as an increase of mothers' average age for all births (from 25.0 years in 1990 to 26.9 years in 2006). One could notice a transition from the 2 children model to the 1 child model.

2. 2. Impact of population's natality and mortality on the demographic decline

Population's numeric evolution/involution in the Republic of Moldova and in Romania according to latest censuses

Table 2

Romania stable population		**Republic of Moldova stable population**	
7th January 1992	22,810,035	12th January 1989	3,657,665
18th March 2002	21,680,974	5th-12th October 2004	3,383,332

Source: National Bureau for Statistics of the Republic of Moldova, Romanian National Institute for Statistics.

The last two censuses revealed population decrease in both countries (table 2). According to the National Bureau for Statistics, in 2008, the population of the Republic of Moldova was 3572.7 thousands and that was about 82.9 thousands less than the population registered in 1998 (during this period, the National Bureau for Statistics offered data for the population of the country, except for the settlements on the left of the Dniester and for Tighina municipium). During the last decade, we noticed a slow decrease, with approximately 5 thousand persons per year, and then a rather quicker decrease, with 7-11 thousand persons per year (table 3).

An intensifying of population's decrease in the Republic of Moldova was linked with the deepening of the economic crisis that determined lower living standards for the population, lower values of the natality and higher values of out-migration. The decrease of the population's number was determined especially by natural decrease. The decrease of the population's number was determined by the negative values of the natural increase and of the migratory one.

For the Republic of Moldova researchers quoted (C. Matei *et al.*, p. 6) the demographic transition that took place during several decades and not during centuries such in the other European states, identifying two periods in the evolution of the demographic phenomena: from 1950 to 1990 and after 1990. Between the demographic evolution stages in the previous period, for the Republic of Moldova, like in the case of Romania, one could notice a constant increase of natality: between 1945 and 1965 – up to 40‰, generated by high fertility rates such as 3.5-4.0 children/woman and determinant for the young's significant percentage (being 18 and 19 years old, 41-42%) out of the total population (C. Matei *et al.*, p. 6).

Population's trends in the Republic of Moldova and in Romania between 1990 and 2008

Table 3

Year	**Republic of Moldova** (thousands inhabitants)					**Romania** (thousands inhabitants)				
	Total	**Urban**	**Rural**	**U. (%)**	**R. (%)**	**Total**	**Urban**	**Rural**	**U. (%)**	**R. (%)**
1990*	4359.4	2053.1	2306.3	47.1	52.9	23206.7	12608.8	10597.8	54.3	45.7
1995*	4345.7	2016.8	2328.9	46.4	53.6	22680.9	12457.1	10223.7	54.9	45.1
1996*	4331.9	1987.6	2344.3	45.9	54.1	22607.6	12411.1	10196.4	54.9	45.1
1997*	4317.5	1978.4	2339.1	45.8	54.2	22545.9	12404.7	10141.2	55.0	45.0
1998	3655.6	1522.9	2132.7	41.7	58.3	22502.8	12347.8	10154.9	54.9	45.1
1999	3649.9	1516.8	2133.1	41.6	58.4	22458.0	12302.7	10155.2	54.8	45.2
2000	3644.1	1514.2	2129.9	41.5	58.5	22435.2	12244.6	10190.6	54.6	45.4
2001	3635.1	1486.4	2148.7	40.9	59.1	22408.4	12243.7	10164.6	54.6	45.4
2002	3627.8	1485.2	2142.6	40.9	59.1	21794.8	11608.7	10186.0	53.3	46.7
2003	3618.3	1484.1	2134.2	41.0	59.0	21733.6	11600.1	10133.4	53.4	46.6
2004	3607.4	1477.9	2129.5	41.0	59.0	21673.3	11895.5	9777.7	54.9	45.1
2005	3600.4	1476.0	2124.4	41.0	59.0	21623.8	11879.8	9743.9	54.9	45.1
2006	3589.9	1469.8	2120.1	40.9	59.1	21584.3	11913.9	9670.4	55.2	44.8
2007	3581.1	1478.0	2103.1	41.3	58.7	21537.5	11877.6	9659.9	55.1	44.9
2008	3572.7	1476.1	2096.6	41.3	58.7	21504.4	11804.4	9700.0	54.9	45.1

* Including the territories on the left of the Dniester and the Tighina Municipium (Republic of Moldova).

U. = Urban; **R.** = Rural

Source: National Bureau for Statistics of the Republic of Moldova, Romanian National Institute for Statistics.

Natality and mortality in the Republic of Moldova and in Romania (‰)

Table 4

Year	**Republic of Moldova**				**Romania**			
	N.	**M.**	**N. i.**	**I. m.**	**N.**	**M.**	**N. i.**	**I. m.**
1990*	17.7	9.7	8	19	13.6	10.6	3.0	26.9
1995*	13	12.2	0.8	21.2	10.4	12.0	-1.6	21.2
1996*	12	11.5	0.5	20.2	10.2	12.7	-2.5	22.3
1997	12.5	11.8	0.7	19.8	10.5	12.4	-1.9	22.0
1998	11.3	10.9	0.4	17.5	10.5	12.0	-1.5	20.5
1999	10.6	11.3	-0.7	18.2	10.4	11.8	-1.4	18.6
2000	10.2	11.3	-1.1	18.3	10.5	11.4	-0.9	18.6
2001	10	11	-1	16.3	9.8	11.6	-1.8	18.4
2002	9.9	11.6	-1.7	14.7	9.7	12.4	-2.7	17.3
2003	10.1	11.9	-1.8	14.4	9.8	12.3	-2.5	16.7
2004	10.6	11.6	-1	12.2	10.0	11.9	-1.9	16.8
2005	10.5	12.4	-1.9	12.4	10.2	12.1	-1.9	15.0
2006	10.5	12	-1.5	11.8	10.2	12.0	-1.8	13.9
2007	10.6	12	-1.4	11.3	10.0	11.7	-1.7	12.0
2008	10.9	11.8	-0.9	-	10.3	11.8	-1.5	11.0

* Including the territories on the left of the Dniester and the Tighina Municipium (Republic of Moldova).

N. = Natality; **M.** = Mortality; **N. i.** = Natural increase; **I. m.** = Infant mortality

Source: National Bureau for Statistics of the Republic of Moldova, Romanian National Institute for Statistics.

Natality, as a demographic phenomenon, revealed two stages overlapping the period significant for our study and for the present geodemographic features of the Republic of Moldova: from 1965 to 1990, when natality had values between 20‰ and 17.7‰; from 1990 to 2008, when natality suddenly decreased, from 17.7‰ to 10.9% (almost two times) (C. Matei *et al.*, p. 11).

In the Republic of Moldova, in 1990, the natality was 17.7‰, reaching the lowest level of 9.9 ‰ in 2002, and then a period of relative stagnation followed (table 4). Lower living standards and the lower level of health assistance caused an increase of mortality. Thus, in 1990 mortality was 9.7‰, and in 2005 it was 12.4‰.

The decrease of natality and the increase of mortality determined a change of the natural rates and thus, starting with 1999, in the Republic of Moldova, a natural deficit was characteristic and in 2005 it increased up to -1.9‰. In the Republic of Moldova, natality was lower in the urban than in the rural area, but the natural increase was negative in the rural and 0 in the urban.

The Romanian population's numeric evolution had similar features, but the decrease of the inhabitants' number was more spectacular. Thus, from 1998 to 2008, the population decreased with almost 1 million inhabitants (998.4 thousand persons) (table 3). High rhythms of population's decrease maintained during the whole analysed period, while the biggest decrease was at the middle of the 1990s and during the last period (2003-2008), when population decreased with 60 thousand persons per year. The causes for decrease were the negative values of the natural increase and of the out-migration. In Romania, the natural increase had registered negative values four years before that of the Republic of Moldova. The values of this indicator varied from -0.9‰ in 2000 to -2.7‰ in 2002 (table 4). Between 1990 and 2008 the decrease of infant mortality was significant.

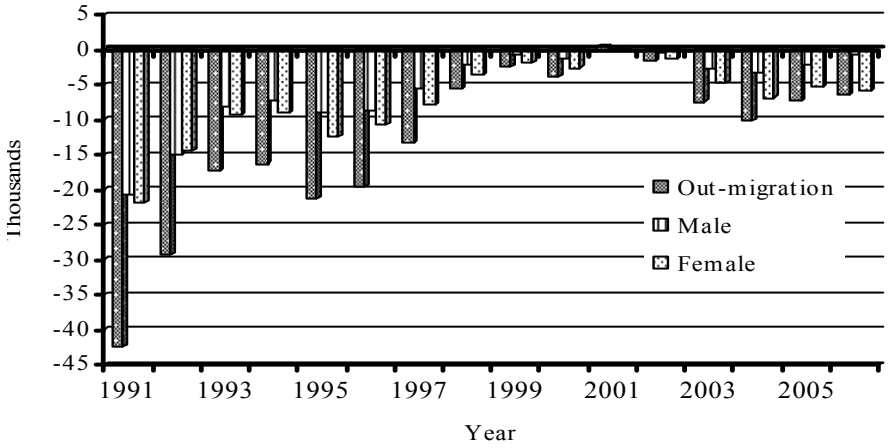
The 1990s marked the breakdown of natality in Romania (in Romania, the fertility rate was 2.2 children per woman in 1989, but in 1995 it was 1.3 children per woman). This situation was similar for the Republic of Moldova: *"If in the 1950s and in the 1960s the total fertility rate was 3.5-4.0 children per woman, now it is only 1.2-1.3 children per woman"* (C. Matei *et al.*, p. 11). This trend of the natality and general mortality determined both the number of inhabitants and their age structure. Romania underwent large variations of natality (the communist period with high natality and the present one with low natality), with major effects that could be neither corrected nor avoided (V. Gheţău, 2004, p. 20).

The decrease of the fertility rate had serious negative impact from a social and economic perspective (for the labour market and for the three systems in a difficult situation at present both as human resource and as financing – health, education, and pensions – as labour force could no longer be replaced: 2.1 children per woman were necessary, while there were 1.5 children per woman in Romania, a demographic phenomenon characteristic of the entire Europe).

2. 3. Impact of the population's migration on the demographic decline

The present demographic situation in the Republic of Moldova and in Romania received characterisations such as "demographic decline", with a continuous decrease of the number of inhabitants, determined by both negative natural and migration rates. The mechanisms that led to a decrease of the number of inhabitants and to a degrading of their age structure were the values of fertility, of out-migration, and of general mortality. A main component of the demographic decline remained out-migration oriented almost exclusively towards developed countries.

Migration, as a component of population statistics, had characteristic features for both countries. After 1990-1992, in Romania, emigration motivated by ethnic and religious identity appeared first and then two other successive ones followed: definitive emigration and emigration for economic reasons. Within the migration process, the role of women at the childbearing age was decisive, especially if we took into account that their number was higher than that of men (*Cartea Verde a Populației României*, p. 7).



Source: *Anuarul Statistic al României 2007*, chapter 2, table 2.33.

Fig. 1. Out-migration in Romania.

For both countries, we identified the following features of the migrational phenomenon: the previous village-city migration became emigration abroad (this idea was very well commented by a well-known Romanian researcher: *"Forced to leave the rural area for the urban one during the industrialisation period, and forced to return to the rural area during the crisis of the transition period and forced by poverty to work and leave abroad?"* – V. Gheţău, 2007, p. 36); migration as a form of brain drain; most of those who emigrated were between 20 and 39 years old; usually, 50% of the emigrants did not return (C. Matei *et al.*, p. 29). Population's emigration according to the "push-pull" hypothesis (*"A migration theory that suggested that the circumstances in the place of origin (such as poverty and unemployment) reject or pull the inhabitants of that place to places which are attractive (such as high living standards and employment opportunities)"* – C. Matei *et al.*, p. 40) affected both countries.

Both countries were well-known on the international migration market as "emigration countries" or transit countries towards more economically developed ones. Despite Romania's integration in the European Union and of the possible integration of the Republic of Moldova, a solution only after a rather long period was that the two countries would become "immigration countries" themselves.

In what the migrational phenomenon was concerned there was also a difference between the two countries: Romania became an immigration country for much of the labour force in the Republic of Moldova. From this perspective, the example of the above-mentioned cultural compatibility might be encouraged in the case of both countries with inhabitants of other European countries exactly in order to ensure the future necessary labour force seriously affected by the present demographic decline.

Romania had over two million people legally emigrated, while the number of those who left illegally was unknown (probably 600 thousand persons emigrated illegally as that was the number of the missing ones from Romania's population at the 2002 census – V. Gheţău, 2004, p. 14), that was why for Romania: "*In the complex present demographic, social, and economic reality, the elaboration of a firmly based demographic prognosis is impossible*" (V. Gheţău, 2004, p. 9). The trend of international migration was relevant for explaining the demographic decline in Romania (figure 1).

Number of persons who emigrated from Romania, according to nationality

Table 5

Year	1990	2006
Total	96,929	14,197
Romanians	23,888	13,296
Germans	60,072	85
Hungarians	11,040	693
Jews	745	54
Other nationalities	1,184	69

Source: *Anuarul Statistic al României 2007*, chapter 2, table 2.30

Number of persons who emigrated from Romania, according to the country of destination

Table 6

Year	1990	2006
Australia	611	125
Austria	3,459	581
Canada	1,894	1,655
France	1,626	529
Germany	576	3,110
Greece	1,227	134
Hungary	10,635	900
Israel	1,130	128
Italy	66,121	3,393
Spain	no data	330
Sweden	996	37
USA	4,924	1,982
Other countries	3,730	1,293

Source: *Anuarul Statistic al României 2007*, chapter 2, table

In tables 5 and 6, we presented the changes in the emigrants' ethnic structure and numeric changes, according to the country of destination, relevant for the present migratory behaviour of the Romanians.

Similarly, in the Republic of Moldova, the official statistical sources could not offer a specific image of emigration as they registered only those who emigrated definitively, and no one knew the number of those who emigrated illegally. One could notice that especially the highly qualified and active population emigrated. In the Republic of Moldova the population of all administrative units decreased, while an increase for a short period (between 2004 and 2008) was characteristic only for Kishinev and other four departments (C. Matei *et al.*, p. 30).

The values of the divorce rate increased as a result of higher emigrants' number. For instance, that indicator increased about 1.5 times in the urban area and about two times in the rural area of the Republic of Moldova (C. Matei *et al.*, p. 15).

In the trends of emigration in the Republic of Moldova, we noticed a change in the migratory fluxes direction (before 1990, the direction was toward the USSR, so it was to the East, while after 1990, the main fluxes were towards the European West). Among the immigration fluxes in the Republic of Moldova, it was interesting to notice that beside the immigration of inhabitants of the CIS countries, especially from Russia and Ukraine, also emigrants of the Near East settled down, especially from Jordan and Syria (C. Matei *et al.*, p. 16). Still, the migration to the East, to Russia, in the case of the Republic of Moldova, was not characteristic of Romania, as its migration vectors were mainly oriented to the West.

From an economic point of view the emigrated persons' impact was obvious (both a negative one because of labour force loss, and a positive one, as they supplemented the financial resources of their families who remained at home. For instance, in 2008, those working abroad accounted for 1/3 of the GDP of the Republic of Moldova – C. Matei *et al.*, p. 30).

The major contribution of out-migration in quantifying the demographic decline of the two countries was obvious and revealed their incapacity to maintain their population inside their borders (especially in the rural area and in the small towns).

3. CONSEQUENCES OF THE DEMOGRAPHIC DECLINE

The most important geodemographic problems of the two countries were decrease of natality, ageing population, and population's emigration. Fertility decline and emigration, as main causes of the demographic decline, were the result of the political and economic changes following the fall of the communist regimes. The consequences were medium and long term.

Between 1992 and 2005, in Romania, population decreased with 1 million persons. A constant decrease maintained and its causes were low fertility, significant out-migration, average level of mortality. Beside those, if we added the increase of life expectancy at birth we were led to an expected and already visible resolution: population's ageing. Moreover, the changing age and sex structure had a considerable effect on the social and economic situation of Romania and of the Republic of Moldova for the present and for the future.

The row of consequences was a very long one and revealed a profound negative impact on the demographic, social, and economic future of the two East-European countries. We considered that the following observation on the demographic situation of the Republic of Moldova was worth quoting as it was equally true for Romania: *"Maintaining fertility rates at a low level for a long period generates a series of long term consequences on the demographic security, economic efficiency, and social fairness between generations"* (C. Matei *et al.*, p. 5).

From a *geodemographic* point of view, we listed the following consequences: a continuous deterioration of population's age structure; Romania, in 2050, in the most pessimist scenario would have 16 million inhabitants, with a dependency ratio of 1 to 9; rural population's ageing and feminisation (16-17% old people in the Republic of Moldova – C. Matei *et al.*, p. 23).

From an *economic* point of view, we listed the following consequences: starting with 2030 one will be able to notice the first problems caused by active population's decrease because of the present significant decrease of fertility (e.g. decrease of natality led to active population's decrease (between 1999 and 2008, in the Republic of Moldova, with 38%) (C. Matei *et al.*, p. 19); negative impact on the income and expenditure system in the budget of the country; higher economic burden for those active in the economy (*"The recovery of natality cannot stop active population's decreasing and aging until 2025……but this is not the worst part, but the active population's economic burden is higher"* – V. Gheţău, 2007, p. 14).

From a *social* point of view, we mentioned the increase of the old people's dependency ratio (including retirement money, health services, and ensuring those at a decent level was one of the main medium and long term problems of the two countries, although problems appeared also at present because of low level of social and economic

development and of the impact of the world financial crisis); the unfavourable situation in the labour force market (the social expenditure would create considerable pressure upon the young entering the labour force); families underwent a period of instability with an increase of the number of one parent families (with 6% in the Republic of Moldova, C. Matei *et al.*, p. 25); increase of the single persons' number; transferring responsibility for the old outside the family, and changing relationships between generations, etc.

One might take into account the existence of *transition generations* for both countries, with similarities in what the causes and effects of the present demographic decline were concerned: the old people's polimorbidity (morbidities, illnesses, accidents, disabilities); school population's decrease because of the decrease of natality; medium and long term immigration policies in order to attract culturally compatible labour force.

The following would be necessary:

- restructuring of the social insurance system, of the medical, and education systems as the number of old people increased and the number of the young decreased (a reform of the education system for all cycles would be necessary as the school population underwent major changes. For instance, in the Republic of Moldova, in 2008-2009, the students entering the 1st grade decreased two times and therefore it was the generation with the lowest number of students in the Republic of Moldova) (C. Matei *et al.*, p. 19);

- governmental measures for increasing or reviving natality (e.g. in Romania, the allowance for child's bringing up, until the age of two, but at present reduced and with negative effects on the future natality characteristic of those with university studies and with over the average income);

- active social protection policies (several necessary measures were: changes in the social insurance system, and well thought upon measures that would lead to preventing the old people's marginalising, institutionalising, and social exclusion).

Depopulation began in the urban area (table 3). There were significant differences in what the urban and rural population were concerned. In the urban area of the Republic of Moldova, population's number decrease began after 1990, and, in the rural area, the decrease began after 1996. The decrease rhythms presented also differences from the urban to the rural area: the urban population had higher decrease rhythms than the rural one's. The causes of the urban population's significant decrease were many, the most important ones being the urban population's stronger emigration abroad because of its better access to information, some of the urban inhabitants returned to the rural area at the beginning of the 1990's hoping for their economic revival, etc.

The changes in the number of the urban and rural population led to a significant change of their percentage in the total population in the Republic of Moldova. Thus, starting with 1990, the percentage of urban population was decreasing (especially between 1990 and 2001, as the percentage of the rural population increased significantly.

In Romania, the urban and rural population's evolution trends were similar. The urban population's decrease rhythms were higher than the rural one's. The percentage of urban population had and oscillating evolution with a slow trend of increase, reaching 55.2% in 2006.

The ageing of population in the Republic of Moldova was determined mainly by the rural population's features where the women were really old (C. Matei *et al.*, p. 10). Among the changes that appeared in the demographic profile of the Republic of Moldova, most of them also features of the population of Romania, we identified the following: increase of the age for the first marriage; serious decrease of natality (it decreased for about two times) (C. Matei *et al.*, p. 9); the level of nuptiality was higher in the urban area where population was younger than in the rural area; population's settling mostly in the area neighbouring the capital city and the major cities; 1998-2008 – negative values of the natural increase; high mortality for the rural population; heart and vascular diseases caused over 50% of deaths; mainly economic motivation for emigration; families underwent a series of changes (*"Decrease of natality, changes in the population's behaviour in their families, and the increase of incomplete families led to a contraction of the dimensions of the family"* – C. Matei *et al.*, p. 25).

4. SOLUTIONS FOR DIMINISHING THE DEMOGRAPHIC DECLINE

In order to stop the demographic decline, the following factors bring their contribution: natality increase, mortality decrease, and out-migration decrease as well, in the case of both countries. A series of other direct and indirect factors determine them. These are social, cultural, economic, health, and environmental factors. The solution for both countries consists of natality increase, as the alternative – represented by an immigration policy – does not have the necessary conditions for success (neither Romania, nor the Republic of Moldova are attractive from an economic perspective in the sense of economic immigration which would be, at the same time, population immigration).

Demographic increase and a fair balance between generations would put away the social and economic problems that the two countries are to face on a medium and long term. Therefore, natality increase is the most important solution with long term impact: "... natality remains the only one that if acted upon will ensure efficient, visible on a short term results, but having positive long term effects" (*Cartea Verde a Populației României*, p. 7). For Romania, *"the future evolution of fertility remains a big unknown part, but its recovery remains the only option able to lead to the improvement of the demographic situation of the country, and, possibly, to stopping the future demographic decline"* (V. Gheț ău, 2004, p. 7). In the same context, V. Gheț ău considered that *"In the recovery of natality one has the only key of the demographic future of our country..."* (V. Gheț ău, 2004, p. 26).

Investment in labour force and in offering new social and economic success chances is a possible and desirable option for the social policies in both countries (one possibility would be projecting development policies structured on population's age, on five-year periods, offering bonuses for diverse social and age categories – *Cartea Verde a Populației României*, p. 21). Still, the economic and social revival of these two countries does not imply demographic revival as the population's present demographic rates is a result of the evolution and changes of the present and of the past, too.

In what the emigration problems are concerned, only economic increase and creating well paid jobs could cope with the present trend of high emigration from both countries.

5. CONCLUSIONS

The political and economic changes influenced the demographic evolution of both countries. We revealed several trends of demographic evolution, or rather demographic involution, such as population decrease and depopulation of the rural area. The negative values characteristic of the natural increase, over a long period of time, determined serious demographic ageing.

As a result of emigration and of the negative natural increase, the number of inhabitants will be decreasing in the decades to come and, therefore, the unbalanced age and sex structures of the population in both countries will continue to be a constant feature and will even deteriorate

The changes in population's number and structure could have the most diverse types of impact – social, economic, demographic, and even political – for both countries.

Both Romania, and the Republic of Moldova, need a very careful and responsibly elaborated family policy, one that is stable and oriented towards a better and balanced future, and one that does not focus on immediate effects and has the support of the political class, of civil society, of public opinion, and of specialists.

REFERENCES

1. Biroul Național de Statistică al Republicii Moldova (2009), *Anuarul Statistic al Republicii Moldova 2009,* Editura Statistica, Chișinău.
2. Comisia Națională pentru Populație şi Dezvoltare, UNFPA (Fondul ONU pentru Populație) (2006), *Cartea Verde a Populației în România,* București.
3. Gheţău, V. (2004), *Anul 2050. Va ajunge populația României la mai puțin de 16 milioane de locuitori? O viziune prospectivă asupra populației României în secolul 21*, Academia Română, Institutul Național de Cercetări Economice, Centrul de Cercetări Demografice „Vladimir Trebici", București.
4. Gheţău, V. (2007), *Declinul demografic şi viitorul populației României. O perspectivă din anul 2007 asupra populației României în secolul 21*, Alpha MDN, Buzău.
5. Haupt, A., Kane, T. T. (2006), *Populația. Definiții şi indicatori*, Alpha MDN, Buzău.
6. Ilovan, Oana-Ramona (2007a), *Demographic Ageing Risk in the Land of Năsăud – Causes and Impact*, in "Romanian Journal of Population Studies", vol. 1, no. 1-2, pp. 113-132, Cluj University Press, Cluj-Napoca.
7. Ilovan, Oana-Ramona (2007b), *Feldru Commune in Bistrița-Năsăud County. Rural Development Model*, in Surd, V., Zotic, V. (ed. and coord.) "Rural Space and Local Development", pp. 286-297, Presa Universitară Clujeană, Cluj-Napoca.
8. Ilovan, Oana-Ramona (2009), *Țara Năsăudului. Studiu de Geografie Regională,* Presa Universitară Clujeană, Cluj-Napoca.
9. Institutul Național de Statistică al României (2008), *Anuarul Statistic al României 2007*, București.
10. Institutul Național de Statistică al României (2009), *Anuarul Statistic al României 2008*, București.
11. Matei, C. (2002), *Problemele metodologice ale prognozei demografice*, Evrica, Chişinău.

12. Matei, C., Paladi, Gh., Sainsus, V., Găgăuz, Olga (2009), *Cartea Verde a populației Republicii Moldova*, Editura Statistica, Chişinău.
13. Sochircă, Elena (2008), *Modificări în structura demografică a populației municipiului Chişinău in perioada 1989-2007*, in "Economica", no. 3 (63), pp.16-19, Chişinău.
14. Sochircă, Elena (2009), *Evoluția natalității în municipiul Chişinău în perioada 1950-2007*, în "Procesele socio-demografice în societatea contemporană: de la meditații la acțiuni", pp. 97-100, Chişinău.
15. Sochircă, Elena (2010), *Studiu geodemografic şi social al municipiului Chişinău. Teză de doctorat*, Academia de Studii Economice din Moldova, Chişinău.
16. Sochircă, V., Antipova, E., Baciu, S. (2009), *Evaluarea comparativă a situației demografice în Republica Moldova şi Belarus în perioada de tranziție*, în "Procesele socio-demografice în societatea contemporană: de la meditații la acțiuni", Chişinău.
17. *** *World Factbook*, www.cia.gov (Accessed on the 26th of May, 2010).

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

EFFECTS OF INTERNAL MIGRATION ON EMPHASIZING TERRITORIAL DISPARITIES

IBOLYA KURKÓ[1]

ABSTRACT. – Effects of Internal Migration on Emphasizing Territorial Disparities. The abolishment of the communist regime, the establishment of a democratic legal and institutional system brought important changes regarding Romania's labor market. Deindustrialization and the restructuring processes that occurred in the late nineties have had a negative effect that took shape not only in the rise of unemployment, but also in the directional change of the internal migration. For the regions that adapted more effectively to the new conditions of the market economy, surviving this period marked by industrial restructuring and privatization was much easier than for those with a weak infrastructural development and a small or no industry. The study focuses on the disparities regarding the Romanian internal migration. It is mainly concerned with the emphasizing of regional inequalities resulted from earlier analyses based on indicators used for measuring disparities.

Keywords: *internal migration, suburbanization, deindustrialization.*

1. INTRODUCTION

One of the most important effects of the economic processes in the second half of the '90's was the change of internal migration's direction. Therefore, besides the population's evolution in time we must also take into account its movement in space, the direct effects appearing in the population's structure both from a quantitative as well as a qualitative point of view. Changes of residence are very rarely caused by one single factor, in Romania the combined effects of subjective and objective conditions have lead to a multidirectional flow of migration, in most cases, economic conditions ranking first among them. Just like in the Socialist era, when the main causes of the population's migratory movement were collectivization and industrialization - as these were the economic factors bringing about the rural-urban movement - the change of the internal migration's direction in the Romania of the nineties is also the result of the given economic conditions. The difference lies in the fact that in the first case, the positive effects of economic factors have materialized in higher incomes and in the cultural – educational advantages provided by cities, while in the second case, they seem to have achieved the negative effects of economic factors leading rather to a constrained migration for an important number of individuals. It must be noted that migration represents an important factor in the processes of economic development as the first reactions of the labour force in increasing regional disparities starts through emigration and immigration (Heller, W. – Ianoş, I. 2004).

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, ibolya.kurko@geografie.ubbcluj.ro*

Many authors (Ravenstein, E.D. 1885; Lee, E. 1966; Zelinsky, W. 1971) drew up theories and models in order to determine the phenomenon of migration, bringing it in relation with regional development and the spatial distribution of the population. From this point of view, Ravenstein's laws have became true, as he claimed that any migration flow – of course, with delays in time – also brings about counter-flows (opposite direction flows). The same author states that in the case of internal migration as well as of international migration, the main decision-making factor is and always will be the economic one[2].

2. EVOLUTION OF INTERNAL MIGRATION DURING THE TRANSITION YEARS: FEATURES AND CONSEQUENCES

Migratory processes have played an important role in determining the evolution of the Romanian spatial structure. Between 1955 and 1989, in the light of social homogenization and excessive-, yet forced industrialization and urbanization, the main form of migration was the rural-urban and interregional (from the less developed Moldavia to Banat and Transylvania). Here we can also mention the international migration specific to the '70s and '80s which mostly affected the national minorities (Germans, Jews, Hungarians). After 1989, the dominant flow of migration has changed, becoming irreversible, but selective at the same time: cities with complex and innovative functions have succeeded in maintaining a positive migration balance. The trend of international migration has intensified, revealing the development of centre–periphery relations, as the people involved were highly qualified individuals, having the direct effect of attracting human resources, especially if we consider the impact of maintaining territorial inequalities in a globalizing economy (Benedek, J. – Nagy, E. 2004).

Compared to other European countries, even for the migration processes we can identify a whole set of inequities that have occurred in time and space: migration surplus, which was higher in the decades before the '90s has suddenly decreased, followed by a migration wave from areas with an excessive and forced industrialization. Thus, for the first time in the last four decades, the direction of internal migration has changed significantly in Romania. As a consequence, the number of people leaving urban areas was much higher than the number of those settling in cities. The intensified urban–rural migration has mainly been caused by industrial restructuring and by the fact that life was becoming increasingly expensive in cities; the people that have participated in this constrained migration process were mainly those who several years ago have been taken by the swirl of migration towards large industrial centers. The other direction of constrained migration took the form of

[2] *Ravenstein's second law referes to the distance, and it states that the migrants make their first step towards the closest cities and they settle in the more developed urban centres only afterwards (step migration), a law that has been much debated especially by British authors. Thus, it has been demonstrated, that in the case of the British population there has been a vertical migration in the light of an urban hyerarchy and through the lifetime of a person, in the sense that after the industrial revolution, the settlers coming from farms have first settled in villages, from here the migration has continued towards the towns, from towns they have moved to municipalities and from here they have moved to their final destination, the big urban centers (Plane, D. – Henrie, C. – Perry, M. 2005). In Romania we cannot talk about such a migration,where thanks to the much lower level of development, right after the industrialization process the biggest part of the population has setteld directly into the large urban centers with a higher level of prosperity (mostly Bucharest).*

emigration. We must mention the fact that the change of the internal migration in the case of a well situated group of society with a higher status did not qualify as a constrained migration but rather – similarly to Western countries – a post-socialist sub-urbanization that has taken shape mainly in the last years of the 20th century. The main feature of this migration is that it is concentrated in settlements in close proximity to big urban centres, where the territorial and social infrastructure is much more developed.

Examining the rates of migration during the transition period, we must note that it shows great fluctuations. In this context, the year 1990 is an exception as in this year the balance of internal migration has reached 33.9‰. The cause of this excessive increase of internal migration and, first of all, that of the rural-urban flow is due to the fact that the restrictive regulations on settling in some cities have been repealed. Starting with this year, the rate of the internal migration at national level has decreased and began to stabilize at a relatively low value in 2000, followed by a significant increase especially in the 2001-2004 and 2006-2007 periods. The analysis of internal migration by types of settlements shows great differences: if until 1994 rural-urban migration prevailed for a short a period of time (1995-1996) rural-rural migration becomes more important starting with 1997, while in our days the main flow of the internal migration has an urban-rural direction.

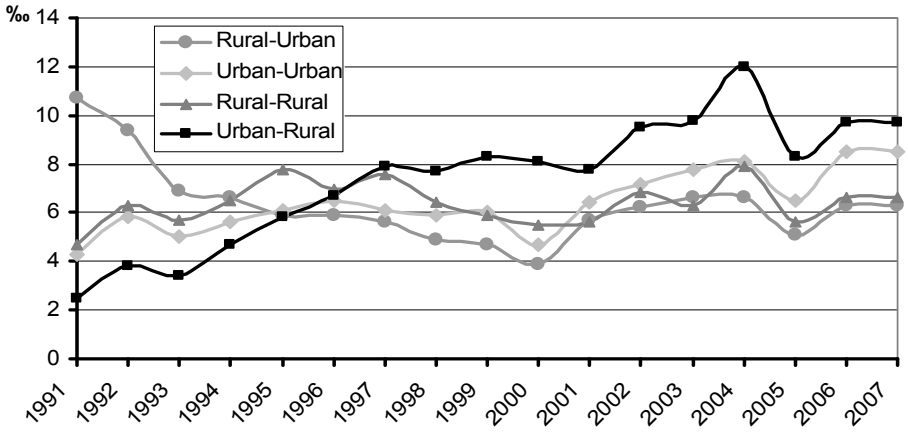


Fig. 1. The evolution of the internal migration between 1991-2007.

Source: the author, on the basis of the data collected from the Romania Statistical Yearbooks, 1991-2007, INS, Bucureşti.

The diagram above shows that neither rural-rural nor urban-urban migration have witnessed important changes in the course of the years, stabilizing at a relatively constant level, but starting with '90s, the gradual decrease of rural-urban migration seems to take shape - although it has been the prevailing form of internal migration for more than four decades – together with the excessive increase of the urban-rural migration. Thus, if at the beginning of the transition period, urban-rural migration has represented only 3,5%, while rural-urban was a staggering 70%, at the end of the '90s the migration towards rural areas has reached values of up to 33,8% which exceeds the rate of individuals who have settled in cities, their rate being a mere 19,5%. Statistical data also show that while at the beginning of '90s the migration of an

important number of people has greatly contributed to weakening the position of rural settlements, by the end of the decade the numbers of the adult population (above 35) and that of children who have settled in rural areas show a rather significant increase. Thus, we can talk about an individual migration before the change of the Communist regime, turning into a family migration afterwards (Rotariu, T. 2003). Even though at first glance it would seem that this emigration process will "refresh" the population in rural areas, due to the fact that these people are already close to the upper limit of the fertile age or are about to reach fertility, this migration cannot stabilize demographic aging, not to mention the fact that the migration of young people towards urban areas still prevails.

Result of the migration in the rural environment by age groups, period 1990-2007

Table 1

Age brackets	1990	1997	2000	2007	1990	1997	2000	2007	1990-2007
	Absolute value				In percent of total (%)				Average value
Total	**-521422**	**12588**	**24696**	**38002**	**-66,3**	**4,2**	**10,1**	**10,2**	
0-15	-125589	13937	2596	2542	-64.0	19.7	6.0	4.1	
15-19	-29948	1630	2168	682	-66.2	7.7	13.5	2.5	-10.3%
20-24	-95209	-8232	-855	-1357	-73.7	-18.5	-2.2	-2.5	
25-29	-98995	-9604	-4617	-1035	-74.3	-17.4	-12.5	-1.8	
30-34	-79533	-127	-899	83	-69.5	-0.4	-2.8	0.2	
35-39	-38248	3185	2447	2432	-61.2	13.8	15.0	7.8	
40-44	-20168	4167	5620	3712	-58.1	23.5	33.3	20.6	
45-49	-10760	3127	6923	6179	-55.6	27.4	52.3	35.7	15.8%
50-54	-8537	1923	5861	8338	-50.2	27.4	59.9	45.1	
55-59	-5955	1572	2804	7257	-45.3	25.0	46.1	48.0	
Over 60	-8480	1010	2648	9169	-39.3	6.8	17.7	31.7	

Source: Romania Statistical Yearbooks, 1990-2007, INS, Bucureşti.

The above table shows that most of the people who have returned to their placesof origin belong to the age-groups between 45-49 and 50-54 years, in fact they are the first generation of urban inhabitants who, in the socialist period were caught in the wave of forced industrialization and urbanization. A relatively low or inexistent migratory movement can be noticed in the case of the young population, staying at negative values during the examined period. From here we can see that rural areas did not succeed in retaining the most important population group – young people - during this period, which could ensure the revigoration of the rural environment, delaying or diminishing the process of advanced demographic aging.

The migration towards rural settlements is closely related to the loss of jobs in industry, a phenomenon that has increased mostly in small and medium-sized cities with mining / resource extracting activities. Big cities have remained attractive even after 1989 due to their advantages such as the existence and the significant increase of foreign capital and foreign direct investments ensuring a wider array of jobs.

The return to villages has also been encouraged by the Law of Land Reform (Law no. 18 / 1991) according to which agricultural land and forests confiscated during the communist regime were returned to their former owners, which in turn could ensure only a minimum living standard because of the lack of equipment for agricultural works. This situation is further worsened by the fragmentation of agricultural land, which can ensure neither the market production of small farms nor the competitiveness of small products at national or international level. The negative consequences this process has obviously been felt in the increase of the population employed in agriculture, a particular feature of the Romanian society, although it is not a peculiar process but rather a rational decision entailed by economic crisis conditions (Benedek, J. 2005).

Analyzing the internal migration balance between counties, the territorial differences decisively determined by economic factors are even more obvious. Thus, the main reasons for a person ("individual migration") or for a family ("nest transplant") to make a decision in this respect are based on economic grounds as people shall consider the advantages provided by the destination as compared to their places of origin. The perception of these advantages leads to the "attraction" and "rejection" theory (Lee, E. 1966), assessing advantages and disadvantages, coping with obstacles (distance, integration, acculturation, assimilation) along the way (Trebici, Vl. – Hristache, I. 1986). The first years of the '90s still bare the traces of post-socialist industrialization and a rural-urban migration, therefore the more industrialized and urbanized counties witness a higher positive migration balance. Analysing migration rates by county, one can notice that Bucharest has received the highest percentage of people coming from other counties in 1990 (75.5‰), followed by other counties such as: Timiş (56.2‰), Braşov (37.5‰), Constanţa (36.9‰), Arad (26.1‰) and Sibiu (16.2‰). A negative migration balance and, at the same time, the largest losses in the number of population are witnessed in the case of Ilfov (-77.6‰), Vaslui (-51.7‰) counties, as well as Giurgiu, Călăraşi, Ialomiţa, Botoşani, Teleorman (the drop ranging between 40-50‰). It is very important to analyze the places of origin and to see whether geographical distance was critical or not in determining the migration inflow. To analyze this issue we took into consideration the number of the population which changed their address according to the 1992 Census.

Thus, one can notice that migrants generally came from neighbouring counties, yet in some cases larger distances did not have a very big influence on the settlement of people in other counties. In the course of the years, Bucharest has attracted the highest percentage of people having arrived from distant counties (mostly from Moldavia), around 55% of the population being born here, the rest coming from other counties. Out of the population that has settled in the Capital, most of them come from Botoşani, Bacău, Iaşi, Suceava and Vaslui counties (between 20 000 - 25 000 people representing 1% - 1.3% of the Bucharest's total population). The contribution of these counties is quite significant in the case of Timiş (between 1% and 2%), Constanţa and Braşov counties. All these clearly show that due to higher wages and advantages provided by urban lifestyle, larger distances did not pose as an obstacle for migrants to leave their homes definitely. This process was especially beneficial for areas with a solid development in the last decades; first of all the counties of Southern Transylvania (Braşov, Sibiu, Hunedoara), Timiş and Arad, Constanţa, and last but not least the capital of the country.

In the second year following the process of opening up all the "closed cities" and lifting the ban on building new homes in these areas, migration intensity as well as the volume of population mobility have dropped significantly, although the aforementioned counties have managed to maintain a positive migration balance at least until the mid '90s.

Starting with 1997, the direction of internal migration has drastically changed and for the first time in the last four decades urban-rural migration has become the main form of migration. Thus, this type of migration in Romania is closely related to economic crisis and not the fourth stage of urbanization, also called the de-industrialization stage. Of course the consequences of the recession consist in the decrease of the number of people employed in industry and services, but this situation should not have necessarily led to the increase of the population working in agriculture. Romania is the only country on the European continent witnessing this reverse change in professional status (Borzán, A., 2004).

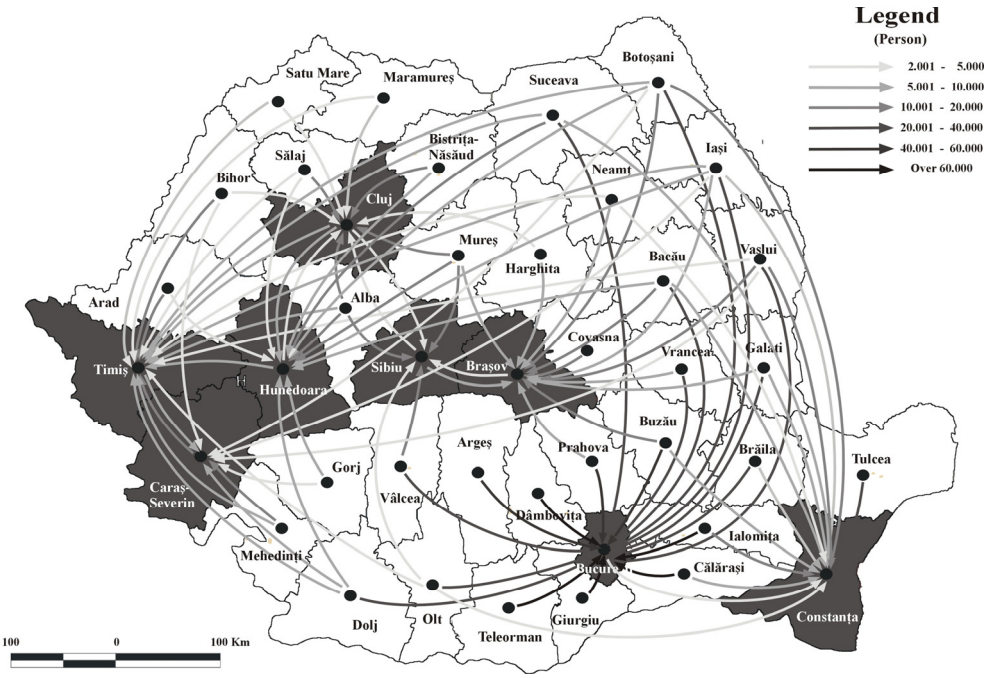


Fig. 2. The rural-urban migration in the year 1992.

Source: The Author, on the basis of the data gathered from the 1992 Census, INS, Bucureşti.

After 1997, the migrational increase of some rural settlements has constantly intensified, slowly transforming into a real trend. This process is very well explained by the fact that due to a profound demographic aging and a negative natural increase affecting the large majority of the rural population, the size of rural population should have dropped. But the population in rural areas has witnessed a slight increase in the last years, from 1997 until 2000, by 14,000 persons (Popescu, Claudia R., 2003). This relatively small percentage partially offsets the drop in population size due to negative natural increase, although it does not counterbalance it enough in order to bring about spectacular changes in the evolution of the population in these territories. The most significant population losses are closely related to counties where the effects of de-industrialization and implicitly mass redundancy have determined the return of this population group to their places of origin.

Therefore, the migration increase in the cities of Hunedoara county in the 1997-2007 period has reached a deficit of - 6,9‰ (which means a drop of more than 29.000 inhabitants from the urban population in this period), -4,4‰ in Harghita county (totaling more than 7.295 persons), while in Maramureş county it has reached -2,9‰ if we consider the areas of large industrial or mining centers as well. Moreover, there are the urban territories included in the group of less developed areas where the drop in population size based on a positive migration balance is the consequence of the higher costs of urban living (Teleorman, Botoşani, Neamţ, Vaslui, Olt, Sălaj). This fact is also proven by population increase in the rural areas surrounding big cities.

But if we analyze the migration increase in rural areas, amongst the winners of the transition period we can find Constanța county (8.9‰) ranking first as its population has increased by more than 20.000 inhabitants followed by Arad county (7.7‰ and an increase of 18,573 inhabitants), Timiş (7.3‰, meaning an increase of 20,696 inhabitants) as well as Ilfov county (7.3‰), which can mainly be explained by the sub-urbanization process of services and industry, from the core of urban centers towards the neighbouring rural settlements. Significant increases can be witnessed especially in the case of areas with a well developed territorial infrastructure and a more diverse geographic environment. There are also other territories with a positive migration flow, like Braşov (7.2‰), Mureş (4.9‰), Sibiu (4.4‰) and Cluj (4‰), belonging to the group of counties that have witnessed a positive migration balance, translated in fact into a population increase ranging from 7,000 to 12,000 inhabitants, mostly representing welfare migration. The other component of internal migration is closely related to forced migration and is mostly present in the rural areas of southern Walachia, especially in Giurgiu County (2.8‰). This value actually means that a number of 6.294 individuals have established in this territory, followed by Buzău, Ialomița, Călăraşi and Teleorman counties (fluctuating between 1.7‰ – 2.8‰, with numbers ranging between 4,000 and 9,000 persons). In other counties of Walachia, Oltenia or Moldavia, which were the first territories with an impressive number of emigrants, the negative migration balance has significantly dropped, without reaching positive values, fluctuating between -1‰ and -0.1‰.

Thus, considering the consequences of the transition period, the migration balance has been constantly positive for the last 17 years in the counties which have reached a higher level of development during the last decades, first of all in Timiş county (8,4‰), which is also one of the territories with the most dynamic pace of development, followed by Bucharest (6.3‰), Arad (5.9‰), Constanța (4.3‰), Braşov (3.4‰), Sibiu (2.7‰), Ilfov (2.2‰) and Cluj (1.1‰). Here we could also add Mureş, Dolj, Bihor and Brăila counties with a migration balance ranging between 0.0‰ and 0.5‰. In these counties, the increase of internal migration has often reached values higher than 14‰ (for instance Dumbrăvița – Timiş county 14.3‰; Săuceşti, Hemeiuş – Bacău county 14.6‰, respectively 15.6‰; Floreşti – Cluj county 14.7‰; Corbu, Cumpăna, Valu lui Traian, Limanu – Constanța county 14‰-18‰), even reaching values as high as 20‰ in various country towns in Constanța county (Lumina 21.4‰; Agigea 33.6‰). We have to have in mind the fact that these two country towns have a very good geographic location, as they are crossed by national roads and have good railway connections, river and maritime connections as it is the case of Agigea or they are located in the proximity of spa resorts (Mamaia, Năvodari) and large urban centres (Constanța), in the case of Lumina.

Among the territories affected by significant population losses, there are the „under-developed" counties such as Vaslui (-6.4‰), Botoşani (-4.9‰), Teleorman (-4.1‰), Tulcea (-3.5‰), Giurgiu, Călăraşi and Olt (-3.3‰), as well as Ialomița, Vrancea, Sălaj counties (between -2.6‰ and -3.3‰) where we could also add some areas of Cluj, Hunedoara and Alba counties.

Considering that during the first years after the collapse of the Communist Regime, a real rural-urban exodus has started due to the opening of closed cities, it would be more appropriate to analyze the positive migration balance only for the period ranging between 1992 and 2007. In this way the hierarchy of counties changes significantly, the aforementioned counties ranking first together with two others: Ilfov county, which is a good example for the sub-urbanization process, with a population increase of 7,3‰ during this time, the second one being Giurgiu county which, on the other hand shows us a gloomy example of the negative effects brought about by the transition period when, due to de-industrialization and the loss of jobs, a significant number of individuals had to return to their places origin from where they left a few decades ago. As a result of this process, the effect of migration on the population of Giurgiu country has contributed to maintaining the balance, remaining at 0.0‰ even despite the massive departures ever since the early '90s. Moreover, during this period, the hierarchy of counties with the largest losses of population has also changed as two traditionally industrialized counties have entered this category, namely Hunedoara and Alba. The effects of industrial restructuring were proven to have affected mainly small, mono-industrial towns, specialized in mining activities. Thus the closing down of mining centers has led to a negative migration balance of -2.8‰ and -1.7‰ respectively.

These processes have emphasized the existing territorial disparities even more, meaning that the most developed territories have continued to benefit not only from a large inflow of workforce, but also from a huge amount of direct foreign investments. In contrast, the less developed territories at the same time have generated a relatively high percentage of unemployed workforce which, occupied in subsistence agriculture, highlighted the disadvantaged character of such places even more.

3. THE SHIFT IN THE CENTRE OF GRAVITY OF MIGRATIONAL INCREASE

The most appropriate method for analyzing a demographic phenomenon or process and to determine the influence of a certain area on these processes is the center of gravity model for the population's migration[3]. Before determining the population's centre of gravity it is important to determine the geographic middle point to which we can further relate to when analyzing the movement in time of the above mentioned indicator. Should we consider the arithmetic mean of the geographical coordinates (longitude and latitude coordinates) of each county, the geometric centre of the country is located in Braşov county, more exactly in the town of Şinca, 155 km from Bucharest in north – north-west direction. We have to keep in mind the fact that if all counties in Romania had a population share equal to the share their territory represents out of the total surface of the country, the population's centre of gravity would coincide with the geometric center point of the

[3] **Methodological note**: Center of gravity:

$$x = \frac{\sum_{i=1}^{n} f_i x_i}{\sum_{i=1}^{n} f_i}; \quad y = \frac{\sum_{i=1}^{n} f_i y_i}{\sum_{i=1}^{n} f_i},$$

where x and y represent the geographical coordinates; f represents a parameter that can either be the rate of the population, the GDP, the rate of unemployment, etc. (Nemes Nagy J. 2005 - coord: 72)

country. Nowadays the center of gravity of the population is located in Braşov County as well, only 2 km east of the geometric centre of the country, also in the commune of Şinca. Unlike the evolution of a territory's population, migration increase is much more sensitive to events occurring in the course of time, the shift of the centre of gravity being thus influenced both by the increase as well as the decrease of migration inflow (the centre of gravity may shift towards a territory without it showing a negative migration balance)[4].

Analyzing the shift in the migration's center of gravity one can notice a south-west as well as a north-east orientation, influenced at a great extent by the evolution of migration inflow in the various territories of the country. Thus, in 1992, the centre of gravity of internal migration used to be located at Stulpicani, Suceava county but starting with this year and until 1996 it started moving southwards, in a first stage up to Tulgheş (Harghita county), and afterwards towards the borders of Cârţa and Dăneşti also in Harghita county. From 1996 and until 1997, the centre of gravity has been moving in a south-west direction, reaching the village of Săcel at the boundaries of Harghita and Mureş counties. The year 1997 is marked by a change in the internal migration flow, very well emphasized by the north-eastern orientation of the center of gravity, at first up to Lunca Bradului (Mureş county), and afterwards moving towards Stăuceni (Botoşani county); starting with 2000 and up to this day it still revolves within the territory of Botoşani county. We have to mention the fact that migration's centre of gravity was the closest to the geometric centre of the country in 1997, when the distance between them was only 46.9 km. During the first years after the collapse of the communist regime, the shift in the centre of gravity of the migration increase has been strongly influenced by large cities, being considered closed cities during the years of socialism. After this restriction has been lifted, thousands of people – especially from Eastern counties – chose the capital of the country as their destination, together with the more industrialized and developed cities in the southern part of the Transylvanian axis (Braşov, Sibiu, Hunedoara, Alba-Iulia, to which we can also add the cities in the Western part of the country: first of all Timişoara, Arad, but also Oradea), which greatly contributed to such a shift in the centre of gravity. The change in the internal migration inflow starting with 1997 outlines a sudden and reverse displacement of the centre of gravity, as it had moved from the south west to the north-east, from Transylvania up to Moldavia. As several inhabitants of the Moldavian counties were involved in the rural-urban migration inflow in the socialist period, their return explains, in fact, the shift in the migration's center of gravity in these territories. The fact that the center of gravity is still located in Botoşani County and generally in Eastern counties can be explained by their extremely low migration balance which is not likely to shift even with the most favorable evolution of this index. As we have shown, the geometric centre and the population's centre of gravity were the closest to each other in 1997, indicating the decrease of inequalities that have occurred in population's migration shift, in other words the territorial leveling of this index. But nowadays, after 10 years, the migration's center of gravity has started to move away even further from the geometric center of the country (more than 270 km in 2007), which separates the losing and winning counties (those areas having a much more diversified economy, a much more developed territorial infrastructure and a more favorable geographic position that can attract the highly skilled workforce in contrast with mono-industrial centers already in decline, without any sign of revival), emphasizing, in fact, the increase of territorial inequalities between these territories, an increase which shall also continue in the coming years.

[4] *It is worth mentioning, that the center of gravity for migration has been calculated for 2944 commune and towns/cities.*

4. CONCLUSIONS

As I have shown, out of the 42 counties in Romania, almost ¼ have succeeded in preserving their population; these are the areas which have easily adapted to the new conditions of market economy and which have been the centers of new investments, thus preserving their attractiveness just as during socialist years. The change in the direction of internal migration did not lead to the revival of population in terms of age structure as those who returned to their native places belong mainly to the first generation emigrant, this in turn having a major long-term negative effect on the continuous demographic aging of the rural population. These problems arise mainly in those counties where negative migration balance is accompanied by a negative natural increase. In those territories government interventions as well as local measures would be highly important in order to capitalize on strong points and opportunities which might bring about further development (first of all, the development of territorial infrastructure, delimiting existing and important touristic objectives and creating an attractive environment for foreign direct investments and an optimum flow of foreign capital).

REFERENCES

1. Benedek, J. , Nagy, E. (2004), *Kolozs és Bihar megye etnikai térszerkezetének változása 1966-2002 között* (Schimbări de structură geo-etnică în județele Cluj şi Bihor în perioada 1966-2002), în Erdélyi Társadalom, Vol. 2, No. 2, Kolozsvár.
2. Benedek, J. (2005), *A romániai urbanizáció jellegzetességei az utolsó évszázad során* (Caracteristicile procesului de urbanizare din ultimul secol). În: Kárpát-medence: települések, tájak, régiók, térstruktúrák (coord. Győri R. – Hajdú Z.), Dialóg Campus, Kiadó, Pécs – Budapest, p. 77-101.
3. Borzán A. (2004): *România népességének alakulása, 1941-2002* (Evoluția populației României, 1941-2002). În: Területi Statisztika, vol. 7, nr. 2, p. 164-172.
4. Heller, W. – Ianoş, I. (2004): *Spatial Patterns of Economy and Migration in Post socialist Romania*, În: Europe Regional, vol. 12, no. 1, p. 4-13.
5. Lee, E. (1966): *A Theory of Migration*. În: Demography, 1966, vol.3, No.3. p. 47-57.
6. Nemes Nagy J. (2005 coord): *Regionális elemzési módszerek* (Metode de analiză regională), Regionális Tudományi Tanulmányok 11, Macropolis Kiadó, Budapest.
7. Plane, D. – Henrie, C. – Perry, M. (2005): *Migration Up and Down the Urban Hierarchy and Across the Life Course*. În: Social Sciences, vol. 102, no. 43, p. 15313-15318.
8. Popescu, Claudia R. (2003): *Disparităţile regionale în dezvoltarea economico-socială a României*, Editura Meteor Press, Bucureşti.
9. Rotariu, T. (2003): *Demografie şi sociologia populaţiei*, Editura Polirom, Iaşi.
10. Trebici, Vl. – Hristache, I. (1986): *Demografia teritorială a României*, Editura Academiei, Bucureşti.
11. ***Recensământul populației şi al locuințelor, 1992, 2002, INS, Bucureşti.
12. ***Anuarele statistice ale României, 1990-2007, INS, Bucureşti.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

NEW RURAL-URBAN RELATIONSHIPS IN ROMANIA. ISSUES AT THE RURAL-URBAN FRINGE OF BUCHAREST

LILIANA GURAN-NICA[1], MICHAEL SOFER[2], NARCIZIA ŞTEFAN[3]

ABSTRACT. – New Rural-Urban Relationships in Romania. Issues at the Rural-Urban Fringe of Bucharest. Romania, as many other East-European countries, is a space of various and profound changes in the last two decades. Having a more rigid totalitarian regime than other ex-communist countries determined a slower evolution of its socio-economic and spatial structures, therefore this country experienced after the political events in 1989 a strong flux of changes beginning with the political and legal system and including all the socio-economic components. This all new evolution involves the rural-urban relationships. The two worlds (urban and rural), stone-still structures before 1989, are new emerging forms. Even though they are totally different, they interpenetrate as a result of the demographic and economic flows, giving birth to a new space in the urban-rural fringe. This paper analyzes this kind of spaces focusing on the periphery of Bucharest, the capital of Romania. The largest and functionally most complex city of this country, Bucharest is enlarging, having a strong impact on the neighbouring rural settlements. These villages have experienced important socio-demographic, functional and environmental transformations in the last 20 years, which are spatially determined by the location of the settlements in relation with the city and by their natural potential. The knowledge of this process is very important and gives the specialists the opportunity to understand and conceptualize it, and then implement the best policies and programs to solve the emerging problems.

Keywords: rural-urban relationship, gentrification, rural-urban fringe, Bucharest, Romania..

1. INTRODUCTION

Rural areas in the market economies have experienced in recent years an accelerated process of transformation from a farm-based economy to a diversified multi-functional environment. This process has resulted in patterns of uneven development and increasing heterogeneity, reflected in inter-regional and intra-regional inequalities in welfare and socio-political status, in access to economic opportunities and in economic performance (T. Marsden, et al., 1987; R. Beteille, 1994; K. Hoggart, et. al, 1995; T. Marsden, 1995; I. J. Terluin, 2003). The features and underlying causes of these changes have been described and analysed extensively in the literature (e.g. A. H. Brun şi A. M. Fuller, 1991; Arkleton Trust, 1992; T. Marsden et al., 1996; B. Ilbery, 1998; S. Eikeland şi I. Lie, 1999; J. Bryden şi R. Bollman, 2000; K. Hoggart şi A. Paniagua, 2001; M. Sofer, 2001, Liliana Guran-Nica, 2004). The major aspects are:

[1]*Spiru Haret University, Faculty of Geography, Bucharest, Romania, e-mail: liliana_guran@yahoo.co.uk*
[2] *Bar-Ilan University, Department of Geography, Israel, e-mail: soferm1@mail.biu.ac.il*
[3] *Faculty of Geography, University of Bucharest, Romania, e-mail: narcizia_stefan@yahoo.com*

- the declining significance of agriculture for the national economy in terms of employment, contribution to the GDP and share of export;
- the setting aside of land for unlimited periods;
- evolution of new forms of agricultural niches linked to quality products;
- introduction of new land uses into the rural communities and rural space through industrialisation, development of commercial and service-sector businesses, tourism and recreation activities etc;
- expansion of pluriactivity at the household level, including the allocation of family labour force to external labour markets;
- counter-urbanization and repopulation of declining rural communities.

Spatially, the process of change is far more remarkable in the rural-urban fringe (RUF). This is exhibited by an intense competition between agricultural and non-agricultural land uses (A. M. Blair, 1987; C. Bryant şi A. Joseph, 2001; M. Bunce şi G. Walker, 1992; G. Robinson, 2004). The result is a conversion and succession of land uses within this belt affected by contesting forces as well as changing agricultural policies and planning policies. The form of interaction between the urban economy and the rural space, and the resulting spatial pattern is derived from the nature of the actors involved in the land market (either public or private; big capital or small holders; planning institutions etc.), their relative power, and the constraints (regulation and deregulation) imposed on the development process, including planning controls. Mechanisms contributing to the growing urban influence on the RUF include, among others, an increased population mobility, changing locational advantages of the fringe rural communities, differences in costs of land, changes in the desired lifestyle, housing availability and radical changes in the pattern of housing (shifts from collective to one-family dwellings), employment opportunities locally and in the surrounding area and public policy. The major resulting processes that have shaped the RUF include: the changing nature of rural communities and their socio-demographic structure due to in- and out-migration; the loss of prime agricultural land; the diversification of the economic base; the appearance of environmental issues and nuisances unknown before; increasing social division between farmers and urban newcomers and even increasing income gap inside and between communities (T. Bradshaw, 1993; I. J. Terluin, 2001; M. Sofer and L. Applebaum, 2006).

In Romania as in other European countries, a result of the in-migration flow which revitalizes and affects the RUF is the process of "rural gentrification". This term has been used in rural studies somewhat differently from its use in the urban context, though there are writings on this subject suggesting that it is the way it has been used to describe urban processes (J. Little, 1987). Hammett (1973, p. 252), for example, defines gentrification as "the invasion of traditionally working class areas by middle of upper income groups", while in the rural context Cloke and Little (1990, p. 164) talk of "class-dictated population movements" into accessible rural areas through "an immigration of middle-class residents at the expense of the lower classes". Thus, the term gentrification within both urban and rural studies has been seen to signify a change in "the social composition of an area with members of middle-class group replacing working-class residents" (M. Phillips, 1993, p. 124).

The fundamental premise underlying migration, and thus gentrification, is residential relocation as a rational action taken by self-interested individuals to improve their quality of life (G. F. De Jong şi R. W. Gardner, 1981). Individuals tend to locate themselves at a place which the sum of its perceived utility is higher than other relevant places, while considering both tangible (attractive landscape) and intangible (safe and friendly spaces) advantages (S. Paquette

şi G. Domon, 2003; C. Mitchell et al., 2004). The growing attractiveness of rural lifestyles has taken place concomitant with shifts in the rural capital accumulation process, which means a shift from de-valorised agricultural land uses to tertiary oriented accumulation which re-valorised rural resources (M. Philips, 2004). It also involves the development of property by "property developers" investing capital in residential properties, and also in the development of retail, financial and spaces of consumption. It may also involve the displacement of local rural consumption practices and their associated retail facilities as well as displacement of people from residential properties. Alternatively, there are cases where original rural residents are capable of devising strategies that enable them to remain rural and to adjust to the changing rural environment (K. Hoggart, 2007). The newcomers are considered as 'consumers of rurality' and the 'rural idyll' with preferences of accessible rural areas (P. Cloke et alt., 1998). The movement into the rural areas and transforming them is expressed by demographic characteristics. There have been studies looking at the role of gender, age and life cycle of the gentrifiers, where retirees and pre-elderly migrants are showing different motives to migrate (A. Findlay si R. Rogerson, 1993; A. Stockdale, 2006). Geographically, this process and related changes appear more frequently and further entrenched in the rural urban fringe (R. Bunker si P. Houston, 2003), while its diffusion to the peripheral areas lags behind (M. Sofer si L. Applebaum, 2006).

2. THE CONTEXT OF THE CHANGES IN THE RURAL-URBAN FRINGE IN ROMANIA

It is a well-known fact that political changes at the end of 1989 in the Central and Eastern European countries represented the transition process from centralized economy to market economy (Liliana Guran-Nica, 2004). Such transition having led to the transformation of the entire social and economic system in the respective region had different features in different countries determined by the direction and the pace of the structural reforms (Liliana Guran-Nica, 2002). From this viewpoint, Romania was placed among the countries with a slow transition pace, a fact that has been reflected by the slow economic progress during the last decade of the XXth Century. The growth pace increased once the companies' privatization and restructuring process was completed, and the legal and institutional framework of the entire social and economic system was established (fig 1).

The development processes in the rural areas and, implicitly the new rural-urban relationships have occurred under these circumstances.

It is an acknowledged fact that Romania has become, over the recent decades, a mainly urban country, if we take into account the statistics regarding the composition of the population. This

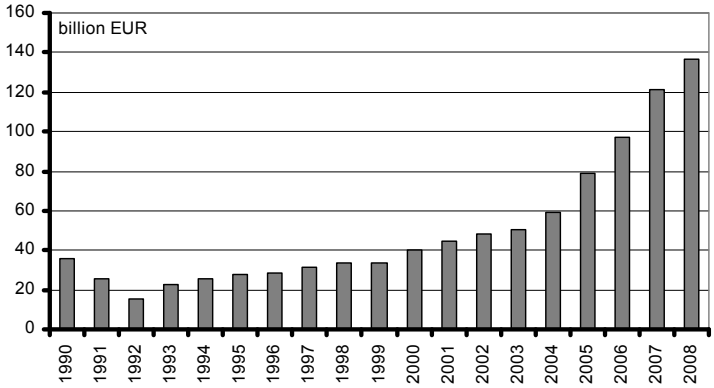


Fig. 1. Economic growth in Romania (GDP).

situation is the result of a mix of factors among which especially the urbanization policy implemented by the communist regime in the second half of the past century. Many localities were declared towns, even though they did not meet the necessary criteria to be classified as such (R. Săgeată, 2002, 2003) and the rural regions were rapidly industrialized, which attracted a high number of people to the respective environment. This explains that in less than 30 years the Romanian urban population becomes predominant, with the rural population proportionally decreasing in number by over 15% in 1966-2007 (table 1). This reduction (over 2 million people) is also impressive given the negative growth of the total population number. This process affects not only the size but the demographic composition of the rural dwellers as well. The demographic ageing trend is remarkable since people at working age constantly tend to leave the villages of origin in search for new sources of income in either urban areas or abroad. Under these circumstances, the rejuvenation potential decreases, with the elderly presenting a major share of the fragile rural space.

Demographic characteristics of the rural population

Table 1

Years	1966	1977	1992	2002	2007
Population (thousand persons)	11,797	12,164	10,418	10,245	9,670
Population dynamics (1977=100 %)		100.0	85.6	84.2	79.4
Rural population as % of national population	61.8	56.4	45.7	47.3	44.8
Elderly rural population aged 60 and over (%)	12.2	16.4	22.1	24.3	23.8

Source: National Institute of Statistics, *Census of Population*, 1966, 1977, 1992, 2002 and *Statistical Yearbooks* 1981-2008.

The population economic composition highlights the predominance of farming activities in the rural area, with over 52% of the village inhabitants occupied in this type of activities. Out of these, 25% are old people, retired from the former farming cooperative units (CAP) on one hand, and the industrial enterprises of the urban environment, on the other hand. The other 25% are former commuters, resident in the rural regions, and town inhabitants who returned to their native households. There are also people working as artisans, skilled workers in craft professions, technicians, foremen, clerks etc., but also unqualified workers (15%) (***, 2008). The high proportion of the population occupied in the agriculture is an important indicator of the subsistence nature of this activity, a feature generated by the changes of the Romanian economy occurred after 1989. 20 years later that moment, around 90% of the country's farming population still work in small-sized individual farms of 2.3 hectares in average (***, 2008).

The socio-economic difficulties that the Romanian rural regions are facing now may be counteracted by their rich and diverse natural potential. More than 200,000 km^2 of rural area accommodate a high diversity of landscape resulted from the variety of the geographical relief forms, the climate and hydrographic factors, the vegetation and the fauna, which are important resources to revitalize the rural settlements. If the literature in the field speaks a lot about the economic re-launch of villages through tourism activities, this is because of these natural resources. These are, at the same time, factors attracting part of the urban population in search of larger, "cleaner" and accessible environments to establish their homes. Thus we discover the circumstances for the apparition and intensification of the rural gentrification process, mainly in the urban fringes or metropolitan perimeters of large cities.

3. RURAL-URBAN FRINGE OF BUCHAREST – CHARACTERISTICS

The reason for selecting this area as a case study for the gentrification process analysis is primarily its location near the largest urban centre of the country. Near a city of that size and impact the transformation process in rural settlements is expected to be rapid and on a large scale. We can consider, as well, the possibility for occurrence of the gentrification process as the urban population is an important source of gentrifiers and the rural environment has the potential to attract them.

The fact that Bucharest and its metropolitan area are located in a plain area with a reduced fragmentation is a factor favouring the development of residential areas on a large scale. The only elements that could be an obstacle to this spatial development, the lakes and forest areas, are in reality the factors attracting the new residents. The Vlăsia Plain presents all these features. Interfluves with slow slopes develop on larges surfaces, numerous valleys cut in loess have large water meadows and altitudes vary between 50 and 100 meters. The temperate climate foster various topoclimates, generated by the presence of local elements such as valleys, large-sized tablelands, lacustrian basins, forest areas and, contrasting asphalted and built up areas.

The dense hydrographic network, formed of important rivers coming from the Carpați Mountains (Argeş, Dâmbovița) and from local rivers as well (Pasărea, Mostiştea) is supplemented by a very well developed network of lakes – valley lakes, limans and ponds (on Colentina, Pasărea, Mostiştea, Snagov, etc.) (I. Ianoş, I. Iordan, Liliana Guran-Nica, 2005).

The specific vegetation is the forest steppe supplemented by the valley azonal vegetation with numerous forest patches, remains of the famous woods (Codrii Vlăsiei) which are true oases of forest vegetation in a strongly populated environment (Gr. Posea, Ioana Ştefănescu, 1984).

From a social and economic point of view, the evolution of the metropolitan area is directly linked to the evolution of Bucharest city. Hence, as a result of the rapid industrialization of cities, the metropolitan area sees an important demographic growth by the beginning of the 80s, on a pace similar to the capital city. Subsequently, the population growth rate goes down in both zones as a result of the policy aimed at fighting migration to big cities. The trend after 1990 is interesting, underlining in a suggestive manner the changes of the migration process to the metropolitan area. The migration flow from Bucharest to the fringe area largely increases (fig. 2).

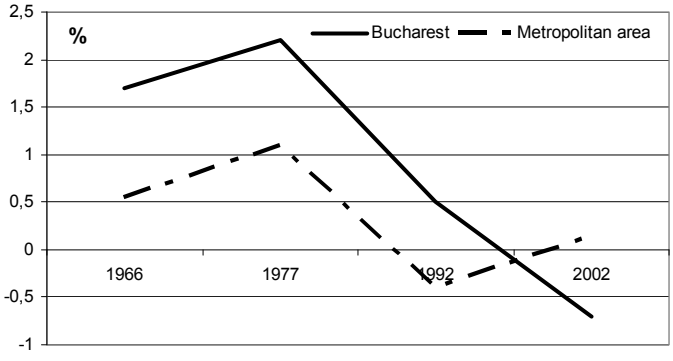


Fig. 2. Annual average population growth rate.

From a spatial perspective, this is an unbalanced process. The migration between the two zones is subject to various factors, the distance from the capital city and the accessibility being the most important. The location within the metropolitan area is also significant, its favourability depending on the more or less developed neighbouring areas Thus, the settlements located near Bucharest have always had a rapid population growth compared with those placed at larger distance. This situation is distorted by the presence of some important roads and railways that determined a positive demographic evolution even in the more remote villages. Good examples are the communes Mogoşoaia, Tunari, Pantelimon, Bragadiru and many others located in the North of the capital. The settlements from the South and those located far from the city have negative population growth as their accessibility is poor. Berceni, Vidra, Adunații-Copăceni are only a few examples (fig. 3 and 4).

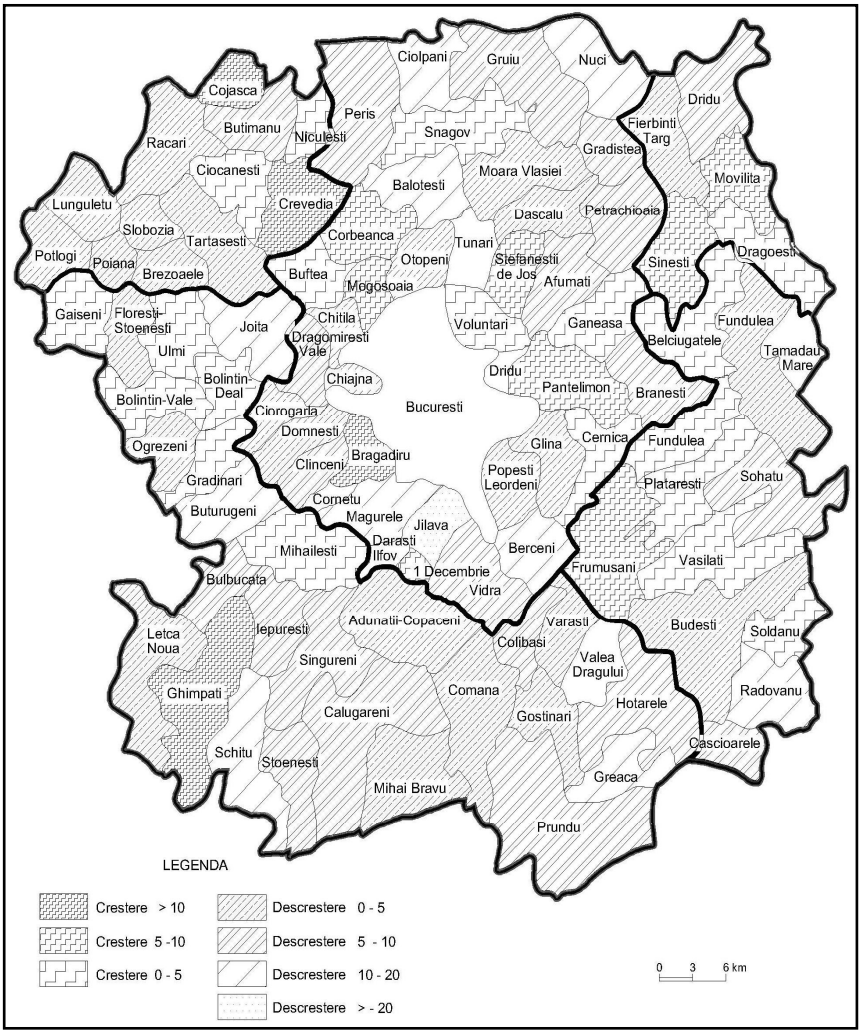


Fig. 3. Population dynamic 1992-2002.

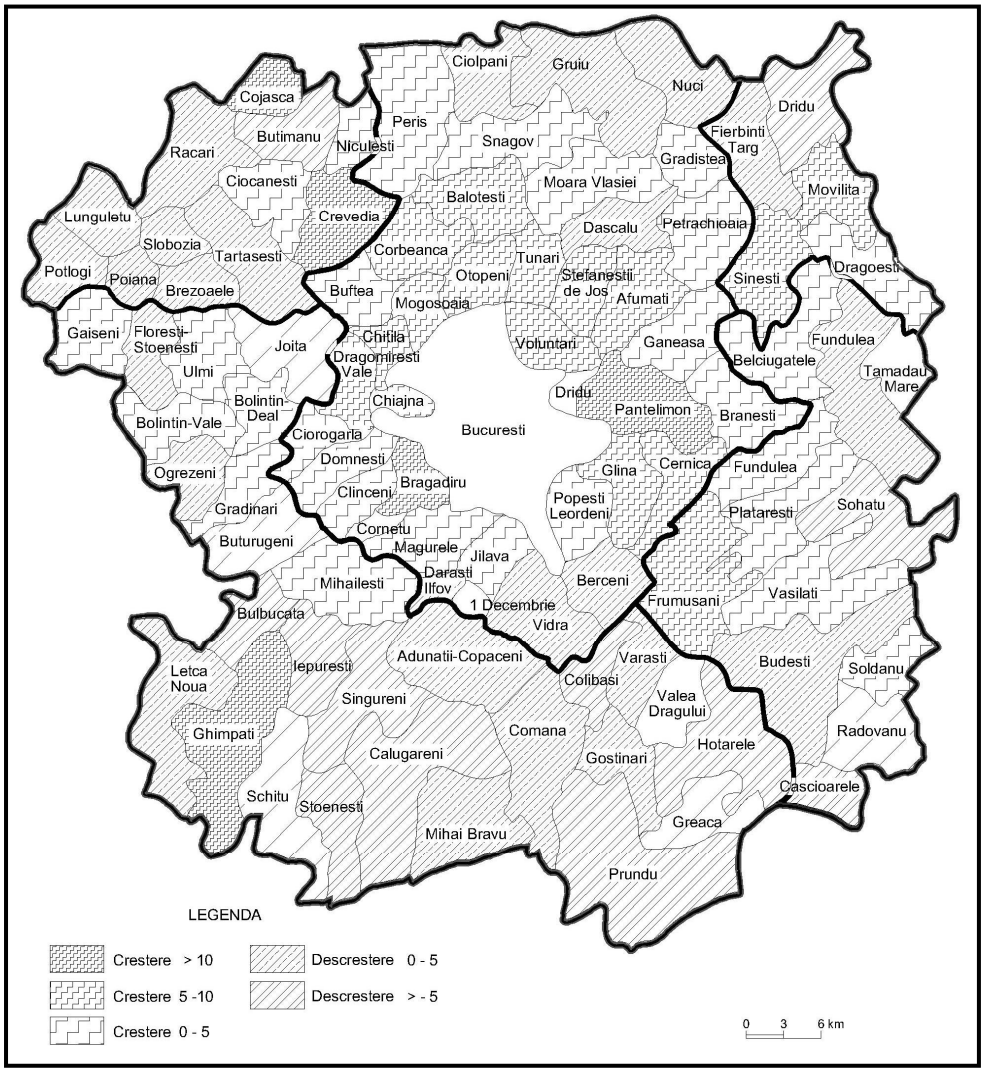


Fig. 4. Population dynamic 2002-2007.

The differences between the Northern and Southern areas of the metropolitan perimeter can be explained by the fact that they are neighbouring regions with different economic development potentials. If the North is the transit way to economically heavy Valea Prahovei having favored an important communications network, the South is a connection with a peripheral area that is less attractive and developed, the Giurgiu county.

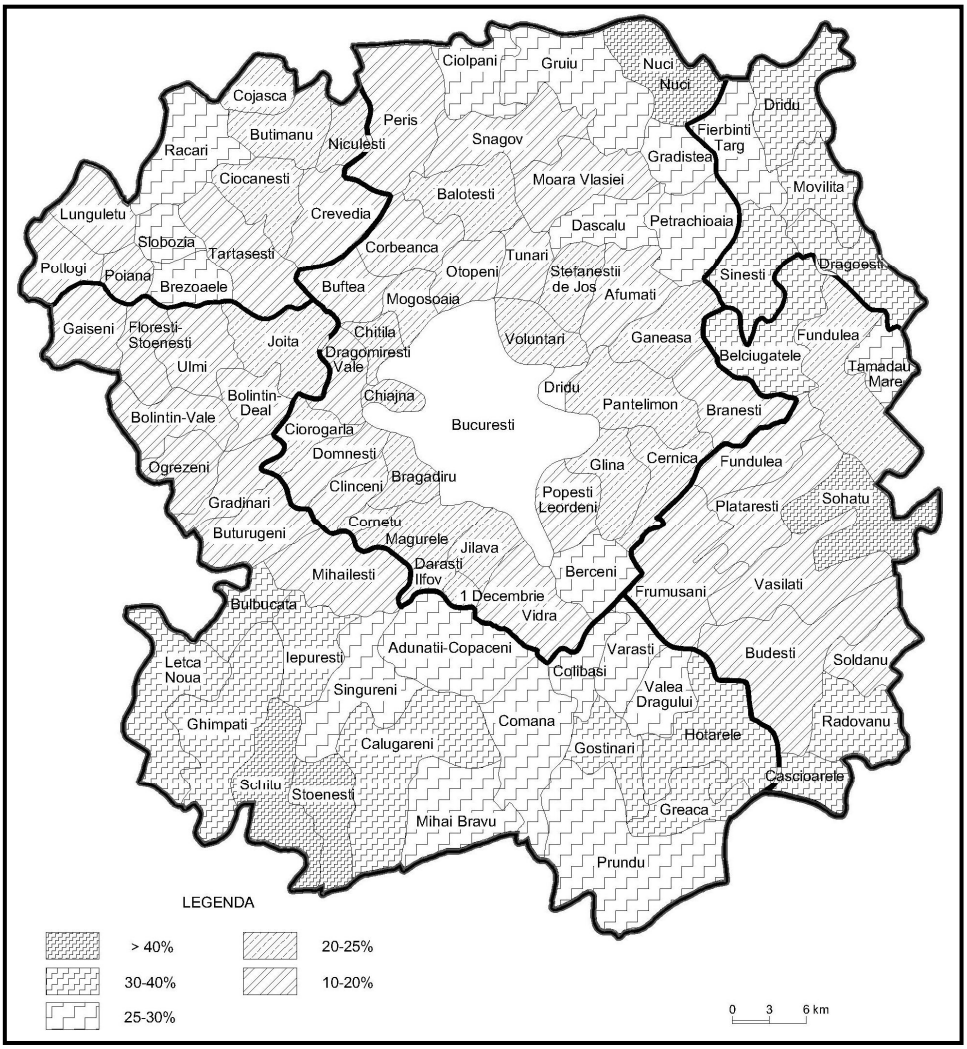


Fig. 5. Age structure – old population (60 and over).

Directly linked to the population dynamics is the composition of age groups (fig. 5). It is easy to see a general trend of rural population ageing against the background of a nation-wide population ageing process, but being more intense in the areas with demographic downturns, which explains to a large extent the migration of young population and population at working

age towards either the capital city and other cities, or the Western labour market. From this perspective, it is significant to emphasise the increasing share of aged population (over 40%) in villages located within a perimeter of only 30 kilometres from Bucharest.

These are only two indicators highlighting the changes of the peri-urban capital area. Their direct relationship with all other elements of the social and economic system induces the idea of changes occurred at all levels. Therefore, it is necessary to deepen the analysis of the new rural-urban relations in this area by tackling all the phenomena of the past 20 years. To this end, a local study was executed in Voluntari town and Brănesti commune. These two localities were selected because of their gentrification potential and because of the obvious recent changes. Although currently a town, Voluntari has been a rural settlement until 2004, one of the most attractive to the Bucharest inhabitants.

4. CASE STUDIES: VOLUNTARI AND BRĂNEŞTI

Placed in the north-eastern part of the capital city, no further than 8 km, the town of Voluntari has been for long time under Bucharest's influence. That determined a stronger and continuous development compared to Brăneşti commune, which is lying further out (18 km) to the east. Both settlements are characterized by a picturesque environment as they are surrounded by well-known forests – [Tunari, Andronache, Vulpachi, Băneasa (Voluntari) and Pasărea, Ştefăneşti, Boldu–Creţuleasca (Brăneşti), and have also many areas of water (lakes stringing along Pasărea river in Brăneşti), elements that always attracted the inhabitants of the big city. Beside these, the short distances and the good connections offered by major roads and railways favoured the development of the two settlements. Voluntari is crossed by the national road no. 2 (DN2), and the belt road, while Brăneşti is passed through by DN3, the Sun Highway, and Bucureşti – Constanţa main railway.

From the administrative point of view the two settlements are lying in Ilfov County and consist of two or more units. The town of Voluntari has two residential districts, former villages of the commune (Voluntari, Pipera), and Brăneşti has four villages: Pasărea, Izlaz, Vadu Anei and Brăneşti, the largest one. The two settlements (town and commune) are spread over relatively large area: Voluntari – 3740 ha and Brăneşti – 5326 ha. Their land-use structures differ by their relative share: in the town the residential area, the agricultural one and the forests have almost equal share (35%, 35%, and 30%) while in the commune the agricultural land covers 63% of the territory, the woods 25%, and the built-up areas only 13%. These differences indicate the major functions of each settlement. Voluntari developed all the time as mainly residential and commercial settlement compared to Brăneşti that remained up to now a dominantly agricultural one.

The population size and its density are also dissimilar. The town is much larger (30,484 inhabitants) and densely populated (815 inh/km^2) while the commune, with 8,176 inhabitants and 153 inh/km^2, is one of the big rural settlements in Romania (2007). The demographic dimension of Voluntari is not necessarily the result of the fact that it was officially declared town in 2004. It was a very large commune even before, the largest in this country.

The present situation is determined mainly by the migration rate. Being much closer to Bucharest, thus more accessible, having less building, land and rent prices compared to those in the city and a status of commercial settlement, Voluntari has always been very attractive to the people coming from different regions of the country in search of working places in Bucharest and therefore used to be called a "sleeping settlement". As a remote commune, Brăneşti attracted less migrants and maintained its agricultural functions.

Regarding the evolution of the migration rate we can observe in both localities three distinct stages. In the first 3 years after 1989, a period when state policy that prevented migration (residential change) to the big cities was abolished, a large population from the two settlements moved to Bucharest (fig. 6). In the next 10 years, a period of slowly economic transition implying low incomes, the migration rate was positive but small. Everything changed in the last few years during a rapid economic grow that allowed an increasing number of city dwellers to buy land in the rural space and build new houses (fig. 1 and 6).

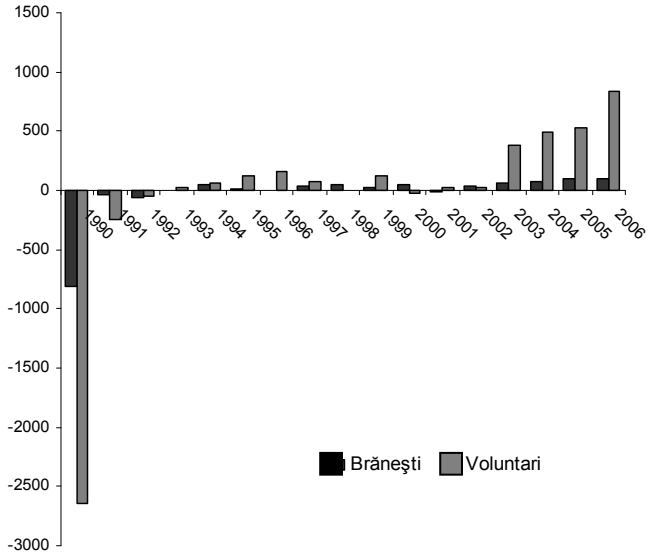


Fig. 6. Net migration rate (domicile).

The same growing evolutiontrend can be seen in the number of households (fig. 7), some placed in the built-up areas and many at their borders (fig. 10), the result of this process being the extension of the residential space over the agricultural one (fig. 8 and 9). A good example is Pipera residential district (former village), that used to be and still is a luxury area, which developed next to Băneasa forest. It is a tradition for the rich people to build up houses in this area, therefore its development was spectacular in the last 10 years. The presence of some natural and anthropic elements of environment (forest, river, roads) changed this village in a most coveted place for the newly enriched people in the very beginning of the transition period. Therefore, now 50% of the buildings of Voluntary town are new while in Brăneşti only 30% were built in the last few years, the rest of them dating from the '70s and '80s (fig. 10).

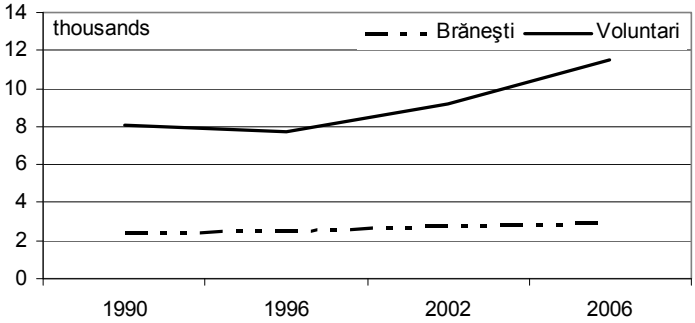


Fig. 7. Number of households.

All these changes determined by the shift in the direction and pace of migration in the metropolitan area of Bucharest deeply transformed the

two settlements. The changes in the land-use induced the change in functionality, and together with the new, modern architecture created a new landscape. Nevertheless, there is also a negative impact: some residential areas are crowded, much more than a traditional rural space can bear, and thus put pressure on the natural environment by polluting the air, the water and overstressing the biological systems (forests).

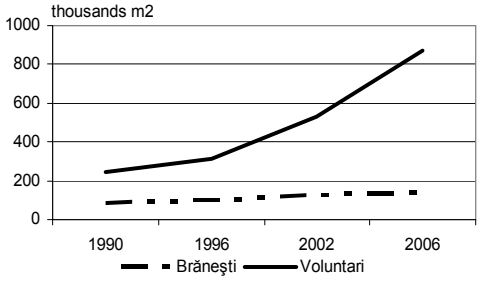


Fig. 8. Built up area.

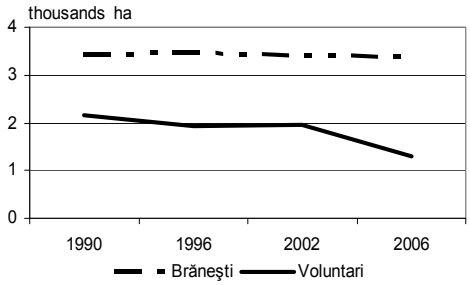


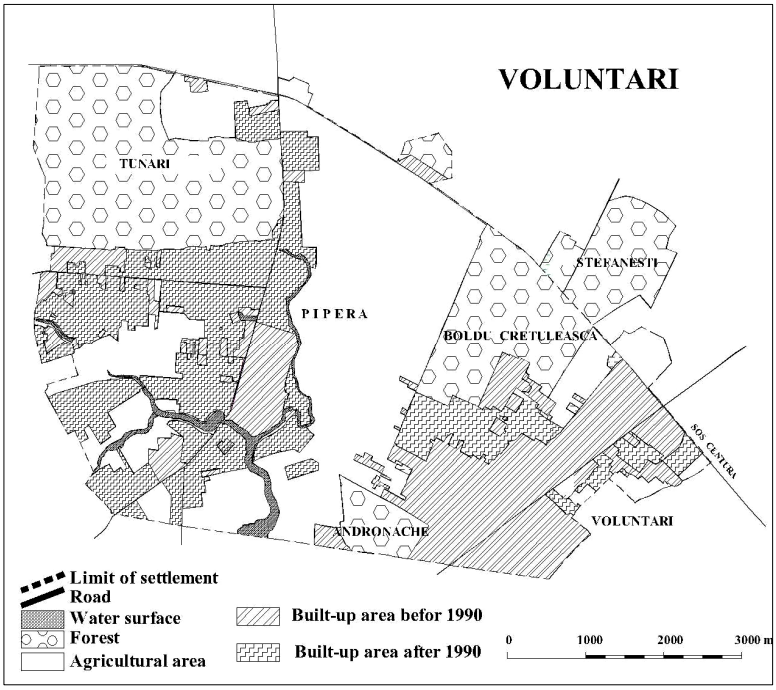
Fig. 9. Agricultural area.

5. CONCLUSIONS

The transformation of the Romanian rural space proves to be a highly complex process. But the most important changes are evolving in the peri-urban areas of the large cities as a result of the continuously growing migratory movements. These determine important alteration at all levels of the socio-economic life of the rural communities and finally of the landscape.

In this context it is necessary to study thoroughly the current rural-urban relations, to underline all the characteristics of the rural change process and to understand them entirely. Therefore, it is important to concentrate on the following subjects:

- population mixing at the fringe increases the interactions between farm and non-farm residents with differing resource preferences;
- increasing demand for land for non-farming purposes – the development of land market under growing demand for residential, commercial and industrial land-uses and thus the conversion of agricultural land to non-agricultural uses;
- farmers' adaptation to the changing preferences (pattern of demand for goods and services) of the new comers and the local rural population by changing or adding enterprises;
- the appearance of environmental nuisances unknown before as a result of the development of non-agricultural enterprises;
- the motivations behind a newcomer's decision to move to the rural-urban fringe;
- changes in the form of farming (is there a move towards larger specialised farms on the one hand and hobby farming on the other hand?);
- the question upon the facing of a process of rural gentrification in some areas and geriatrification in others.



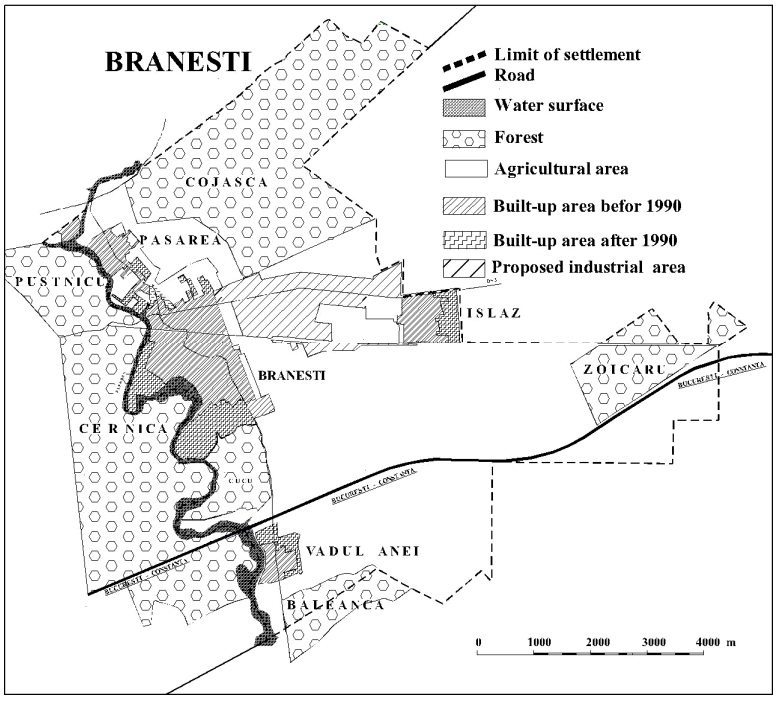


Fig. 10. Spatial evolution of the built-up areas in the two settlements (1990-2008).

REFERENCES

1. Arkleton Trust (Research) Ltd. (1992), *Farm Household Adjustment in Western Europe 1987-1991***,** Final report on the research programme on farm structures and pluriactivity, Volume 1.
2. Beteille, R. (1994), *La Crise Rurale*, Paris: Press Universitaires de France.
3. Blair, A.M. (1987), *Future landscapes on the rural-urban fringe*, in: Lockhart, D. and Ilbery, B.W. (eds.), ***The Future of the British countryside***, Geo Abstracts, Norwich.
4. Bradshaw, T. (1993), *In the Shadow of the Urban Growth: Bifurcation in Rural California Communities*, in Lyson, T. and Falk, W (eds.), ***Forgotten Places: Uneven Development in Rural America***, Lawrence KS: University Press of Kansas, p. 218-256.
5. Brun, A.H., Fuller, A.M (1991), *Farm Family Pluriactivity in Western Europe*, Arkleton Trust (Research) Ltd and the French Ministry of Agriculture and Forestry.
6. Bryant, C. and Joseph, A. (2001), *Canada's Rural Population: Trends in Space and Implications in Place*, Canadian Geographer, 45.
7. Bryden, J., Bollman, R. (2000), *Rural Employment in Industrialised Countries*, Agricultural Economics, 22.
8. Bunce, M., Walker, G. (1992), *The Transformation of Rural Life: the Case of Toronto's Countryside*, in Bowler, I.R., Bryant, C. and Nellis, D. (eds.), ***Contemporary rural Systems in Transition: Agriculture and Environment***, Wallingford, U.K.: CAB International.
9. Bunker, R., Houston, P. (2003), *Prospect for the Rural-Urban Fringe in Australia: Observations from a Brief History of the Landscapes around Sydney and Adelaide*, Australian Geographical Studies, 41.
10. Cloke, P., Little, D. (1990), *The Rural State? Limits to Planning in Rural Society*, Oxford University Press, New York.
11. Cloke, P., Philips, M., Thrift, N. (1998), *Class, colonization and lifestyle strategies*, în P. Boyle and K. Halfacree (Eds.), ***Migration into Rural Areas, Theories and Issues***, Wiley, Chichester.
12. De Jong, G.F. and Gardner, R.W. (1981), *Migration Decision-Making: Multidisciplinary Approaches to Microlevel Studies in Developed and Developing Countries*, Pergamon, New York.
13. Eikeland, S. and Lie, I. (1999), *Pluriactivity in Rural Norway*, Journal of Rural Studies, 15(4).
14. Findlay, A. and Rogerson, R. (1993), *Migration, places and quality of life*, în A.G. Champion (Ed.) ***Population Matters***, Paul Chapman, London.
15. Guran-Nica, Liliana, 2002, *Investiţiile străine directe şi dezvoltarea sistemului de aşezări din România***,** Edit. Tehnică, Bucureşti.
16. Guran-Nica, Liliana (coord.) **(2004),** *Rolul diversificării activităţilor economice în revitalizarea aşezărilor rurale din Bucovina***,** Edit. Ars Docendi, Bucureşti.
17. Hamnett, C. (1973), *Improvement Grants as an Indicator of Gentrification in Inner London*, Area, 5.
18. Hoggart, K., Buller, H. and Black, R. (1995), *Rural Europe: Identity and Change*, London: Edward Arnold.
19. Hoggart, K and Paniagua, A. (2001), *What Rural Restructuring?*, Journal of Rural Studies, 17(1).
20. Hoggart, K. (2007), *The Diluted Working Class of Rural England and Wales*, Journal of Rural Studies, 23.

21. Ianoş, I., Iordan, I., Guran-Nica, Liliana (2005), *Câmpia Bărăganului*, în *Geografia României V. Câmpia Română, Dunărea, Podişul Dobrogei, Litoralul românesc al Mării Negre şi Platforma continentală*, Edit Academiei Române.
22. Ilbery, B. (1998), *Conclusions*, în Ilbery, B. (ed.), ***The Geography of Rural Change***, London: Longman.
23. Little, J. (1987), *Gentrification and the influence of local-level planning*, în Cloke, P. (ed.), ***Rural Planning: Policy into Action*?,** Harper and Row, London.
24. Marsden, T. (1995), *Beyond Agriculture? Regulating the New Rural Spaces*, Journal of Rural Studies, 11(3).
25. Marsden, T., Whatmore, S. and Munton, R., (1987), *Uneven Development and the Restructuring Process in British Agriculture: a Preliminary Exploration*, Journal of Rural Studies, 3(4).
26. Mitchell, C. (2004), *Making sense of counterurbanization*, Journal of Rural Studies, 20.
27. Paquette, S. and Domon**,** G. (2003), *Changing ruralities, changing landscapes: exploring social recomposition using a multi-scale approach*, Journal of Rural Studies, 19.
28. Phillips, M. (1993), *Rural Gentrification and the Processes of Class Colonisation*, Journal of Rural Studies, 9, no. 2.
29. Philips, M. (2004), *Other geographies of gentrification*, Progress in Human Geography, 23.
30. Posea, Gr., Ştefănescu, Ioana (1984), *Municipiul Bucureşti şi Sectorul Agricol Ilfov*, Edit. Academiei, R. S. România, Bucureşti.
31. Robinson, G. (2004), Geographies of Agriculture: Globalisation, Restructuring and Sustainability, Pearson, Harlow.
32. Săgeată, R. (2002), *„Ruralul" în mediul urban*, Revista Geografică, VIII, p. 157-165.
33. Săgeată, R. (2003), *Structurile urbane de tip socialist – o individualitate geografică?*, Analele Universității din Oradea, Geografie, XII.
34. Sofer, M. (2001), *Pluriactivity in the Moshav: Family Farming in Israel*, Journal of Rural Studies, 17.
35. Sofer, M. (2005), *The Future of Family Farming in Israel: The Second Generation in the Moshav*, The Geographical Journal, 171.
36. Sofer, M., Applebaum, L. (2006), *The Rural Space in Israel in Search of Renewed Identity: The Case of the Moshav*, Journal of Rural Studies, 22.
37. Stockdale, A. (2006), *The role of a 'retirement transition' in the population of rural areas*, Population, Space and Place, 12.
38. Terluin, I.J. (2003), *Differences in Economic Development in Rural Regions of Advanced Countries: An Overview and Critical Analysis of Theories*, Journal of *Rural* Studies, 19(3).
39. Terluin, I.J. (2001), *Rural Regions in the EU: Exploring Differences in Economic Development*, Netherlands Geographical Studies 289, Utrecht/Groningen.
40. *** (2008), *Anuarul statistic al României 2008*, Institutul Național de Statistică, Edit. "Revista Română de statistică", Bucureşti.

Note: The paper presents the results of the research work carried out in the Exploratory research project with the title *Changes in rural Romania: the process of rural gentrification*, code 783/2008, financed by UEFISCSU.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

FUNCTIONAL ASPECTS OF URBAN COMMUNITIES: "THE NEW NEIGHBOURHOODS". CASE STUDY: VIILOR NEIGHBOURHOOD, SIGHIŞOARA MUNICIPALITY, MUREŞ COUNTY

ANA-MARIA POP[1], V. ZOTIC[2]

ABSTRACT. – Functional Aspects of Urban Communities: "The New Neighbourhoods". Case Study: Viilor Neighbourhood, Sighişoara Municipality, Mureş County. The relationship between residents and the area that they were born and/or live in, on the one hand, as well as the determination of any form of social relationship established between individuals, on the other hand, represents the fundamental nature of a human community. "The New Neighbourhoods" have been formed both in urban and in rural areas – where dialogue covers other dimensions and connotations –; they were borrowed, in type and in form, from the Saxons, but are defined by a distinctive function. By clarifying the theoretical approach and terminology, and by describing the applied methodology, the analysis of urban community under the form of a case study, which was applied in the case of Viilor Neighbourhood – Sighişoara Municipality - evidences the possibility of considering it a territorial unit quite suitable for the implementation of various social policies.

Keywords: *neighbourhood, Viilor Neighbourhood, urban community, functionality, social policies.*

1. INTRODUCTION

Purpose and objectives. The pace, in which society is being subjected to everyday transformations, does not always influence the urban system in a successful way. In a society in which everything seems to be ruled mostly by competition and individualism, social relationships between individuals and groups of individuals lose more and more their meaning, therefore being directly dependent on the pursued interest. Hence, social relationships become the essence of a human community, even if the association based on purely spatial criteria does not guarantee its existence and further development.

In case of Transylvanian settlements, where people of Saxon origin have created their own organizational system, characterized by reciprocal help between neighbours, we can sketch a model of practical human community. Once with their departure, after the '80s, the rest of the remaining segregation elements diminished. Rather resilient, some of the urban communities still seek to meet the needs of the present-day society, by taking over the old models, therefore generating a neighbourhood community, on the same criterion of spatial proximity, yet only partially observed.

[1] *Babeş-Bolyai University, Faculty of Geography, Centre for Regional Geography, 400006, Cluj-Napoca, Romania, ana-maria.pop@geografie.ubbcluj.ro*
[2] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, zoticv@geografie.ubbcluj.ro*

Much more common in the suburban area of cities in Transylvania, this model of social organization was also adopted by the Romanian urban communities, in this case, the ethnic criterion being neither defining, nor exclusive!, a viable example being given by "the new neighbourhood"[1] in Sighişoara Municipality, Mureş County.

The bond of the residents to their living territory, the spirit of cooperation in case of burial, and not only, can be considered reasons for substituting this form of social organization and bringing out several associative housing policies that would respond best to the current and future needs of the community.

By starting from the identifying such communities within a city profoundly marked by deep German public consciousness, we focused on expressing its functionality within the existing urban system and the possibility of [its] inclusion in urban housing policies.

Conceptualisation in specialized literature. The issue of human communities was first raised by F. Tönnies (*Gemeinschaft und Gesellschaft*, 1887), who makes the distinction between community (*Gemeinschaft*) and society (*Gesellschaft*) through the type of social association involved; social relationships are more visible within a community, because we deal with a stationary population, governed by certain values. Other similar or contradictory opinions are sustained by sociologists such as: F. Le Play, L.W. Warner, P.S. Lunt, W.M. Whyte (*Larousse. Dicţionar de sociologie [Dictionary of sociology]*, 1996, p. 62).

T. Parsons saw the community as a "broader relationship of solidarity stretched over a rather undefined area of life and interests". At the same time, Hillary G. (*Definition of Community: Areas of Agreement*, Rural Sociology, 1995) has attempted to make a distinction between the different connotations of this concept, succeeding in identifying 94 definitions, in which people represent the common element, "Beyond this common basis, there are no points of agreement." (*Oxford. Dicţionar de sociologie [Dictionary of sociology]*, 2003, p. 119).

We can also note that, semantically, there is no major distinction between the concepts of "community" and "neighbourhood", in some cases them being identified as synonymous terms (*Oxford. Dicţionar de sociologie [Dictionary of sociology]*, 2003).

If we refer to the Romanian literature, the neighbourhood phenomenon has distinctly drawn the attention of P.H. Stahl (1998), Muslea or Herseni (1931), whose ideas were continued, in the last two decades, by sociologists like V. Mihăilescu (2002, 2003), S. G. Totelecan (2002) and others, their approaches being mainly focused on the sociological and anthropological perspective.

Considering it was implemented in the territory by the German ethnics as a form of social organization one *"... an association of people, strictly according to the criterion of spatial contiquity: all adult inhabitants of a streat were groped and organized in a neighbourhood. And if the streate was too large, it was divided into several neighbourhoods" (V. Mihăilescu, 2002, p. 7)* considers that the neighbourhood becomes.

Preceded by youth associations, dissociated by gender (*Bruderschaft* and *Schwesterschaft*), the neighbourhood compulsorily gathered all young individuals, from the moment of their marriage or from the moment of their turning 24, under the rule of a "neighbourhood father", democratically elected, since "life outside the neighbourhood was inconceivable for a Saxon living in the village" (Schenk, 1995). Women belonged to the neighbourhood only by association to their husbands, the neighbourhoods of women being quite rare and met relatively as a tardy form.

[1] *Such types of communities, established after 1980, are mentioned in the literature under the name of „New Neighbourhoods".*

After completing the semantic analysis of the connotations of "neighbourhood" term, S. G. Totelecan (2003, p. 120) shares V. Mihăilescu's opinion, emphasizing the fact that "[it] represents a socio-spatial entity, either individual or as a group (social group, whose members maintain primary relationships determined by their location in the same place, also embodied by the regular exchange of products, either barter or by the provision of compensation services). Thus, it becomes the argument for a well organized community space, although standing for the same place where the disintegration can start, as a result of no longer sharing the same way of being."

Once with the emigration of the Saxons, the Romanian population creates its own neighbourhoods, in accordance with the existing model, based on the "***voluntary***" association of inhabitants of one street (see *The Statute of Organization and Operation of Viilor Neighbourhood*, 1995, art. 1); these were designed to provide relationships between their members if help was needed, while entirely complying with the superior legal and institutional forms: "Our aim is *to get to know us better* by organizing meetings, parties, trips, *to help each other* in case of death in the family and *together contribute* to the implementation of decisions by the local government and state" (ibid, Art. 1).

In addition, the Neighbourhood follows a definite purpose, therefore becoming a "special economic, intermittent, exceptional association, based on mutual assistance [...]. The neighbourhood report means bilateral relationship based on tacit agreement: *do ut des*. It is neither philanthropy, nor altruism, not even sentimentality – it is an association of interests: the neighbour located in the surrounding area proves he is the first one that would help us; it is, then, the most natural choice, based on the simple principle of the economy of force" (S. G. Totelecan, 2003, p. 13).

Both L. Vlăsceanu and Cătălin Zamfir have come to the conclusion that neighbourhood represents "a social group, especially formed in areas with strong community orientation, such as traditional villages or ethnic communities, structured either as a result of tight relationships of assistance and acquaintance, or determined by joint action projects and certain specialized roles (such as "the neighbourhood father", the cashier, in some Saxon communities in Transylvania)". (*Dicționar de sociologie [Dictionary of Sociology]*, http://www.dictsociologie. netfirms.com/V/ Termeni/vecinatate. html, Accessed in February 2010).

Beyond the meaning DEX offers to the phrase: "The state of being, the situation of someone or something that exists, inhabits, lives in close proximity to someone or something else; the relationship between two or more neighbours", by considering the identity attribute of the locals, neighbourhood acquires new meaning.

Another definition of the neighbourhood, if we consider its use in spatial planning, would be that it represents "the basic territorial unit of the urban living area. By achieving the status of such unit, means to be able to provide the best possible combination among housing, daily use facilities and street network. This way, it aims at increasing the living standard and fostering community relationships within the type **v** unit"[1]. In case of urban inhabitants, neighbourhood involves certain networking among community individuals, thus its viability depending on the intensity of current connections.

[1] *Dicționar de sociologie [Dictionary of Sociology], http://www.dictsociologie.netfirms.com/V/Termeni/ vecinatate.htm, last accessed, February 2010.*

2. METHODOLOGY

So as to reflect the current functionality of the forms of urban communities such as neighbourhoods, we considered to use the case study as a sociological method (A. Mucchielli, 2002; R. K. Yin, 2005). The accent fell on deciphering several questions (how, when, why), whose answers can not be validated by quantitative statistical criteria.

After analysing the framework in which this urban community has emerged and developed, after a through analysis of the terminology and previous views on this topic, we established the contact with the territory. Data collection and processing was completed with the analysis of this case study, after which discussions and conclusions were initiated. Viilor Neighbourhood, Sighişoara Municipality, Mureş County, was chosen as the reference unit for this type of urban community. It represents a territorial unit that greatly benefited from the richness of multicultural elements, the German influence standing for the main source of setting up this form of social organization. Furthermore, such communities may be considered areas suitable for the implementation of development plans, therefore playing a double role: to ensure support so as to establish social relationships and housing that can be used as the main resources for the implementation of social policies.

3. RESULTS

The built-in area of Sighişoara Municipality, as well as its suburban localities, is crowded by neighbourhoods, whose names are established by the name of the main road that keeps together the inhabitants of Romanian nationality. By taking over the former Saxon model of neighbourhoods, these new social institutions have maintained the ethnicity and spatial proximity as the main criteria for their setting up. Even if most of the neighbourhoods are Romanian, the coexistence of specific Hungarian or Rroma neighbourhoods, within the same area, is not surprising at all. Being defined by a rich multiculturalism, it generates the environment for the social organization of each ethnic group. Moreover, *rural neighbourhoods* appear as a distinct phenomenon of the urban space of Sighişoara Municipality.

The natives of the Romanian Jac (originally settled for work) living in Sighişoara, have created their own neighbourhood, which is named after the former locality, still following the same rules, transmitted from generation to generation, from their parents and grandparents.

Viilor Neighbourhood, Sighişoara Municipality, Mureş County, was established during the ‘80s, by merging three smaller neighbourhoods, and its territorial extension broadly overlaps the former neighbourhoods. The need for cooperation and mutual assistance, the respect for “the neighbours” or the desire to socialize have encouraged the upholding of this social institution, despite all changes, verified in the evolution of society. Yet very similar to the former Saxon **organizational** model of communities, subtle differences appear in this new form of neighbourhood.

First of all, although ***the criterion of spatial proximity*** is being considered, it has lost its accuracy. One of the four sectors of Viilor Neighbourhood (sector 4) includes, on the one hand, members living outside the area, most of them belonging to this neighbourhood by place of birth, and, then again, new members, who wish to join Viilor Neighbourhood out of practical reasons (i.e. mutual assistance in case of death).

The requirement that all neighbourhood members should declare their nationality represents another clause stipulated in the statute of the neighbourhood "When setting up, all residents can become members of the neighbourhood [...] regardless of gender, age, yet compulsorily only those of Romanian nationality" (ibid, chap. 2, art. 1).

Similarities between Viilor Neighbourhood, Sighişoara Municipality, and the Saxon model of Neighbourhood

Table 1

Characteristics	Viilor Neighbourhood, Sighişoara (2010)	The Saxon model of Neighbourhoods (12^{th}-17^{th} century)
Criteria for setting up	√	√
- spatial proximity	√	√
- ethnicity	√	√
The organizational pattern (the general assembly as the Steering Committee, the great father of the Neighbourhood, the vice of the Neighbourhood and the cashier)	√	√
Normative aspects (statute, financial records)	√	√
Means of transmitting information (the Neighbourhood's blackboard)	√	√
Revenues	√	√
Functionality	√	√
The existence of women neighbourhoods	√	√
Typical objects (the Neighbourhood's trunk, the flag)	√	√

As in the case of the ideal association model – the Saxon model of neighbourhoods – everything is regulated by legislation (statute, records). If the neighbourhood statute makes clear distinctions in which regards the organization pattern of community, it representing the "legislative act" officially stipulating the existence of this social institution, then, the neighbourhood registers all entries and losses, revenues and costs, economically describing its functioning. Records register incomes and expenditures, the financial records including both revenues and penalties of the community members, like the old Saxon neighbourhoods used to operate (Gabriela Coman, 2002, p. 105).

Members of Viilor Neighbourhood (2010)

Table 2

Sectors of the Viilor Neighbourhood (2010)	No. of members		
	Total	Out of which:	
		Exempt	Contributors
Sector 1	114	6	108
Sector 2	109	5	104
Sector 3	120	7	113
Sector 4	72	1	71

Source: Information provided by Lucaci C., 2010.

Having the same importance as an official company regulation, the statute lays down the rules referring to the establishment of the neighbourhood, the enrolment procedures, the rights and the obligations of the members, the subscription fees. Each new adherent to this form of social unit has to be at least 18 years old, must be aware of the Neighbourhood's statute, and know his rights and obligations. We have to note that enrolment in the neighbourhood is made only once a year, at the beginning of the year, and it is optional, dependent on the will of the people. As for the old neighbourhood, "The registration consists in a written application that is submitted to the representative of the sector or to any member of the committee. Once with the application form, the person that wants to become a neighbourhood member will pay a fixed registration fee (see *the Statute* ..., chap. II, art. 1), subsequently its adherence being discussed and approved by the general assembly, at its annual meeting. In the last 10 years, out of 430 members of the Neighbourhood, 78 deaths were registered, the gender ratio being rather balanced (39 men deaths /39 female deaths), while 74 new members were added and 19 people were excluded from the neighbourhood institution, the main causes being the non-payment of taxes in case of three deaths, as well as indiscipline. *We can observe that, despite the transition that characterized the last decade, a reasonable input and output stability has been maintained in the system (urban community), people showing the same openness to support this form of social association.*

Yet, who leads the Neighbourhood? Following the previous models of association, ***the general assembly*** is the one that ensures the execution of the duties stipulated in the statute and manages the functionality of neighbourhood. The general assembly, as the steering committee, elected every five years, consists of:

- *the steering committee* – meets statutorily once a year. The future of the neighbourhood in general and of Viilor Neighbourhood in particular is decided by the chair, the vice-chair and the cashier of the Neighbourhood. The neighbourhood chair, also called „*fotăr*" (name taken after the German word *Vater*, which describes the same occupation), represents neighbourhood in all its problems. He is responsible for the order and discipline or the proper course of this form of social organization, while keeping track of members and being responsible for all the expenses registered; both the vice-chair and the cashier help the chair achieve these assignments.

The chair election is organized in accordance with the decision made by the elderly committee, and only the persons over 60 years old and having a high standing civic and moral behaviour are eligible:

- *the audit committee*, consisting of three persons and designated by the general assembly for a 4-5 year period, is in charge with the financial management of the Neighbourhood;

- *the elderly committee* consists of three elderly members, and is responsible for the compliance with tradition, as well as it has the power to propose the members of the general assembly, every five years;

- among the representatives of the steering committee we also mention *the master of ceremonies*, who supervises the carrying of flags, cross and crowns, the funeral cortege**,** who also organizes the parties; *the 4 sector representatives* (one for each sector of the neighbourhood), who collect the fees and fines from members, who are responsible for notification of the members regarding future meetings, reunions, and funerals; and *the janitor*, who is responsible for cleaning and supervising furniture in the Neighbourhood.

Taxes that are levied in the neighbourhood are as it follows:

a) *the registration fee*[1] (the fee for a dead person in the amount of 4 RON), which varies with age: 18-30 years – 8 RON (two fatalities), 30-40 years old – 20 RON (5 fatalities), 40-50 years – 60 RON (15 fatalities), 50-55 years – 400 RON (100 fatalities), 55-60 years – 600 RON (150 fatalities); over 60 years – 800 RON (200 fatalities). Exemptions from this fee apply to persons under 18 and over 85 years. The money is distributed as funeral aid, for purchasing the crown at current price, as well as for covering other costs (pay and charge of all people responsible for the ceremony). Another exception is allowed in the case of families whose children are over 18 years old, but who are away for studying: "The mutual assistance for funeral is also specified for family members, yet contributors over 20 years old, who attend college under 25 years old, even if they are not members of neighbourhood" (ibid, chap. II, art. 2). A further exemption is applied to all members of the Neighbourhood's steering committee: chair, vice-chair, sector representatives, people in charge of ceremonies and the hearse keeper" (ibid, chap. II, art. 2);

b) *the annual fee*/ "*the smoke money*": 3 RON for each neighbourhood member. This money is usually spent on a festive event – Richttag – which is held at the beginning of every year (usually in February) at CFR Club, Sighişoara Municipality. In 2009, out of a budget of 2356 RON, they covered the amount of 1206 RON for organizing the Richttag, including insurance and lease of the hall (1150 RON) (according to the verbal statement shared by C. Lucaci, 2010);

c) *penalties,* applied for: 1. the non-payment of the annual fee (0.25 RON/day); 2. missing the convened general assembly (100 RON for those not attending the meetings and 10 RON for those who are late for the meetings); 3. the lack of discipline during neighbourhood assembly (10 RON) and during other meetings (50 RON); 4. the unjustified absence to a funeral of at least one family member (5 RON).

As they are inventoried in the neighbourhood's records, we also mention the income represented by interests ("In order to guarantee the payments representing the death assistance, the money necessary for three deaths will be kept at hand, while the remaining cash will be stored at CEC Bank" – see *The Statute* ..., chap. IV, art. 3) or the financial input from the rental of seats and tables used for other events (weddings, baptisms). The neighbourhood's secretary administers these funds, to make sure that he always has enough money to cover the costs for funeral arrangements in case of three fatalities.

Currently, ***the Neighbourhood functions*** tend to become obsolete, the only function still standing being *the obligation for death assistance*[2]. The Neighbourhood assists the mournful families, providing for both the cost and the funeral procession of carrying the deceased on his last journey.

Perpetuated until two or three years ago, the Neighbourhood board made the recorded death known publicly among its members, news which was passed from house to house by the representative of the sector. At the same time, the contributions for funeral were gathered and the burial date and place announced.

---

[1] *Verbal information shared by Lucaci C., the vice-chair of Viilor Neighbourhood between 2000-2010.*

[2] *V. Mihăilescu (2003, p. 9) distinguishes three forms of mutual assistance: situations of mutual assistance (specific to any community, particularly rural), duties of mutual assistance (defined by reciprocal obligations) and obligations of mutual assistance (neighbourhood).*

Another function, less and less verified, is *the mutual assistance for wedding arrangements*, but, due to the multitude of firms offering a range of services to plan a wedding, and the desire of the bride and groom to be modern, led to a continuous loss of traditional customs related to marriage, and gradually the performance of this function diminished.

Socially, there is an annual party (*Richtog → Richttag* – on which occasion the Saxon influences are visible again), expected to take place at the beginning of each year (in February), which involves all the members of the neighbourhood, regardless of gender. Another distinct feature of this neighbourhood is the parallel existence of a ***neighbourhood of women***, the only one being located in town, on the Târnava Mare River. In accordance with the rules of the old Saxon neighbourhoods of women, this one does not have its own status or a binding character, thus having an exclusively female nature. The main function used to be the lease of pots on various events. As the demand to the service currently diminishes, the functionality of this Neighbourhood is limited. The Neighbourhood's female members meet at Richtog, a folk celebration, held as a ceremonial wedding, once every two years, when the new leadership of the neighbourhood is elected, thus, Fotăriţa Mare, the female equivalent of "the Father" of the Neighbourhood is replaced with the new elected.

By respecting the same criterion of spatial proximity, the analysed human community is characterized by smaller groups, and for a better insurance of the neighbourhood functionality, some of them respect this criterion (sector 1: Viilor Street, no. 1-64, Dealul Gării, Tudor Vladimirescu, sector 2: Viilor Street, no. 65-99, Stejarului, Oltului, Crângului streets, sector 3: Parângului Street, Viilor Street, no. 100 – end of the street, Cart. Viilor), while others include members from outside the geographic area, as well (sector 4: Corneşti, Ipătescu streets etc.).

4. CONCLUSIONS

The updated analysis of the way Viilor Neighbourhood was formed, of the determination of the key actors involved in the leadership of this community, of the presentation of the rules under which it operates and of the rights and obligations its members have to comply with, can highlight a number of issues, such as:

- the seething multicultural space and the role played by the German population in this framework, represent the main cause of taking up such model of social organization, functional at the time. Once with the implementation of such type of social interaction by the members of a social group, the working pattern, of the Neighbourhood meeting the needs of individuals and of the created group, has also been adopted;
- the use of the criterion of spatiality in establishing the Neighbourhood becomes obsolete to that community, due to the continuously changing motivation;
- in light of friendly relationships and good neighbourliness that may be established between the community members, we can observe a persistence of identity and the social character of the Neighbourhood, even if membership to this territorial unit is not so defining as in the case of the old Saxon neighbourhood;
- the neighbourhood functions are affected by the „dilution" process, thus, the economic relationships established between individuals are no longer so strong as they used to be in the initial forms of social organization;
- despite the existence of an elderly committee, responsible for compliance with tradition, its preservation is slightly beginning to deteriorate, up to, in some cases, its utter denial;

- the Neighbourhood represents a model of voluntary association between the residents of urban communities, therefore the verb „to choose" becomes the benchmark for the expression of its existence, this being able to become a project unit, in which the customary criteria are no longer legitimate.

By taking over the Saxon model of Neighbourhood and adapting it to its own needs, the New Neighbourhoods become separate territorial entities, with different characteristics, this way, *new group-entities, carrying an associative character.*

5. DISCUSSIONS

Is Neighbourhood compatible with the urban area? Does Neighbourhood represent an optimal form of communication? Can this form of social organization be stored? The answers to these questions are confirmatory, thus making Viilor Neighbourhood become such an example.

By analyzing the functioning way of Viilor Neighbourhood[1], the type of interaction among individuals and that of the social group, as well as the community way to refer to that place, we may dare to suggest this type of neighbourhood communities should be considered suitable territorial units for the implementation of some social projects. The following ideas stand for arguments:

- this type of urban community is the result of a voluntary association of inhabitants, governed by certain rules followed by them;
- the criterion of spatial proximity provides a certain closeness among neighbours, therefore, allowing them to establish socialization relationships more easily;
- the Neighbourhood has autonomous management, being able to satisfy its own needs, in line with the new requirements of society;
- the Neighbourhood follows superior organization and administrative structures and, at the same time, it meets one of the essential criteria of existence of inter-community associations, namely *the joint management*.

REFERENCES

1. Alexiu, T. M., Anastasoaei, Teodora (2001), *Dezvoltare comunitară. Curs de specializare pentru lucrători în mediul rural*, Edit. Waldpress, Timişoara. http://www.ngorural.org/lib/dezv_comunitara.pdf
2. Dumitru, R. (2001), *Gospodăria între vecinătate şi rudenie*, în Sociologie Românească, 1-4, pp. 250-266.
3. Ghiu, B. (?), *Despre vecinătate – colocrația*, http://www.icca.ro/pdf/Bogdan_Ghiu.pdf (Accesat în februarie 2010).
4. Mihăilescu, V. (2000), *Spiritul Vecinătății*, în Provincia, decembrie.
5. Mihăilescu, V. – coord. (2003), *Vecini şi Vecinătăți în Transilvania*, Colecția de antropologie, Edit. Paideia, Bucureşti.

[1] *Acknowledgements. We would like to express our gratitude to both Ilea Şt., chair, and Lucaci C., vice-chair of Viilor Neighbourhood for the information they provided and their availability.*

6. Totelecan, S. G. (2003), *Vecinătatea în Munţii Apuseni*, Edit. Napoca Star & Argonaut, Cluj-Napoca, p. 304.
7. Yin, R. K. (2005), *Studiul de caz. Designul, analiza şi colectarea datelor*, Polirom, Iaşi.
8. *** (1996), *Larousse. Dicţionar de sociologie*, coord. de Boudon, R., Besnard, Ph., Cherkaoui, M., Lécuyer, B. P., Univers Enciclopedic, Bucureşti.
9. *** (1997), *Barometrul de Opinie Publică*.
10. *** (1995), *Statut de organizare şi funcţionare a Vecinătăţii Viilor*, Vecinătatea Viilor, Sighişoara.
11. *** (2000), *Planning tomorrow's countryside*, The Countryside Agency.
12. *** (2002), *Dicţionar al metodelor calitative în ştiinţele umane şi sociale*, coord. Mucchielli, A., seria Sociologie. Antropologie, Polirom, Iaşi.
13. *** (2003), *Oxford. Dicţionar de sociologie*, Univers enciclopedic, Bucureşti.
14. *** (2006), *The Cambridge Dictionary of Sociology*, coord. Turner, B. S., Cambridge University Press.
15. *** (2008), *Strategia de dezvoltare economico-socială a municipiului Sighişoara pentru perioada 2008-2013*, Municipiul Sighişoara.
16. *** (2008), *Obiceiuri unice în zona Sighişoarei*, în Ziarul de Mureş, ediţia din 28.11.2008, variantă online: http://www.ziaruldeMureş.ro/fullnews.php?ID=11360 (Accesat în februarie 2010).

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE TYPOLOGY OF RURAL SETTLEMENTS WITHIN THE TRASCĂU MOUNTAINS, ALBA COUNTY

GABRIELA ADINA LAZĂR[1]

ABSTRACT. – The Typology of Rural Settlements within the Trascău Mountains, Alba County. By means of its natural and anthropogenic elements, the morphological unit of Trascău Mountains is identified as a complex area which allowed and encouraged the development of human communities in a strict relation and dependence with its hydrographical and edaphic components. Regarding the anthropogenic elements, within the Trascău Mountains one can easily notice the dominance of human settlements within the depressionary areas and valleys, while the higher parts of the mountain area and the plateaus possess more scattered, isolated settlements as a direct consequence of the less favourable conditions for their development due to the morphology of the landforms. The depopulation processes of the rural areas, more pronounced nowadays, are the result of the increased demand of the population for better life standards. The majority of the younger inhabitants from the rural areas migrate to urban centres either in search of a new, better paid place of employment, either for the establishment of a family, in an area where, the primary requirements are more at hand. The natural resources of the Trascău Mountains can be highlighted only with and by means of its human component, the only one which can truly dictate the social and cultural evolution of the rural areas, by means of active involvement in the decision making processes, not only regarding the exploitation of the natural resources, but also regarding the interdependence and mutual correlations between the communities and the component elements of the entire geocomplex.

***Keywords**: typology, favorability, human settlements, rural areas, geocomplex.*

1. INTRODUCTION

By means of its landforms, its hydrographical and edaphic components, the Trascău Mountains allowed, throughout their history, the settlement of the human communities within their territory, permitted the development of a wide range of providing activities (from agricultural activities, to wood processing or the exploitation of iron ores). Starting with the idea provided by B. Commoner [1980] that "*the environment is an alive, enormous and very complex machinery which constitutes a dynamic and thin layer on the surface of the Earth and every human activity is dependent to the perfect estate and well performance of this mechanism…*" we can sustain the idea that the Trascău Mountains represent a unique "environment". Unique by means of their morphology, of their relationships developed throughout its history with the vegetation, soils or the human communities. Unique by means of their tourism features as a statement of a long and often convoluted history of those who lived within its territories and who often recourse to the support of the nature, either by building fortresses in higher, more inaccessible places, either by settling halidoms in areas where "*in the surroundings is only the*

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, e-mail: adina.lazar@geografie.ubbcluj.ro*

sky", either by sheltering literally in a cave. And for all these, the Trascău Mountains have served mankind, have offered their natural elements in the service of man and, as a personal input, have enchanted the sights of all those who have entered their territories.

Regarding the geographical distribution of the human settlements, one can easily notice a dominance of the households in the depressionary areas and valleys, while the higher parts of the mountain areas and the plateaus possess more scattered and isolated settlements, as a consequence of the less favorable conditions for the development of the households. The majority of these settlements are small and very small sized, the areas located at higher altitudes being characterized by the scattered type of settlements (the case of the Râmeț and Întregalde communes), while the corridor areas possess congregate-type of villages, many of which developed along the main valleys (the case of the Ocoliș, Lunca, Sălciua, Geomal, Ighiel, Feneș communes).

The anthropogenic component of this geocomplex is extremely diverse but in the last decades it underwent a numerical decline. Nowadays, there are different households which have been entirely abandoned or deserted as a result of the migration of the younger population towards urban areas, more developed and where better life conditions can be encountered.

2. RESTRICTIVITY AND FAVORABILITY IN THE TYPOLGY OF THE SETTLEMENTS

The spreading of the inhabited surfaces was initially accomplished on the terraces and alluvial plains and in the depressionary area, but as a result of the population growth and of the continuous increase of the requirements for new resources, new territories have been taken into possession, territories located in areas less favourable or more inaccessible. These territories were previously used as temporary residences in the warmer periods of the year, when the inhabitants took the herds of cattle or sheep to graze on the mountain slopes. Throughout the time these small households have turned into well-established human settlements with agricultural functions.

The variety of the landforms, the correlation between the hydrography and the edaphic component has determined a diverse spreading of the human settlements. The relief was the primary natural element which has dictated the establishment of the settlements not only from the point of view of the accessibility, but also of the conditions provided for their development. Spatially, a concentration of the settlements towards the northern and eastern part of the Trascău Mountains can be noticed (congregate-type villages), while in the central and the western part of the unit, a more disperse presence of the households is encountered (the majority of these settlements are scattered) (fig.1).

In the areas located at higher altitudes, less favourable regarding the access to resources, the settlements are modest (consisting of a living house and at most an extension), the building materials are represented mostly by wood, and the roofs are made out of hay, while in the lower areas, where access is more at hand and the road infrastructure is more developed, the households are more diverse (with a larger number of rooms, summer kitchens, barns or stable houses) and the building materials are represented by brick or light concrete blocks, and the roofs are made out of brick or metal sheets.

The functions of the settlements from the higher parts of the unit are mostly agricultural, represented by the growing of the cattle or sheep herds, or by different smaller sized agricultural activities (the cultivation of vegetables and crops for their own consumption) or by the cultivation of orchards.

However, we need to mention that the morphology itself is not responsible for the settlement of the households in the higher area of the mountain unit, but it is correlated with the presence or absence of the water resources, which still play an important role in the location of the various settlements. As a result, the landforms combined with the hydrographic component represent an element of favorability or restrictivity in the development of human settlements. Even though encounter a lower energy of the relief, the households located on the plateaus are more isolated, with lower possibilities of water supply (V. Surd, 1993).

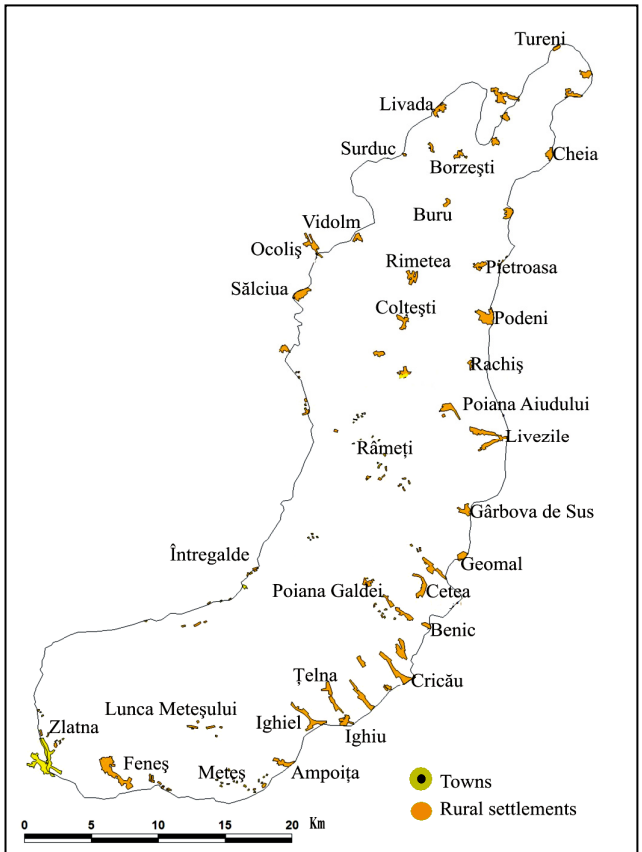


Fig.1. The human settlements within the Trascău Mountains.

Thus, the drainage network presents itself as another element with major influence in the distribution of the settlements. Most of the households of the Trascău Mountains, over 95%, are developed along the main water courses (Elena Bogdan, 2008), resulting a concentration of these settlements along the valleys and within the small depressionary areas.

Also, the basin units are important for the spatial distribution of the human settlements. If considered to the entire unit of the Apuseni Mountains, the depressions of Trascău Mountains are mountainous depressionary basins, but due to their location in regard to the analyzed morphological unit, these basins are in fact contact depressionary units, bordering and limiting the Trascău Mountains from the rest of the neighbouring units.

The larger part of these depressionary units are occupied with scattered type of settlements but with a tendency of grouping in compact centers (the case of the commune seats Ocoliş and Sălciua), where as a result of the presence of more extended surfaces, the development of a larger number of settlements and crops was possible. The functions of these settlements are primary agricultural or agricultural combined with a residential one for the industry of other neighbouring localities (this is the case of the Sălciua de Jos and Sălciua de Sus villages, from where the inhabitants go to the town of Baia de Arieş, for working purposes) (V. Surd, 1993).

Also, within the depressionary areas, settlements with mixed functions are found. This is the case of Rimetea and Colțești villages located in Trascău Depression whose functions are not only agricultural (large areas of crops being encountered), but also agro-touristical (many households offering lodging possibilities for the incoming tourists).

The localities spread alongside the drainage network from the lower areas of the analyzed unit or from the hilly areas are best represented, being located in the eastern part of the unit, towards the Mureș Corridor and possessing various and multiple functions, such as agricultural functions, or different service provider activities and even lodging services.

Regarding the spatial distribution of the settlements, the communes located in the eastern part of the unit are those which recorded a higher percentage, while the communes from the central and western part present a more pronounced dispersal of the households, which strictly correlated with the morphology of the relief.

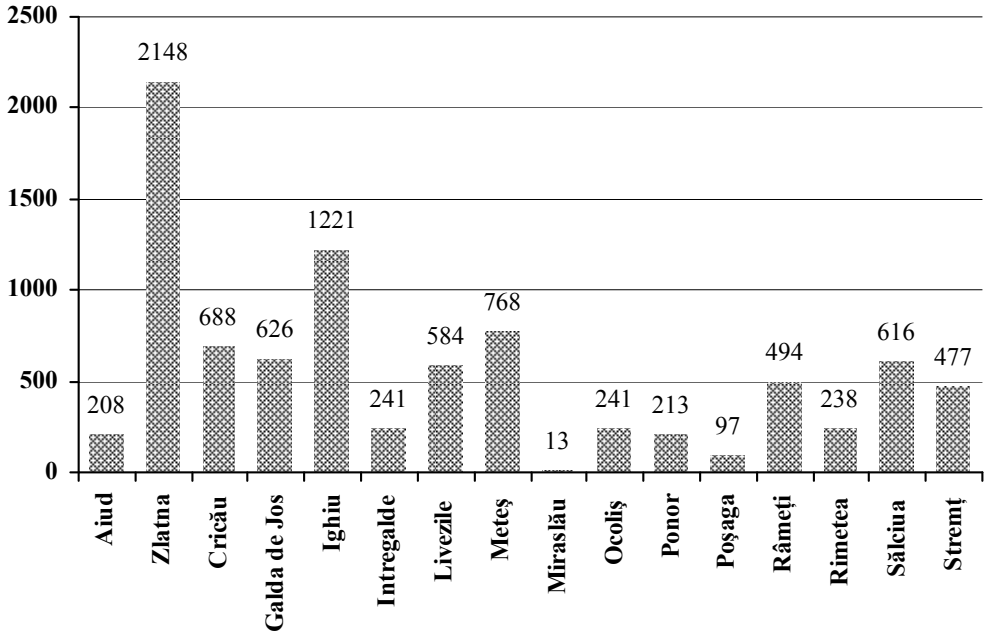


Fig. 2. The total number of households, in the year 2002, within the Trascău Mountains.

Fig. 2 represents the total number of households recorded at the last census in 2002, within the communes and villages of Alba County located within the territory of the Trascău Mountains. In order to be able to present the total number of households per administrative territorial unit, a summing of the total number of households from each component village of Trascău Mountains was made. Making an analysis of fig 2, one can notice that there are several communes which possess a reduced number of households - as is the case of Miraslău commune, a situation explained by the fact that, the only village which is located within the territory of Trascău Mountains is Rachiș village, which has a total number of 13 households. Poșaga commune has a total number of 97 households, as it

has has only one village (Lunca) located within the territory of the analyzed unit, the rest of the villages belonging to Metaliferi Mountains. At the opposite side is the administrative territorial unit of Zlatna which possesses a total of 2148 households. The current situation is explained by the fact that many of these households are located in the surroundings or within the urban area of Zlatna (1597 settlements), the rural areas possessing a lower number of households (Feneş – 299 settlements, Runc – 24 households, Podul lui Paul – only 15 households, and Vâltori – 130 households).

As previously mentioned, in the higher and plateau areas, the number of settlements is smaller, but due to the fact that a large number of these settlements are developed within communes which belong entirely to the Trascău Mountains and because the total number of settlements per commune was taken into consideration, their percentage is much higher. Such is the case of Întregalde or Râmeț communes, whose villages, even though possess a reduced number of settlements, participate to a greater extent to the total number of settlements.

In this situation, the high percentage of the households from the communes located at the periphery of the analyzed unit, either from the depressionary areas (the case of the Sălciua and Livezile communes), either from the hilly or valley areas (as is the case of the Cricău, Galda de Jos, Meteş or Stremț communes) is obvious.

3. CONCLUSIONS

The evolution of the human settlements, their structure and functionality was dictated not only by political factors, but also by the natural elements which probably have played an almost equally important role as the first ones, without taking any credit though.

Within the Trascău Mountains, the presence of a diverse relief has offered a multitude of possibilities for the development of the human communities within its territory, by putting to readiness and into the service of these communities of the entire series of natural elements, harmoniously combined in the completion of a unique region, with a peculiar distinctiveness and simplicity.

The typology of rural settlements from the Trascău Mountains within Alba County was and is still dictated by the landforms, by the hydrographical and edaphic components, all these natural parameters working together for the diversification and the spreading of the settlements. The relief, by means of its components, can play a restrictive role in the distribution of settlements by limiting the possibilities of their spatial development, or can be considered as a favourable element by means of the existence of different lands which can support the development of crops, by means of offering a proper and sheltering micro-climate adequate for the establishment of human settlements.

At the beginning of their development, the communities have placed their settlements in the morphological contact areas, along the water courses or on the alluvial plains and terraces grouping them in compact centers. Along with the continuous requirement for space and the increase demand for resources, the communities occupied new areas, located higher on the mountain, areas capable of sustaining the development of new settlements.

The typology of the settlements is extremely diverse, with the dominance of the scattered villages with a grouping tendency in the depressionary areas, to the presence of the scattered villages in the higher areas and on the plateaus or on the steeper slopes. The congregate villages are characteristic for the mountainous depressionary basins which can dictate the shape of the villages according to their morphology.

Regarding the functions of these human settlements located within the Trascău Mountains, one maz support the idea that there is a multitude of diverse functions, from strictly agricultural ones, to mixed ones (agricultural and agro-tourist functions) or even small scale industrial functions (wood processing etc.)

Nevertheless, the human resources have to be also taken into consideration, due to the fact that, the evolution and the typology of the settlements is dictated by the human presence or absence in the areas, according to their requirements, the humans settling new establishments or abandoning old ones, reorienting towards other, more diverse activities.

REFERENCES

1. Bogdan, Elena (2008), *Munţii Trascău, studiu de geografie umană,* Rezumatul tezei de doctorat, Universitatea Bucureşti, Facultatea de Geografie, Bucureşti.
2. Commoner, B. (1980), *Cercul care se închide – natura, omul, tehnica,* Edit. Politică, Bucureşti.
3. Pop, Gr. (2000), *Carpaţii şi subcarpaţii României*, Edit. Presa Universitară Clujeană.
4. Popescu Argeşel, I. (1977), *Munţii Trascău, studiu geomorfologic,* Edit. Academiei RSR, Bucureşti.
5. Surd, V. (1993), *Aşezările din bazinul montan al Arieşului,* Edit. Interferenţe, Cluj-Napoca.
6. Varga, Á. (2002), *Feher megye telepuleseinek etnikai (anyanyelvi/nemzetisegi) adatai 1850-2002,* publicat pe www.kia.hu/konyvtar/erdely/erd2002/abetn02.pdf.
7. **** Direcţia Regională de Statistică Alba, Recensământul general al populaţiei din martie 2002.*
8. ****Direcţia Regională de Statistică Alba, Recensământul locuinţelor după tipul, numărul şi suprafaţa camerelor de locuit, din martie 2002.*

NOTE: The author wishes to thank for the financial support provided from programs co- financed by The SECTORAL OPERATIONAL PROGRAMME HUMAN RESOURCES DEVELOPMENT, Contract **POSDRU 6/1.5/S/3 – „**Doctoral studies: through science towards society**".**

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE TERRITORIAL DISPARITIES IN THE IMPLEMENTATION OF NATIONAL ACTION PLANS FOR EMPLOYMENT (2004 – 2009)

IRENA MOCANU[1]

ABSTRACT. – The Territorial Disparities in the Implementation of National Action Plans for Employment (2004 – 2009). The present study is aimed at assessing the quantitative and qualitative territorial disparities of employed population under the National Action Plan for Employment (NAPE) provisions. The data-base used is found in the *Quarterly Statistical Bulletin on Labour and Social Protection, 2004 – 2009,* published by the Ministry of Labour, Family and Social Protection. NAPE performances are estimated in terms of the multi-annual average values of employees under the NAPE provisions and of the NAPE performance assessment general statistic data. The paper contains some general reference National Programmes for Employment projected for 2010. The counties level (NUTS III) represents the territorial level of this study.

Keywords: *employment, unemployment, active measures, territorial disparities.*

1. INTRODUCTION

The National Action Plans for Employment (NAPE) are elaborated by the Ministry of Labour, Family and Social Protection in collaboration with the Employment National Agency (ENA), other ministries, associations of employers and trade-unions representative at national level conformable with the guide-lines set by the European Employment Strategy (improving the employment capacity, developing the entrepreneurial spirit and job-creation ability, promoting the enterprises and their workers' adjustment capacity, ensuring equal opportunities for men and women).

The role of NAPE is to coordinate and provide for coherent labour employment programmes. NAPE highlights those short and medium-term measures Romania intends to put into effect in order to increase employment and decrease unemployment, support permanent education, make the job market more efficient and flexible, in order to cope with economic change more readily, and avoid social discrimination and exclusion (Source: NAPE 2002 – 2003).

Another European document which NAPE is closely related to is the *Lisbon Strategy*, intended to help the European Union to achieve full employment if possible, and strengthen social cohesion until 2010. In line with the provisions of this document, Romania, just like any other member-state, has to elaborate a *National Reform Programme* in keeping with guide-lines of the *Lisbon Strategy*. The plans are to follow three directions in terms of the macro-economic, micro-economic and employment priorities. Romania's new EU-membership status required its

[1] *Institute of Geography, Human Geography Department, Str. D. Racoviță, Nr. 12, 023993, Bucharest, Romania, e-mail: mocanitai@yahoo.com*

permanent endeavour to fall in line with the Community cycle of policy preparedness, work out the first *National Reform Plan* and meet the "Lisbon targets". The Plan was published in 2007, its third part, "Employment priorities", replacing NAPE.

Territorial dimension of the implementation of NAPE depends by the multi-levels National Agency for Employment system. The National Agency for Employment is structured on three hierarchical levels: county agencies (41 and Bucharest Municipality Agency), local agencies (96) and working points (127 in towns other than county seats and 22 in the countryside) all coordinated by National Agency for Employment, and forming a system fundamentally involved in implementing the NAPE.

2. A MULTI-CRITERIA ASSESSMENT OF THE IMPACT OF NAPE

2. 1. Types of active measures

The number of people employed under NAPE, based measures dropped by 244,344 (44.5%) between 2004 and 2009. Thus, the "job-matching services" [2] measure led to a numerical increase of employees (by 17.3%, 67,828 people between 2004 and 2007); the decrease had been registered beginning with 2008 (by 38.7%, 151,924 people in 2009 compared with 2007). The same outcome for peoples employed by "vocational training courses", a measure that added 9,729 persons more in 2007, basically a 45% increase compared to 2004. The trend was modified in 2008, by the increase with 1,611 people (7,7%) and had continued in 2009 (4,339 people, 22.1%).

The number of those employed by other types of active measures dropped by 157,440 (73.7%) over the six study-years, such negative results having particularly the "benefits granting to the unemployed who take up employment before the end of the period of entitlement to the unemployment benefit", "employers' subsidization" [3] and "temporary employment of public community interest works" (90.3% of all dismissals in 2008 compared with 2007 and 47.5% specific for 2009, compared with 2008).

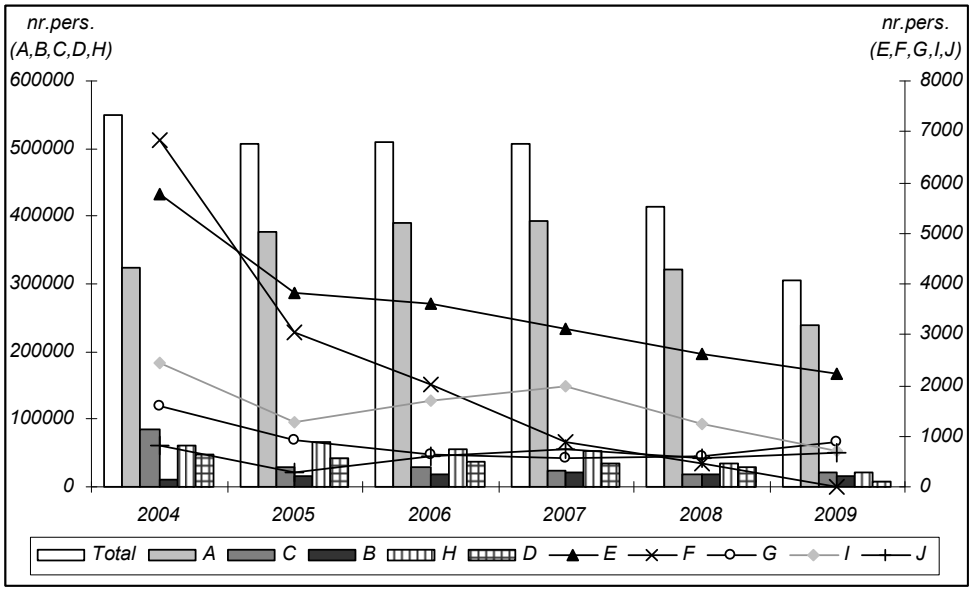
The multi-annual numerical average of job-finders through NAPE measures during this study interval shows that best results were obtained by "job-matching services" (340,373 people), "temporary employment of public community interest works" (49,159), "employers' subsidization" (33,678 people) and "benefits granting to the unemployed who take up employment before the end of the period of entitlement to the unemployment benefit" (34,705).

A general analysis between the statistical data available for the years 2008 and 2009 makes possible a comparative approach of the impact of NAPE provisions on the labour market, during the current economic-financial crisis. The important active measures until 2008 (like "job-matching services", "employers' subsidization" and "temporary employment of public community interest works") registered in 2009 the dynamics with negative effects on the evolution of unemployment during the crisis: the number of people employed under the measures "job-matching services", "vocational training

[2] „*Job-matching services*" (Art. 59, Law 76 and Art. 5(2) Law 116/2002) represents an County Agency for Employment service whereby employers and job-seekers are put face to face in order to establish a working relationship. Mediation services include information and publication of vacancies and employment conditions, organisation of the employment exchange, pre-selection of candidates in terms of the requirement of the job and the candidates' qualification, aptitudes, experience and interests.

[3] This is another County Agency for Employment service, depending on the status of the person employed: graduates, over 45-year-olds unemployed or jobless persons who are single parents, or family bread-winners, unemployed who have only 3 years more until retirement age, and the disabled. Subventions consist in exemption from the contribution to the social security unemployment budget, and cash money in terms of the employees' statute and qualification level.

courses", "temporary employment of public community interest works", "employers' subsidization" and "granting loans to SME's for new jobs creation" was less in 2009 versus 2008 with 25.1%, 22.1%, 37.7%, 71.4% and 100%, respectively). During the current economic crisis, the achievements of the year 2009 should be more significant compared with 2008.



(Legend: A – job-matching services; B – vocational training courses; C – benefits granting to the unemployed who take up employment before the end of the period of entitlement to the unemployment benefit; D – employers' subsidization; E – stimulation of the labour force mobility; F – granting loans to SME's for new jobs creation; G – services of consulting an support for starting an independent activity or a business; H – temporary employment of public community interest works; I – concluding solidarity contracts, according to the Law no. 116/2002; J – other active measures).

Fig. 1. The number of persons employed under the NAPE provisions, structured by the types of active measures.

2. 2. The sex structure

Throughout the study-period more men than women could find a work-place. However, the number of men employed under NAPE actions decreased drastically compared to women (by 154,735 men and 89,609, respectively).

2. 3. The residential environment

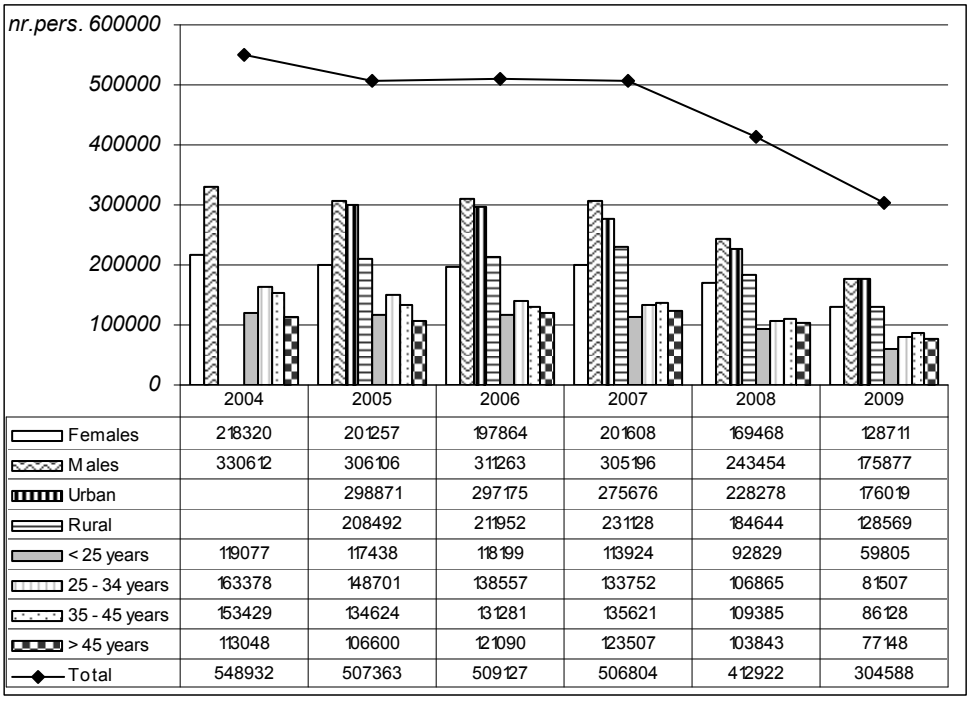
The dynamics of people employed under NAPE is contradictory, in that there were fewer town-dwellers (by 23,196) than villagers (by 22,636), in line with labour employment plans for 2006 and the National Reform Programme to increase employment opportunities for rural applicants. In 2008 and 2009, the dynamic of people employed under NAPE was negative, the number of villagers drops with 20.2% (46,484 people) in 2008 versus 2007 and with 22.8% (52,259 people) in 2009 versus 2008; the number of town-dwellers drops with 20.1% (46,484 people) in 2008 versus 2007 and with 30.3% (56,075 persons) in 2009 versus 2008.

2. 4. The age-group structure

Considerable decreases by a total of 208,444, in the employment of the under 25-year olds; of the 25-34 and 35-45 age-groups; particularly affected were the last two groups (71.5% of all losses). The fact that more people aged over 45 (9.2%) did find a job (under NAPE provisions) is quite encouraging, but the situation had changed in 2008 and 2009, when this category registered a decrease with 9,205 people (11%) in 2008 versus 2007 and with 26,695 persons (25.7%) in 2009 versus 2008.

2 .5. The target groups

The long-term unemployed were not advantaged by the NAPE provisions, those who found a job being by 82.5% (60,789 people) fewer in 2009 than in 2004. The same fate had the former institutionalised graduates and the former detainees. On the other hand, more gypsies (by 4,501, 30%) and disabled did find employment in 2008 versus 2007, but the situation had changed in 2009 (fewer gypsies and disabled in 2009 versus 2008, by 41% (5,396 people) and 45.1% (479 people), respectively).



	2004	2005	2006	2007	2008	2009
Females	218320	201257	197864	201608	169468	128711
Males	330612	306106	311263	305196	243454	175877
Urban		298871	297175	275676	228278	176019
Rural		208492	211952	231128	184644	128569
< 25 years	119077	117438	118199	113924	92829	59805
25 - 34 years	163378	148701	138557	133752	106865	81507
35 - 45 years	153429	134624	131281	135621	109385	86128
> 45 years	113048	106600	121090	123507	103843	77148
Total	548932	507363	509127	506804	412922	304588

Fig. 2. The number of persons employed under the NAPE provisions, structured by the sex, residential environment, age-group structure and target groups.

Calculating the multi-annual average by of NAPE-based employees has revealed the following: it was more men who benefited from various NAPE-related active measures; there were more rural people employed under NAPE provisions throughout the study-period than of townsfolk; adults used to benefit more by the positive effects of active measures than did young people and the over 45-year-olds; active measures did better suit the occupational interests of the long-term unemployed and the gypsies.

3. MULTI-ANNUAL ASSESSMENTS OF NAPE PERFORMANCE IN THE TERRITORY

Were made by a quantitative and qualitative appraisal of the workforce targeted by these Plans, e.g. the analysis of territorial disparities of the multi-annual mean values of the categories of target people, and the calculation of the percentages of these categories of target people, resulting statistic general date on NAPE's performance.

A high *numerical average of people employed under NAPE provisions* (over 15,000) had the counties of the North-East, West and Central Regions, as well as the South-West – Oltenia Region, Bucharest Municipality, and the counties of Buzău and Prahova. The lowest multi-annual score was found in the depleted labour-force counties, e.g. Sălaj, Harghita, Covasna, Giurgiu and Tulcea. The other counties fall into the average-value class (5,000 – 15,000 people) of those who found a job under the NAPE provisions. Significant intra-regional disparities among all the eight development regions do exist, the number of employed people depending on the numerical schedule of each ECA.

The action of "*job-matching services*" made the most important contribution to employment throughout the study-period. A county-based analysis reveals the very good correlation between the elevated numerical total of the employed and of job-finders under this measure.

One of the measures that involved very many people were "t*emporary employment of public community interest works*", but since the working-term was of 12 months at the most, and the offer mainly for low-skilled labour, its impact was pretty limited. Territorial disparities in the total number of employees under these provisions looked as follows: high in the east and south-east counties, moderate in the centre, and south-western ones. Intra-regional disparities among all the development regions are evident. It appears that this measure will have an ever greater impact, given that ever more people benefit by it.

"*Benefits granting to the unemployed who take up employment before the end of the period of entitlement to the unemployment benefit*" is a measure applied fairly homogeneously in the Centre, West and North-East Regions, and North-West Region (low multi-annual mean). The other regions register significant intra-regional disparities.

"*Employers' subsidization*" proved beneficial for more people, especially in the northern half of Romania, with the exception of the north-west counties, and for fewer ones in the south and south-east counties. This measure put significant pressure on the Employment County Agency budgets, the employers complaining about payment difficulties, which might explain why this measure entailed ever fewer applicants. The organisation of professional training courses attracted a total of 102,482 persons across the country over 2004 – 2009, unevenly distributed in the territory. Part of the counties of the South-East, South-Muntenia, West and Centre regions had few people enrolled in various training courses, numbers fluctuating by the year; in the North-East and partly in the North-West, South-West – Oltenia, Centre and South-Muntenia, the Employment County Agency did a better job so that the number of employees kept growing.

As regards the multi-annual structure of target-groups, National Actions Plans for Employment provide significant measures for the long-term unemployed category which in most counties represented 50 -60% of the target-groups. Another target-group, the Gypsies, amounted to 45 – 50% in the western counties (75% in Satu Mare County) and under 20 – 25% in the south and in some Moldavian counties. The multi-annual average structure by sex-group shows a major disparity between the east and the south-east of Romania, the proportion of woman/total persons employed under NAPE provisions was lower (below 37%), compared to the west, centre and north-west counties (around 50%). The multi-annual average structure by

age-groups is rather unbalanced, the 45-year-olds and over, as well as young people prevailing. However, their distribution in the territory is pretty even, this group being present in all of Romania's counties. The multi-annual average structure by residential environments appears to have a greater impact on town-dwellers than villagers, except for the south, partially the south-east and the north of Romania, where the ratio is reversed. In general, the residential structure corresponds to that the residential environments of the labour force.

Identifying the percentages of some target population employed under the NAPE provisions represents the next step of the analyse: -the percentage (%) of long-term unemployed per total employed people under NAPE measures; -the percentage (%) of jobless people employed under the subventions measures/total subventions recipients employed; -the percentage (%) of over 45-year olds unemployed or single family bread-winners employed/total NAPE employed people; -the percentage (%) of targets-group people/total NAPE employed; -the percentage (%) of the disabled employed as subventions recipients/total employed disabled persons; -the percentage (%) of employed for indefinite periods of time/total employed by labour mediation.

Those data do not appear in any official document, having been selected from the statistical date-base. Some indicators show differences between 2004 and the other study-years, so that the final data-base thematic structure enabled calculation and use of only the previously-mentioned percentages. In theory, the performance indices included the National Action Plans for Employment ones, might have been used. However, despite the objectives listed therein, the NAPE performance indices cannot be adapted nor calculated at county level (NUTS III) either because they are only partially reported in the statistical data-base available.

The arithmetic mean of the standard values is calculated for every year and next synthesised for the whole interval, yielding the general NAPE performance assessments statistic data. The extent to which NAPE performances were met differed with the county, however three general characteristics are worth recalling:

- high performance had only 7 counties and only in 2005;
- very low-performance counties registered a marked numerical decrease, from 30 to 4 over 2004 – 2007, but in 2008 the number of very low-performance counties increase at 15 and in 2009 this performance class become better represented by 23 counties;
- the high-performance class increased from 6 counties (2004) to 22 (2007); in 2008 this class was represented only by 4 counties and 7 counties in 2009.

The general NAPE performance assessments statistic data have a numerical variability, between 0.220 (minimum) and 0.715 (maximum). There are two distinguished areas with high and very high degrees of performance assessments of the NAPE: the first is in the north of the country (in east – Vaslui, Neamţ, Suceava, centre – Covasna, Harghita, Bistriţa-Năsăud, Sălaj, Cluj, Alba and west part – Timiş) and the second one in the south of the country (south – Călăraşi, Giurgiu, Teleorman, Dâmboviţa and in the south-west – Dolj and Caraş-Severin). These two areas represent the upper classes of performance assessments of the NAPE.

The high-performance counties (6) reached to the top of the national hierarchy due to the elevated values of the following statistic data (multi-annual means): the percentage (%) of long-term unemployed per total employed people under NAPE measures; the percentage (%) of over 45-year-olds unemployed or single family bread-winners employed/total NAPE employed people; the percentage (%) of targets-group people/total NAPE employed.

The low-performance group (12 counties) had a poor score due to the depleted values of the following statistic data: the percentage (%) of jobless people employed under the subventions measures/total subventions recipients employed; the percentage (%) of over 45-

year-olds unemployed or single family bread-winners employed/total NAPE employed people; the percentage (%) of the disabled employed as subventions recipients/total disabled people. The number of unemployed is an important criterion in establishing the extent to which NAPE performances have been fulfilled, at the same time, efforts should be made for these Plans to solve the employment problems of the labour force category with special needs.

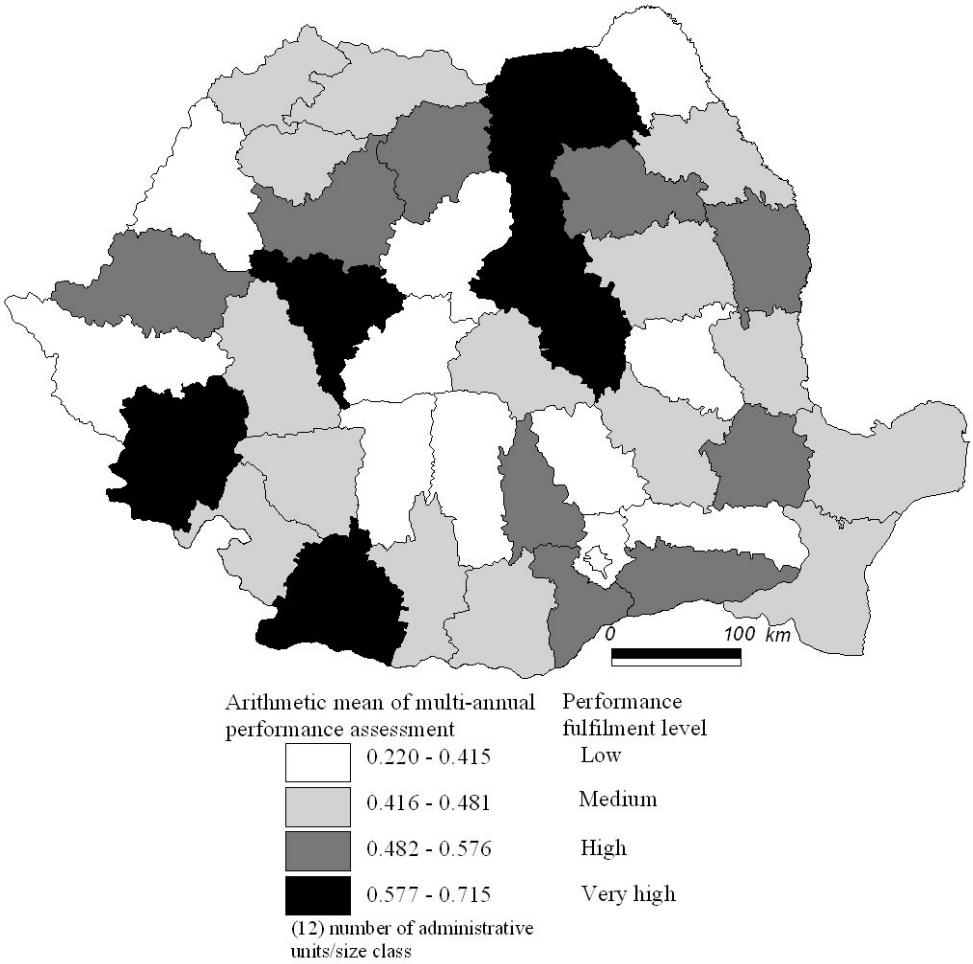


Fig. 3. General NAPE performance assessment (2004 – 2009).

4. THE NATIONAL PROGRAMME FOR EMPLOYMENT–THE PROVISIONS FOR 2010

The *National Programme for Employment* includes some sub-programmes focused on the increasing of employment of the people with social integration problems, in the towns and in the entire rural environment, on the labour market (re)insertion of the Roma people.

The *Programme for Employment of the socially marginalised people 2010* is focused on the social inclusion of the young people affected by the risk of job exclusions, providing the personalised social accompaniment. The main instrument used for achieving this goal is concluding solidarity contracts, according to the Law no. 116/2002: 1,440 people (a significant percentage in the counties situated in the north-eastern and south-western parts of Romania); 1,170 people (81.2%) are estimated to be employed under the provisions of this programme (fig. 4).

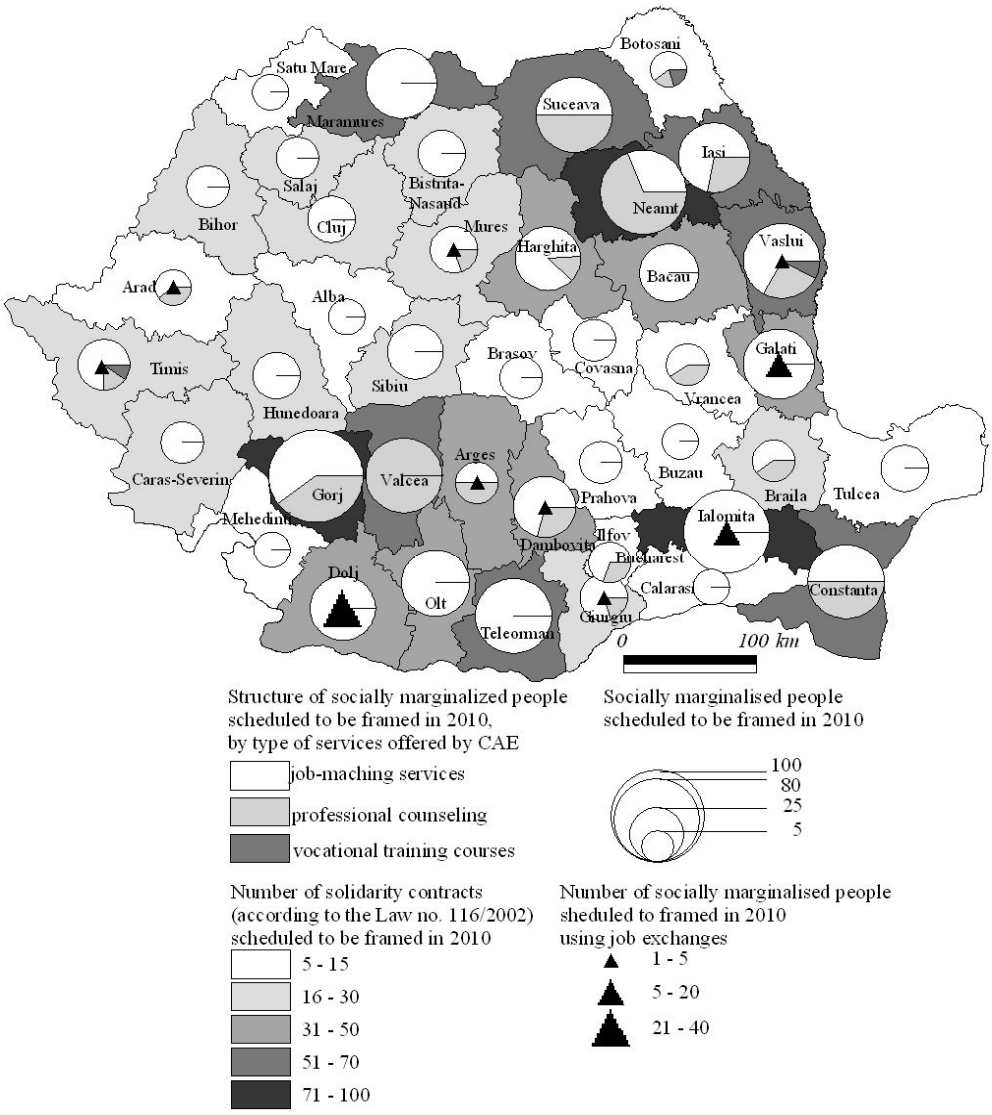


Fig. 4. The *Programme for Employment of the socially marginalised people 2010* provisions.
(Source: mapped information from www.anofm.ro)

Programme 25 (especially for towns) and *Programme 155* (especially for rural settlements) are included in the *Programme for Employment 2010.* The localities are selected after two criteria: the high rate of unemployment and the low degree of economic development.

The positive effects of the *Programme 25* are estimated to be materialised in 4,800 workplaces, especially in two towns: Hunedoara and Orăştie with 56% workplaces per total workplaces. In the towns Băileşti, Clafat (Dolj County), Motru (Gorj County), Târnăveni (Mureş County) and Horezu (Vâlcea County) the workplaces will represent 26.8% per total workplaces (fig. 5).

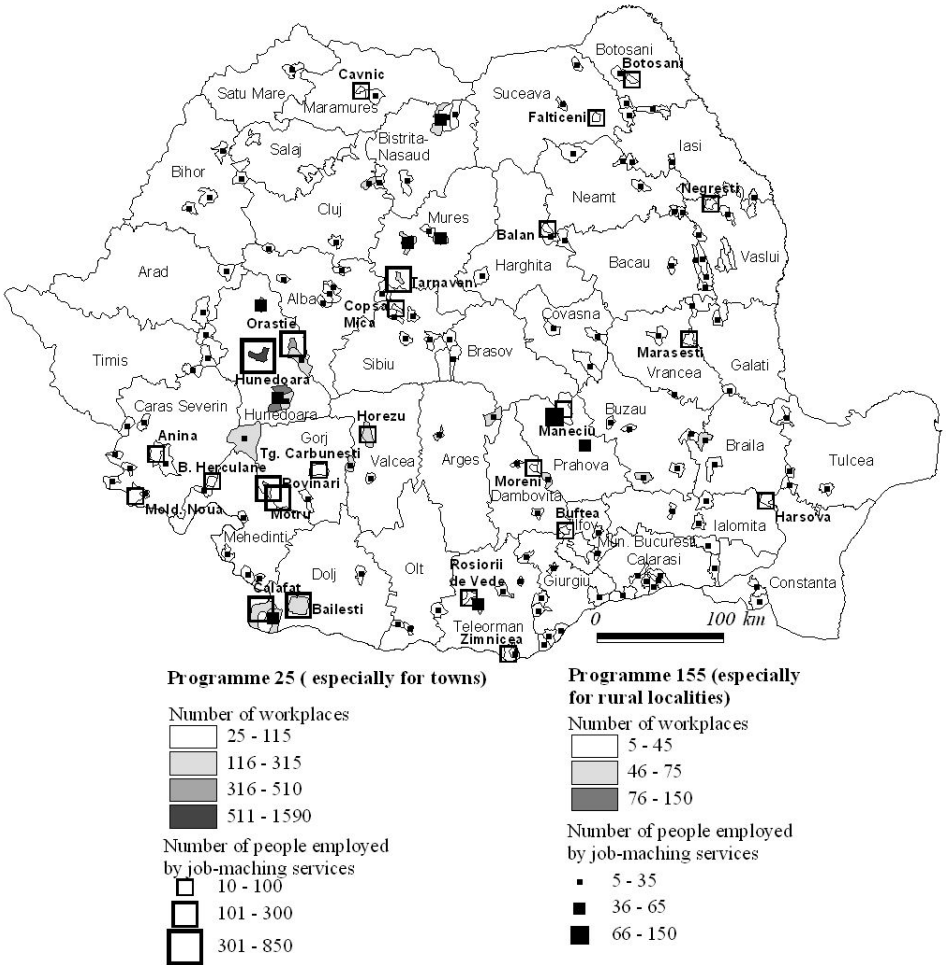


Fig. 5. *Programme 25* (especially for towns) and *Programme 155* (especially for rural localities) provisions.

Source: mapped information from www.anofm.ro

The implementation of the *Programme 155* will create 4,000 workplaces: 15% per total workplaces only in 7 rural localities (Albeştii de Argeş – Argeş County, Dărmăneşti – Dâmbovița County, Padeş – Gorj County, Criscior and Pui – Hunedoara County, Band – Mureş County and Măneciu – Prahova County). The Programme 155 provides that in 60% per total rural localities selected will be created 81% workplaces per total workplaces created during the year 2010. The most important active measures in 2010 will be "job-matching services" (58.8% per total workplaces), especially permanent workplaces (60.8% per total workplaces created by "job-matching services") and "temporary employment of public community interest works" (27.1% per total workplaces, in Buzău, Braşov, Cluj, Dolj, Dâmbovița, Gorj, Iaşi and Sălaj counties) (fig. 5).

5. CONCLUSIONS

The present study highlights several aspects of NAPE related territorial disparities:

- in general, National Action Plans for Employment had a positive impact on the job market, but they should be increasingly more involved as employment imbalances are growing in the context of the economic recession worldwide;
- NAPE performance depends on the management of each County Agency for Employment;
- actions should target preferentially the vulnerable labour categories (long-term unemployed aged over 45 years, single family bread-winners, etc.);
- counties with very low or very high NAPE performance classes depend on the low/high multi-annual average values of the unemployed-related percentages (the long-term unemployed, the subventions recipients employed, the unemployed aged over 45, or the single family bread-winners who did find a job).

REFERENCES

1. Dumitrean, Silvia, (2005), *Strategia Națională pentru Ocuparea Forței de Muncă 2004 – 2010,* Ministry of Labour, Family and Social Protection.
2. Ghinăraru, C., Voineag, V., Panduru Filofteia, (2007), *Sistemul de indicatori ai protecției sociale din România,* Revista Română de Statistică, no. 7, National Institute of Statistic, Bucharest.
3. Mereuță, Cristina, (2005), *Țintele Lisabona – unde suntem?,* in *Forța de muncă. Buletin de informare*, Ministry of Labour, Family and Social Protection, Bucharest.

-* * * *Romanian Statistical Yearbook*, editions 1992 – 2008, National Institute of Statistic, Bucharest.

-* * * *Quarterly Statistical Bulletin on Labour and Social Protection,* no. 1(49)/2005, no. 1/2006, no. 1/2007, no. 1/2008, no. 1/2009, no. 5/2009, Ministry of Labour, Family and Social Protection.

-* * * *National Plans Action for Employment*, National Agency for Employment, Bucharest.

-* * * *National Programme for Reform,* Romanian Government, 2007, Bucharest.

-* * * *Programmes for Employment of the social marginalized people,* 2010, National Agency for Employment, Bucharest.

-* * * *National Programme for Employment,* 2010, National Agency for Employment, Bucharest.

-* * * *Government Programme 2009 – 2012,* Romanian Government, 2009, Bucharest.

-* * * www.anofm.ro

-* * * www.gov.ro

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

A MODEL FOR CALCULATING THE COEFFICIENT OF ACCESSIBILITY IN THE TRANSYLVANIAN ADMINISTRATIVE TERRITORIAL UNITS

M. G. OPREA [1]

ABSTRACT. – A Model for Calculating the Coefficient of Accessibility in the Transylvanian Administrative Territorial Units. The present paper analyzes the essential aspects regarding the accessibility by applying an assessment model of the accessibility of the administrative territorial units (ATU) within Transylvania. The methodology used for the calculation of the accessibility coefficient is based on the analysis of the distance between point A and point B, calculating the distance based on satellite points. An analysis of the obtained results regarding the accessibility by road in different administrative territorial units, show that these units have recorded a higher coefficient such as Cluj-Napoca, Sibiu, Târgu Mureş, Huedin, Iernut, Teiuş, Alba Iulia, while other most inaccessible territorial units are located in the mountain areas of the Alba, Cluj, Bistriţa-Năsăud, Harghita, Covasna and Hunedoara counties. Following the analysis of the obtained results regarding the accessibility we can calculate the accessibility level of relief units (eg. Trascău Mountains – 7.4 points or Hârtibaciu Tableland – 6.17 points). The values obtained as a result of this analysis can be used in the future local, micro-regional or regional studies which will also comprise elements of accessibility.

Keywords: *Accessibility, administrative territorial units coefficient, counties, access level of relief units, inaccessible areas, Transylvania*.

1. INTRODUCTION

Accessibility is a fundamental but often neglected concept in transportation analysis and planning. Three complementary views of accessibility have evolved in the literature. The current paper represents an analysis of the problem of accessibility by applying an assessment model of the accessibility of the administrative territorial units (ATU) within Transylvania, in order to show the current state of accessibility which will be used in other future studies regarding the components and the functions of these units or their coefficient of accessibility. Even though Romania is a member state of the UE it possesses great problems regarding its transport infrastructure especially if the duration of travel is to be considered. In this paper we would like to point out that the main objective of the calculation of the accessibility is to highlight the transport networks, the areas with increased fluxes of transport, the areas favorable for the economic investments, as well as the touristical elements of the analyzed regions.

Due to the fact that the transport capability and the additional improvements of the transport influence the state of the economy of different states as well as of the transport networks, these parameters have been largely debated and analyzed by different scientists throughout the time, scientists which have launched different indirect theoretical and

[1] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, e-mail: marius.oprea@geografie.ubbcluj.ro*

empirical theories of development. Among them, Owen in 1959 presented a first analysis of the accessibility especially for the road transport networks. The first measures quantifying the accessibility didn't posses a great harshness thus many times being unrealistic: as a result the possibility of measuring the human error was often increased. These first studies represented the starting point of other researches carried out by Morris, Dumble and Wigan (1979) and by Pooler (1987), while the most representative study was carried out by Geertmann and Van Eck (see References) using GIS, in 1995, a study which presented a more accurate representation of the geographic space. Due to the fact that this procedure is more efficient and discharges the human error, we have chosen to use it in our study.

As main testing and existing methods for the determination of the accessibility in the literature, we can mention the studies which comprised and analyzed this segment, such as the study of PATN, PATR North-West or other regional studies which highlighted the potential of communication (see the references).

2. THE METHODOLOGY USED IN THE ASSESSEMENT OF THE ACCESSIBILITY

The methodology used for the calculation of the accessibility coefficient is based on the analysis of the distance between point A and point B, respectively of the access points in which these analyses can be carried out. The calculation was made using different methods of calculating the distance based on satellite points.

The main analyzed components are represented by the access by means of every communication paths starting with roads, where, as a criterion we have chosen the direct access to different roads. The county road has to be between 0 and 5 km distance from the analyzed unit, from the placement in regard to a national road with two deviated lines which dapple the direct access and at a distance between 0 and 20 km. The placement in regard to a national road with two deviated lines which dapple the direct access and the 0-50 km, the placement in relation to an express road which for the moment in non-existent but whose construction will be accomplished in the future with the taking into account of the following calculi. Being a more important criterion, when a placement in regard to a highway is to be analyzed and considering the traffic and flux of motor vehicles, the distances which will be calculated will take into account the distances of 0-20 km, 20-50 km and 50-150 km. Calculations are performed using the following formula and pointing sectors are given in table 1.

$$Ar = \sum Adj + \sum Adn + \sum Ade + \sum Adr + \sum Aa, \text{ where:}$$

Ar – The road accessibility, Adj – The placement in regard to a County Road, Adn - The placement in regard to a National Road, Ade - The placement in regard to a European Road, Adr – The placement in regard to a Speedway, Aa - The placement in regard to a Highway.

The access on the railroad is made by means of quantification of the distance between the analyzed point and a railway station with international traffic, a railway station with moderate traffic (express, high speed trains or intercity type trains), as well as between the analyzed point and a railway with a reduced traffic (way trains); the punctuation is made according to the distances where the first railway stations are located, respectively at the distances of 0-20 km and 20-50 km.

The access by water will be made by means of quantification of the distance between the analyzed point and a port with international traffic, as well as between the analyzed points and a port with internal traffic, which records the highest traffic. The distances where the analyses are made are in the range of 0-20 km, 20-50 km and 50-150 km.

Calculation model of road accessibility

Table 1

Signs	Location	Distance	Points
	The placement in regard to a County Road	0 to 5 km	1 point
	The placement in regard to a National Road	0 to 20 km	2 points
		20 to 50 km	1 point
	The placement in regard to a European Road	0 to 20 km	2 points
		20 to 50 km	1 point
	The placement in regard to a Speedway	0 to 20 km	2 points
		20 to 50 km	1 point
	The placement in regard to a Highway	0 to 20 km	3 points
		20 to 50 km	2 points
		50 to 150 km	1 point

The access by air is made by means of quantification of the distance between the analyzed point and an airport with international traffic, but also in regards to an airport which possesses a higher traffic. The distances where the analyses are made are between 0-20 km, 20-50 km and 50-150 km.

The assessment and the classification of the administrative territorial units were made starting with the maximum of 25 points for each element which is to be analyzed. For the calculation of the entire accessibility value we have made a sum between the values of the accessibility by roads, of the accessibility by railroads, by air and by water, using the following formula:

$$VA = \sum_{(0\text{-}10)} Ar + \sum_{(0\text{-}5)} Af + \sum_{(0\text{-}5)} Aa + \sum_{(0\text{-}5)} An, \text{ where:}$$

VA – The total value of accessibility , Ar – The road accessibility, Af - The rail accessibility, Aa - The air accessibility. An – The water accessibility.

3. ACCESSIBILITY OF THE ADMINISTRATIVE TERRITORIAL UNITS OF TRANSYLVANIA

The implementation of the formulas for the calculation of the accessibility in an administrative territorial unit was accomplished within a historical region of Romania which comprises 10 counties. The results of this study present several common situations.

An analysis of the obtained results regarding the accessibility by road in different administrative territorial units, show that these units have recorded a higher coefficient due to the conjunction of several main roads. Thus, we can distinguish the localities which posses railroads as well as roads and airport who can make a big score.

Following the analysis of the obtained results regarding the road accessibility, several administrative territorial units have recorded an increased coefficient due to the junction of several main roads, or posses a combination of roads and railroads which will result in the increase of the degree of accessibility.

3. 1. Accessibility at county level

Making an analysis of the counties and of their degree of accessibility we can easily observe that counties like ***Cluj*** recorded a coefficient of 9.41 which is much higher than the average coefficient in Transylvania. This value is given especially by the road factor due to the fact that within the county's territory only a fragment of the highway A3 is developed. Other European roads like E58, E60, E81 and E576 or national roads contribute to the increase of this coefficient of the county. From the point of view of the railroad factor, we have to mention that there are several railway stations with high speed traffic. The railway stations from Dej and Cluj record international traffic and contribute to the increase of the accessibility degree of the area. From the point of view of the aerial factor, Cluj County possesses an airport with international traffic which is placed almost in the middle of the county, a fact which can facilitate the accessibility in the area in regards to other, more isolated areas. In this administrative territorial unit, the town of Cluj-Napoca can be easily distinguished, a town which recorded a coefficient of 20 points over the average of the entire Transylvania. The current situation is due to the placement of this town at the conjunction of several important roads as well to its proximity to the highway and of the placement within the range of the town of the international airport and of the railway station, which represent an important railway junction with international traffic. Other administrative territorial units with a high degree of accessibility are represented by the following towns - Turda, Câmpia Turzii, Gherla, Dej and Huedin, all these towns being either located in the proximity of the highway, either representing important railroad junctions with high speed traffic. Also we need to mention that these towns are administrative territorial units with an increased number of inhabitants. In the range of the town of Cluj-Napoca several communes with an increased degree of accessibility are present, commune which are dependent by means of their location, to the facilities offered by Cluj-Napoca. This is the case of the Baciu, Apahida, Floreşti, Gilău and Feleacu communes. At the opposite side, a decreased degree of accessibility characterize the communes located at the periphery of the county, which are more geographically isolated, such as: Beliș and Măguri Răcătău, or communes which are located between two transit corridors such as Cătina and Buza.

The ***Mureş County*** has recorded a degree of accessibility of 8.87, which is much higher than the Transylvanian average due to the presence of an international airport within its territory, as well as of different corridors represented by the E60 and E578 roads. Also, a large number of county roads and railroads with regional traffic are present, roads which have lead to an increase of the accessibility degree of the area. Among the most accessible administrative territorial units is the town of Târgu Mureș, with a coefficient of 15 point, closely followed by Iernut, Ungheni, Reghin, Sighişoara, towns which are either road or railroad junctions. The most isolated administrative territorial units are those located in the Transylvanian Plain, such as Ṣăulia or Grebenişu de Câmpie, or those located at the base of the mountains, such Gurghiu – Hodoşa, Eremitu and others.

The ***Sibiu County*** has a coefficient of 8.67, an advantage represented by the proximity of the European roads E81 and E68 as well as of the international airport, which has contributed to the increase of the coefficient of the administrative territorial unit of the county. The highest value is recorded by the town of Sibiu (17 points) while the lowest is recorded by the towns located in the Hârtibaciu Tableland such as Agnita, Merghindeal, Iacobeni or by different municipalities of Cindrel Mountains such as Tilişca and Gura Râului. The coefficient of Braşov County is just a little over the Transylvanian average. Even though the county does not possess an airport or a highway, but due to its location in the center of the country, the territory of the county is crossed by many national roads, while, within the town of Braşov the presence of the most important railroad junction with over 6 networks is found.

Accessibility at counties levels
Table 2

County	Coefficients
Alba	7.92
Braşov	8.26
Bistriţa Năsăud	7.83
Cluj	9.41
Covasna	7.44
Harghita	7.31
Hunedoara	8.01
Mureş	8.87
Sibiu	8.67
Sălaj	8.13
Transylvania	**8.18**

Counties such as ***Sălaj*** with a coefficient of 8.13 points, ***Hunedoara*** (8 points), ***Alba*** (7.92 points), ***Bistriţa-Năsăud*** (7.83 points) have recorded values just under the average, while counties such as ***Covasna*** (with a coefficient of 7.44 points) or ***Harghita*** (with only 7.31 points) along with their town residences Miercurea Ciuc and Gheorgheni, have recorded 13 points. The current situation is the result of the existence of the railway station which is crossed by an international train, but which cannot compound the average of the county which possesses a number of 7 administrative territorial units located in the mountain area and which are difficult to access.

3. 2. The values of the accessibility of the administrative territorial units and of the morphological units

Within the administrative territorial units the highest values are recorded by the following towns: Cluj-Napoca Sibiu, Târgu Mureş, Huedin, Iernut, Teiuş, Alba Iulia, Gherla, Turda, Ungheni and Apahida, which even though is not a town and do not possess a railway station with international or high speed traffic, is located at the junction of several important roads as well as in the proximity of the Cluj-Napoca international airport.

The most inaccessible administrative territorial units are mainly those located in the mountain areas of the Alba (Poiana Vadului, Avram Iancu, Vidra), Cluj (Beliş), Bistriţa-Năsăud (eg. Târlişua, Parva, Şanţ), Harghita (Bilbor, Vărşag, Vlăhiţa, Lueta, Ocland, Mereşti and Plăieşii de Jos), Covasna (Comandău) and Hunedoara (Lelese and Bunila) counties, among which a small town is also present (the town of Vlăhiţa).

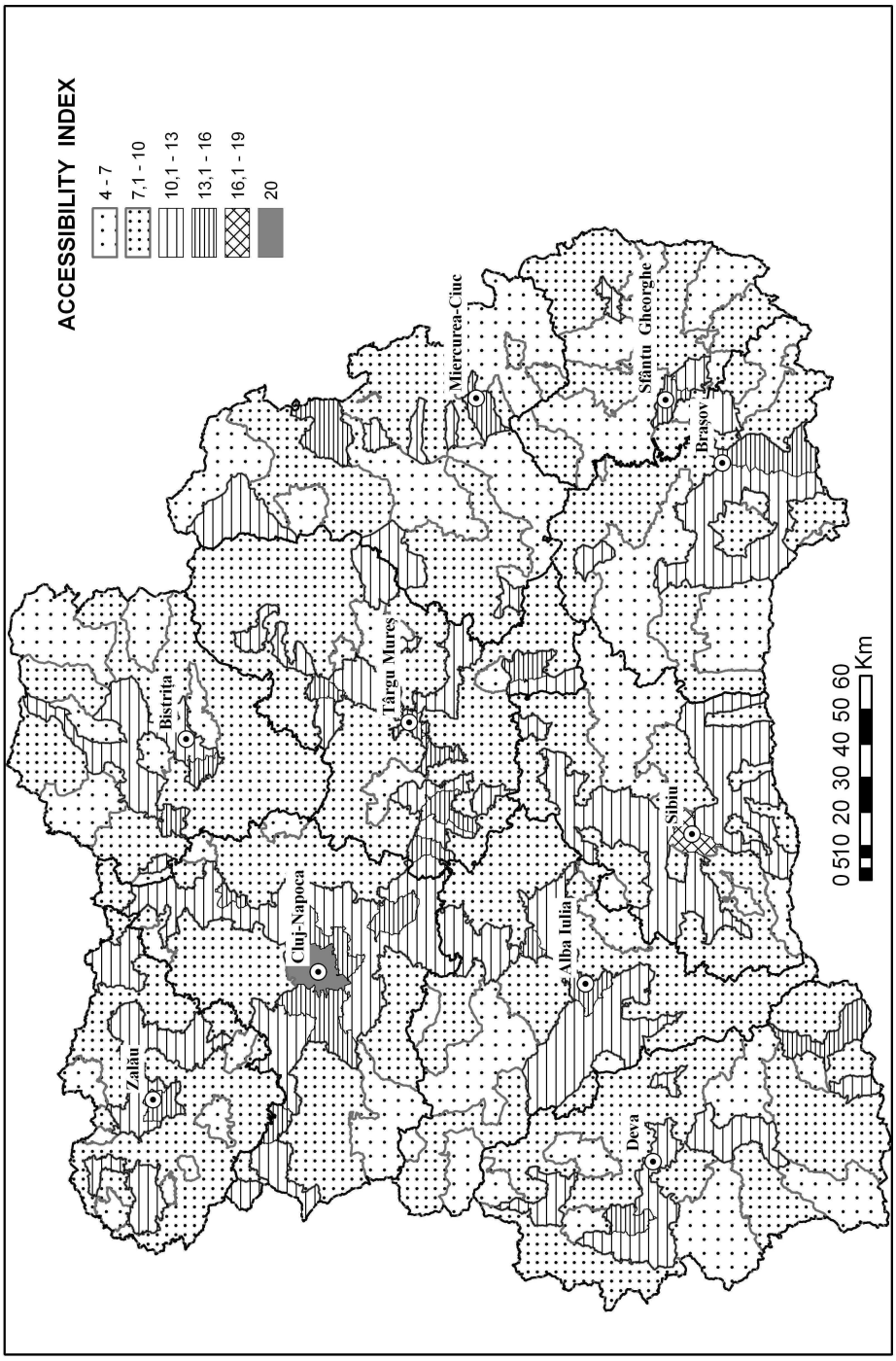


Fig. 1 The index of accessibility in the administrative territorial units from Transylvania.

Within the analyzed morphological units which entirely belong to the Transylvanian region, different mountain areas can be distinguished, areas wich have recorded the following coefficients: ***Gilău Mountains*** – 8.5 points, ***Retezat Mountains*** – 8 points, ***Trascău Mountains*** – 7.4 points, ***Muntele Mare*** – 7.2 points, ***Şureanu Mountains*** – 7.1 points, ***Metaliferi Mountains*** – 6.9 points and ***Harghita Mountains*** – 5.5 points. In the case of the depressionary areas, a high degree of accessibility is recorded by ***Huedin Depression*** with 11.3 points, followed by the ***Brad Depression*** – 9 points, ***Braşov Depresssion*** – 8.96 points, ***Haţeg Depression*** – 8.66 points, ***Făgăraş Depression*** – 8.4 points, while at the opposite side the following depressionary areas are located: ***Ciuc Depression*** with 7.7 points and ***Borsec Depression*** with 6 points. Among the lower landforms represented by the tablelands, the following units are distinguished: ***Târnave Tableland*** with a total of 8.95 points, ***Someşelor Tableland*** with 8.53 points, the ***Transylvanian Plain*** with only 8.04 points. The less accessible units are those located in the sourthern part of Transylvania, units such as ***Secaşelor Tableland*** with 7 points and ***Hârtibaciu Tableland*** with only 6.17 points.

4. ACKNOWLEDGEMENT

The author wishes to thank for the financial support provided from programs co-financed by The SECTORAL OPERATIONAL PROGRAMME HUMAN RESOURCES DEVELOPMENT, Contract **POSDRU 6/1.5/S/3 – „**Doctoral studies: through science towards society.

5. CONCLUSIONS

The analysis which was carried out regarding the accessibility of the administrative territorial units reveals the coefficient of every settlement and, at a larger scale, of different elements which can be in the future analyzed by means of this relevant factor within a society in a continuous development. Along with the development of the infrastructure, many other areas will have the opportunity of development, and the accessibility coefficient will increase as a result of the placement of the new established roads, railroads or airports.

The values obtained as a result of this analysis can be used in the future local, micro-regional or regional studies which will also comprise elements of accessibility.

REFERENCES

1. Ciangă, N. (1997), *Turismul in Carpatii Orientali*, Ed. Presa Univeritară Clujeană, Cluj-Napoca.
2. Ciangă, N., Dezsi, St., Rotar, G. (2002), *Aspecte privind estimarea valorii potentialului turistic si a bazei materiale din regiunea de nord-vest a României*. Studia UBB, Geographia, Anul XLVII, 2, Cluj-Napoca.
3. Khadaroo, J., Seetanah, B. (2008), *The role of transport infrastructure in international tourism development: A gravity model approach*, Tourism Management, Volume 29, Issue 5, October 2008.

4. Miller, H. (2002), *Measuring space-time accessibility benefits whitin transportation networks: Basic theory and cmputational preocedures*, Geographical Analysis, volume 31.
5. Olsson, J. (2008), *Improved road accessibility and indirect development effects: evidence rural Philippines* , Journal of Transport Geography, Volume 17, Issue 6, November 2009.
6. Page, St. (2004) *Tourism and transport: issues and agenda for the new millennium* , Ed. Elsevier – Amsterdam.
7. Pop, P. Gr . (1984), *Romania. Geografia Circulației*, Ed. Ştiințifică şi Enciclopedică, Bucureşti
8. Prideaux, B. (2000), *The role of the transport system in destination development,* Tourism Management, Volume 21, Issue 1, February 2000.
9. Surd, V. (2005) *Amenajarea teritoriului şi infrastructuri tehnice*, Editura Presa Universitară Clujeană, Cluj-Napoca.
10. Weibull, J.W. (1980), *On the numerical measurement of accessibility,* Environment and Planning, Volume 12, February 1980.
11. *** *Planul de Amenajare a Teritoriului National*.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

MULTIMODAL TRANSPORT. CONCEPT AND SUGGESTIONS OF APPLICATION TO THE SITUATION OF ROMANIA

AL. PĂCURAR[1]

ABSTRACT. – Multimodal Transport. Concept and Suggestions of Application to the Situation of Romania. Combined railway-motor transport also referred to as multimodal transport, appeared as a necessity to the reduction of the pressure exercised by the heavy road transport (truck), from the terrestrial roads to the railway, which, in French geographic literature bears the name of *"ferroutage"*. Romania disposes of a dense railway network, but it does not own, at this present moment, a road network that would be adapted to the heavy road transport, which is found in an exponential development, and this issue arises with acuity. According to the Western model, we propose a series of sectors of roads which register high values of traffic and which can be relieved of the pressure represented by the heavy motor transport that can be redirected on the railway.

Keywords: *"ferroutage", roadrailer, multimoda transport, combined transport, the impact upon the surrounding and anthropogenic environment, the impact upon the population and upon the activities, the impact upon the economical activities, multimodal platforms.*

1. INTRODUCTION

Emerged on a worldwide scale in the 1980's, railway transport, combined or multimodal, named in French literature with the word *"ferroutage"*, a term that implies the transportation of trucks on carriage-trailers in difficult terrestrial railway areas or sectors, especially in mountain passages, narrow mountain straits, etc., in order to diminish the pressure of heavy transport of *"truck"* type on these crowded road segments.

"Set free", in this way, of the pressure of the heavy transport, that is taken over by the railway, these mountain areas or sectors and the regions that are adjacent to them, become suddenly more attractive: for tourism, for the quality of life, due to the fact that the quality of the environment is improved through the drastic diminution of pollution with exhaust fumes in dust form and phonic pollution.

Romania, still lacking a highway network, has from this point of view, a series of road routes highly used by trucks that, unfortunately, overlap areas which are densely inhabited, and, in addition to this, these are touristic regions with a significant value as far as the scenery is concerned: Prahovei Valley, especially regarding Câmpina-Braşov (DN1) sector, Oltului Valley, on Râmnicu-Vâlcea-Tălmaciu (DN7) sector, Mureşului Valley, on Vinţu de Jos-Ilia (DN7) sector, Dunăre Valley, in Drobeta-Turnu Severin-Orşova (DB6) sector, or DN17 in Bistriţa-Câmpulung Moldovenesc sector, etc.

[1] *"Babeş-Bolyai" University, Faculty of Geography, 400006 Cluj-Napoca, Roumanie, sandu@geografie.ubbcluj.ro*

Our approach aims the identification of these sectors on which *"ferroutage"* can be put into practice, which in other words is heavy road transport performed on the railway, the possibilities of equipping the access ramps on the platform cars, as well as the impact this type of transport would have when introduced: concerning the fluidization of the traffic, concerning the qualities of the environment, the fitting out of the territory, the social impact upon the population that is found in *"road"* type settlements, situated on the routes of such kind of heavily circulated roads, "hindered" by heavy traffic, whose *"psychical and mental comfort"*, which at this moment is burdened by the stress that is generated by the heavy road transport, would increase.

Our approach has doubtless practical capacities; it has trans-disciplinary qualities of approach – the geography of transport, elements of road traffic, of environmental science, of social geography, the territorial arrangement, and the objectives are obvious: the identification of the routes to which the combined train-truck transport is suitable in Romania, and later the study of the impact of the environment, of the territorial arrangement and of the human activities might have upon the human communities.

2. MULTIMOIDAL TRANSPORT IN EUROPE AND SUGGESTIONS CONCERNING ROMANIA

In the 8th decade of the 20th century, the concept of the combined or, in other words, of the multimodal transport, known as *"ferroutage"* in the francophone regions, and as *"roadrailer"* in the Anglophone areas, was more and more integrated within the practice of the terrestrial transport.

Combined transport or multimodal transport, means the loading of the containers, or of the entire truck, on carriage-pads, through the agency of access pads, and their delivery on difficult road sectors, such as mountain passes, gorges, narrow straits, subjected to an aggressive pressure generated by the heavy transport, by the transport done with trucks.

This type of combined transport train – motor train (truck) is successfully practiced in all the countries of the European Union, especially in the alpine states such as Austria, France, Spain, Germany, Italy, and in Switzerland as well. These countries encourage this type of transport especially in the crowded mountainous sectors, with the view of protecting nature and the inhabitants. Let us not forget that, when Austria adhered to the EU, one of its requests, concerning combined transport in relation to the railway, was the limitation of the number of trucks in transit on its highways and their incumbency for combined transport in relation to the railway.

At the end of the 1980's, in France, there were functioning about 34 stations of multimodal pads, equipped for the access / exit of the trucks placed on platform-carriages, or of transhipping of the containers and for the depositing of the equipments. Novatrans Society, associated with SNCF (French Railways) has created a genuine network of multimodal transport and interconnexion centers on motor- train combined transport (or multimodal), with branches in many European countries. At that time, in Europe there were nine European Societies of combined transport and approximately eighty interconnection centers in the proximity of the great western and southern European capitals (Dézert, Bernard, 1988, *read works,* pages 96-98) (fig. 1).

In the USA, this type of transport is usually practiced on the most crowded segments of the great motor road axels such as New York – Cleveland, Memphis – Louisville (Dézert, Bernard, 1989, *read works,* page 262).

Romania is a country that does not own yet a highway system that would avoid and go round the localities, but by having numerous Transcarpathian roads, with an intense

road traffic, and a railway traffic, which registers massive reductions of traffic since after the year of 1990, and which superposes several intensely inhabited areas and few regions of great touristic interest – it is sufficient to exemplify only with regions such as Prahova Valley, Olt Valley, the Danube Pass, and so on. – is able to accomplish, with material efforts and minimum prices, this type of combined transport.

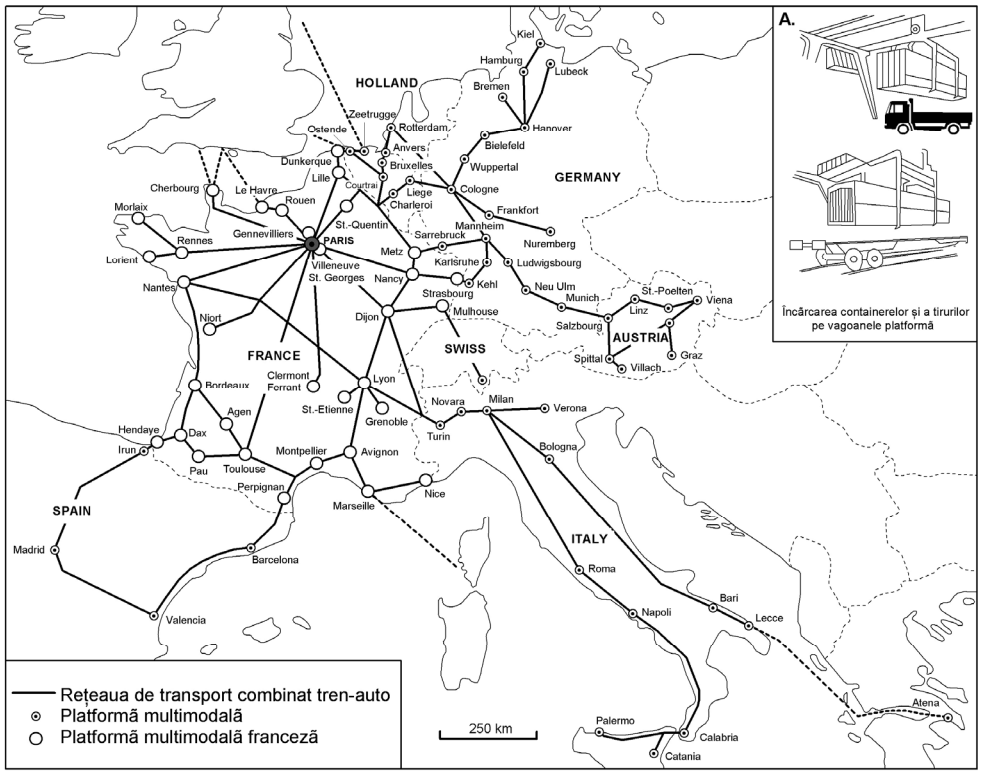


Fig. 1. Railway network on which motor-railway (ferroutage) combined transport is practiced in the European countries, in the 1980's. Source: Dézert, Bernard, 1988, *read works,* pages 97.

Since the terrestrial axels of transport (road and railway) are "corridors of development" (Faivre, Emmanuel, 2003, read works), the fluidization of the road traffic, the quality of the natural environment, the psychological and mental comfort of the inhabitants, which escaped the tyranny of the heavy traffic that crosses through the middle of the localities, the equipping of the access/exit ramps from the motor-train combined transport system, represent just as many favorable factors in the advantage of the natural environment, of the social-human and of the friendly and agreeable business environments.

The identification of the mountainous sectors in Romania, workable as far as the motor-train combined transport is regarded, was achieved in accordance with the heavy traffic indicators: heavy vehicles / 24 hours, per season / trimester, annually, maximum number of vehicles / 24 hours, weight / spindle, combined with the density of the population (the density of the human settlements, the density of the inhabitants), and which, all together, *"recommend"* the use of the motor-train combined transport.

To all these it is added the alteration of the parameters of the quality of the natural environment, generated by the intense circulation of trucks, respectively the pollution (the stale quality of the noxious gases existent in the air, the presence of dust, the noise and the trepidations), summed up in one word - *"the stress"* induced upon the surrounding environment, proved by measuring, just as the discomfort that is caused by heavy transport to the inhabitants, which are disturbed in their daily activities. In our opinion, the *sectors that are suitable* for combined railway transport are: (table 1).

Railways and road sectors which are suitable for combined transport (motor-train)

Table 1

Nr. crt.	Main railway line (sector)	From – until	Cleared highway road (sector)	Maximum road traffic registered in 24 hours out of which (trucks)
1	401 Beclean/Someş – Salva 409 Salva – Sighetul Marmaţiei	Beclean/Someş – Sighetul Marmaţiei	DN17D Beclean/Someş-Salva DN17C Salva-Moisei DN18 Moisei-Sighetul Marmaţiei	1 480 (690)
2	401 Beclean/Someş-Salva 502 Salva – Gura Humorului	Beclean/Someş – Gura Humorului	DN 17 Bistriţa – Gura Humorului	15 700 (2100)
3	400 Deda – Ciceu 501 Ciceu - Comăneşti	Comăneşti – Deda (Oneşti)	12 A Comăneşti – Miercurea Ciuc 12 Miercurea Ciuc – Topliţa 15 Topliţa - Deda	9 800 (1200)
4	211 Haţeg – Subcetate 202 Subcetate – Târgu-Jiu	Haţeg – Târgu-Jiu	DN 66 Haţeg – Târgu Jiu	12 800 (700)
5	211 Haţeg – Subcetate 202 Subcetate – Simeria 200 Simeria – Ilia 212 Ilia – Lugoj	Haţeg – Lugoj	DN 68 Haţeg-Caransebeş DN 6 Caransebeş-Lugoj	12 000 (800)
6	900 Caransebeş – Orşova – Drobeta-Turnu-Severin	Caransebeş-Orşova-Drobeta-Turnu-Severin	E94 Caransebeş- Drobeta-Turnu-Severin	18 000 (2 200)
7	300 Braşov-Câmpina	Braşov-Predeal-Câmpina	DN1 (E15) Braşov-Câmpina	26 000 (3 800)
8	201 Podu Olt-Râmnicu Vâlcea	Podu Olt-Râmnicu Vâlcea	E 15 A (DN 7) Tălmaciu – Râmnicu Vâlcea	20 000 (2 900)
9	200 Vinţu de Jos - Lipova	Vinţu de Jos - Lipova	DN 7 Vinţu de Jos - Lipova	23 000 (3 600)
10	400 Sfântu Gheorghe – Miercurea Ciuc-Deda	Sfântu Gheorghe – Miercurea Ciuc-Deda	DN 12 Sfântu Gheorghe – Topliţa DN 15 Topliţa-Deda	8 200 (700)

The most favorable **locations** where the "connection" between the heavy motor transport and the railway transport could be made possible, respectively of the access platforms, of the loading – unloading from the platform carriages are: Beclean/Someş, which would disservice two directions: Comăneşti or Oneşti, both locations are valied due to the fact that they each dispose of a great railway platform connected to the coal transport (Comeănești), or detrimental to the Chemical Plant Complex (Oneşti), and at the moment the activities, to which they were practicly built for, have stopped: Haţeg, with the disservice of two directions; Târgu-Jiu; Caransebeş; Lugoj; Orşova; Drobeta-Turnu-Severin; Braşov; Câmpina; Tălmaciu; Râmnicu Vâlcea; Vinţu de Jos; Lipova; Sfântu Gheorghe (fig. 2).

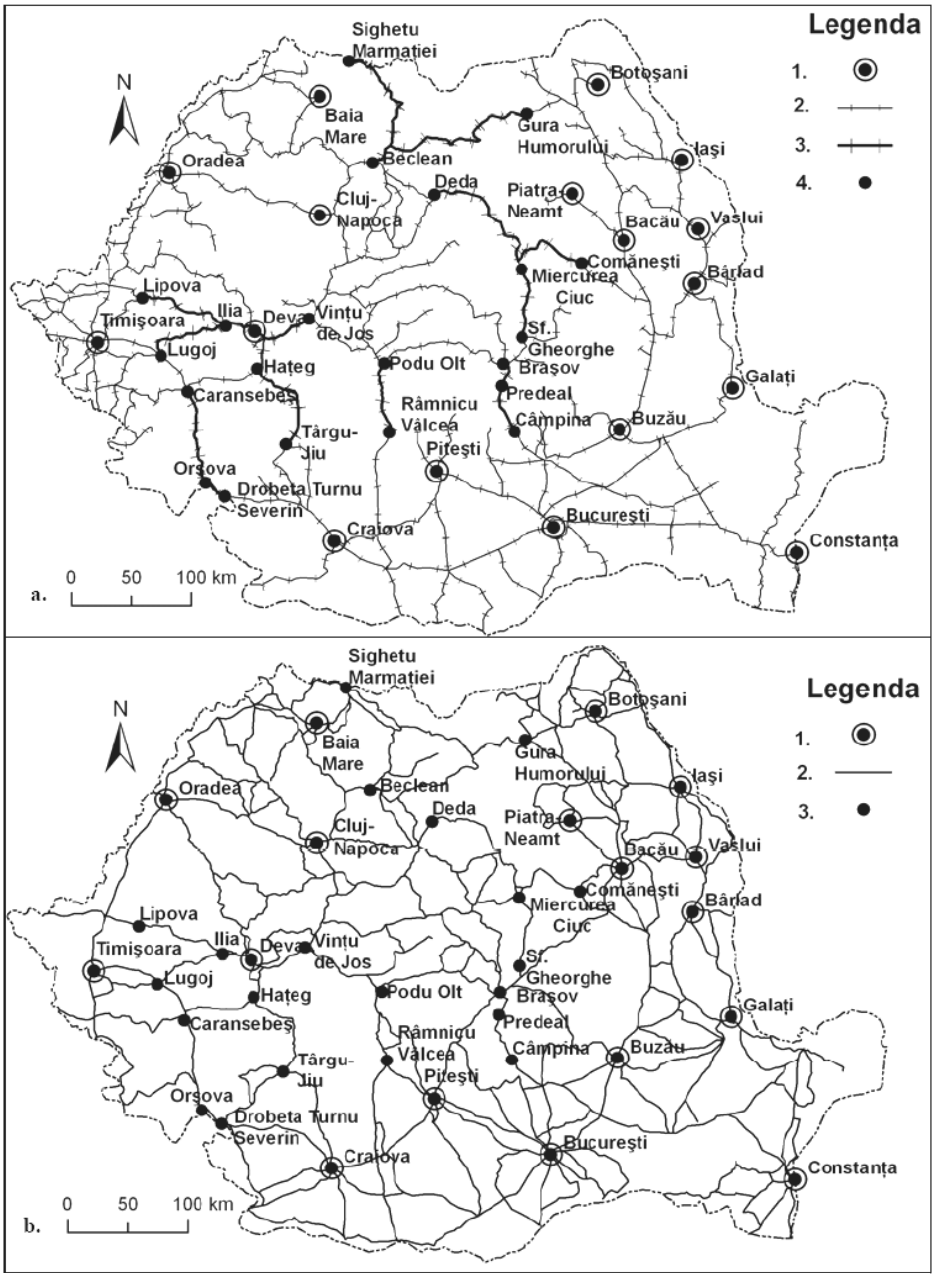


Fig. 2. Romania. The railway network (a) and the road network (b) on which, on some of the sectors, heavy road-railway (ferroutage) combined transport can be practiced. *A.1. urbane settlements; 2. railways; 3. railway segments that can be suited to combined transport (road-railway); 4. a favourable locality to the realization of the multimodal platforms of loading / unloading of the trucks from the railway; B.1. urbane settlements; 2. road ways; 3. locality for the realization of the multimodal platforms of loading / unloading of the trucks from / on the railway.*

3. THE IMPACT OF THE IMPLEMENTATION OF THE COMBINED SYSTEM OF TRANSPORT

The impact of the implementation of this combined system of transport manifests itself on the following components of the geospheres:

3. 1.The quality of the surrounding environment

The diminution of the pressure exercised by the heavy motor transport upon the environment, by being taken over by the railway transport, decreases significantly:

- the pollution of the air, by the reducing of the gas and dust emanations;
- phonic pollution, the level of noise is reduced significantly;
- it reduces the pressure exercised on the vegetation through the diminution "*of the anthropogenic effect",* of the human intervention, which a massive traffic and circulation induces on the nature. The anthropogenic effect refers to the fact that by the air currents, generated by the speed of displacement of the vehicles in the proximity of a way of road transport (but it also includes the railway), the pollen and the seeds of the plants are transported which, in time, create a *"green corridor"* formed out of resistant species that eliminate the ones with more fastidious ecological requirements; in this way the trophic chain is being modified;
- by becoming *"more natural"*, these corridors of circulation set free from under the tyranny of the noisy frequency of the trucks, have the possibility to become ways of promenade again, most of them having characteristics of scenery that have a higher touristic attractiveness.

3. 2. The population and its activities

These main roads that are intensely circulated by trucks, gravely disturb the internal life of the settlements, due to the lack of the motor highways, which would avoid the localities by going round them. It is sufficient to exemplify with few cases such as: Predeal, Sebeş, Huedin, Petroşani, Vatra Dornei and other dosens of settlements whose inhabitants are literaly terrorised by heavy transport. There are some issues that ocurr because of this reason, difficulties regarding communication and problems concerning the internal transport done within the localities, the main road losing its role of being a vector of displacement, becoming in this way a *fault-barrier* in the displacement of the people in the area of the locality;

The deviation of the heavy motor transport by using the railway reduces enormously the pressure on the road-settlements and restores to the inhabitants the rest and the inward organical dinamics. In addition, the hired staff placed in the connection points of the road transport with the railway transport, that is ready trained from the professional point of view, is able to take over the CFR staff which was discharged after the drastic decrease of the volume of transported merchandise and of the number of travelers. This way it a social pressure that is manifested on the society is also solved. In our opinion, approximately 150 employees are needed at an average station of 1000-1500 trucks / 24 hours for driving access to / exit from the platform-carriages. Moreover, during the combined transport carried out on that sector, the truck driver is able to rest, on an average of 2-6 hours, fact that contributes to the safety of the motor circulation and to the elimination of the wastage of time.

3. 3. The organization of the space

The impact of this combined system of transport on the organization of the space is manifested through the conception, the equipping and through the implementation of the connection points motor transport-railway transport, with beneficial effects in the social level by the gearing of a volume of workforce in this activity of loading / unloading of the trucks in / from the platform-carriages. These connection points are basically realized where these two terrestrial ways of transport are situated closer one to another, within the selection that offer the most efficient (short) time that is necessary for the loading of the trucks on the platform-carriages, as they arrive in the station.

3. 4. The economic activity

The impact upon the economic activity is beneficial due to the fact that the factor time-expenses is substantially reduced in the motor displacement on the motor road segments exempted by the heavy transport. In addition to this, the area that is crossed by a highway becomes more attractive for other activities, especially the touristic ones which are more sensitive to the quality of the environment; it becomes friendlier, if we are allowed to say so. We must not forget that these sectors which we are proposing have high scenery valences, some of them being defined by very unique elements.

The positive impact that the motor-railway combined transport has upon the human collectivities and on their activities, as well as upon the quality of the environment and on the labor market affected by unemployment is therefore proven and established.

4. CONCLUSIONS

The combined motor-railway transport that was implemented in Europe and in the USA with the purpose of reduction of some very crowded sectors of roads has a very practical applicability in Romania as well. Our country has known exponential increases as far as the heavy motor transport is concerned, in parallel with the decrease of the circulation of merchandise on the railways. We have identified the sectors where combined transport or *"ferroutage"*, as it is also known in French literature, can be applied and put into practice, taking into consideration the high values of truck traffic, as well as the possibility of the equipping of the multimodal platforms of loading-unloading of the trucks, on and from the platform carriages, in the localities situated at the extremities of the segments that were proposed for being travelled through.

The introduction of this type of combined transport has effects upon the environment, upon human communities and contributes to the fluidization of the motor traffic.

REFERENCES

1. Bonniol, J. J., Vial, M. (1997), *Les modèles de l'évaluation*, De Boek Université.
2. Botez, C., Urmă, D., Saizu, I. (1977), *Epopeea feroviară românească,* Edit. Sport-Turism, Bucureşti.

3. Dézert, B. (1988), *Un espace transparent* in Géographie I^{ère}, Edit. Nathan, Paris.
4. Dézert, B. (1989), *La mondialisation des communications rapides*, in Géographie Terminales, Edit. Nathan, Paris.
5. Faivre, E. (2003), *Autoroutes, activites et territoires,* in Rancontres de Théo Quant, Besançon.
6. Guigo, M. (1994), *Géstion de l'environment et système expert*, Edit. Masson, Paris.
7. Plassard, F. (1995), *Les effets des grandes infrastructures de transport, modèles et paradigmes,* INRETS-TRACES, Lille.
8. Pop, Gr. (1984), *România. Geografia circulației,* Edit. Științifică și Enciclopedică, București.
9. Wackermann, G. (2007), *La mondialisation,* Edit. Ellipses, Paris.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

RAILWAY TRANSPORTATION IN MUREŞ COUNTY

S. FILIP[1], AL. PĂCURAR[1]

ABSTRACT. – Railway Transportation in Mureş County. Going back into history, the construction of the railway in Transylvania dates back to the year 1848, with studies regarding the route of the railway Oradea – Cluj-Napoca. Numerous debates took place later, regarding the first steps of the building of the tracks Arad – Alba Iulia – Sibiu and Oradea – Cluj-Napoca – Braşov. The Rotschild Bank financed the construction of the first Transylvanian railway, whose route opened in 1867 and in December 1868 the track Arad – Alba Iulia was already inaugurated. The British-Austrian Bank financed the Waring society, which in 1868 started the building of Oradea - Cluj railway track that was going to be inaugurated in 1870; in 1871, it reached Târgu Mureş, and in 1873 it reached Braşov. Until the ninth decade of the twentieth century, the railway network was continuously modernized, therefore the sections found on the main railways 300 and 400 are at present doubled and electrified. Others, since they do not justify their utility, were taken out of use; it is the case of the narrow gauge ones that, in our opinion can be enlivened for tourist utility. After the year 1990, the railways suffered a general process of reorganization, reflected in a massive decrease of both the volume of transported merchandise and of the number of passengers.

Keywords: *railway network, connectivity, structure of the loaded/unloaded merchandise, territorial development politics, integration.*

1. INTRODUCTION

The investments in transportation infrastructure were one of the main objectives for the top-level economies and countries, from Roman Empire to the present day. Economic and social impacts of those actions are positive as long as they serve to local and regional interests as well as to the other territorial networks needs (localities, economic branches, etc). On the other hand, the resulting network must be well integrated at superior level networks. According to some authors (Mohring, H., 1993, Berechman, J., 2005), is generally agreed that improved accessibility should be one of the main goal of territorial development politics. Frequently, the presumed capability of transportation investments to generate other positive impacts is regarded as the main motivation for undertaking the investments (idem).

Undoubtedly, there is a direct relation between the railway infrastructure and the total factor of economic productivity and economic growth. From this point of view, different aspects can be taken into account, such as the variables linking railway transportation and economic activity, the impacts of different types of investments or industry, the time period considered (McQuaid, R., 2005).

[1] *„Babeş-Bolyai" University, Faculty of Geography", 400006, Cluj-Napoca, Romania, e-mail: sfilip@geografie.ubbcluj.ro; sandu@geografie.ubbcluj.ro*

2. STRUCTURAL EVOLUTION AND CHARACTERISTICS OF THE RAILWAYS NETWORK

The railroad system of Mureş County, integrant part of the national network, is a veritable hub, since the arterial roads 300, on the section Vânători – Sighişoara – Daneş, and 400 (of the intra-Carpathian ring) cross it, on section Stânceni-Deda. Out of it, the railway that unites the settlements situated on this ring, along Mureş Valley, detaches itself, respectively Brâncoveneşti – Reghin – Târgu-Mureş – Iernut – Luduş – Cheţani – Războieni, as well as the railway of the Transylvanian Plain, on Luduş-Bistriţa alignment.

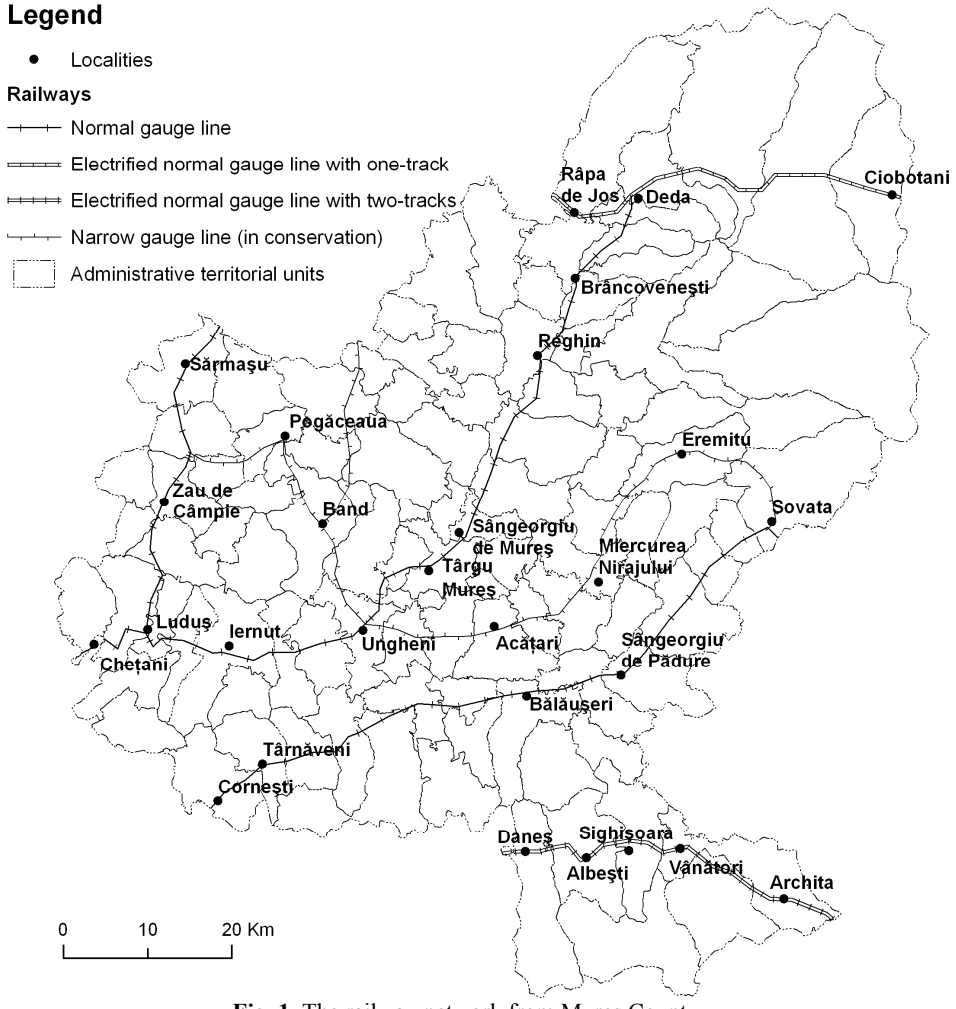


Fig. 1. The railway network from Mureş County

A normal, simple railway of secondary importance follows the Târnava Mică Valley, starting in Teiuş down to Praid, connecting the settlements of Crăieşti – Târnăveni – Mica – Bălăuşeri – Sângeorgiu de Pădure –Sovata, throughout Mureş County.

Beside the railways with a normal gauge of track, on the territory of the county there are a series of tracks with narrow gauge of tracks. At present these are out of service, being in preservation: Târgu Mureş – Sovata Spa and Târgu Mureş – Band, with two branches: one towards Miheşu de Câmpie, and another one towards Crăieşti – Milaş – Teaca – Lechinţa, the last three settlements in Bistriţa - Năsăud County.

The construction of these railways is ancient. The section, found on the territory of the county, which belongs to the arterial road 300, was inaugurated on June 1, 1973. The median line of the intra-Carpathian ring and then sections of the arterial road 400 were commissioned in stages, as following: Războieni – Târgu Mureş on November 20, 1871, Târgu Mureş – Reghin in 1886, Reghin – Deda in 1905, and Deda – Gheorgheni in 1909. The railway of the plain was commissioned in 1918, and the narrow tracks from the territory of the county in 1915.

Throughout the time, they were continuously modernized, therefore the sections found on the arterial roads 300 and 400 are at present double and electrified. Others, since they do not justify their utility, were taken out of use; it is the case of the narrow ones that, in our opinion can be enlivened for a tourist utility.

The number of travelers in the CFR train station from Mureş County, in the year of 2008

Table 1

No.	CFR train station	Number of travelers
1	Târgu Mureş	581466
2	Sighişoara	406490
3	Luduş	203964
4	Reghin	186598
5	Daneş	62422
6	Deda	44764
7	Brâncoveneşti	38991
8	Iernut	35776
9	Vănători	34509
10	Chețani	7447
11	Stânceni	6306
12	Sărmăşel Gară	2082
13	Zau de Câmpie	0
14	Miheşu de Câmpie	0
15	Sărmaşu	0

After the year 1990, the railways entered an ample process of reorganization, recording drastic decreases in both the volume of transported merchandise and of the number of passengers. As far as the passenger travel from the year 2008 in the main railway stations is concerned, it is presented in the following way: (table 1). A private operator attends to the stations located on the line of the plain.

With regard to the volume and structure of the merchandise, the situation in 2008 is presented the table 2 and figure 2.

The construction of the railway in Transylvania dates back to the year 1848, with studies regarding the route of Oradea – Cluj-Napoca railway. Numerous debates took place later, regarding the start of the building of the tracks Arad – Alba Iulia – Sibiu and Oradea – Cluj-Napoca – Braşov. The opinions were divided, as following: the majority of the great Hungarian landowners, as well as the residents of Braşov, the most developed city from an economic point of view, opted for the main railway Oradea – Cluj-Napoca – Braşov, while the politicians and the middle class of Sibiu opted for the second alternative, the one from Arad. The Rotschild Bank financed the construction of the first Transylvanian railway, whose route opened in 1867 and in December 1868 the track Arad – Alba Iulia was already inaugurated. The British-Austrian Bank financed the Waring society, which started the building, in 1868, of Oradea - Cluj railway track that was going to be inaugurated in 1870; in 1871, it reached Târgu Mureş, and in 1873, it reached Braşov. Over 20,000 workers

worked at this main railway of 633 km. It encouraged the people living in the Transylvanian space to travel and facilitated the cereal, salt, iron and coal export, especially after 1870, when the junction to Jiu basin was accomplished. In 1884, the main railway system was nationalized by the Hungarian state, becoming MAV.

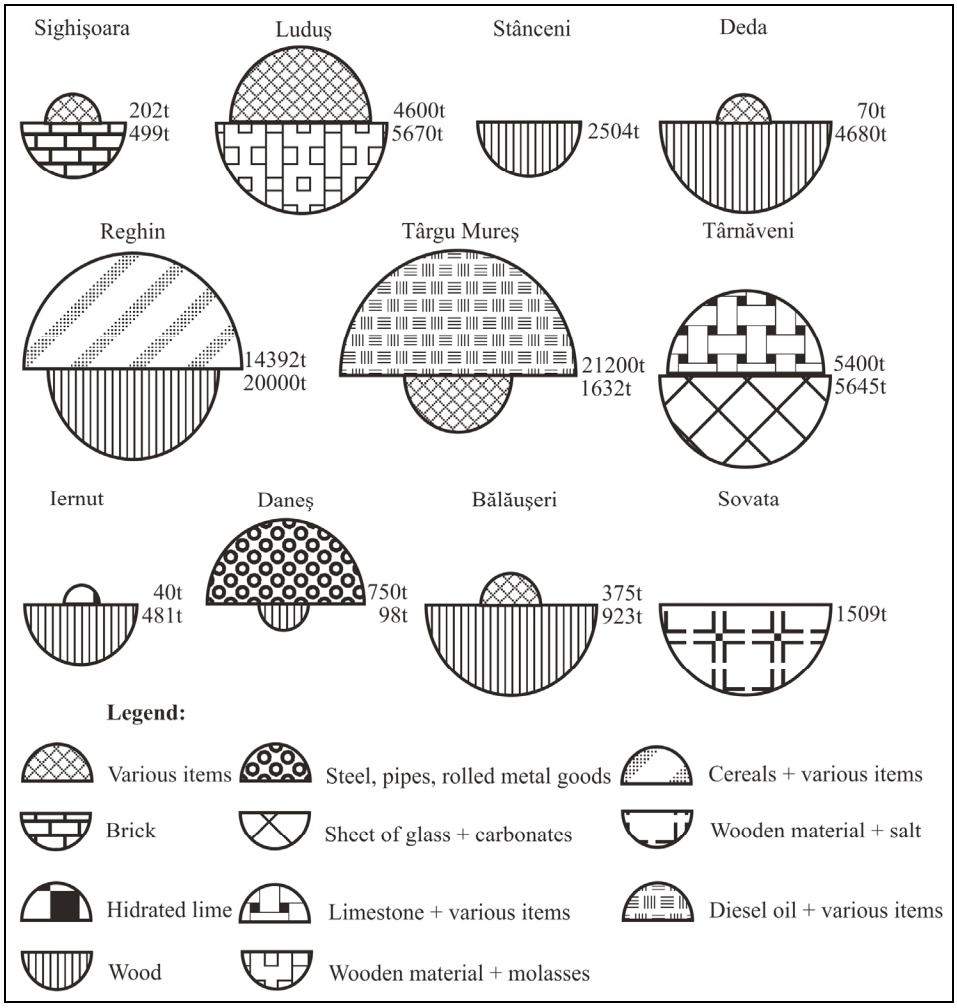


Fig. 2. The structure of the loaded / unloaded merchandise in the CFR train stations from Mureş County, in the year of 2008.

Two junctions with the Romanian railway were accomplished in 1879, and in 1895, the third junction with Romania was turned into reality. Until 1914, the Transylvanian railway counted 2384 km, respectively 6.7 km/100 km² and 1.02 km/1000 residents. Regarding Mureş County, the total length of the railway (2007) was 279 km (4.16 km/100 km^2), of which 87 km were electrified. Thus, Mureş County is on the second place of the ranking in "Centre" Development Region regrading the length and density of the railway.

The volume and structure of the loaded/unloaded merchandise in CFR train stations from Mureş County

Tabel 2

CFR train station	Volume of loaded merchandise	Volume of unloaded merchandise	Structure of loaded merchandise	Structure of unloaded merchandise
Bălăuşeri	923	375	W.m.	V.i.
Brâncovenesti	0	0		
Cheţani	0	0	W.m. + molasses	V.i.
Crăieşti	0	0	*	*
Daneş	98	750	W.m.	Steel, pipes, R.m.g.
Deda	4680	70	*	*
Iernut	481	40	V.i.	Diesel oil + M.
Luduş	5670	4600	W.m.	Hydrated lime
Mica	0	0	*	*
M. de Câmpie	0	0	*	*
Reghin	14392	20000	*	*
S. de Pădure	0	0	*	*
Sânger	0	0	*	*
Sărmăşel Gară	0	0	*	*
Sărmaşu	0	0	*	*
Sighişoara	499	202	Brick + V.i.	V.i.
Sovata	1509	0	W.m. + salt	*
Stânceni	2504	0	W.m.	*
Târgu Mureş	1632	21200	W.m.	Cereals + V.i.
Târnăveni	5645	5400	S.g. + carbonates	Limestone + V.i.
Tăureni	0	0	*	*
Vânători	0	0		*
Zau de Câmpie	0	0	*	*

W.m. = Wooden material; R.m.g. = rolled metal goods; M = miscellaneous; V.i. = various items;
S.g. = Sheet of glass; M. de Câmpie = Miheşu de Câmpie; S. de Pădure.

3. CONCLUSIONS

Despite some morphological restrictions, the railway network of Mureş County is relatively dense. It has a good connectivity on East-West direction (according to the main rivers and valleys) and a good interconnectivity with other transportation networks (road network, airport). Low connectivity on North-South direction, decreasing of the volume of the loaded/unloaded merchandise and continuous degradation of the narrow gauge railway are the main weaknesses as a result of the general economic recession of the last decades.

As a perspective, the further studies and development actions must concentrate on some problems regarding the railway transportation:

- the optimal frame of territorial development politics for infrastructure (investments, exploitation) and services (state monopoly vs. public-private partnership);
- how regional politics should be integrated in national transportation strategy.

According to European Union's transport policy, integration and interoperability (to allow high-speed trains to run non-stop between cities in neighboring counties) has to become ways to make public transport more attractive, especially for commuters. Besides the cost, railway transportation at local and regional scale has to maximize its advantages: low land consumption, low level of air pollution, increased safety.

REFERENCES

1. Calthrop, E., De Borger, B., Proost, S., (2010), *Cost-benefit analysis of transport investments in distorted economies,* Transportation Research Part B, in press, available online, Elsevier.
2. Berechman, J., (2005), *Transport Infrastructure Investment and Economic Development*, in Transport and urban development, edited by Banister D., Chapman & Hall, London.
3. Botez, C., Saizu, I., (1977), *Epopeea feroviară românească*, Edit. Sport – Turism, Bucureşti.
4. Garrison, W.L., Levinson, D.M., (2006), *The Transportation Experience. Policy, Planning and Development*, Oxford University Press, Oxford.
5. Hall, R.W. (editor), (2003), *Handbook of Transportation Science*, Kluwer Academic Publishers, New York.
6. Kopeczi, B., (1992), *Histoire de la Transilvanie*, Akademiai Kiado, Budapesta.
7. McQuaid, R., (2005), *The Economic Debate: Theory and Practice*, in Transport and Urban Development, edited by Banister D., Chapman & Hall, London.
8. Mohring, H., (1993), *Maximizing, Measuring and not Double Conting Transportation -Improvement Benefits: a Primer on Closed and Open-Economy Cost-benefit Analysis*, Transportation Research B, 27, 6, Elsevier.
9. Păcurar, Al., (2006), *Geografie economică mondială*, Presa Universitară Clujeană, Cluj-Napoca.
10. Pop, Gr., (1984), *România. Geografia circulației*, Edit. Ştiinţifică şi Enciclopedică, Bucureşti.
11. Pop, Gr., (2001), *Depresiunea Transilvaniei*, Presa Universitară Clujeană, Cluj-Napoca.
12. *** (2009), *Anuarul Statistic al României,* Institutul Național de Statistică, Bucureşti.
13. *** (2009), *How Regions Grow. Trends and Analysis*, OECD, Paris.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE EFFECTS OF THE ECONOMIC CRISIS ON TOURISM IN ROMANIA AND EUROPE

ALINA SIMION[1], MONICA MOLDOVAN[2]

ABSTRACT. – The Effects of the Economic Crisis on Tourism in Romania and Europe. The economic crisis occured when nobody expected, and its effects are felt in all the economic fields, at national, European and global level. Tourism, also is subject to major changes because the effects are felt in this sector, both at national, continental and even global level. The European states, whose economy was based mainly on tourism, feel the effects of the economic crisis much deeper, even the states with a tourism tradition (France, Spain, Italy), but WTO's vision is rather optimistic for Europe. For Romania, the economic crisis is another factor that always stands in the way of the development in the tourism sector. The diversified potential of our country did not determined Romanian citizens to spend their holidays in the country. They travel to the neighbouring countries to spend their holidays, no matter if these are short or long. This choice for a holiday destination can be attributed to the high prices charged by the Romanian tourism market and the lack of clear stategies for the development of the Romanian tourism sector. Thus, for the Romanian tourism, the effects of the economic crisis will be felt for a long time, if nothing is done urgently to stimulate and gave financial and political support for this sector. This confusing period causes a fierce competivity on the European tourism market,the states are competiting in developing stategies to attract international tourists.

Keywords*: economic crisis, effects, tourism, GDP, substraction, statistics, prospects.*

1. INTRODUCTION

The increasing volume and the complexity of the tourism supply have generated the development of a real industry of trips and of tourism, which justifies the dealing of the tourism phenomenon as a distinct branch of the national economy found in full development, being a component of the tertiary sector. By its nature the tourism phenomenon is very complex with deep social, political, cultural and economic implications. The interpenetration of its heterogeneous components gives birth to a unique and original specificity, which does not justify itself with either of the traditional branches of the national economies, completely justifying his dealing in an autonomous way. However we must say that, unlike other sectors of service supply, the trip and the tourism industry stays however a branch of consequence, whose development in each step will be permanently in a tight correlation with the levels and development rhythms of the other branches of the national economy. The economic domaines present relations of interdependance, relations to which even tourism relates with numerous quantitative and qualitative connections with other economic branches (ex: transports, health, alimentation, etc).

[1] *Teaching Assistant, Babes-Bolyai University, Faculty of Geography, Sighetu Marmaţiei Extension, Avram Iancu Street, No.6, e-mail: simona.simion@geografie.ubbcluj.ro*

[2] *Babeş-Bolyai University, Faculty of Geography, 400006, Cluj-Napoca, Romania, e-mail: monica.moldovan@geografie.ubbcluj.ro*

2. THE IMPORTANCE OF TOURISM FOR THE ECONOMY

The interdependance between the development of tourism (international and national) and the economic growth is obvious because it trains the request for a series of goods and services which otherwise would not have been produced or offered. Therefore, because of this, the present economic modifications which have affected all the economic branches, implicitely tourism, are felt much stronger in the sectors which complete the tourism sector.

For some countries tourism was the launching pitch for the economic rescue, so the incomes cashed out of tourism have lead to the economic growth and its development, tourism consequently becoming a very important economic branch. With the help of tourism, a lot of poor countries, out of natural and political reasons (restrictive political regims), have succeeded to grow economically, becoming today developing countries or even developed countries (ex: Poland, Hungary, Croatia, Bulgaria, Estonia, Letonia etc). So tourism is seen as an easy and fast solution to fight the economic gaps established among the countries.

As an economic branch, tourism has a significant contribution to the GDP for a lot of countries in Europe and worldwide. There are countries which made up until 80% of the GDP (Maldive Islands) from the tourism activity, but countries with a developed economy too (France 7,3% of the GDP, Switzerland 7,7% of the GDP) which have high weight of the tourism activities in the GDP. In this sense, in Romania tourism contributes with 2-3% to the GDP. For our country, in the present stage, as a consequence of some unexploited and insufficiently valued tourism ressources, tourism is a branch with considerable growth possibilities and therefore stays in a sphere of activity which can „absorb" a part of the work force left available by economic restructuration.

3. TOURISM, THE WORK PLACES AND THE ECONOMIC CRISIS

Tourism and its relations with the connected branches, includes a large number of employees, in comparison with other economic fields because „the industry of tourism", the mechanisation and the automatisation would degradate the quality of the tourism products. Because it is a great consumer of energic work, tourism plays an important role in the economy of the society. It creates new places to work, therefore it participates in the attraction of the surplus of the work force from other sectors, consequently contributing to the attenuation of unemployment. The great number of those who work in tourism have as explanation the fact that the mechanisation-automatisation possibilities of the tourism operations are limited.

Also, still remaining in the sphere of the tourism-work force relationship, we must remind the indirect effect of the growth of the number of those occupied in this sector. Studies show that a direct work place in tourism can create 1-3 indirect work places. This is explained by the fact that tourism being a great consumer of goods and services, positively influences the usage of the work force in its own supplying branches (agriculture, food industry, constructions).

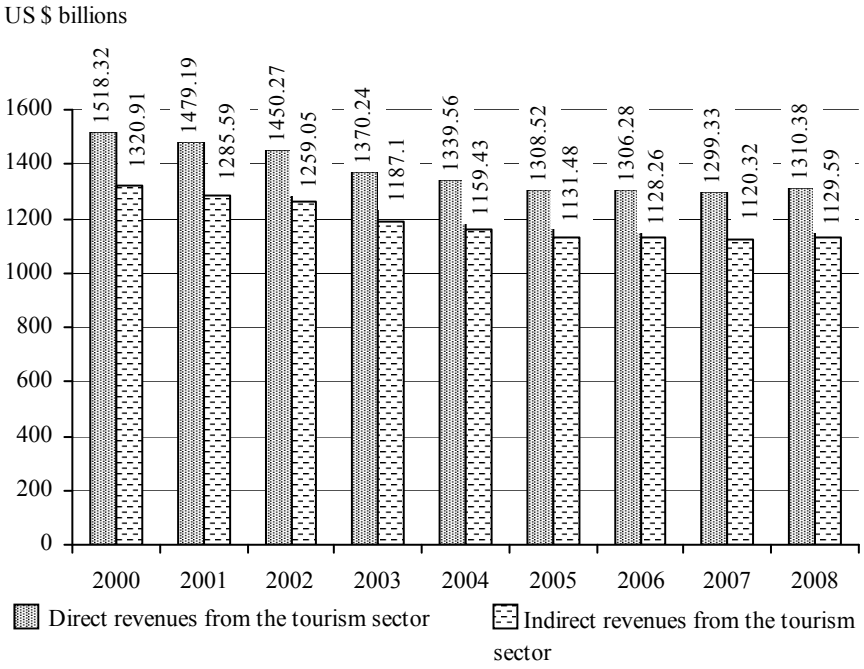


Fig. 1. The evolution of revenues from the tourism sector in France.

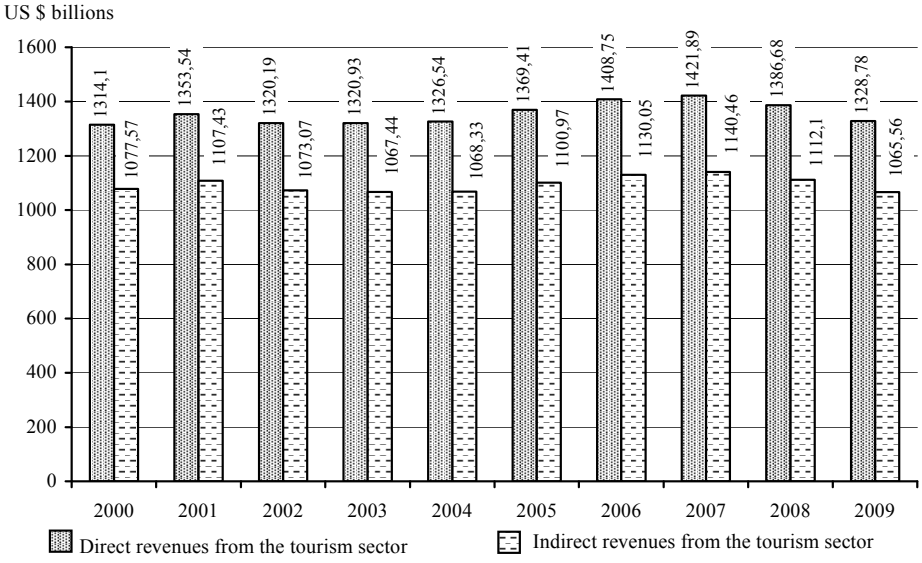


Fig. 2. The evolution of revenues from the tourism sector in Spain.
Source: www.unwto.org/destination/dmo/

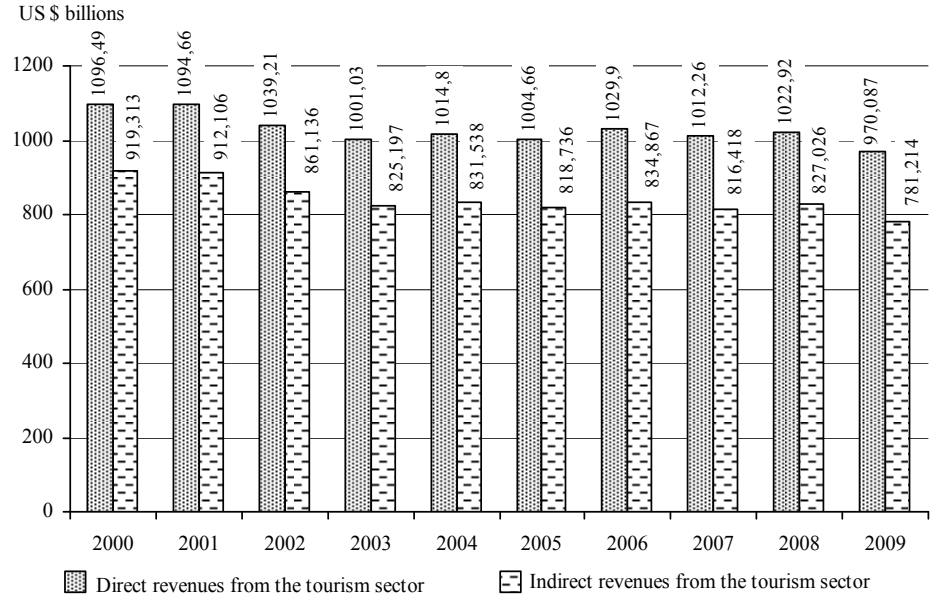


Fig. 3. The evolution of revenues from the tourism sector in Italy.

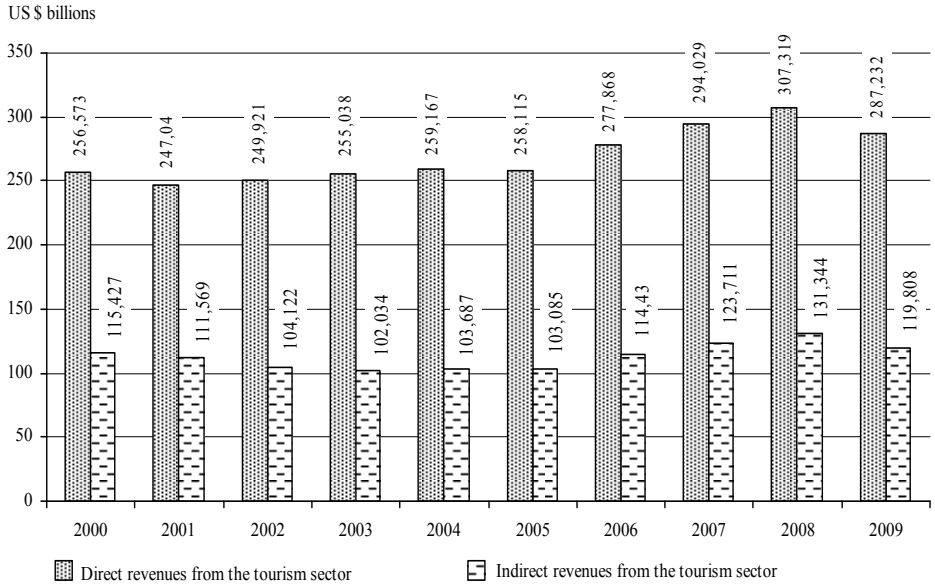


Fig. 4. The evolution of revenues from the tourism sector in Romania.

Source: www.unwto.org/destination/dmo/

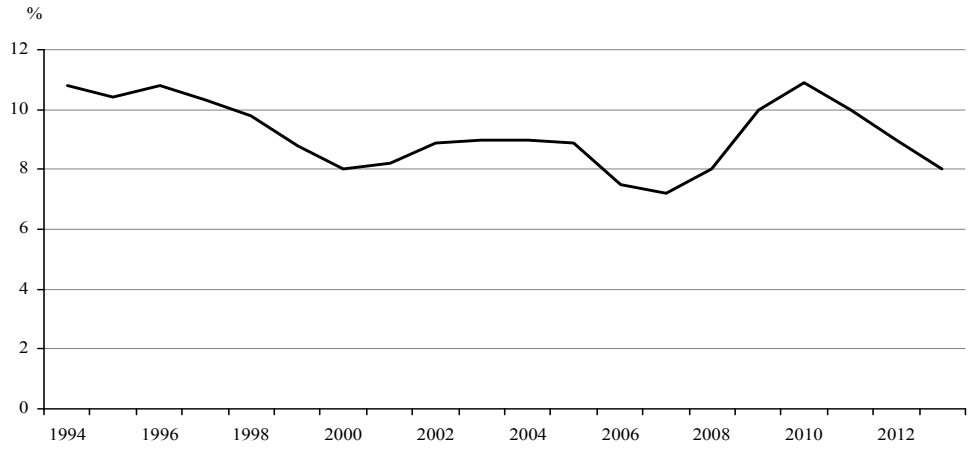


Fig. 5. The evolution of the unemployed in Europe between 1994-2009, and the evolution trend for 2010-2013 (%). **Source**: Oxford Economics (UNWTO).

Due to the present economic crisis, at the European level the number of the unemployed from the tourism sector has grown in the first half of the year 2009 with 9,5% and until the end of the year it reached 10,2%. A lot of states tried to stabilize the hired personnel in tourism by giving to the unemployed from this sector the salary for half norme, situation valid until the end of the year 2009. For the year 2010, the estimation for unemployment is of 10%, therefore without private initiatives and a political measure, the unemployment rate at the national level will grow in a lot of countries.

4. THE ECONOMIC CRISIS AND ITS EFFECTS ON THE INTERNATIONAL CIRCULATION

In the last years, tourism at the world level has been affected by a lot of storms (financial crisis, a crisis of merchandise, the growth of the oil price, fluctuation of the exchange rate, terorism acts) which slowed down the demand for products and tourism services. At the economic level, the year 2009 was the most desastruous one, affecting all the sectors tied to it. The GDP of all countries in the year 2010 is expected to be modest as a consequence of the great economic recession. According to the World Tourism Organisation (WTO) the entries of the international tourists have decreased at the world level with 7% in 2009 in comparison to 2008. At the European level the arrivals during June-July 2009 decreased with 8% in comparison to the same period with a year before, reaching 10% until the end of the year. According to the same sources (WTO), at the level of the European region were registered during the 3 months of the year 2008 (May, June, July) decreases of the international arrivals of 11% to 7% in comparison to the precedent year. The Central and Eastern Europe have registered the biggest decrease, of 11%, the Northern and Southern Europe of 8%,and Western Europe of 7%. Modest increases have been declared in the Northern Europe (Iceland and Sweden) and 5% in the Balkans (Serbia), at the level of entries of tourists as well as at the level of numbers of staying over night. Trips have started to decrease significantly starting even with the first half of the year 2009, continuing in the second half too, the same descendent way.

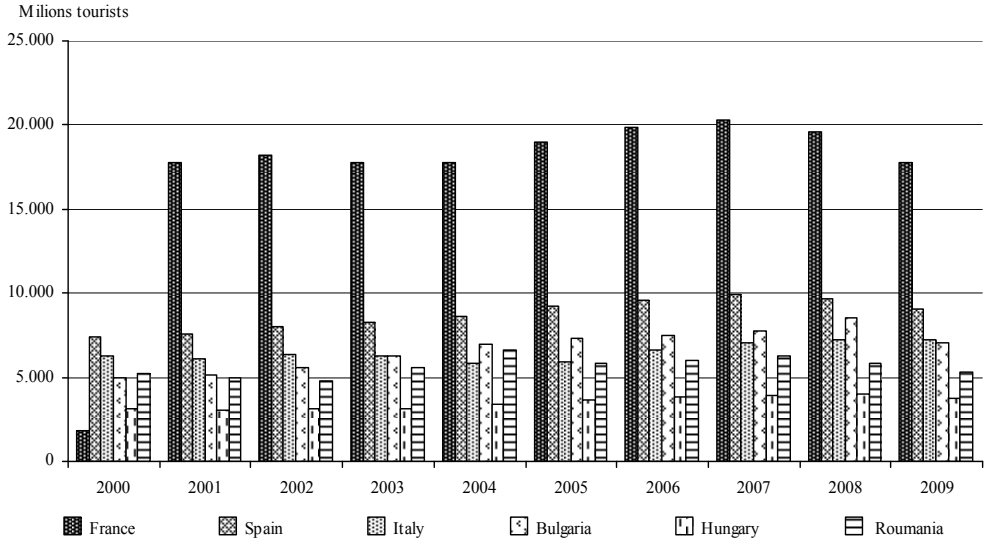


Fig. 6. The evolution of the number of the international tourists before the economic crisis.
Data from www.unwto.org/destination/dmo/

Therefore the transport companies, especially the airlines, together with the hotels registered great losses, finding themselves obligated to reduce the prices. With all these the number of requests for the services, where a lot under the level of registrations from the anterior year. The length of trips have also been reduces, and this trend will continue until the economic situation will be stable. At the national level, the states can take advantage of this short term trips, therefore the internal tourism will present a growth, in comparison to the export of tourists. An increase of the international tourism orientation is predicted for the second half of the year 2010, moment when the effects if the economic instabilities will be improved, and the spreading of the pandemic virus will be in the phase of extinction.

Even if we are only at the beginning of 2010, there are no obvious hopes for the improvement of the international circulation, because of the economic instability, which in some countries is towards the end, still affects a lot of states. Beside this fact the AH1N1 virus has created desastruous consequences from the tourism point of view in some countries like Mexico, Ukraine or in countries from the east of Asia, even if there is a vaccin for it.

In moments of economic instability, the governments often have a negative impact on tourism, by retrackting the finances during the austrity campaigns and giving in to the temptation of growing taxes. The analyses to the responses at the financial crisis in the public and private sector in tourism indicates the fact that a lot of strategies are essential in maintaining the entry in tourism. The economic reaction of the states is different in the situation of the global economic instability, some of them record a lot bigger losses than others in all the fields, including in the tourism sector. This impas was more easily passed by some of the states by adopting easier tax laws or by adopting some much more attractive marketing strategies for tourists, especially complex tourism offers at medium prices. States

like France and Germany estimate for 2010 a raise with 1% of the incomes in the tourism sector in comparison with the precedent year but on the other hand countries like Spain and Italy estimate a procentage of 0,4% and respectively 0,2%.

Global tourism could register in 2010 a reduction of 2-3% as a consequence of the financial crisis and the swine flu according to the figures of the World Tourism Organisation (WTO).

According to the dates presented by the WTO, at the international level the tourist arrivals decreased with 8% during the first two months of the year 2009, in comparison to the same period of the year 2008, arriving at the level of the year 2002. In January 2009, the total arrivals of the tourists were of 59 million people, and in February of 58 million. The most affected regions are Northern and Southern Europe, the Mediteranean area, but also the Middle East and the North-East and South of Asia.

Forecast of the international tourist arrivals by Global regions anterior to the economic crisis

Table 1

Base year	Forecast		Annual growth (%)	
1995	**2010**	**2020**	**1995-2020**	
World	**565.4**	**1006.4**	**1561.1**	**4.1**
Africa	20.2	47.0	77.3	5.5
America	108.9	190.4	282.3	3.9
East Asia and Pacific	81.4	195.2	397.2	6.5
Europe	338.4	527.3	717.0	3.0
Middle East	12.4	35.9	68.5	7.1
South Asia	4.2	10.6	18.8	6.2

Source: World Tourism Organization

Tourism will be affected in the following years by the global economic crisis, because all the prices will increase, and people will pay more attention when planning the priorities of their every day life. Due to the decrease of the demands for tourism activities, there will be economic and financial restraints in the tourism sector too. In the same time, the weather changes and the price of oil are other factors which will affect tourism at the world level.

5. FORCASTS ON TOURISM

Long distance trips will have a more emphasized growing tendency (5.4% per year) than short term distance trips (3.8 per year). Therefore, from a figure of 82% of short term distances in the year 1995, they will arrive in 2020 and will hold 76% of the international tourism market.

In what the incomes of the international tourism is concerned, it is appreciated the reaching of 2000 billion USD in 2020. Consequently expenses of 5 billion USD are appreciated every day world wide. Until the year 2020, the number of tourists, at the global level, will reach 1,6 billion, more than double in comparison to the existing registers for the year 2002, approximately 700 millions.

Regarding the European market, which Romania belongs to, WTO identifies the following macroeconomic tendencies which will manifest in the near future:

- it is said that the international tourism arrivals will reach 1,56 billion in 2020 with a medium growing average of 4,1%. It is estimated that long distance trips will increase from 18% to 24% in 2020 in the detriment of the inter-regional ones;

- until the year 2020 the Central and Eastern Europe will attract more tourists than the countries in Western Europe; the international tourist arrival in Europe will reach 717 millions in 2020, with an annual increase of 3%, under the world average of 4.1% fact which will diminish the European market share; France will remain the most important tourist recever in Europe (until 2020 it will reach almost 106 million tourists international);

- the 10 Balkan countries will receive in 2020 up until 79 millions tourist, 92% of them being attracted by Greece, Bulgaria, Romania and Croatia. This fact it is owed to an annual increase of 4,6% during the years 1995-2020;

- until 2020, 346 millions tourist will visit the Mediteranean area (reprezenting 22% of the entire world arrials).

Besides these purely economic predictions some social-psychologycal predictions are needs of the new tourists and the come in their way with products and services which satisfy their needs. WTO identifies the tendency which will manifest, in this sense, on the European market:

- tourism is promoted more by the governments for the obtained economic profits, than for the social benefits and the improvement of life quality;

- the raising of the competition between the hollyday destinations and other forms of enjoying the free time; the growing of importance of the internet means promotion and sale;

- the thematic entertaiment parks will became more and more popular by ofering a wide range of attractions and facilities in a rather compact area;

- the introduction of the unique Euro currency in more European countries has as main outcome the growing number of intraregional trips;

- the fast growing on the number of „low cost airlines" will have as effect the growing of the international trips;

- in western societies there is a tendency of growth of the number of aged people of the divorce rate, of single parents families and of marriages at a higher age and of the respect for nature;

- culture represents a component of the trip at over 60% of the European tourists.

These predictions, of economic nature as well as of psycho-sociological nature, are necessary in order to create of a tourism offer according to the evolution and the deanands of the market. This is an approach at the macro-economic level which will have to be profunded by short term analysis of the market. In order to understand better the effects of the economic crisis on tourism, we take for example Italy, a developed country with tradition in tourism. In 2009 left in vacantion 25,7 million Italians. Out of this sum, 18,3 millions chose holliday destinations from the interior of the Peninsula, more convenient as price, and only 7,7 millions chose to spend their summer vacantions abroad, with 2,7 million fewer than in the summer of 2008. An Italian people spends around 895 euro for a vacantion in Italy, and 1220 euro for a destination abroad. In total, the sums allocated by the Italians for their summer vacantion is around 16,3 billion euro for those in Italy and 9,4 billion euro for those abroad. Unlike the year 2008, in 2009, 15% of the Italiens have simply given up to spend their vacantion during the traditional period of August, when the cities from Italy are rather empty. For the year 2010, Italiens prefer not to program their summer vacantions with months before, but to make reservatios in the last moment, especially that, because the offers made by their agencies after the beginning of August month are reduced with 50% for the August-September period. Therefore, if around 2.2 million Italians will spend their vacation in Spain and Grece, aproximately a million will orient themselves towards France, other 600 000 prefer Croatia, followed by Great Britain and Germany with another million altogether.

For Romania, 20 000 Italians people have reserved tourism packages at the beginning of the year. Our country, as vacation destination, is in competition with the Czech Republic, where Italians have reserved in January for the year 2010, less than 85 000 tourism packages. Mean while, between a quarter of Italians stay at home or prefer to go in vacations in the last moment or later, in September, when the price are more convenient.

The tourist entries in Italy in 2009, comparate with the year 2008, according to the Fivet data, have registered a decrease under 3% of the reservations between Germany and France, of approximately 5% of the tourist of Russia and over 10% of the British, Japonese and Spanish ones. In the hotels, from the cultural cities in Italy, like Rome, Florence, Venice, Verona, it is maintained a high rate of reservation, in comparaison to the precedent year. On the other hand, the watering and the climatic tourism registers a decrease of 10-15%. Tourism is one of the most important sector of the Italien economy, assuring around 12% of the GDP of the country and approximately a million work places. Every year, Italy is visited by over 40 million tourists, over half of them preferring the summer month for their vacantions. Italy also remains, in 2010 a preferred destination for the foreign tourist, in spite of the economic crisis.

6. THE ECONOMIC CRISIS – A NEW IMPEDIMENT FOR THE ROMANIAN TOURISM

The global economic crisis amplifies itself every day, and Romania starts more and more to feel this economic recession, to which the great economists at the world level cannot succed in finding an antidote. Romania's tourism potential is valuable, but the performance to put it in value are limited, in comparaison to other countries from the Central and Eastern Europe. Even if tourism is considered an economic branch with considerable competitive advaritage, Romania is at present, at the global level, among the countries with low level in the intensive explotation of the tourism potential. In a top which include the Romania and the neighbours, as a rival destinations, out of 170 countries, our country is on the 162nd position.

In Romania, tourism imposed itself as an economic branch only after the year 2000. The improvement of the Romanian economy was rather slow after the political changes of 1990, and because of this, the tourism sector also has suffered a stagnation from the point of view of the investments. In the last years Romania has become an interest point on the European map for the international tourism, fact which influenced a lot the investments in this sector, especially in the infrastructure (accommodation, access, treatment, entertainment base). But with all that, the number of Romanian tourists who prefer an external destination has been increasing more and more in the last year. Even for the short or medium vacantions term, Romanians prefer the destinations near the Romania borders.

Romania's rival countries from the tourism point of view, Hungary and Bulgaria, have faced the same difficulties on the economic and political levels, but have established very tactically the strategic domains for the national economies. In Bulgaria, tourism is favourised by a natural tourism potential, was financially supported more than other economic sectors, for the development of the accommodation and entertainment infrastructure. Beside these compulsory elements for tourism we also add decisional elements for the tourist, which determined for the two countries significant entries for international tourists, especially Romanians. These decisional elements are reduced prices, the quality of the services and the held marketing policies. In Hungary, even the tourism potential is very varied, prioritary for the investment from the tourism sectors are those which aim at the valorification of the thermal waters, very much demanded by the Romanian tourists.

7. CONCLUSIONS

Analysing the economic level and the development of tourism of European countries, we can state that the more developed economically the country is, the more developed the tourism sector is (France, Italy, Great Britain), but the valorification of this sector can lead to the growth of the economic level of the states (Poland, Bulgaria, Hungary, Romania, etc.).

Generally the tax policy is very gentle in the tourism sector, especially for the countries where an economic growth leant on this branch is had in sight. The increase of the dues and taxes must not affect the tourist entries, which are generally sensitive to price changes. But the taxation of the producer by the value added tax and taxes on the import content of the tourism product represent an acceptable and applicable solution for each of the tourism countries exporting, regardless of their economic development degree. The percentage of the VAT applied to the tourism services are different from one country to another (7% in France, 8% in Italy, 13% in Germany, 22% in Denmark) and can also have as outcome an increase or decrease of the international tourism circulation.

For Romania, tourism represents the economic sector which has a very valuable developing potential, not yet sufficiently exploited in order to become an attraction source for the investors and the foreign tourists. But there is a strong competition on the part of the neighbouring countries (Hungary, Bulgaria, Croatia) and a modest competitiveness of the Romanian tourism. The great advantage for Romania is the natural and cultural potential of a big diversity and harmoniously spread in the territory, giving the possibility to practice different forms of tourism. But without a good quantitative and qualitative development of the receiving, restauration and entertaining structures, these tourism resources cannot be put in value, an increase of the number of tourists cannot be accomplished, of the staying period the occupying degree of the profit in tourism, so that the Romanian tourism is able to become competitive on the international market.

Contrary to stagnation, and even the regress, tourism has a very optimistic future predictions, becoming bigger and bigger at the world level, regional, national and local level. Studies demonstrate already that tourism can be considered the main industry, because this concerned a big number of employed work force, has an important contribution in GDP and is the most important capital investor.

REFERENCES

1. Barbu, G. (1981), *Turismul în economia națională*, Edit. Sport Turism, București.
2. Enea, Constanța (2009), *Efectele crizei asupra managementului firmelor de turism şi servicii şi impactul acesteia asupra dezvoltării durabile a oraşelor*, Analele Universității "Constantin Brâncuşi" din Târgu Jiu, Seria Economie, Nr. 1/2009.
3. Păcurar, Al. (2009), *Turism Internațional,* Presa Universitară Clujeană, Cluj-Napoca.
4. Snak, O., Baron, P., Neacşu, N. (2003), *Economia Turismului*, Edit. Expert, Bucureşti.
5. ***, European Travel Commission – *Raportul asupra Turismului European, trimestrul al III-lea al anului 2009*, Bruxelles, octombrie 2009.

Note: ***Investing in people!*** PhD scholarship, Project co-financed by the SECTORAL OPERATIONAL PROGRAMME HUMAN RESOURCES DEVELOPMENT 2007 – 2013, Babeş-Bolyai University, Cluj-Napoca, Romania.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

CROSSING THE BORDER. TRANSBORDER PRACTICES OF SMALL-SCALE ECONOMIC ACTORS AT THE EU'S NEW EXTERNAL BORDER BETWEEN ROMANIA AND UKRAINE

A. WUST[1], **H. ZICHNER**[1]

ABSTRACT. – Crossing the Border. Transborder Practices of Small-scale Economic Actors at the EU's New External Border between Romania and Ukraine. The significant changes that have occurred in European border regimes during the last years have caused considerable consequences for people dealing with "the" border in their daily routines. On the one hand the EU's external border has to perform a security function, but on the other hand it has to continue serving as an "efficient economic bridge" – the intended double function can be summarised by the expression "smart border". Thus, the border has a variety of impacts, differing in accordance with the social context. The research project "Geographies along the EU project's eastern edges" reported here aims at analysing such transborder practices of small-scale traders and small entrepreneurs and how they deal with the border as a geopolitical ordering of the social world in a comparative manner. Based on the project findings it can be argued that in the framework of these everyday practices the external European border which is regulated as a uniform and common one is not always realised in the intended homogeneous way but heterogeneous due to "local", "individual" etc. influences and circumstances.

***Keywords**: European Union, EU's external border, Schengen treaty, border, border regime, transborder practices, small-scale trade, small entrepreneurship.*

1. INTRODUCTION

Ever since the Schengen treaty of 1985, the European Union has been establishing a common external border as the downside of its increasing integration. The treaty protects the ability of goods, capital, services and persons ("the four freedoms") to move freely within the internal market of the European Union. While citizens of the EU are now allowed to cross internal borders without control, the common border regime has become the instrument to circumvent unwanted and uncontrolled border crossings, especially migration (Busch, 2002).

De facto, the EU external border has a variety of impacts, differing in accordance with the social context. Contradictions do not only arise out of different actors' use of the border, but are inherent in the construction of the political-administrative border regime itself. These contradictions materialize in border related practices. The crossing of the border is the moment, or: the place, where negotiations of state/ness and border becomes manifest within and through practices.

In order to analyse effects of the common border regime being implemented by the EU so far it is thus necessary to focus on practices dealing with the border in one way or

[1] *Leibniz-Institute for Regional Geography, Schongauer Str. 9, 04329 Leipzig, Germany, e-mail: a_wust@ifl-leipzig.de and h_zichner@ifl-leipzig.de*

another (transborder practices). The research project "Geographies along the EU project's eastern edges"[2] reported here aims at discussing concrete transborder practices and how they deal with the border as a geopolitical ordering of the social world in a comparative manner. The project is especially interested in transborder *economic* practices and these practices – not the border itself – are the objects of analysis. In our project, we focussed on small-scale economic practices because they are assumed as somehow precarious because they are exposed to several constraints (e.g. visa and procedures of acquirement, passing and control procedures) and limited in terms of coping strategies (e.g. being bound to local contexts). Furthermore, we argue that in the framework of these everyday practices the external European border which is regulated as a uniform and common one is not always realized in the intended homogeneous way but heterogeneous due to "local", "individual" etc. influences and circumstances.

Following the assumption that persons who exercise small-scale economic activities on a local level are more dependent on frequent and personal border crossings in order to run their businesses than actors involved in large-scale economic activities, we decided to research especially small-scale economic activities of traders (also called petty trade, suitcase trade, shuttle trade, see e.g. Williams and Balász, 2002) and small entrepreneurial activities. In order to get access to their practices we did fieldwork at four different border relations, one of them being a border section between Romania and Ukraine[3]. As some of the transborder economic activities – namely petty trade – are of a rather precarious character, we opted for group discussions as the central methodological instrument in order to approach the sensitive topic[4]. These discussions were augmented by expert interviews with local decision-makers and border authorities as well as systematic observations at border crossing points and local markets as far as these were allowed and possible.

In the following section we concentrate on some aspects of the theoretical background and discuss several terms, like e.g. border and border regime. Main empirical findings from the case study at the Romanian-Ukrainian border as well as from the other border relations we investigated in are published or going to be published elsewhere (see e.g. Bruns et al. 2009, Bruns et al. 2010, Wust/Zichner 2010[5], Bruns/Miggelbrink/Belina/Müller/Wust/Zichner 2010[6]).

2. FUNCTIONS OF BORDERS – BORDERS IN PRACTICE

If you try to find a quick overview on the EU's website on its regulations of its external border, this turns out to be a rather complicated task. There is no special section

[2] *The research project is realized at the Leibniz Institute for Regional Geography (Leipzig) and the Leibniz Institute for Regional Development and Structural Planning (Erkner) and ran from 2007 until the end of 2009.*

[3] *The other border-relations were: Finland-Russia, Poland-Belarus and Poland-Ukraine.*

[4] *In cooperation with local project partners, who represented persons of trust to the members of the local communities within which we did our fieldwork, we organized two group discussions on each side of the border. One was held with local small-scale traders and another with small entrepreneurs and each of them was moderated by native speakers and audio-taped while we were listening and taking notes.*

[5] *Article with detailed reference to the findings at the Romanian-Ukrainian border is in preparation (to be published in RECEO, Revue d'etudes comparatives Est-Ouest).*

[6] *Monograph with project findings in preparation.*

within the interlaced website concerning all the aspects of the border, but detailed information is spread in different layers of the site, what could be interpreted as a hint to the different tasks the external border is to perform. Because of the fact that the management of the external border constitutes a part of the policy area "justice, freedom and security", which is coordinated by one of the Directorate-General within the European Commission[7], it is mentioned on the corresponding website among many other tasks of that policy area, e.g. children, asylum, terrorism, or fundamental rights[8].

Basically yet, we are talking about a border that has to fulfil two principle functions: on the one hand, it has to protect the citizens living within the boundaries from potential, anticipated risks or dangers that are located outside the boundaries. But even though the border has to shield the inside from threats coming from an (rather vague) outside, protection and openness have always to be balanced and negotiated. On the other hand, it shall guarantee a high degree of free mobility within the boundaries, or more exactly, within the "area of freedom, security and justice" and be permeable for certain entries, i.e. entries/migrations that are not perceived in terms of risk or danger and/or seem desirable from an economic point of view. In other words, the external border shall perform a security function (see also Laitinen 2003 on the notion of "security border"), but at the same time continue to serve as an "efficient economic bridge" (Andreas, 2003, p. 96).

The intended double function can be summarised by the expression "smart border", a term first coined in politics, especially with regard to the US-Canadian border, (Koslowski, 2005, p. 527; Andreas, 2003, p. 95f.) and later adopted in scientific literature. "Smart border" stresses the idea that borders should not only function as barriers but rather as "filters that do not impede legitimate border crossings" (Andreas, 2003, p. 96). Accordingly, a border should be able to differentiate between wanted and unwanted entries into the EU space which ultimately means that it allows for exclusion and inclusion at the same time. Questions of what are legitimate interests to cross a certain border, then, become prevalent.

Moving from the level of functions to the level of theoretical conceptualizations of the border, we present in a next step some terms taken from more recent approaches within border research, which we find useful with regard to our own empirical research design. From the different approaches we will concentrate mainly on the idea of borders as processes (Paasi, 1999) and borders as institutions (see among others Newman, 2006 and Eigmüller, 2006). To describe borders in these terms basically means to shift from the long tradition of considering boundaries as something primordial to a perspective in which they are analyzed as something "rather *situational* and *contextual*" (Paasi, 1999, p. 79, emphasis in the original), as "a part of the everyday practices of life" (Paasi, 1999, p. 85) having different meanings to different groups of people (Paasi, ibid.). Adopting this perspective one can draw attention more easily also to the individual border narratives and experiences. Thereby, we go beyond a totalizing notion of border.

While the term "process" is stressing the idea of boundaries as something which is not fixed, stable or primordial the term (social) "institution" rather underlines the idea of formal and informal rules that every social institution represents, and furthermore the idea that it is social actors who, through their border related actions, exercise an influence on and thus shape the institution of the border:

[7] *For further details see [http://ec.europa.eu/dgs/justice_home/index_en.htm].*
[8] *ibid.*

"The major function of institutions is perhaps to establish stable structures for human interaction and thus to reduce uncertainty and increase ontological security, but they can vary greatly in nature. (…) Boundaries are both symbols and institutions that simultaneously produce distinctions between social groups *and are produced by them*." (Paasi, 1999, p. 75 and 80. Our emphasis.)

Of course, the regulations concerning the external border are manifold and especially rules concerning modalities of access to the territory of the EU have constantly been restricted throughout the last years, especially since the implementation of the Schengen agreement. Consequently, these regulations consist of many formal rules having a complex legislative body behind them. The effectuation or implementation of these rules seems to require or depend on detailed compulsory instructions, fixed for example in the comprehensive Schengen Handbook[9] with detailed instructions of how to carry out a passport control. Yet, at the same time, the realisation of the border and the meaning of the border may differ from actor to actor, from place to place. The EU's intention is to create a uniform border, what we will refer to in the following as the idea of creating a homogeneous border, meaning that it shall function according to the same rules and these rules being applied in the same way at every section of the border. According to this intention, there should be no differences in border procedures, no matter if you pass the border between Poland and Belarus or that between Romanian and Ukraine. If we however accept with Paasi and others that "boundaries are one means of organizing social space", "[t]his means questions of power, knowledge, agency and social structures become decisive" (Paasi, 1999, p. 85). And it is by adopting this perspective that we want to research the different meanings the border can gain in different social contexts and for different actors and thus also the potential cleavage between the intended homogeneity of the border and its eventually heterogeneous realization.

To focus on certain transborder practices like small-scale trade and other small entrepreneurship does not mean that it would be sufficient to concentrate exclusively on entrepreneurial and smuggling activities. Moreover, it is necessary to take the formal rules and the ways they are implemented into account (as we just argued). So if we want to grasp the full scope of the process of border crossings we have to take into consideration also those actors (border guards and customs officers) who are in charge of securing the application of these rules and of protecting the border, respectively the "area of freedom, security and justice" and who have to be seen as representatives of the formal border institutions. One way to include the border authorities' tasks within a theoretical border concept is to refer to the term of "border regime" as it is defined by Krasner: "Regimes are defined as sets of implicit or explicit principles, norms, rules, and decision-making procedures around which actors' expectations converge in a given issue-area of international relations" (Krasner, 1982, p. 186). According to this definition, border guards and customs officers can be regarded as the ones who are to realize the border regime in the sense of purely executing or acting according to certain rules, norms etc. Yet, at the same time Krasner hints to decision making procedures and actors' expectation which implicates an interactive component inherent in border regimes. Now, he does not refer to any specific individual actors or actor groups (except for the mentioning of states), but from

[9] *The "Schengen Handbook" represents the annex of the COMMISSION RECOMMENDATION of 06/XI/2006 establishing a common "Practical Handbook for Border Guards (Schengen Handbook)" to be used by Member States' competent authorities when carrying out the border control of persons,* see [http://ec.europa.eu/justice_home/doc_centre/freetravel/rights/doc/C_2006_5186_F_en.pdf].

what he later describes it follows that neither a regime (like an institution) should be interpreted as something primordial and eternal: *"If the principles, norms, rules, and decision making procedures of a regime become less coherent, or if actual practice is increasingly inconsistent with principles, norms, rules, and procedures, then a regime has weakened."* (Krasner, 1982, p. 189, italics in the original.) Here again, we want to draw attention to the "actual practices": if we look at the interactions between border crossers and border authorities, we have to carefully examine how both parts eventually come to arrangements by which formal rules are subverted to a greater or lesser extent and in a more or less direct way.

Regarding these processes and practices, it can be shown (see Wust/Zichner 2010) how the actors incorporate the space of the border in the sense of how they arrange with the different forceful requirements the border in its actual way(s) of functioning poses to them. These requirements must be differentiated because it is not only a single set of rules that structures border procedures, but often also residues of national border regulations and the national regulations on the non-EU-side of the border relations, not to speak of other local particularities in interacting with state authorities. And it can also be shown how their daily practices at the border are reflected in spatial fixations, shape and depend on them.

3. CONCLUDING REMARKS

According to the self-representation of the EU, the external border shall guarantee a high degree of mobility inside its borders and be permeable for certain entries from the outside so that especially the economic exchange with non-EU countries is not hindered. In contrast to that, one of the main findings of our case study at the researched border section between Romania and Ukraine is, that petty traders as well as small entrepreneurs are perceiving the border in its current way of functioning very much as a barrier. This is especially the point of view of (former) petty traders but also of entrepreneurs from the Ukrainian side of the border because of the visa-regime. Except for some shops near the border, they can hardly profit from the recently opened border crossing point in Sighet/Solotvino which ultimately means that the border does not function as a "smart border" that should allow for the desired economic relations but as a "new wall in Europe" as several interviewees call it.

At the same time we found evidence that many of the researched actors, especially Romanian petty traders and entrepreneurs, are at least partly able to subvert, circumvent or generally to influence the way of functioning of the border regime according to their needs (see Bruns/Miggelbrink/Belina/Müller/Wust/Zichner 2010). Their opportunities to do so differ a lot due to their different position towards the border regime: It is the petty traders who, because of a lack of economic and relevant social capital depend on circumventing the rules that are not made for them but nevertheless apply to them. Whereas they have to veil their commercial activity by smuggling, disseminating the goods in legal quantities or waiting for a lenient customs shift, the entrepreneurs basically respect formal regulations but engage also in informal arrangements in order to accelerate the proceedings at the border, though in many cases unsuccessfully.

With reference to the aim of the EU which is to create a homogeneous border regime alongside the whole external border, we can say that this has only partly been achieved. Rather, the existing formal rules and the prescriptions to carry out procedures at the border are altered. The ways in which procedures are modified depend not only on local conditions in the respective communities or on the specific relations between border

authorities on the EU-side and the economic actors but they depend also on the practices of border authorities on the corresponding non-EU side of a crossing point. So, as we could learn by observing daily practices in detail, it is many factors together which decide about whether the external border functions in the intended ways – homogeneously and as an economic bridge – or not.

REFERENCES AND FURTHER READING

1. Andreas, P. (2003), "Redrawing the line", *International Security*, vol. 28, n° 2, pp. 78-111.
2. Arambaşa, M.N. (2009), „Bedeutung der grenzüberschreitenden Praktiken im moldauisch-rumänischen Grenzraum vor und nach dem EU-Beitritt Rumäniens" (Meanings of transborder practices in the Romanian-Moldovan border region before and after Romania's accession to the EU), in W. Heller & M.N. Arambaşa, *op. cit.*, pp. 137-160.
3. Boar, N. (2000), "Rolul rețelei de transport pentru relațiile transfrontaliere din spațiul maramureşean", *Revista de geografie politică*, n° 2, pp. 80-86.
4. Boar, N. (2005), "Changes in the human migration patterns in the Maramures region (Romania - Ukraine)", *BELGEO*, n° 1-2, pp. 185-197.
5. Boar, N. (2006), "Human mobility and the transport system in a border region (Maramures-Romania). Changes in the past 15 years (1990-2005)", *Romanian Review of Regional Studies*, Editura Presa Universitara clujeană, pp. 35-39.
6. Bruns, B. et al. (2009): "Handeln an der Außengrenze der Europäischen Union", *Grenzen in den Internationalen Beziehungen, Welttrends Lehrtexte 14*, Potsdam, pp. 210-223.
7. Bruns, B. et al. (2010): "Praktiken der Grenzüberschreitung. Die Produktion der Außengrenze der EU zwischen Homogenisierung und lokaler Aushandlung", in Belina, B. & Miggelbrink, J. (Eds.): *Hier so, dort anders. Raumbezogene Vergleiche in der Wissenschaft und anderswo.* Münster, Westfälisches Dampfboot, Münster, pp. 62-84.
8. Bruns, B. & Miggelbrink, J. & Belina, B. & Müller, K. & Wust. A. & Zichner, H. (2010): Making a living on the edges of a security border. Everyday tactics and strategies at the eastern border of the European Union (in preparation).
9. Busch, H. (2002), "Vertiefen, Erweitern, Verfassung ... Wo steht die Innen- und Justizpolitik der EU?" (Deepening, enlargement, constitution… Where does the internal and justice policy stand?), *Bürgerrechte & Polizei/CILIP*, vol. 73, n° 3, pp. 6-9.
10. Eigmüller, M. (2006), "Der duale Charakter der Grenze. Bedingungen einer aktuellen Grenztheorie" (The dual character of the border. Conditions of an actual theory of borders), in M. Eigmüller & G. Vobruba (Eds.): *Grenzsoziologie. Die politische Strukturierung des Raumes*. Wiesbaden, pp. 55-73.
11. de Certeau, M. (1988), *Kunst des Handelns* (Arts de Faire), Berlin.
12. *Gateways to Europe. Checkpoints on theEU external land border*, (April 2008), edited by the Stefan Batory Foundation, Warsaw.
13. Heller, W. & Arambaşa, M.N. (Eds.) (2009), *Am östlichen Rand der Europäischen Union. Geopolitische, ethnische und nationale sowie ökonomische und soziale Probleme und ihre* Folgen für die Grenzraumbevölkerung (At the Eastern edge of the EU. Geopolitical, ethnic, national, economic and social problems and their consequences for the population of the border region), Potsdamer Geographische Forschungen, Band 28, Potsdam.

14. Ilieş, A. (2005), "The peculiarities of the human mobility frame in the Romanian-Hungarian and Romanian-Ukrainian border area", *BELGEO*, n°1-2, pp. 175-183.
15. Ilieş, A. & Tătar, M (2005), "A 'Euroregion of Maramureş' or 'Maramureş-Trnaskarpatia'? About a possible functional cross-border cooperation structure at the Eastern border of the EU", *Revista Română de Geografie Politică*, vol. 7, n° 1, pp. 69-81.
16. Ilieş, G. (2007), *Ţara Maramureşului. Studiu de geografie regionala* (The land of Maramureş. A regional geography), Presa Universitară clujeană, Cluj.
17. Ilieş, D. (2008), "Premises of transboundary cooperation in the geoparks area at the external border of EU. The subject matter of the northern sector of the Romanian-Ukrainian border", *Romanian Review of Political Geography*, vol. 10, n° 1, pp. 15-26.
18. Konstantinov, Y. (1996), "Patterns of reinterpretation: traders-tourism in the Balkans (Bulgaria) as a picaresque metaphorical enactment of post-totalitarianism", *American Ethnologist*, vol. 23, n° 4, pp. 762-782.
19. Koslowski, R. (2005), "Smart border, virtual borders or no borders: homeland security choices for the United States and Canada", *Law and business Review of the Americas,* vol. 11, n° 3/4, pp. 527-51.
20. Krasner, S. D. (1982), "Structural causes and regime consequences: regimes as intervening variables", *International Organization*, vol. 36, n° 2, pp. 185-205.
21. Laitinen, K. (2003), "Post-cold war security border: a conceptual approach", in E. Berg & H. van Houtum (Eds.): *Routing borders between territories, discourses and practices*, Aldershot, pp. 13-33.
22. Michalon, B. (2009), "Mobilitätspraktiken und Strategien von Kleinhändlern im grenzüberschreitenden Verkehr an der rumänisch-moldauischen Grenze vor dem EU-Beitritt" (Mobility practices and strategies of petty traders in transborder traffic at the ROmanian-Moldavian border), in W. Heller & M.N. Arambaşa, *op. cit.*, pp. 125-136.
23. Neef, R. (2002), "Aspects of the informal economy in a transforming country: the case of Romania", *International Journal of Urban and Regional Research*, Vol. 26.2, June, pp. 299-322.
24. Newman, D. (2006), "The lines that continue to separate us: borders in our 'borderless' world", *Progress in Human Geography*, vol. 30, n° 2, pp. 143-161.
25. Paasi, A. (1999), "Boundaries as social process: territoriality in the world of flows", in D. Newman (Ed.): *Boundaries: territory and postmodernity*, London, Cass, pp. 69-88.
26. Pijpers, R. & van der Velde, M (2007), "Mobility across borders: contextualizing local strategies to circumvent visa and work permit requirements", *International Journal of Urban and Regional Research*, vol. 31, n° 4, pp. 819-35.
27. Popescu, G. (2006), "Geopolitics of scale and cross-border cooperation in Eastern Europe: the case of the Romanian-Ukrainian-Moldovan borderlands", in J.W. Scott (Ed.): *EU enlargement, region building and shifting borders of inclusion and exclusion,* Ashgate, Hampshire, pp. 35-51.
28. Williams, A. M. & Balász, V. (2002), "International petty trading: changing practices in Trans-Carpathian Ukraine", *International Journal of Urban and Regional Research*, 26, n° 2, pp. 323-42.
29. Wust, A. & Zichner, H. (2010), "Negotiating the EU's new external border: transborder practices of small-scale economic actors at the Romanian-Ukrainian border", *RECEO*, in preparation

Online documents and web pages

1. „Accize majorate la tigari si bauturi, de la 1 aprilie" (Excises on cigarettes and alcohol increased with first April) (27.3.2009), [http://www.avocatnet.ro/content/articles/id_15136/Accize-majorate-la-tigari-si-bauturi-de-la-1-aprilie.html].

2. *Agreement between the European Community and Ukraine on the facilitation of the issuance of visas,* available at [http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_332/l_33220071218en00680076.pdf].
3. *Convenție din 29/03/1996 între Guvernul României şi Guvernul Ucrainei privind trecerea simplificată a frontierei de stat comune de către cetățenii care domiciliază în județele şi raioanele de frontieră* (Convention between Romania and Ukraine concerning simplified border crossings for citizens living in the districts near the border, "Ismail Convention"), text available at [http://legislatie.just.ro/].
4. Conventie din 11/03/1991 între Guvernul României şi Guvernul Uniunii Republiciilor Sovietice Socialiste privind desfiinţarea regimului de vize, text available at [http://legislatie.just.ro/].
5. Council directive 2007/74/EC of 20 December 2007 on the exemption from value added tax and excise duty of goods imported by persons travelling from third countries, [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:346:0006:0012:EN:PDF].
6. European Commission, "Travellers entering the EU. Customs and tax allowances for travellers", [http://ec.europa.eu/taxation_customs/common/travellers/enter_eu/index_en.htm].
7. „Maramureşenii preferă chinezăriile" (The people from Maramures prefer chines goods) (11.11.2009), *Glasul Maramureşului*, [http://www.sighet online.ro/index.php?option=com_content&view=article&id=7174:maramureenii-prefer-chinezriile&catid=44:comunitate&Itemid=63].
8. Ohanesian, E.O. (11.12.2006), „Podul peste Tisa – un pod prea indepartat" (The bridge over the Tisa – a too far away bridge), *Gardianul*, [http://www.gardianul.ro/2006/12/11/reportaj-c9/podul_peste_tisa_un_pod_prea_indepartat_-s87840.html].
9. Ordinul ministrului economiei şi finanţelor nr. 3424 din 20 noiembrie 2008 pentru modificarea şi completarea unor norme şi instrucțiuni aprobate prin ordine ale ministrului finanțelor publice, publicat în Monitorul Oficial nr. 795 din 27 noiembrie 2008. (OMEF 3424/2008) (Ordinance of ministry for economy and finances concerning the modification and completion of some norms and instructions that are in duty via ordinances of the ministry of public finances, published in M.O. 795/2008), [http://static.anaf.ro/static/10/Anaf/legislatie/OrdineMFP/OMEF_3424_2008.htm].
10. *Procedures for bringing personal belongings into/out of Ukraine by individuals*, [http://www.customs.gov.ua/dmsu/control/en/publish/article?art_id=1093966&cat_id=1093808].
11. *Reisezeit – Ihr Weg durch den Zoll*, edited by the German ministry of finance, Berlin, May 2009, p. 24-25: [http://www.zoll.de/e0_downloads/d0_veroeffentlichungen/z1_reisezeit_2009.pdf].
12. "Schengen Handbook" - COMMISSION RECOMMENDATION of 06/XI/2006 establishing a common "Practical Handbook for Border Guards (Schengen Handbook)" to be used by Member States' competent authorities when carrying out the border control of persons, [http://ec.europa.eu/justice_home/doc_centre/freetravel/rights/doc/C_2006_5186_F_en.pdf].
13. "Şpaga de la vămile ucrainene, subiect de dezbatere între autoritățile din Suceava şi Cernăuți" (bribing at the Ukrainian customs, discussion between the authorities if Suceava and Cernivtsy), in *Obiectiv de Suceava*, [http://www.obiectivdesuceava.ro/index.php?page=articol&ids=46487].
14. Voiculescu, L. (31.10.2009), "Acciza la ţigări a crescut cu 50% în ultimele luni. Cât vor costa, de anul viitor, cele mai ieftine ţigări" (Excises on cigarettes have increased 50% during the last months. What the cheapest cigarettes are going to cost next year.) , in Gândul, [http://www.gandul.info/financiar/acciza-la-tigari-a-crescut-cu-50-in-ultimele-luni-cat-vor-costa-de-anul-viitor-cele-mai-ieftine-tigari-5069089].
15. European Commission, DG Justice, Freedom and Security, [http://ec.europa.eu/dgs/justice_home/index_en.htm].
16. Romanian Consulate in Kiew, [http://www.kiev.mae.ro/index.php?lang=ro&id=69748].

Film material:

Stanculescu, I. (2004), *Podul peste Tisa* (The bridge over the Tisa).

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE IMPORTANCE OF THE NEIGHBOURHOOD PROGRAMME ROMANIA-UKRAINE 2004-2006

N. BOAR[1], S. KOSINSZKI[1]

ABSTRACT. – The Importance of the Neighbourhood Programme Romania – Ukraine 2004-2006. Borders represent the vertical planes that determine the territory of two neighbouring countries. In situ, the border becomes a space that includes the "border corridor" of 5 m out of each country's territory and the 20-meter long border "security strip". Border police exert their professional obligations in the "border zone", stretching over 25-30 km along the borders, which is to say that the actual border is more complex than the "red line" drawn on maps. After two world wars, aimed at solving border problems, proved that imposing force is not the best option, there is a new tendency emerging in Western Europe to optimize cooperation across the borders through the association of regional or local entities, known as Euroregions. After the deep changes that took place in the early 90s in Eastern Europe countries, several Euroregions appeared across their borders. The European unification allotted significant funds for strengthening the cross-border cooperation at its eastern border. The present study aims at analyzing the present-day situation and the prospects of Romanian-Ukrainian cross-border relations, through the development Phare CBC projects.

Keywords*: cross-border regions, barrier effect, cross-border interrelations, Phare CBC Programme, eastern E.U. border.*

1. INTRODUCTION

The frontier is the limit that outlines the spatial form of the state, up to which its integrity and sovereignty is manifested. The frontier fulfils military functions (of protecting the territory), fiscal functions through the system of customs duty, legislative functions (up to the frontier a state has legislative competence) and control functions for the import and export of goods, capital, services or the flow of people.

Through the functions fulfiled the frontier has an evident barrier role. The contiguity involves exchanges of matter, energy, information, not even the most sealed frontiers succeeded in imposing a total interruption of cross-border interrelations.

The cross-border regions are "*strips of contiguity and dysfunction on both sides of the frontier, between which spontaneous cross-border interrelations occur*". (Boar, 2005).

The legal framework of cross-border relations is set by the agreement between the two countries, stating that at the border there is only one cross-border region. In this approach, the cross-border regions are analysis regions, the results of defining regions in a positivism scientifical manner, having the ability of separating them in frontier fragments, on formal normative or informal symbolic criteria, based on territorial administrative units, economic organizations or identity regions. (Benedek, 2004).

[1] *Babeş-Bolyai University, Cluj-Napoca, Romania, Faculty of Geography, Sighetu Marmaţiei Extension, e-mail*: *nboar@geografie.ubbcluj.ro; kosinszki.sorin@gmail.com*

They are different from ”Euroregions” that were defined as ”*associative structures of institutional cross-border structures, stretching over the territories of the member administrative units.*”(Boar, 2005). They may include territorial administrative units of different rank (regional, local), from two or more states as well as territorial units that do not have direct contact with the border but are interested in initiating institutional cross-border cooperation. They have their own leading structures, nevertheless they are not territorial administrative units and are not recognized as such by international law. Euroregions have constituted the pioneers of the European Union edification process. The emerging of The European Union has turned the inner borders from ”*barriers*” into ”*binders*” and the barrier role of the frontiers has migrated towards the outer borders of The European Union.

The present paper analyses a fragment from the Eastern border of The European Union, the romanian-ukrainian border, from the perspective of the cross-border cooperation projects unfolded within the PHARE CBC Programme during 2004-2009.

2. FINANCING THE CROSS-BORDER COOPERATION

A research conducted at the belgian-dutch border (van Houtum, 2000), points out the frontier effect upon the entrepreneurs behaviour, emphasizing the role of mental distances in taking the decisions. This was defined as ”the entrepreneurs’ estimation of differences and the consequences of these differences in the way of doing business with a foreign country or with their own.” The bigger the differences the greater the effort, necessary to insure success in the neighbour country, will be. The disadvantaged position of frontier regions in relation to the capital investments, foreign or domestic, is already well-known.

As a consequence, even from the preliminary stage of Romania’s adhesion to the European Union, cross-border cooperation programmes, from communitary funds, were launched in order to stimulate the development of border areas and to maintain good relations between Romania and the neighbour countries.

In march 2004, at Galați (Romania), **The Neighbourhood Programme Romania-Ukraine 2004-2006** was launched, and it benefited from a budget of 35,5 million euros, distributed as follows: Romania 27,3 million euros from the PHARE CBC Programme and Ukraine 8,2 million euros from the TACIS Programme. These funds could be accessed by the contiguous administrative units, respectively five counties from Romania (Tulcea, Botosani, Suceava, Maramures and Satu Mare) and four ukrainian regions: Odessa, Cernivestska, Ivano-Frankivska, Zakarpatska.

The Common Programme Document identified the following priorities:

Priority1. Social and Economic Development
- Measure 1. 1. Tourism Development and Expansion
- Measure 1. 2. Economic Cross-Border Cooperation

Priority 2. Developing an Integrated Infrastructure System in the Cross-Border Region
- Measure 2. 1. Developing the Cross-Border and Frontier Transport Infrastructure;
- Measure 2. 2. Improving the Cross-Border Environment Management

Priority 3. „People to People” Activities;
- Measure 3. 1. Common Fund for Small Grant Projects

Priority 4: Technical Assistance
- Measure 4. 1. Programme Management and Implementation
- Measure 4. 2. Programme Marketing and Evaluation

The total sum for Romania's grants was 10.000-50.000 euros for small projects and 50.000-800.000 euros for large projects. For Ukraine the small projects financial limits were the same but the large projects could extend from 50.000 up to 1 million euros, at which a national cofinancing of 10%, insured by the beneficiary institution, was added.

For the post adhesion period the Joit Operational Programme Romania-Ukraine-Republic of Moldova 2007-2013 (JOP RO-UA-MD) was launched, financed through the European Neighbourhood and Partenership Instrument (ENPI), having an allocated amount of 126.718.067 euros at which a national cofinancing of 11.404.628 euros was added. Practically this programme was launched only in 2009, therefore the present research will focus only on the PHARE CBC 2004-2006 Programme, implemented up to present.

3. THE NEIGHBOURHOOD PROGRAMME ROMANIA-UKRAINE 2004-2006

For the management of the cross-border cooperation programmes, specialized structures called C.B.C.R.B. (Cross-Border Cooperation Regional Bureaus) were established. For the Neighbourhood Programme Romania-Ukraine, the C.B.C.R.B. was attributed to the Suceava municipality.

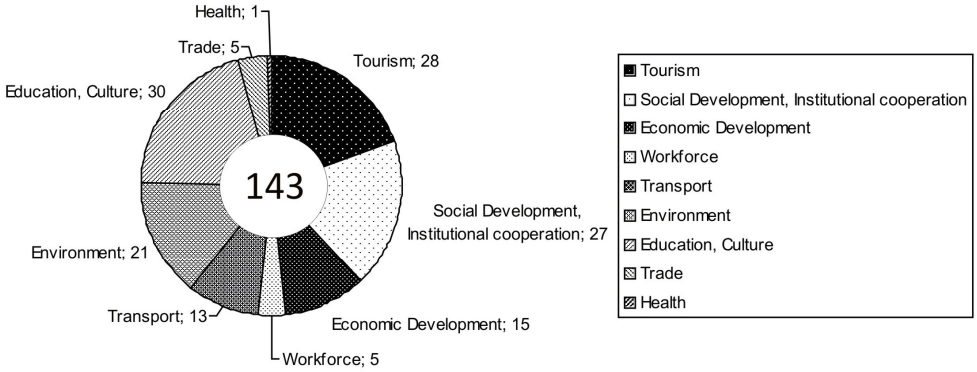
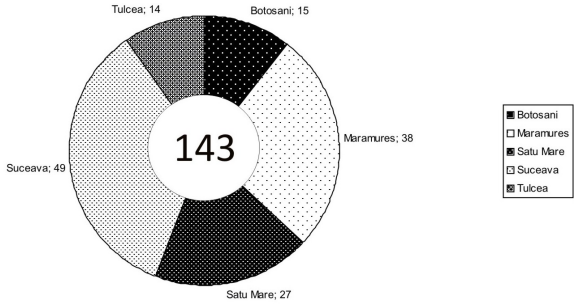


Fig. 1. CBCRB Suceava - Number of projects/fields of activity



Within C.B.C.R.B. Suceava, during the three years of contracting, a number of 143 projects were declared eligible, totalizing 27,3 million euros.

Fig. 2. CBCRB Suceava - Number of projects/counties

The tables analysis reveal the dominant position of Suceava county awarded with 49 projects (34,2%), followed by Maramureş county with 38 projects (26,5%), Satu Mare county with 27 projects (18,9%), followed at a greater distance by Botoşani county with 15 projects (10,5%) and Tulcea county with 14 projects (9,8%). If the dominant position of Suceava county can be explained by the presence of the C.B.C.R.B., Maramureş and Satu Mare counties, having a better financial situation and a traditionally western orientation sought to take advantage of this opportunity in a better way, whilst Botoşani and Tulcea counties, with a more modest economic development, are placed at the end of the awarded list.

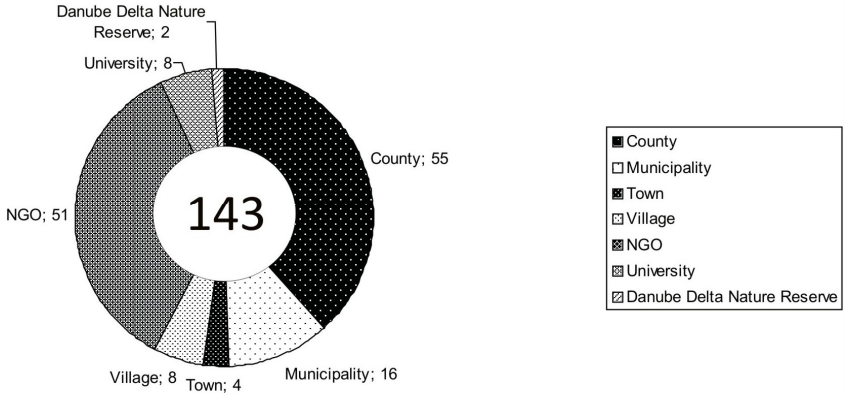


Fig. 3. CBCRB Suceava - Number of projects/ Administrative levels and types of beneficiary organizations

By the type of beneficiaries, the county councils hold the first place, with 55 projects (38,4%), taken into consideration that they have the necessary resources for cofinancing the projects and specialized bureaus of cross-border cooperation where specialists work and have as tasks the writing and implementation of such projects.

The NGOs follow with 51 projects (35,6%), this category taking advantage of a great number of intellectuals in their structure, able to write, manage and implement cross-border cooperation projects. At a great distance follow municipalities (16 projects) and universities (8 projects), having as constraints the reduced capacity of cofinancing, and with a small percentage are the small towns and villages, facing the same constraints together with a very small number of specialists.

Regarding the fields of the projects the most numerous are concerned with developing the cross-border cooperation in education and culture, which benefit from superior qualified personnel, nevertheless not very well paid, fact for which cross-border cooperation projects not only develop interhuman relations but also help improve the income for the project team members.

Judging by the number of projects as criterion, the tourism field is next with 27 projects, a hope for the entire romanian-ukrainian frontier region. The fact is explained by the high importance of this region for the romanian as well as ukrainian tourism. In Romania along the frontier there are a series of tourism regions such as: Oaş Land with rural tourism, Maramureş with rural, curative and mountain tourism, Bucovina with cultural, religious and

rural tourism and The Danube Delta with leisure tourism. In Ukraine, at the frontier with Romania, lies the second tourism region of the country, as importance, (after the Black Sea coastline), with important curative tourism resorts based on mineral waters and leisure tourism based on mountain hikes and winter sports.

Next, judging by the number of projects criterion, are the fields of cross-border environmental protection and institutional development, to stimulate the mutual knowledge and to identify the ways and main fields of cross-border cooperation. Other projects concern the economic development of the cross-border region, the transport infrastructure and the establishment of new border crossings, at the end of the list being the fields such as: instructing the work force, trade development and health.

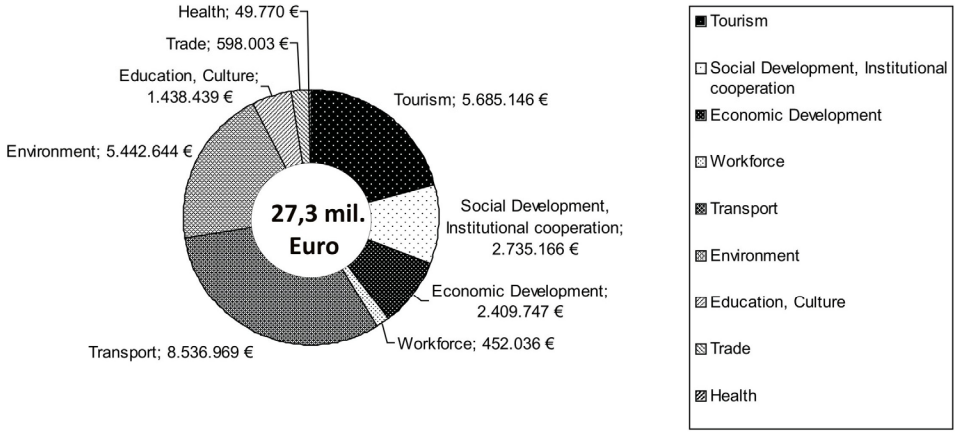


Fig. 4. CBCRB Suceava - Value of projects/fields of activity

Analysed by the financial allocation, the projects reveal the prioritising position of the county and municipality councils which hold two thirds from the projects value. The fact is explained through the financial resources which they own to cover the national percentage in order to participate at the projects (10%). The same argument but with a backward action explains the less important position of the NGOs on the value scale, which do not have ehough cofinanciang funds, and implemented smaller projects. Taking into consideration the value, the projects hold three major fields: tourism, transport and environment protection, which hold two thirds from the total value, the rest of the fields having a reduced percentage.

Taking into consideration the value of the projects, the Maramureş county takes the first place, surpassing the Suceava county, due to the projects regarding infrastructure, including the border crossings, which require higher financial allocations.

The existence of the programme insured the financing of the projects through grants in a 90% fraction of their total value and constituted a special opportunity that was taken by the regional authorities as well as the NGOs, education institutions, private agencies, etc. Lacking some major investments of private capital, the financial opportunities of the european funds allowed cross-border cooperation initiatives to emerge, which otherwise would have been very difficult to achieve without the financial support of The Neighbourhood Programme.

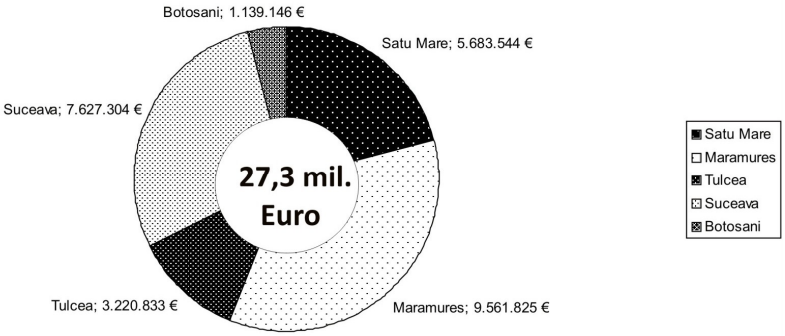


Fig. 5. CBCRB Suceava - Value of projects/counties

Fig. 6. CBCRB Suceava - Value of projects/administrative levels and types of beneficiary organizations

The value of the projects is generally small, even the large projects were situated below 1 million euros, not allowing very important material achievement; the importance of these projects is stated mostly by the identification of common interest fields of activity and the estblishment of cross-border cooperation structures (bureaus, centres), as well as acquiring experience in the writing, management and implementation of future cross-border cooperation projects.

4. CONCLUSIONS

As conclusions for the analysis of the cross-border cooperation, based on the projects submitted within The Neighbourhood Programme Romania-Ukraine 2004-2006, we can state the following aspects:

- the romanian-ukrainian frontier is not a mere frontier between two neighbour countries, but also a segment of a macroregional frontier (Kolossov V., O' Laughlin J., 1998), separating the E.U. space from the former Soviet Union space. This involves strengthening the barrier role of the frontier in order to prevent specific negative phenomena such as: illegal emigration, smuggling, introduction of dangerous substances and guns, drug traffic, etc. The Romanian authorities must find means through which the strengthening of the frontier's barrier role should not affect the Romanian minority ethnic group from Ukraine, which does not benefit from the attribute of EU member citizenship (although they want it);

- in order to develop the frontier regions and to maintain good relations with the neighbours, the E.U. allocates specific funds for cross-border cooperation projects, at which a small percentage has to be the contribution of the applicants. The Neighbourhood Programme Romania-Ukraine had a financial allocation of approximately 30 million euros from the Phare CBC 2004-2006 Programme. An important number of beneficiaries from the border counties sought to take advantage of it. The approached fields of activity were varied, reflecting both the needs of the region as well as the regional specialists. The impulse of involving in cross-border cooperation activities was given by the 90% fraction of the EU grants, only 10% of the projects value being the contribution of the beneficiaries. In addition to reaching the target (cross-border cooperation stimulation) the projects also constituted complementary sources of income for the project team members;

- the fact that most of the projects had as a main target the establishment of centres, pilot centres, bureaus, networks of cross-border cooperation, prove the weak activity of the ″Euroregions″ (Carpathian, Upper Prut and Lower Danube Euroregions), which have become purely formal; in future a revival of such institutions is necessary, or the establishment of new ones, able to plan complex strategies, on three time terms (short, medium and long) to establish priorities, to interconnect different sources of financing in order to concentrate the resources on concrete objectives, clear, able to lead to the progress of the cross-border regions, able to prevent the waste of the resources allocated by the EU in this field;

- the participation at The Neighbourhood Programme Romania-Ukraine 2004-2006 has constituted good experience for the most active part of the social, economic and cultural environment, from the frontier regions, opening the way to more intense participation at the new ENPI Programme 2007-2013 (European Neighbourhood and Partenership Instrument) with a more generous fund allocation (126.718.067 euros).

REFERENCES

1. Benedek, J. (2004), *Amenajarea teritoriului şi dezvoltarea regională,* Edit. Presa Universitară Clujeană, Cluj-Napoca.
2. Boar, N. (2005), *Regiunea transfrontalieră româno-ucraineană a Maramureşului*, Edit. Presa Universitară Clujeană, Cluj Napoca.
3. Boar, N. (1999), *Regiuni transfrontaliere în Europa postcomunistă*, Revista Română de Geografie Politică, anul I, nr. 1, Oradea.
4. Boar, N. (2003), *Cross-border Dysfunctionalities in Maramureş region*, Europe Between Milleniums – Political Geography Studies, Editura Universităţii din Oradea.

5. Boar, N. (2009), *Changes in the New Peripheral Areas of the European Union. The Case of Maramureş (Romania-Ukraine)*, "Migration and Citizenship: the role of the metropolis in the European Union process of enlargement", vol. 20, Ricerche e Studi, pag. 47-58, Societa Geografica Italiana.
6. Bodocan, V. (1997), „*Geografie politică",* Editura Presa Universitară Clujeană, Cluj- Napoca.
7. Breitung, W. *(*2002), *Transformation of a boundary regime: the Hong Kong and Mainland China case*, Environmment and Planning, vol. 34, pag 1749-1762.
8. Cocean, P. (2002), *Geografia regională*, Edit. Presa Universitară Clujeană, Cluj-Napoca.
9. Pop P., Gr. (2000), *Carpaţii şi subcarpaţii României*, Edit. Presa Universitară Clujeană, Cluj Napoca.
10. van Houtum, H. (2000), *Borders, distances and spaces*, Journal of Borderlands Studies/2000.
11. Ilieş, A. (2004), *România. Euroregiuni*, Edit. Universităţii din Oradea, Oradea.
12. Kollosov, V., O`Laughlin J. (1998), *New borders for new world orders: Territorialities at the fin-de-siecle*, Geojournal 44/1998, pag 259-27.
13. Piermay, J. J. (2003), *Ces Frontieres qui vous Attendent*, Europe between Milleniums, Edit. Universităţii din Oradea, Oradea, pag.163-170.
14. Rietveld, P., (1993), *International transportation and communication network in Europe,the role of barier effects*, Transportation Planning and Technology 17(4), pp 311-317.
15. Rietveld, P., (2001), *Transport and Communication Barriers in Europe,* European Research in Regional Science 3, pag. 47-59, Londra.
16. http://www.brctsuceava.ro/

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

PUBLIC HEALTH IN MARAMUREŞ COUNTY - CURRENT STATUS, PROBLEMS AND STRATEGIES

C.N. BOŢAN[1]

ABSTRACT. – **Public Health in Maramureş County - Current Status, Problems and Strategies.** A population's health is very often a good indicator of that given nation's stage of development and culture. Ever since its accession to the European Union, Romania has been trying to fill the development gap that separates it from the developed European countries. The analysis of the public health component needs to be based on a series of objective indicators that correspond to the existing realities. Among these indicators we have the main health indicators like *the existence of relevant institutions and their number, the medical personnel and their skills (qualifications), the main/specific diseases and their consequences*, the main demographic indicators ecc. The analysis of this specific region is indicative of the general national situation in terms of state of health of the population and in terms of main flaws of the system (compared to most of the existing systems in the European Union). The present study offers a detailed description of the public health component in the county of Maramureş and makes a series of policy proposals aimed at improving this component, policies that need rapid implementation.

Keywords: *health, regional development, medical personnel, medical infrastructure, diseases.*

1. INTRODUCTION

Maramureş County, situated in the northern part of the country, is divided into 76 administrative units (13 urban administrative units and 63 rural administrative units). This is one of the biggest and most important counties in Romania.

From a public health perspective, the county is important for the northern part of the country, as it has a complex and complete health infrastructure and a great number of healthcare workers.

There are three main *components of public health* in Maramureş:

- *primary health care* (general practitioners' practices, local dispensaries, school and enterprise infirmaries, specialized medical units of primary health care such as dentist practices, pharmacies and ambulance services);
- *ambulatory care* (hospitals, diagnosis and treatment centres, specialized clinics, ecc);
- *health care units that provide inpatient treatments* (clinics, hospitals, county hospitals and other health and social units equipped with beds).

The analysis of the public health component needs to be based on a series of objective indicators that correspond to the existent realities. Among these indicators we have the main health indicators like *the existence of relevant institutions and their number, the number of public health workers and their skills (qualifications), main diseases and their consequences*, the main demographic indicators ecc.

[1] *„Babeş-Bolyai" University, Faculty of Geography, 400006, Cluj-Napoca, Romania, cbotan@geografie.ubbcluj.ro*

2. SPECIALIZED INFRASTRUCTURE

Table 1 offers an analysis of primary health care infrastructure in the county of Maramureş and of the impact of its elements on the community.

The network of practices and dispensaries in the county of Maramureş (2009)

Table 1

Crt. No.	City/Town/ Municipality	Inhabitants	Dispensaries	School infirmaries	Health-centres for students	Medical practices (public/ private)	Ratio inhabitants/ practice
1	Baia Mare	138932	2	14	1	246	528,26
2	Sighetu Marmației	41390	1	1	-	40	985,48
3	Baia Sprie	16521	-	1	-	13	1180,07
4	Borşa	28038	-	-	-	38	737,84
5	Cavnic	5199	-	-	-	5	1039,80
6	Dragomireşti	3155	-	-	-	1	3155,00
7	Săliştea de Sus	5089	-	-	-	2	2544,50
8	Seini	10204	-	-	-	8	1275,50
9	Şomcuta Mare	7986	-	-	-	6	1331,00
10	Târgu Lăpuş	12996	1	-	-	22	590,55
11	Tăuții-Măgherăuş	7255	-	-	-	5	1451,00
12	Ulmeni	7442	-	-	-	4	1860,50
13	Vişeu de Sus	16571	1	-	-	9	1841,22
14	Ardusat	2818	-	-	-	1	2818,00
15	Ariniş	1057	-	-	-	1	1057,00
16	Asuaju de Sus	1566	-	-	-	1	1566,00
17	Băița de sub Codru	1844	-	-	-	1	1844,00
18	Băiuț	2497	-	-	-	1	2497,00
19	Bârsana	4821	-	-	-	2	2410,50
20	Băseşti	1550	-	-	-	1	1550,00
21	Bicaz	1143	-	-	-	1	1143,00
22	Bistra	4227	-	-	-	2	2113,50
23	Bocicoiu Mare	4465	-	-	-	2	2232,50
24	Bogdan Vodă	3223	-	-	-	1	3223,00
25	Boiu Mare	1209	-	-	-	1	1209,00
26	Botiza	2841	-	-	-	1	2841,00
27	Budeşti	3311	-	-	-	2	1655,50
28	Călineşti	3257	-	-	-	2	1628,50
29	Câmpulung la Tisa	2473	-	-	-	1	2473,00
30	Cerneşti	3696	-	-	-	2	1848,00
31	Cicârlău	4055	-	-	-	2	2027,50
32	Coaş	1407	-	-	-	1	1407,00
33	Coltău	2249	-	-	-	1	2249,00
34	Copalnic-Mănăştur	5794	-	-	-	3	1916,33

35	Coroieni	2284	-	-	-	1	2284,00
36	Cupşeni	3636	-	-	-	1	3636,00
37	Deseşti	2516	-	-	-	1	2516,00
38	Dumbrăviţa	4367	-	-	-	2	2183,50
39	Fărcaşa	3991	-	-	-	2	1995,50
40	Gârdani	1637	-	-	-	1	1637,00
41	Giuleşti	3221	-	-	-	1	3221,00
42	Groşi	2550	-	-	-	2	1275,00
43	Groşii Ţibleşului	2127	-	-	-	1	2127,00
44	Ieud	4194	-	-	-	2	2097,00
45	Lăpuş	3888	-	-	-	2	1944,00
46	Leordina	2542	-	-	-	1	2542,00
47	Mireşu Mare	5142	-	-	-	3	1714,00
48	Moisei	9301	-	-	-	2	4650,50
49	Oarţa de Jos	1353	-	-	-	1	1353,00
50	Ocna Şugatag	4149	-	-	-	3	1383,00
51	Onceşti	1539	-	-	-	1	1539,00
52	Petrova	2543	-	-	-	1	2543,00
53	Poienile de sub Munte	10247	-	-	-	3	3415,67
54	Poienile Izei	989	-	-	-	1	989,00
55	Recea	5642	-	-	-	4	1410,50
56	Remetea Chioarului	2860	-	-	-	2	1430,00
57	Remeţi	3117	-	-	-	1	3117,00
58	Repedea	4895	-	-	-	1	4895,00
59	Rona de Jos	2049	-	-	-	1	2049,00
60	Rona de Sus	4633	-	-	-	2	2316,50
61	Rozavlea	3452	-	-	-	1	3452,00
62	Ruscova	5211	-	-	-	2	2605,50
63	Săcălăşeni	2510	-	-	-	3	836,67
64	Săcel	3577	-	-	-	1	3577,00
65	Sălsig	1536	-	-	-	2	768,00
66	Săpânţa	3317	-	-	-	1	3317,00
67	Sarasău	2519	-	-	-	2	1259,50
68	Satulung	5842	-	-	-	4	1460,50
69	Şieu	2553	-	-	-	1	2553,00
70	Şişeşti	5449	-	-	-	3	1816,33
71	Strâmtura	3993	-	-	-	2	1996,50
72	Suciu de Sus	4024	-	-	-	2	2021,00
73	Vadu Izei	2938	-	-	-	1	2938,00
74	Valea Chioarului	2254	-	-	-	1	2254,00
75	Vima Mică	1452	-	-	-	1	1452,00
76	Vişeu de Jos	5508	-	-	-	2	2754,00
77	**Total**	**511828**	**5**	**16**	**1**	**500**	**982,40**

Source: Maramureş County Statistics Authority (2009).

- for a community of 511828 inhabitants, in the area of Maramureş there are 5 dispensaries, 16 school infirmaries, 1 health centre for students and 500 individual/collective GP medical practices;

- the average number of persons per medical practice (dispensary+school infirmaries +students' health centre+GP medical practices) is of 982,40 persons. This is largely above the EU average of 200-300 persons/ medical practice;

- the dispensaries are located as follows: 5 in Baia Mare and one in each of the following cities: Sighetu Marmației, Târgu Lăpuş and Vişeu de Sus; school infirmaries are to be found only in three cities: Baia Mare (14), Sighetu Marmației (1), and Baia Sprie (1); the health centre for students is located in Baia Mare;

- there is at least one GP practice in every administrative sub-division of the county of Maramureş; these practices actually represent the main primary care units, the first point of consultation and medical services for the patients;

- in the urban areas of Maramureş there is a total of 399 GP practices, while in the rural areas there are 101 such practices;

- in the city of Baia Mare there are 246 GP practices, followed by the city of Sighetu Marmației - 40, Borşa - 38, Târgu Lăpuş - 22, Baia Sprie - 13; each rural subdivision (municipality or village) has between 1 and 4 GP practices, the larger the population or the number of villages that make up a commune, the more practices in the area; for example, in the municipalities of Copâlnic-Mănăştur, Mireşu Mare, Ocna Şugatag, Poienile de sub Munte, Recea, Săcălăşeni, Satulung and Siseşti there are 3 more such medical practices;

- the average number of inhabitants/primary care unit in all administrative subdivisions of the county is significantly above the average of the developed regions of the EU; however, there are local units with an average of less than 1000 inhabitants/medical practice: Baia Mare (528,26 inhabitants/medical practice), Sighetu Marmației (985,48), Borşa (737,84), Târgu Lăpuş (590,55), Poienile Izei (989,00), Săcălăşeni (836,67), Sălsig (768,00). But even so, the average is still above the average promoted in the EU;

- at the opposite end, with an average of more than 2500 inhabitants/medical practice, we have: Dragomireşti (3155,00), Săliştea de Sus (2544,50), Ardusat (2818,00), Bogdan Vodă (3223,00), Botiza (2841,00), Cupşeni (3636,00), Deşeşti (2516,00), Giuleşti (3221,00), Leordina (2542,00), Moisei (4650,50), Petrova (2543,00), Poienile de sub Munte (3415,67), Remeți (3117,00), Repedea (4895,00), Rozavlea (3452,00), Ruscova (2605,00), Săcel (3577,00), Săpânța (3317,00), Şieu (2553,00), Vadu Izei (2938,00), Vişeu de Jos (2754,00).

We can therefore make a first policy proposal for tackling this problem: the number of GP practices should be increased in all of the administrative units of the county. A first step would be the increase in number of GP practices in those cities/ municipalities where the average of inhabitants per practice is above 1000. Next, the policies should aim at attaining the EU average.

In most of the cases the premises of these basic care units meet the average standards for a primary care unit.

The following table shows the configuration and the territorial distribution of *healthcare infrastructure related to secondary care* (hospital-based specialised services, ambulatory treatment services), of that *related to specialist medical services* (dentist practices, pharmacies, medical laboratories, dental laboratories) and *of the specialized child care facilities* (nurseries).

Healthcare infrastructure in the county of Maramureş (2009)

Table 2

Crt. No.	City/Town/ Municipality	Hospitals	Hospital beds	Ambulatory Care Services	Dental Practices	Pharmacies	Nurseries	Medical/ Dental Laboratories
1	Baia Mare	6	1547	10	158	61	5	61
2	Sighetu Marmaţiei	1	792	1	27	12	2	11
3	Baia Sprie	1	60	1	7	6	-	1
4	Borşa	1	405	1	9	7	2	5
5	Cavnic	1	130	1	2	3	1	1
6	Dragomireşti	-	-	-	1	1	-	-
7	Săliştea de Sus	-	-	-	3	3	-	-
8	Seini	-	-	-	3	4	1	1
9	Şomcuta Mare	2	35	1	4	3	1	1
10	Târgu Lăpuş	1	105	1	7	4	1	2
11	Tăuţii-Măgheräuş	-	-	-	1	1	-	-
12	Ulmeni	-	-	-	2	2	-	1
13	Vişeu de Sus	1	252	1	10	5	1	5
14	Ardusat	-	-	-	2	1	-	-
15	Ariniş	-	-	-	-	1	-	-
16	Asuaju de Sus	-	-	-	-	-	-	-
17	Băiţa de sub Codru	-	-	-	-	-	-	-
18	Băiuţ	-	-	-	2	1	-	-
19	Bârsana	-	-	-	2	1	-	-
20	Băseşti	-	-	-	-	-	-	-
21	Bicaz	-	-	-	-	-	-	-
22	Bistra	-	-	-	-	-	-	-
23	Bocicoiu Mare	-	-	-	-	-	-	-
24	Bogdan Vodă	-	-	-	-	-	-	-
25	Boiu Mare	-	-	-	-	-	-	-
26	Botiza	-	-	-	-	-	-	-
27	Budeşti	-	-	-	-	-	-	-
28	Călineşti	-	-	-	-	1	-	-
29	Câmpulung la Tisa	-	-	-	1	-	-	-
30	Cerneşti	-	-	-	1	-	-	-
31	Cicârlău	-	-	-	1	-	-	-
32	Coaş	-	-	-	-	-	-	-
33	Coltău	-	-	-	-	-	-	-
34	Copalnic-Mănăştur	-	-	-	3	2	-	-
35	Coroieni	-	-	-	-	-	-	-
36	Cupşeni	-	-	-	-	-	-	-
37	Deseşti	-	-	-	-	-	-	-
38	Dumbrăviţa	-	-	-	-	-	-	-
39	Fărcaşa	-	-	-	1	1	-	-
40	Gârdani	-	-	-	-	-	-	-

41	Giuleşti	-	-	-	-	-	-	-
42	Groşi	-	-	-	1	-	-	-
43	Groşii Ţibleşului	-	-	-	-	-	-	-
44	Ieud	-	-	-	1	-	-	-
45	Lăpuş	-	-	-	1	1	-	-
46	Leordina	-	-	-	-	-	-	-
47	Mireşu Mare	-	-	-	1	1	-	-
48	Moisei	-	-	-	1	2	-	-
49	Oarţa de Jos	-	-	-	-	-	-	-
50	Ocna Şugatag	1	185	1	2	1	-	-
51	Onceşti	-	-	-	-	-	-	-
52	Petrova	-	-	-	1	-	-	-
53	Poienile de sub Munte	1	15	1	3	1	-	-
54	Poienile Izei	-	-	-	-	-	-	-
55	Recea	-	-	-	-	1	-	-
56	Remetea Chioarului	-	-	-	1	-	-	-
57	Remeţi	-	-	-	1	-	-	-
58	Repedea	-	-	-	-	-	-	-
59	Rona de Jos	-	-	-	-	-	-	-
60	Rona de Sus	-	-	-	1	-	-	-
61	Rozavlea	-	-	-	1	-	-	-
62	Ruscova	-	-	-	1	1	-	-
63	Săcălăşeni	-	-	-	1	1	-	-
64	Săcel	-	-	-	1	1	-	-
65	Sălsig	-	-	-	-	-	-	-
66	Săpânţa	-	-	-	-	-	-	-
67	Sarasău	-	-	-	-	-	-	-
68	Satulung	-	-	-	1	1	-	-
69	Şieu	-	-	-	-	-	-	-
70	Şişeşti	-	-	-	1	1	-	-
71	Strâmtura	-	-	-	-	1	-	-
72	Suciu de Sus	-	-	-	-	1	-	-
73	Vadu Izei	-	-	-	-	-	-	-
74	Valea Chioarului	-	-	-	1	-	-	-
75	Vima Mică	-	-	-	-	-	-	-
76	Vişeu de Jos	-	-	-	-	1	-	-
77	**Total**	**16**	**3526**	**19**	**268**	**135**	**14**	**89**

Source: Maramureş County Statistics Authority (2009).

- there are 16 hospitals and health centres in the county of Maramureş, located in Baia Mare, Sighetu Marmaţiei, Baia Sprie, Borşa, Cavnic, Şomcuta Mare, Târgu Lăpuş, Vişeu de Sus, Ocna Şugatag and Poienile de sub Munte. 14 of these hospitals and health centres are located in the urban areas of Maramureş and only 2 of them in the rural areas;

- the total number of beds in these medical centres is 3526, which means an average of 145,16 persons/bed. This average is also above the EU recommended average, which is of 50 persons/bed. 1547 of these hospital beds are in the hospitals and health centres in Baia Mare alone (43,87% of the total number of beds). The number of beds in the

urban areas is of 3326 beds (94,33% of the total number of beds), which means that the number of hospital beds in rural areas is of 200 beds (5,67% of the total number of beds);

- considering this situation, there is, on one hand, a need for more medical centres (hospitals and health centres) with beds and, on the other hand, a need for a more equal territorial distribution of this kind of infrastructure by building such centres in the large municipalities of the rural areas (Poienile de sub Munte, Mireşu Mare, Ieud, Şişeşti ecc);

- the 19 ambulatory care units (hospital outpatient departments or specialised ambulatory care services) are located in the same towns as the medical units with hospital beds;

- in the county of Maramureş there are 268 dental practices, of which 234 are located in the urban areas (87,31% of the total number in the county) and 34 in the rural areas (12,69% of the total number in the county). There is obviously a need for a joint policy aiming at increasing the number of dental practices at county level, but especially in the rural areas. For example, in a large number of municipalities: Băseşti, Bistra, Bogdan Vodă, Botiza, Călineşti, Dumbrăviţa, Giuleşti, Leordina, Recea, Repedea, Săpânţa, Sarasău, Şieu ecc, there are no dental practices at all, which means that the inhabitants of these municipalities either have to go to the existing dental practices in the urban areas, or do not have access at such services at all;

- the situation of pharmacies is similar to that of dental practices, the only difference being that there are fewer pharmacies than dental practices (135). 111 of these are located in urban areas (82,22% of the total number) and only 24 in rural areas (17,78% of the total number). Thus, in the case of pharmacies too, there is a need to increase their number at county level, but especially in rural areas. In a number of large municipalities there are no pharmacies at all: Băiţa de sub Codru, Bogdan Vodă, Botiza, Cerneşti, Cicârlău, Dumbrăviţa, Giuleşti, Ieud, Leordina, Petrova, Remetea Chioarului, Repedea, Rozavlea, Săpânţa, Şieu, Vadu Izei ecc, their inhabitants having to go to the neighbouring towns in order to find one;

- the 14 nurseries and 89 medical/dental laboratories are located exclusively in the urban areas of the county, with the city of Baia Mare on top of the list (5 nurseries and 61 laboratories), followed by the city of Sighetu Marmaţiei (2 nurseries and 11 laboratories).

Table 3 (see below) presents a list of the main hospitals and health centres equipped with beds in the county of Mramureş. The departments and units of these hospitals and health centres treat the largest number of hospitalized patients and perform the largest number of complex medical interventions in a year.

The analysis of the complexity of the healthcare infrastructure (at all levels) reveals that in the county of Mramureş most of the healthcare infrastructure is concentrated in two urban administrative units - the 2 municipalities (Baia Mare and Sighetu Marmaţiei).

The healthcare infrastructure in the 2 cities is divided as follows: (1) the city of Baia Mare: *number of hospital beds (public healthcare sector) - 1507; number of hospital beds (private sector) - 40; number of nursery beds - 220; hospitals (public sector) - 3; number of dispensaries (public sector) - 2; school-based medical practices (public sector) - 14; health centres for students (public sector) - 1; GP individual practices (public sector) - 41; pharmacies (public sector) - 2; drug stores (public sector) - 1; specialized ambulatory care units (public sector) - 9; hospital-based ambulatory care units (public sector) - 1; individual dental practices (public sector) - 2; specialist medical practice (public sector) -19; specialist group medical practices (public sector) - 2; health centres (public sector) -1; nurseries (public sector) - 5; blood transfusion centres (public sector) - 1; hospitals (private sector) - 2; specialist medical practices (private sector) - 124; dental practices (private sector) - 130; medical laboratories (private sector) - 6; dental technicians' laboratories (private sector) - 34; pharmacies (private*

sector) - 7; GP practices (private sector) - 12; general medicine practices (private sector) - 12; other types of medical practices (public sector) - 2; other types of medical practices (private sector) - 8; medical laboratories (public sector) - 5; dental technicians' laboratories (public sector) - 16 and (2) the municipality of Sighetu Marmației: *number of hospital beds (public sector) - 792; number of nursery beds - 140; hospitals (public sector) - 1; number of infirmaries (public sector) - 1; school-based medical practices (public sector) - 1; GP individual practices (public sector) - 13; specialist medical practices (public sector) - 2; nurseries (public sector) - 2; specialist medical practices (private sector) - 13; dental practices (private sector) - 24; medical laboratories (private sector) - 3; dental technicians' laboratories (private sector) - 3; pharmacies (private sector) - 10; GP practices (private sector) - 7; general medicine practices (private sector) - 2; other types of medical practices (private sector) - 3; medical laboratories (public sector) - 3; dental technicians' laboratories (public sector) - 2.*

The healthcare institutions of these 2 municipalities practically provide treatment for more than 80,00% of the county's serious cases. In this respect the gap between the two municipalities and the other administrative units of the county is quite large.

The main hospitals in the county of Maramureş and their units/departments (2009)

Table 3

Crt. No.	Municipality/ Town/ Commune	Healthcare Institution	Units/ Departments
1	Baia Mare	Emergency County Hospital „Constantin Opriş"	Paediatrics; Neurology; Neurosurgery; Paediatric Surgery; Internal Medicine; Cardiovascular Surgery; Rheumatology; Endocrinology; Haematology; Diabetes; Cardiology; ORL; Ophthalmology; Oncology; Obstetrics and Gynaecology; Reparatory Surgery; Neonatology; General Surgery; Orthopaedics; Traumatology; Urology; Intensive Care Unit; Nephrology-Haemodialysis; Professional Diseases; Paediatric Recovery
2	Baia Mare	Pneumophtisiology Hospital	no information available
3	Baia Mare	Psychiatry and Dermato-Venerology Hospital	no information available
4	Cavnic	Psychiatry Hospital	no information available
5	Baia Sprie	City Hospital	no information available
6	Sighetu Marmației	Municipal Hospital	no information available
7	Borşa	Recovery Hospital	Internal Medicine; Cardiology; General Surgery; Anaesthesia and Intensive Care Unit; Emergency Department; Paediatrics; Obstetrics and Gynaecology; Cardiovascular Recovery Unit; Physical rehabilitation and Balneology; Medical Laboratory; Radiology and Medical Imagery Laboratory; Pharmacy; Dermato-Venerology Practice;

8	Vişeu de Sus	City Hospital	Internal Medicine; General Surgery; Paediatrics; Obstetrics and Gynaecology Neonatology; Intensive Care Unit; ORL; Ophthalmology; Dermato-venerology; Infectious Diseases; Family Planning; Tuberculosis and Lung Diseases Dispensary
9	Târgu Lăpuş	City Hospital	no information available
10	Şomcuta Mare	Health Centre	no information available
11	Baia Mare	Blood Transfusion Centre	no information available
12	Baia Mare	County Ambulance Service	

Source: (http://www.sintec.ro/dspmm/page4.html, accessed in 28.02.2009, hours 15,00).

3. SPECIALIZED PERSONNEL

Another important element of this kind of analysis is *the situation of the medical personnel* (physicians, dentists, pharmacists, ancillary medical personnel) *both in the public health sector and in the private one* (table 4).The values of this indicator are within national average levels, but in comparison with EU average levels, the situation is completely different. The EU directives on this issue recommend an average number of 200 inhabitants/healthcare worker. This average in all of Romania's counties, including Mramureş, is significantly above EU recommended figures. Urgent measures are thus required in order to solve this problem.

- for a total number of 511828 inhabitants, in public and private medical institutions in Mramureş county there are 819 physicians, 249 dentists, 214 pharmacists and 3228 persons working as ancillary medical personnel. If we divide these figures by the number of inhabitants, the situation is as follows: the average number of inhabitants/ physician is of 624,94; the average number of inhabitants/dentist - 2055,53; the average number of inhabitants/pharmacist - 2391,72; the average number of inhabitants/person working as ancillary medical personnel - 151,51;

- after analysing these figures, two conclusions can be drawn: (1) the average for each indicator is significantly above the EU's developed states' average; in order to change the current situation, more medical personnel should be hired; (2) there are major differences between the rural and urban indicators linked to medical personnel; the situation in rural areas is much more difficult and thus harder to change; nonetheless, change is necessary, no matter how high the financial costs would be;

- there is at least one physician in each administrative unit of the county. Of a total number of 819 physicians, 712 (86,94%) work in the urban areas and 107 (13,06%) in the rural areas. Their numbers vary significantly between the urban areas themselves: 422 physicians (51,53% of their total number) work in the municipality of Baia Mare, 114 physicians (14,04% of the total number) work in the municipality of Sighetu Marmaţiei, 56 physicians (6,84%) in Borşa, 35 physicians (4,27%) in Vişeu de Sus and 30 physicians (3,66%) in Târgu Lăpuş. Of the total number of physicians, 80,34% (658 physicians) are concentrated in these 5 cities;

- the rural administrative units (municipalities and villages) where there are more than 3 physicians are those with a large number of inhabitants or those made up of a large number of villages: Copalnic-Mănăştur (4), Groşi (3), Mireşu Mare (3), Ocna Şugatag (3), Poienile de sub Munte (5), Recea (4), Ruscova (3), Satulung (5), Şişeşti (3);

Public and private medical/ healthcare personnel in the county of Maramureş (2009)

Table 4

Crt. No.	Municipy/ Town/ Commune	Inhabitants	Physicians	Dentists	Pharmacists	Ancillary Medical Personnel	Inhabitants/ Physician
1	Baia Mare	138932	422	145	116	1627	329,22
2	Sighetu Marmaţiei	41390	115	33	28	637	359,91
3	Baia Sprie	16521	17	8	6	61	971,82
4	Borşa	28038	56	10	8	274	500,68
5	Cavnic	5199	11	2	3	45	472,64
6	Dragomireşti	3155	2	1	1	8	1577,50
7	Săliştea de Sus	5089	2	3	2	5	2544,50
8	Seini	10204	6	3	4	18	1700,67
9	Şomcuta Mare	7986	8	3	5	32	998,25
10	Târgu Lăpuş	12996	30	2	7	73	433,20
11	Tăuţii-Măgherăuş	7255	4	1	1	86	1813,75
12	Ulmeni	7442	4	2	2	10	1860,50
13	Vişeu de Sus	16571	35	10	8	157	473,46
14	Ardusat	2818	1	1	1	2	2818,00
15	Ariniş	1057	1	-	1	2	1057,00
16	Asuaju de Sus	1566	1	-	-	-	1566,00
17	Băiţa de sub Codru	1844	1	-	-	2	1844,00
18	Băiuţ	2497	1	1	1	11	2497,00
19	Bârsana	4821	2	2	1	10	2410,50
20	Băseşti	1550	1	-	-	1	1550,00
21	Bicaz	1143	1	-	-	2	1143,00
22	Bistra	4227	2	-	-	5	2113,50
23	Bocicoiu Mare	4,465	2	-	-	4	2232,50
24	Bogdan Vodă	3223	1	-	-	2	3223,00
25	Boiu Mare	1209	1	-	-	-	1209,00
26	Botiza	2841	1	-	-	-	2841,00
27	Budeşti	3311	2	-	-	-	1655,50
28	Călineşti	3257	2	-	1	3	1628,50
29	Câmpulung la Tisa	2473	1	-	-	2	2473,00
30	Cerneşti	3696	2	1	-	3	1848,00
31	Cicârlău	4055	2	-	-	3	2027,50
32	Coaş	1407	1	-	-	2	1407,00
33	Coltău	2249	1	-	-	1	2249,00
34	Copalnic-Mănăştur	5794	4	3	2	7	1448,50
35	Coroieni	2284	1	-	-	1	2284,00
36	Cupşeni	3636	1	-	-	3	3636,00
37	Deseşti	2516	1	-	-	2	2516,00
38	Dumbrăviţa	4367	2	-	-	4	2183,50
39	Fărcaşa	3991	2	1	1	4	1995,50
40	Gârdani	1637	1	-	-	-	1637,00
41	Giuleşti	3221	2	-	-	-	1610,00

42	Groşi	2550	3	1	-	-	850,00
43	Groşii Ţibleşului	2127	1	-	-	-	2127,00
44	Ieud	4194	2	1	-	5	2097,00
45	Lăpuş	3888	2	1	1	2	1944,00
46	Leordina	2542	1	-	-	-	2524,00
47	Mireşu Mare	5142	3	1	1	6	1714,00
48	Moisei	9301	2	1	2	6	4650,50
49	Oarţa de Jos	1353	1	-	-	1	1353,00
50	Ocna Şugatag	4149	3	2	1	3	1383,00
51	Onceşti	1539	1	-	-	1	1539,00
52	Petrova	2543	1	1	-	3	2543,00
53	Poienile de sub Munte	10247	5	2	1	21	2049,40
54	Poienile Izei	989	1	-	-	1	989,00
55	Recea	5642	4	-	1	4	1410,50
56	Remetea Chioarului	2860	2	-	-	3	1430,00
57	Remeţi	3117	1	1	-	2	3117,00
58	Repedea	4895	1	-	-	2	4895,00
59	Rona de Jos	2049	1	-	-	2	2049,00
60	Rona de Sus	4633	2	1	-	5	2316,50
61	Rozavlea	3452	1	-	-	1	3452,00
62	Ruscova	5211	3	1	1	7	1737,00
63	Săcălăşeni	2510	2	1	1	5	1255,00
64	Săcel	3577	1	-	1	2	3577,00
65	Sălsig	1536	2	-	-	3	768,00
66	Săpânţa	3317	1	-	-	2	3317,00
67	Sarasău	2519	2	-	-	5	1259,50
68	Satulung	5842	5	1	1	6	1168,40
69	Şieu	2553	1	-	-	1	2553,00
70	Şişeşti	5449	3	1	1	5	1816,33
71	Strâmtura	3993	2	-	1	5	1996,50
72	Suciu de Sus	4024	2	-	1	4	2012,00
73	Vadu Izei	2938	1	-	-	4	2938,00
74	Valea Chioarului	2254	2	1	-	-	1127,00
75	Vima Mică	1452	1	-	-	-	1542,00
76	Vişeu de Jos	5508	2	-	1	3	2754,00
77	**Total**	**511828**	**819**	**249**	**214**	**3229**	**624,94**

Source: Maramureş County Statistics Authority (2009).

- there are administrative units where there is no dental practice; this negative aspect needs to be dealt with as all EU integrated communities have to enjoy this sort of specialized medical assistance. Of a total number of 249 dentists, 223 (89,56%) work in the urban areas and only 26 (10,44%) work in the rural areas. Their numbers vary significantly between the urban areas themselves: 145 dentists (58,23% of their total number) work in the municipality of Baia Mare, 33 dentists (13,25% of the total number) work in the municipality of Sighetu Marmatiei, 10 dentists (4,02%) in Borşa and respectively in Vişeu de Sus. Of the total number of dentists, 79,52% are concentrated in these 4 cities;

- the rural administrative units (municipalities and villages) where there is more than 1 dentist practice are those with a large number of inhabitants or those made up of a large number of villages: Bârsana (2); Copalnic-Mănăştur (3), Ocna Şugatag (2), Poienile de sub Munte (2);

- there are some administrative units that lack pharmacists and this is also a situation that needs to be dealt with. Of a total number of 214 pharmacists, 191 (89,25%) are located in urban areas and only 23 (10,75%) are located in rural areas. Most of them are located in the municipality of Baia Mare, followed by Sighetu Marmației (28), Borşa and Vişeu (8 pharmacists in each of the two towns) ;

- the rural administrative units (municipalities and villages) where there are more than 1 pharmacists are those with a large number of inhabitants or those made up of a large number of villages: : Copalnic-Mănăştur (2) şi Moisei (2);

- some rural administrative sub-divisions are also confronted with a lack of ancillary medical personnel: Asuaju de Sus, Boiu Mare, Botiza, Budeşti, Gârdani, Giuleşti, Groşi, Groşii Ţibleşului, Leordina, Valea Chioarului şi Vima Mică. This negative aspect needs to be dealt with as all EU integrated communities have to enjoy this sort of medical service; moreover, the GP cannot provide primary care and this type of assistance at the same time. Of a total number of 3229 persons working as ancillary medical personnel, 3043 (94,42%) work in the urban areas and only 186 (5,58%) in the rural areas. Their numbers vary significantly between the urban areas themselves: 1627 ancillary personnel members (50,39% of their total number) work in the municipality of Baia Mare, 637 of them (19,73% of the total number) work in the municipality of Sighetu Marmatiei, 274 (8,49%) in Borşa, 157 (4,86%) in Vişeu de Sus. Of the total number of ancillary medical personnel, 83, 37% are concentrated in these 4 cities;

- the rural administrative units (municipalities and villages) where there are more than 4 persons working as ancillary medical personnel are those with a large number of inhabitants or those made up of a large number of villages: Băiuț (11), Bârsana (10), Bistra (5), Copalnic-Mănăştur (7), Ieud (5), Mireşu Mare (6), Moisei (6), Poienile de sub Munte (21), Rona de Sus (5), Ruscova (7), Săcălăşeni (5), Sarasău (5), Satulung (6), Şişeşti (5), Strâmtura (5);

- the average regional ratio of inhabitants/ physicians is, in the county of Maramures, of 624,94 inhabitants/physician. As this is a regional average, it is a very subjective figure that mostly reflects the situation in the urban areas. In most of the rural areas this ratio is over 1000 inhabitants/ physician, with some cases where this figure is over 4000 inhabitants/ physician;

- the average in each one of the administrative sub-divisions of the county is above the EU average (300-500 patients/physician). The following towns/ municipalities are in a somewhat privileged situation, with less than 1000 inhabitants/ physician: Baia Mare, Sighetu Marmației, Baia Sprie, Borşa, Cavnic, Şomcuta Mare, Târgu Lăpuş, Vişeu de Sus, Groşi, Poienile Izei, Sălsig;

- at the opposite end, there are towns/ municipalities where the situation is worrying and should be dealt with; the average here is above 2500 inhabitants/physician: Săliştea de Sus, Ardusat, Bogdan Vodă, Botiza, Cupşeni, Deseşti, Leordina, Moisei, Petrova, Remeți, Repedea, Rozavlea, Săcel, Săpânța, Şieu, Vadu Izei şi Vişeu de Jos.

The first step in dealing with this situation would be the reduction of number of patients/physician down to less than 1000 inhabitants/physician (this reduction can be achieved by hiring more medical personnel).

The natural conclusion drawn after analysing all these indicators is that, in order to provide quality medical assistance, there is an urgent need for more specialized medical personnel all throughout the region.

4. MAIN HEALTH AND DEMOGRAPHIC INDICATORS

When assessed within a specific framework, the average values of main health indicators of the county of Maramures are comparable, to a certain extent, to the average values at national level.

After a thorough analysis of the main health indicators and of the main causes of mortality in the county of Maramures, there are several aspects and several indicators that need to be taken into account:

Birth rate - according to the latest data offered by the Maramures Public Healthcare Authorities, the average birth rate in the county in the first 9 months of 2008 was of 11, 90‰ (4249 births);

Mortality rate - in the first 9 months of 2008, the average mortality in the county was of 10,11‰ (3867 deaths);

Rate of natural increase - as a result of the values of the above-mentioned indicators, the rate of natural increase is positive, 1,79‰; this means that the county population has increased in the first 9 months of 2008 with 375 inhabitants;

Infant mortality rate - during the same period (first 9 months of 2008), the infant mortality rate has been of 8,25‰ (35 infant deaths);

Standardized mortality ratio (specific mortality due to specific disease) - during the first 9 months of 2008, the situation was as follows: 2385 deaths caused by *cardiovascular diseases*, representing a 623,52 mortality rate per 100 000 population; 121 deaths due to *respiratory diseases*, thus a 31,63 mortality rate/100 000 population; 274 deaths due to *digestive diseases* - 71,63 mortality rate/100 000 population; 643 deaths due to *tumours* - 168,10 mortality rate/100 000 population; 178 deaths due to *accidents and traumas (injuries)* - 46,54 mortality rate/100 000 population; 266 deaths due to *other causes* - 69,54 mortality rate/100 000 population.

Given the situation, the healthcare authorities in the county should come up with a strategy that takes into account the main components of the health care system. The strategy should focus on these main causes of mortality inside the population.

5. CURRENT PROBLEMS/MALFUNCTIONS

Due to *the distribution of sanitary services* at county level, there are major discrepancies within the assessed region; we also need to mention the fact that the inhabitants of the county are not the only ones who benefit from the medical assistance provided in the healthcare institutions in the county of Maramures. The fact that the distribution of hospital beds does not follow the established criteria of chronic, acute and social medical assistance makes it impossible to assess the real needs of specialized medical assistance.

At this level, the main problems are *the insufficient medical personnel* in the rural areas and *the insufficient technical and material provisions* of dispensaries, dental practices and pharmacies.

Population provision with qualified medical personnel is a reality only in the urban areas. The number of physicians and pharmacist, from both the public sector and the private one,

working in the municipalities of Baia Mare and Sighetu Marmatiei and in other towns of the county is higher than the national average, but the situation in the rural areas is quite the opposite.

The analysis of the indicators reveals the *low efficiency of the primary care services and of ambulatory care*. The main reasons for this are the high, unjustified (objectively) cost of ambulatory care services and the high percentage of inpatient treatments, treatments that could not be replaced by other types of medical assistance.

In the last 5 years the financing of health care facilities, through the state budget, social and health insurance schemes and other sources, has increased progressively. Still, compared to other EU countries, the financing is insufficient.

The state of health of the Maramures county population is poor; there are significant discrepancies between the rural and urban areas in terms of quality of medical infrastructure and health care workers. Primary care services provided by GPs should undergo reforms, both in form and in content. These reforms should also include *well defined medical services, including diagnosis, treatment and prevention, services aimed at families, the basis of all societies.* This is why we consider that the part in the health budget allotted to primary care provided by GPs should considerably increase.

6. SWOT ANALYSIS

The SWOT analysis of the healthcare in Maramureş County has the following particularities:

Strengths: the population (especially the young population) is optimistic when it comes to evaluating its state of health; the municipalities of Baia Mare and Sighetu Marmației are perceived as being the main healthcare hubs in the county; the existence, in the urban areas of the county, of a complex healthcare infrastructure and of a well trained contingent of healthcare workers.

Weaknesses: poor quality of healthcare services provided in rural areas; insufficient healthcare services targeting important professional categories (mostly workers); the high rate of certain indicators, like mortality, infant mortality, abortion rate, etc.; ancillary medical personnel's low wages, especially of those working in the rural areas; the insufficient number of highly-specialized medical personnel and ancillary medical personnel in the rural areas of the county.

Opportunities: the implementation of national programs of education for health; the increase in number, the diversification and the improvement of healthcare services for all social categories, the rapid hiring of specialized personnel.

Threats: urban migration of the young population in rural areas, which triggers a general loss of vigour within the rural population; the increasing lack of trust in the medical personnel.

7. CONCLUSIONS. ELEMENTS OF STRATEGY

As far as public healthcare is concerned, the development strategy of the county of Maramures should be part of a broader, regional development strategy, based on a series of complex *strategic objectives* and *development paths*. The major objective here aims at

improving the state of health of the population of Maramures by improving the healthcare infrastructure and increasing the number of specialized medical personnel.

The actions taken in pursuit of this objective should be the result of the permanent cooperation between 3 categories of stakeholders that have precise responsibilities: *local stakeholders* (the mayors and the members of local councils in each administrative sub-division of the county), *healthcare authorities* (The Sanitary Authority of the Maramures County), and *healthcare beneficiaries* (local communities). The absence of cooperation between these categories of stakeholders leads to misunderstandings and to the loss of faith/ trust in the medical treatment. It seems unlikely that the existent deficiencies be overcome in the near future.

The regional strategy aiming at improving the quality of health care, developing the healthcare infrastructure and, improving the quality of life, has to include a series of concrete measures:

- the recruitment of qualified medical personnel only in the rural areas;

- improved welfare programs for certain important social and professional categories that are underprivileged (retirees, unemployed people, people who live on welfare ecc);

- concrete and specific measures aimed at reducing the high rates of certain indicators: *mortality rate, infant mortality rate, rate of abortions,* etc.

- wage increases, especially for the ancillary medical personnel and especially for those working in rural areas;

- actions to promote national programs of education for health; the increase in number, the diversification and the improvement of healthcare services for all social categories;

- the set up of local dispensaries in every village of the county for preventive treatments and health monitoring of the inhabitants;

The implementation of concrete measures in the healthcare sector is a difficult task as the local stakeholders are not the only ones involved in the implementation process. Local authorities (The Maramures County Council, the mayors and the members of the local councils) don't have any initiative right, the strategies being established at national level.

From our point of view, the above-mentioned measures are the appropriate measures that need to be taken in the county of Maramureş in order to improve the healthcare sector to ensure an efficient regional development.

REFERENCES

1. Adler, Serena (1996), *Raportul dezvoltării umane în România,* Edit. Ceres, Bucureşti.
2. Bailly, A-S., Bernard, B., Debardieux, B. (1995), *Les concepts de la geographie humaine,* Edit. Masson, Paris.
3. Bailly, A-S. (1995), *Geographie regionale et representations,* Edit. Anthropos, Paris.
4. Benedek, J. (2004), *Amenajarea teritoriului şi dezvoltarea regională,* Edit. Presa Universitară Clujeană, Cluj-Napoca.

5. Blij, H.J., de (1997), *Geography: realms, regions and concepts,* John Wiley&Sins. Inc., New. York, Chichester, Brisbane.
6. Bold, I., Buciuman, E., Drăghici, M. (2003), *Spațiul rural. Definire, organizare, dezvoltare,* Edit. Mirton, Timişoara.
7. Cândea, Melinda, Bran, Florina (2001), *Spațiul geografic românesc: organizare, amenajare, dezvoltare durabilă,* Edit. Economică, Bucureşti.
8. Cocean, P., Cocean, R. (2003), *Regiunea de nord-vest a României-entitate sistemică de program*, în Studia UBB, Seria Geographia, nr. 2, Cluj-Napoca.
9. Di Mateo, G. (1998), *Geographie sociale et territoires,* Nathan, Paris.
10. Ianoş, I. (2000), *Sisteme teritoriale. O abordare geografică,* Edit. Tehnică, Bucureşti.
11. Ilieş, Gabriela (2004), *Țara Maramureşului. Studiu de geografie regională,* UBB, Facultatea de Geografie, Cluj-Napoca, Teza de doctorat.
12. Mureşan, Cornelia (1999), *Evoluția demografică a României: tendințe vechi, schimbări recente, perspective. 1870-2030),* Edit. Presa Universitară Clujeană, Cluj-Napoca.

STUDIA UBB. GEOGRAPHIA, LVI, 1, 2011

THE ELECTIONS OF MAYORS IN "MOȚILOR LAND", ALBA COUNTY, IN 1992, 1996, 2000, 2004, 2008

NICOLETA MARIA ERCHEDI [1]

ABSTRACT. – The Elections of Mayors in "Moților Land", Alba County, in 1992, 1996, 2000, 2004, 2008. In Romania, the Electoral Geography has rarely been of interest for the scientists that are preoccupied with studying the development of certain regions. The electoral options of the local population are often overlooked though the elected mayors play a key role in the development of any settlement, beside their personal qualities as leaders and managers, their political affiliations being of outmost importance when it comes to receiving money for projects of development for their localities. The present paper would like to answer a series of questions like: how the election phenomenon/process in the region of ***"Moților Land"*** can be mapped, how the political options evolved in time and if the electing body has matured or not over time, if the election of the mayor is dictated by the political affiliation or not, and finally how political affiliation hinders or favours development in the area.

Keywords: *"Moților Land", mayors, election, development.*

1. INTRODUCTION

The region that is the object of this paper is located in the central part of the Apuseni Mountains and comprises the network of settlements located on the upper Arieş valley, from Bistra to Arieşeni. The exact extension of the "Moților Land" has given rise to a series of controversies over the last 100 years. For some, it comprises the whole of Apuseni Mountains while others reduced it to the valleys of Arieşul Mare and Arieşul Mic. The present paper agrees with the delimitations introduced by the well-known ethnographer Tache Papahagi. For him the people from the area can be subdivided into two classes: the "pure Moți" that have wood-processing as a main occupation and the "Băieşi" that have mining as a main occupation. A similar delimitation is done by C.N. Boțan in his doctoral thesis "Moților Land. A Study of Regional Geography". After extensive research he argues that the territory of "Moților Land" comprises the Arieş valley from Bistra up-stream, thus including the main valleys of Abrud, Sohodol, Arieşul Mare and Arieşul Mic.

From the administrative point of view, the area covers the whole north-west part of the Alba County. The studied region comprises 322 rural settlements and covers an area of 1068,89 km^2 with a population of 44 634 inhabitants (2006). The settlements in the area belong to two different administrative categories: towns and communes[2]. Câmpeni with 8080 inhabitants and Abrud with 6195 are the only towns in the region. The rest of the settlements are comprised in 14 communes: Albac, Arieşeni, Avram Iancu, Bistra, Bucium, Ciuruleasa, Gârda de Sus, Horea,

[1] *Babeş-Bolyai University, Faculty of Geography, 400006 Cluj-Napoca, Romania, haranick@gmail.com*
[2] *Commune= the smallest administrative unit in Romania, comprised of several villages.*

Poiana Vadului, Roşia Montană, Scărişoara, Sohodol, Vadu Moţilor and Vidra. Demographically the region was characterized by the continuous depopulation throughout the last fifty years which led to the aging and feminization of the population and to a high dependency rate that is now of 71dependents to 101 adults (20 to 65 years old).

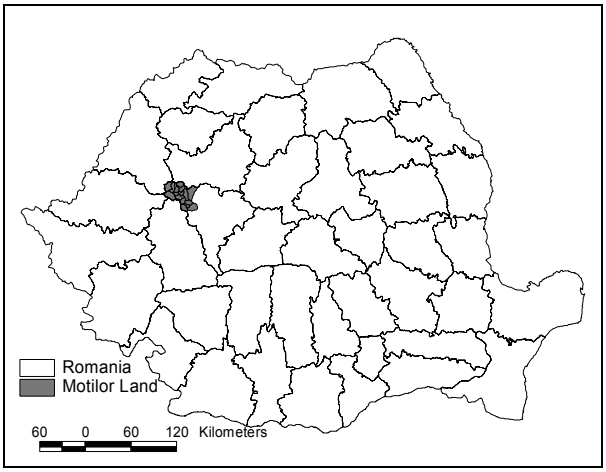


Fig. 1. The Location of "Moţilor Land" within the National. Territory.

2. THE EVOLUTION OF POLITICAL OPTIONS

After 1989, in February 1992, for the first time in four decades, Romanians could freely choose their local leaders. The change was significant: from one party to choose from now they had to decide among various conventions and unions and a number of 23 political or ethnic parties, either 'traditional' ones like the PNL[3] and the PNŢCD or new ones like the FSN. The distribution of votes for the 1105 elected mayors were as follows: 32,76% for the National Salvation Front (FSN), 22,27% for the Independents, 13,39% for the Democratic Convention (CD), 12,21% for the Democratic Union of Hungarians in Romania, (UDMR), 7,88% for the Romanian National Unity Party (PUNR) and 5,16% for Agrarian Democratic Party of Romania (PDAR). The rest of 6,33 % went to other national minorities' parties.

[3] *We kept the Romanian names and abbreviations for parties as it helps for an easier understanding both for the Romanian and the foreign reader: PNL - National Liberal Party (Partidul Naţional Liberal), PNŢCD - National Peasant Party - Christian Democrat (Partidul Naţional Ţăranesc Creştin şi Democrat), FSN- National Salvation Front (Frontul Salvării Naţionale), CDR – Democratic Convention of Romania (Convenţia Democrată din România) [CDR = electoral alliance of PNŢCD + PNL + PNL-CD (National Liberal Party - Democratic Convention - Partidul Naţional Liberal Convenţia Democrată) + PAR (The Alternative for Romania Party - Partidul Alternativa României) + PER (Ecologist Party of Romania-Partidul Ecologist din România) + FER (Federaţia Ecologistă Română-Romanian Ecologist Federation)], PUNR - Romanian National Unity Party (Partidul Unitaţii Naţionale Române), UDMR/RMDSZ - Democratic Union of Hungarians in Romania (Uniunea Democrată a Maghiarilor din România), PDAR - Agrarian Democratic Party of Romania (Partidul Democrat Agrar din România), PRM - Greater Romania Party (Partidul România Mare, USD- The Social-Democratic Union (Uniunea Social-Democrat), PAC- The Civic Alliance Party (Partidul Alianţa Civică), PUR- Romanian Humanist Party (Partidul Umanist Roman), APR- Alliance for Romania (Alianta pentru Romania), PD –The Democratic Party (Partidul Democrat),PDL – The Democratic Liberal Party (Partiul Democrat Liberal),PSD –The Social-Democratic Party,etc.*

(after Gr. P. Pop, 1991[4]). By mapping all these options a big variety among the electoral options of the population becomes obvious, a sign of the 'inexperienced electorate', of a young political scene that hasn't mapped out its main players. Also the high percentage obtained by independents reveals besides a young democracy and a predilection of the electorate to vote for the person and not for the party. Gradually the Romanian political scene will develop and the votes of the population will gravitate towards just a few important parties.

Another noticeable trend is the decrease in the Romanian electorate's interest in the nationalistic discourse. Thus, from the total number of votes for the Senate, together, the PRM and PUNR (since 2000 in alliance with PNR, forming PAN) obtained 11,9% in 1992, 8.76% in 1996, 22,23% in 2000 (according to some authors – Gr. P. Pop, 2000- the high number of votes in 2000 was due to the malfunctioning government of CDR that won the elections in 1996), 14,19% in 2004, while in 2008, none of the Romanian nationalist parties managed to obtained the 5% of votes necessary to pass the threshold for the Senate (PRM obtaining the highest number of only 3,57% of the votes).

In 1992 the results of the local elections in "Moților Land" reflect the same situation as they do at country level, an electorate still searching for its political identity: out of the 16 administrative units FSN won in nine (Arieşeni, Scărişoara, Bistra, Câmpeni, Vadu Moților, Sohodol, Roşia Montană, Bucium, Abrud), Independents in five (Horea, Albac, Avram Iancu, Poiana Vadului,Vidra), PUNR (Ciuruleasa) and PDAR (Gârda de Sus) won in one each (fig.2). In the following elections of 1996 and in 2000 the variety among electoral options increases. In 1996 the electors voted for six parties and two Independents: PDSR[5] won in five of the administrative units (Arieşeni, Albac, Poiana Vadului, Vidra, Bucium), CDR in three (Vadu Moților, Roşia Montană, Ciurulesa), the rest being divided among PUNR, PDAR, PAC, USD and Independents (fig.3). In 2000, the number of parties increases to seven, with PDSR[6] winning most mayor seats (Arieşeni, Gîrda de Sus, Bistra, Câmpeni, Vadu Moților, Vidra, Abrud), seven out of 16, while the other parties win only one or two seats for mayors each, while Independents won only one (Horea)(fig.4). The new party that entered the local political scene was FER that won in Avram Iancu. We can notice that in "Moților Land" the electorate's behaviour is similar to that at the national level: a diverse local political scene with a multitude of parties, a scene that hasn't mapped out its main players.

The elections of 2004 and 2008 bring with them a change: the number of parties diminishes significantly. In 2004 the candidates that won mayor seats belonged to five parties and there were no Independents. The most votes split between two main parties: six mayor seats were won by PD (Albac, Bucium, Horea, Poiana Vadului, Abrud and Vidra), five by PSD (Avram Iancu, Gârda de Sus, Roşia Montană, Scărişoara, Vadu Moților) and only three by PNL (Bistra, Sohodol, Ciuruleasa) and one by PRM (Câmpeni) and one by PUR (Arieşeni) (fig.5). In 2008 PSD was the biggest loser obtaining only two seats in Ciuruleasa and Bucium while PDL won eight mayor seats (Albac, Avram Iancu, Gârda de Sus, Horea, Poiana Vadului, Roşia

[4] *Due to the delays in printing, lack of printable materials and the desire of the paper's board to have a continuity, papers written in 1992 appeared in Studia Universitatis Babeş-Bolyai 1991, that was actually printed in 1993.*

[5] *PDSR – Romanian Party of Social Democracy (Partidul Democratiei Sociale din Romania).*

[6] *PDSR. - Democratic-Social Pole of Romania (Polul Democrat-Social din Romania - PDSR.).*

Montană,, Vidra and Abrud) and PNL six (Arieşeni, Bistra, Ciuruleasa, Sohodol, Vadu Moţilor and Campeni) (fig.6). Observing the evolution of the "Moţilor Land" electorate's political choices we can see that it has evolved significantly since 1992 or 2008: from voting for a multitude of parties (six or seven) to voting only for three in 2008.

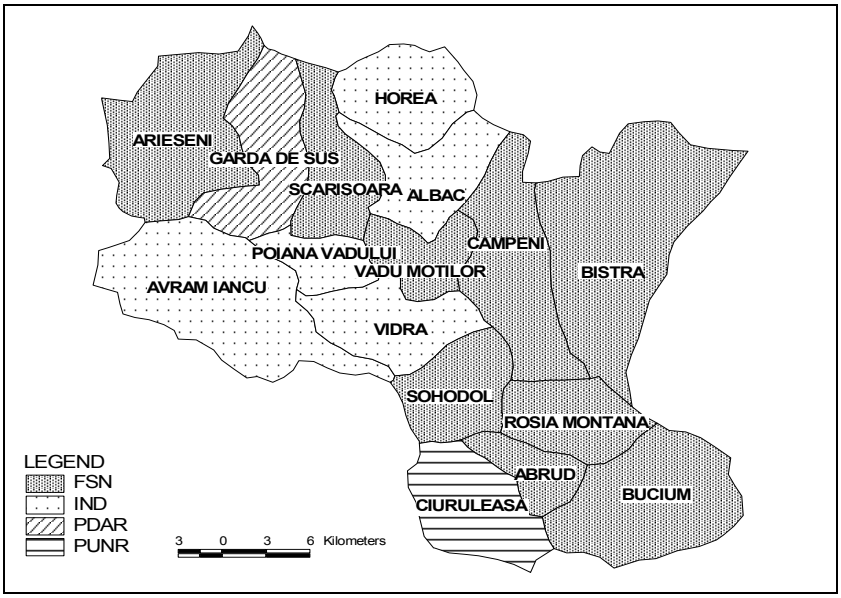


Fig. 2. The Political Affiliation of Mayors in 1992 Elections.

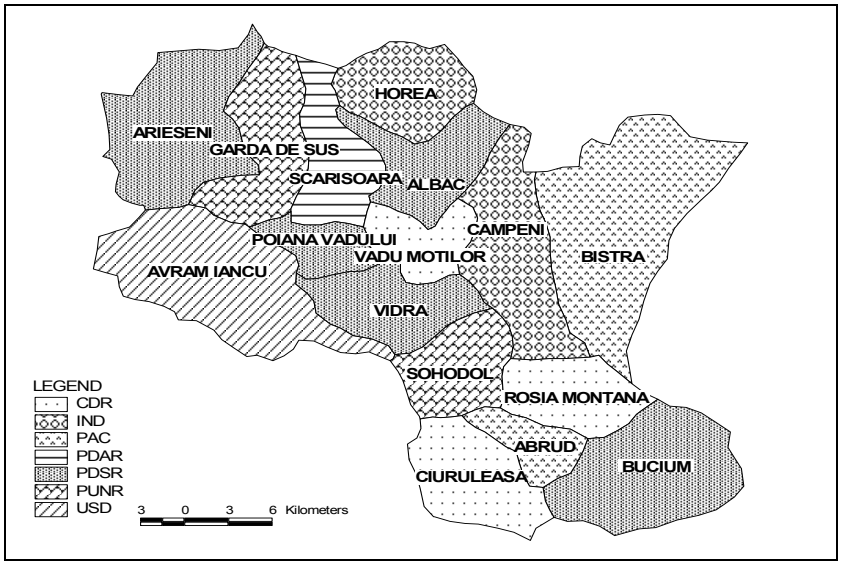


Fig. 3. The Political Affiliation of Mayors in 1996 Elections.

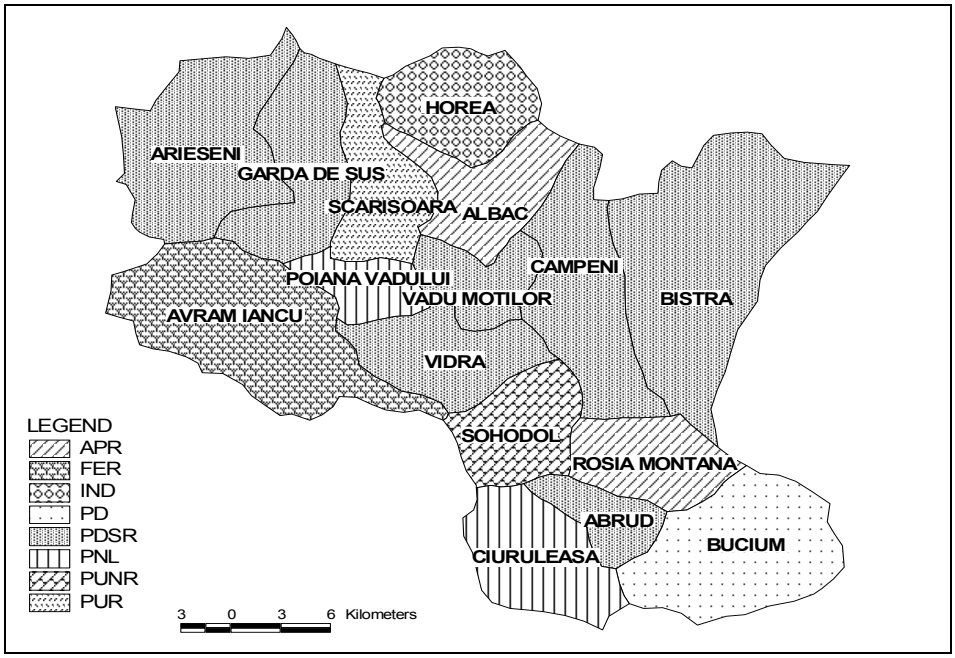


Fig. 4. The Political Affiliation of Mayors in 2000 Elections.

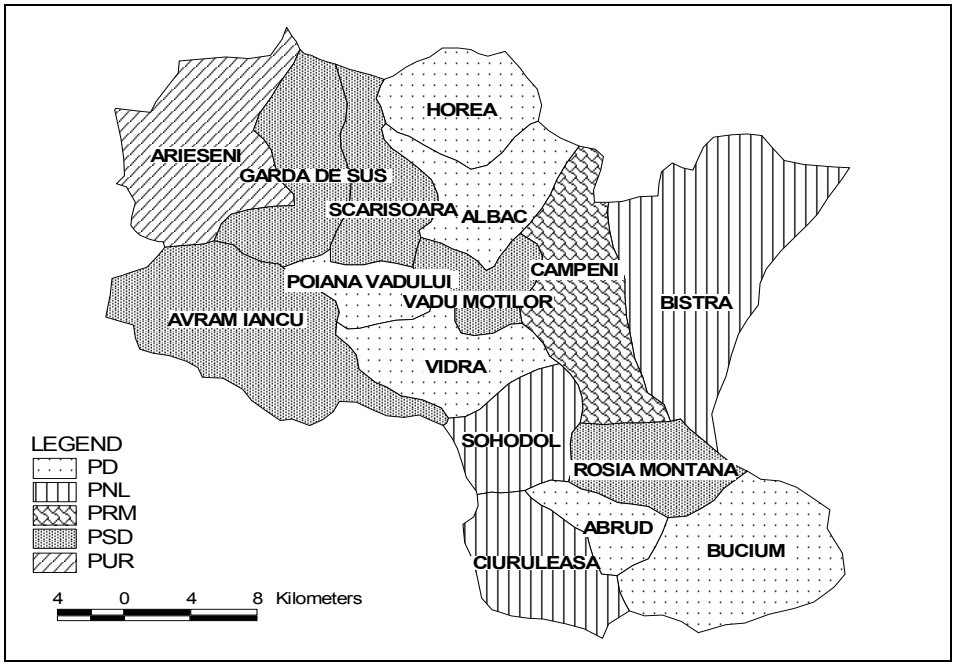


Fig. 5. The Political Affiliation of Mayors in 2004 Elections.

Another change regards the nationalistic parties. If in 1992 the PUNR had a mayor in Ciuruleasa and in 1996 had one in Gârda de Sus and one in Sohodol, in 2000 kept only the seat in Sohodol. In 2004 due to changes in the PUNR the voters chose another nationalistic party, PRM, to represent their interest as a mayor in Câmpeni while in 2008 none of the nationalistic parties won any mayor seats in "Moților Land" following the declining trend for those types of parties at national level. Thus, though the area is considered a quintessence of Romanianism as the people of the area, "the Moți" are famous for their centuries struggle against the Hungarian occupation of Transylvania, they presently don't have such strong nationalistic feelings.

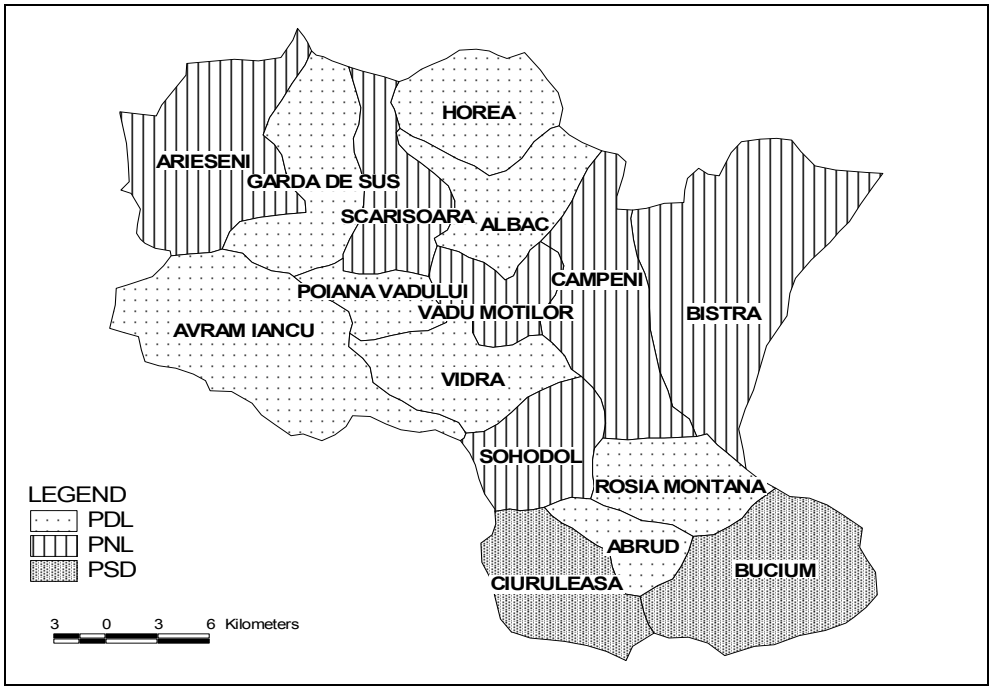


Fig. 6. The Political Affiliation of Mayors in 2008 Elections.

Though the map of 2008 election clearly shows the dominance of PDL and PNL in the area, with the PDL wining eight mayor seats and PNL six, there is a predilection of the electorate to vote for the person and not for the party. The candidates themselves are the one that adhere to one party or another according to who is or looks like is going to be in power at national level. A good example is that of Olar Corneliu, the former mayor of Horea, who won the elections with over 80% of the votes both as an Independent in 2000 (85,98%) and as a representative of PDL in 2008 (82,6%). To further demonstrate this we created a short table with the elected candidates from 2004 and 2008 local elections and their party affiliation. As we can see nine of them changed their party, some of them completely changing the political spectrum they previously belong to, by switching from left to right wing parties.

The Changes in the Political Affiliations of Mayors in "Moților Land" from the Elections in 2004 to those in 2008

Table 1

Election Year		June 6, 2004		June 1, 2008	
Crt. no.	**Locality**	**Elected Mayor**	**Part**	**Elected Mayot**	**Party**
1	Arieseni	Jurj Vasile Marin	**PUR**	Jurj Vasile Marin	**PNL**
2	Horea	Olar Corneliu	**PD**	Olar Corneliu (PDL-resigned from his position after he was elected as a deputy in college number 5 Alba in November 2008), Marin Nicola (PDL)	**PDL**
3	Garda de Sus	Virciu Marin	**PSD**	Virciu Marin	**PDL**
4	Scarisoara	Costea Cristian-Vasile	**PSD**	Costea Cristian-Vasile	**PNL**
5	Albac	Todea Petru Tiberiu	**PD**	Todea Petru Tiberiu	**PDL**
6	Bistra	Gligor Traian	PNL	Gligor Traian	PNL
7	Cimpeni	Andres I. Ioan-Calin	**PRM**	Andres Ioan Calin	**PNL**
8	Vadu Motilor	Hristea Eugenia Silvia	PSD	Lazea Nicolae	PNL
9	Avram Iancu	Heler Sandu	**PSD**	Heler Sandu	**PDL**
10	Poiana Vadului	Avram Ilie	**PD**	Avram Ilie	**PDL**
11	Vidra	Resiga Ioan Alexandru	**PD**	Resiga Ioan Alexandru	**PDL**
12	Sohodol	Andreica Lucian	PNL	Andreica Lucian	PNL
13	Rosia Montana	Narita Virgil Nicolae	PSD	Furdui Eugen	PDL
14	Bucium	Amariei-David Sorinel	PD	Napau Cornel	PSD
15	Abrud	Falca Gheorghe	PD	Ratiu Ioan Tiberiu	PDL
16	Ciuruleasa	Mihalachi Ioan	PNL	Tuhut Radu Marcel	PSD

3. POLITICS AND DEVELOPMENT

Finally we would like to show through some examples how starting from the local and county level to the national level the political affiliation hinders or favours development in the area. For these we would like to present a series of short quotations from the press and a few pieces of information obtained through some interviews that we conducted locally with regards to development.

Every change in the power at national level has significant consequences for local projects in Romania. Liviu Dragnea the general secretary of PSD was quoted by Mioara Maxim on www.realitatea.net on 23rd October 2009 saying that "Things are even worse when it comes to the development programme for infrastructure in rural areas-communal roads, water utilities and sewage. In this case PD-L has truly taken its share of the money" said Dragnea. He also stated that the PD-L mayoralties receive 52,82% (59,55 millions lei), PNL - 25,27% (28,34 millions lei), PSD - 11,4% (13,14 millions lei), UDMR - 7%, other mayoralties - 3,73%, while "PSD has the biggest number of mayors in Romania and hundreds of them have projects in different stages of execution". This situation truly impacts the development in the region, several projects have been stalled for example by the fact that PD-L and PNL have parted ways and now the mayoralties of Arieşeni and Scărişoara are put in the situation of not being able to finish their current projects (Scărişoara is halfway through installing its water pipes but they might not get the rest of the money to finish the project) In Arieşeni the inhabitants have been let known in a meeting by one of the Alba county officials that there will be no money given this year for any project. For those mayors that belonged to the same party as the county leaders money or other resources were found for their development projects that needed to be implemented like for example the new building of the mayoralty and cultural centre from Albac built with the support of the Alba County Council.

Political favouritism is not only the case of PD-L. It has been the case for PDSR and PSD too in the previous years. There are famous the cases of so called "local barons" of PSD who used their political power to develop their businesses. According to Helga Kovacs from the newspaper *Informatia de Vest (27th September2005)*, the former vice-president of the Bihor PSD branch until the 2004 elections used the PSD programme for building sport facilities in the countryside for its own interest, managing to build through his own firm S.C. Selina SRL the sport facilities of Garda and Baia de Arieş, both of whom had PSD mayors.

Besides these few examples of small projects that were either hindered or helped by politics, there are two that had or could have had a significant impact on the development of the entire region and not of just one administrative unit: the ski resort project from Arieşeni and the mining project from Roşia Montană.

The first plan for the development of a ski resort in Arieşeni was made by the ski instructor Dan Gligor in 1978 and followed by another one in 1991. In 1997 together with the Swiss engineer Heinrich Kuhn he made a new project that envisioned the construction of several ski slopes for Arieşeni. Most of the money for the implementation of the project would have come from Swiss investors while the rest, approximately 20% was supposed to come from the Alba County. The misunderstandings that appeared between the prefect and the president of the Alba County Council of that time stalled the project. This was the situation in 2001 when we first heard of the project from the mayor of Arieşeni. Since then there were multiple plans drawn by the local or county administrations or by various investors but so far due to politics and bureaucracy nothing has been done for 20 years and Arieşeni still has just the initial ski slope. Needless to say that the fact that the area hasn't transformed into a modern ski-resort has limited the tourism development not only for Arieşeni but also for the neighbouring communes which would have also taken advantage of the massive number of tourists that would have come to the new resort.

The economic issues and political controversies created by the mining project from Roşia Montană are now known all over the country. In 1997 the Canadian company Gabriel Resources joined "Regia Autonomă a Cuprului Deva" (The Autonomous Authority for Copper Deva) to form a new company initially called "Eurogold Resources" and which later became "Roşia Montană Gold Corporation" in order to exploit the 10,1 millions of ounces of gold and 47,6 millions of ounces of silver estimated to be still found at Roşia Montană. Since then the representatives of different parties from several ministries have either stalled or tried to push the project forward. Now they are at a dead still. Non-profit organisations like Alburnus Maior and the Soros Foundation have strongly opposed the project due to its potential negative effect on the environment due to the proposed used of cyanide in the exploitation. By suing several times the company "Roşia Montană Gold Corporation" they managed to stop the mining from starting.

In the 13 years that have passed since the start of the project the communities of Bucium, Ciuruleasa, Roşia Montană and Abrud have ceased to develop either hoping that they will get back to work in mining and thus not looking for alternative solutions for making a living or fearing to invest in the idea that their investments, in tourism for example, would be ruined by the opening of the project. In the case of Roşia Montană the local PUG (General Urban Planning) specifically hinders any chances of investment in a different area other than the mining industry, thus even the people who would take the chance of investing in tourism and build a B&B for example cannot do so as the local authority would not give them the permit for a new construction.

4. CONCLUSIONS

In conclusion through the present paper we have tried to present how the political preferences evolved in the twenty years since the revolution in the Romanian area of "Moților Land". One can notice that if at the beginning there was a big variety in the political affiliations of the elected mayors there being six or seven different types of parties with elected mayors in the region, in the last local election of 2008 the electorate elected only candidates belonging to three parties only: PDL, PNL and PSD. Also, the importance of the Romanian nationalistic parties has reduced over time, in 2008 none of these parties won a mayor sit in "Moților Land". We can say thus that the local electing body has matured over time.

An interesting aspect worth mentioning is that though the number of parties the people voted for has reduced, there is also a clear tendency in the region to vote for the person rather than the party, as the table number one clearly shows. It is the likely candidate that will join the party that he/she thinks will most likely be in power at the next elections.

What we consider most important is the fact that the electoral options should not be overlooked when one studies the development of certain regions. An area can be rich in underground resources like Roşia Montană is in gold and silver or have extended snow coverage and great landscapes which are essential for winter sports, like Arieşeni and still have significant development issues that are not derived from the lack of natural resources. In the case of "Moților Land" it is both local and national politics in what regards the projects for Roşia Montană and Arieşeni that have significantly influenced the development of the entire region.

REFERENCES

1. Abrudeanu, I.R., (1928), *Moţii, calvarul unui popor eroic dar nedreptăţit*, Edit. Cartea Românească, Bucureşti.
2. Cocean, P., Boţan, C.N., (2005), *Specificitatea individualizării spaţiale a Ţării Moţilor*, Studia Universitatis Babeş-Bolyai, Geographia, Nr.1,Cluj-Napoca, pp17-24.
3. Boţan, C.N., (2008), *Teza de doctorat. Ţara Moţilor.Studiu de Geografie Regională*, Cluj-Napoca
4. Frâncu, T., Candrea, G. (1888), *Românii din Munţii Apuseni: Moţii*, Edit. Tipografia Modernă, Bucureşti
5. Papahagi, T., (1925), *Cercetări în Munţii Apuseni*, extras din Grai şi Suflet, an II, fasc 1, pp 22-89
6. Pop, Gr., Bodocan, V. (1991), *Opţiuni electorale pentru alegerea primarilor din Banat, Crişana-Maramureş şi Transilvania*, Studia Universitatis Babeş-Bolyai, Geographia, nr.2, Cluj-Napoca
7. Pop, Gr. (1992), *România. An Electoral Geography (September-Octomber, 1992)*, Studia Universitatis Babeş-Bolyai, Geographia, 1-2, Cluj-Napoca
8. Pop, Gr. (1997), *România. Geografie Electorală (Noiembrie, 1996)*, Studia Universitatis Babeş-Bolyai, Geographia, 1-2, Cluj-Napoca
9. Pop, Gr. (2001), *România. Geografie Electorală (noiembrie-decembrie, 2001)*, Revista Română de Geografie Politică, Anul III, nr. 1, Edit. Universităţii din Oradea.
10. Pop, Gr. (2006), România. Geografie Electorală (Noiembrie-Decembrie, 2004), Studia Universitatis Babeş-Bolyai, Geographia, L1,1, Cluj-Napoca
11. www.beclocale2008.ro/documm/ora18TUR2/moc_tur2.pdf
12. http://www2.essex.ac.uk/elect/database/indexCountry.asp?country=Romania&opt=elc
13. 13.http://www.realitatea.net/guvernul-da-cei-mai-multi-bani-pentru-baze-sportive-si-infrastructura-primariilor-pd-l--spune-dragnea_647181.html
14. http://rosiamontana.org
15. http://www.soros.ro

Notes and Book Reviews – Note şi recenzii

Hadrian – V. Conţiu, Vasile Conţiu (2010), *Râciu Village, Space of multimillenary living, Monographical study*, Casa Cărţii de Ştiinţă, Cluj-Napoca, 2010, ISBN 978-973-133-681-7 (B 5 format, 538 pages, including 66 figures, 44 tables, 238 bibliographical titles, information gathered form 42 people and 218 notes, as well as the Appendix, on the pages 507-538, which highlights, through pictures, facsimile or quotations, some geo-physical aspects, administrative institutions, with human, financial, economical and cultural character, as well as a series of other problems specific to the surrounding villages).

Before any sort of reference to the present book is to be renderd, I wish to emphasize the pleasure that I feel in pointing out some of the issues regarding the extraordinary scientific accomplishment of the two authors **Conţiu** (son and father), both of them former elite students of mine; the first, ***Hadrian***, at the Faculty of Geography of Babeş-Bolyai University in Cluj-Napoca (1996-2000), and the second, ***Vasile***, at the Faculty of History and Geography of the 3-year Pedagogical Institute in Cluj-Napoca (1962-1965).

Having mentioned the above heartly reference, in order to justify the extraordinary value of the study realised „in family", it is necessary to underline the scientific preparation of the authors, first of them in Geography and Theology, and the second of them in History and Geography. This situation allowed them to approach with ease in their study the complex aspect of the natural environment, of the components of Physical Geography (landforms, climate, hydrography, soils, vegetation and fauna) as well as those related to the Human Geography (population, settlements and the great variety of the human activities). According to the authors' vision, the layout of the book came to outline two major components: **Part I The Physico-Geographical, Geodemographical and Habitatual Characteristics of Raciu** (p. 9-138) and **Part II Histoical and socio-economical reference points in the development of Raciu** (p.139-538).

Before highlightening the rich content of the book, it must be underlined that the way of approaching the entire set of problems according to the requirements of *logical succession of enclosure and profound studying under all aspects, of strict following of the scientifical content, etc.* results from the above mentioned situation of the authors' scientific preparation, as well as from their strive on the field, statistical and archive investigation, along with the broad bibliography consulted and used in elaborating this book.

Naturally, in the **First** Part, the paper begins by highlighting the *geographical position within the* village, which is located in the southeastern part of the Transylvanian Plain, on Comlod Valley (Lechinta), right tributary of Mures, with confluence at Iernut and on DN 15 E, as well as on the route of the former narrow railway of the plain (Târgu Mureş-Cristeşti-Band-Şincai-Râciu-Teaca-Lechinţa).

Of course, in continuing this part from the significant work of the two authors, according to the logic of the most appropriate treatment,

occurs through approaching, in all their complexity, the **Geo-physical traits**, specific for the teritory of the village. In this regard, are considered, firstly, **The Characteristics of the substrate and the geomorphological features**, which are highlighted, based on the rich literature and own investigation, through all that is most characteristic for each situation on both general (location in the Transylvanian Plain) and local level (macro and mini types of landforms, erosion, meandering, etc.).

A second component of the geo-physical features, the **Climatic characteristics** respectively, is followed by presenting, on the most appropriate level, the *Climate-genetical factors* with their specific influences (solar radiation and the movement of the air masses) and then *The peculiarities of the main climatic elements* (temperature of the air, rainfall, wind and weather phenomen of comcern, etc.). Regarding the way of treating this problem, which obviously comes to surface, it is worth noting that <*The data used in analysing the climate elements comes from the measurements done between 1982-2004 at the weather ministation in the geographical place of the present „Gheorghe Sincai" Gymnasium (the former Secondary School and Theoretical Highschool), thought and realised by the History-geography teacher Vasile Contiu (co-author of the present paper and headmaster of the school for 16 years) in 1981. most of the data, thus, refers to a period of time of 23 years*> (in this book, p.30).

Based on a high-level scientific training, which derives from obtaining the Ph.D in Hydrology, one of the authors of the book, **Hadrian Conțiu**, the component regarding the **Hydrographic features** is dealt with in the most complex and appropriate way, resulting in them being rendered through all the water characteristics on the teritory of the village: *general issues on the hydrographic network, organization and morphometric characteristics of the rivers,* and then *the surface waters* with their specificity constituents (average yearly flow, monthly and seasonal flow regime, maximum flow, minimum flow and the quality of the water of Comlod river), *groundwater, water supply to Raciu village, planning the watercourse of Comlod and the perception of floodings in the rural and urban places in the Mures corridor and the main tributaries which drain Mures Plain (Comlod and the Plain Brook).* The entire issue of the water in the village, as wll as in other situations, is accompanied by an excellent mapping material.

The issue regarding the geo-physical features of the village ends in a manner best suited as scientifically and in a synthesis required by the aim, by presenting the biopedogeographical elements: covering soils, vegetatina and animal life.

The highlighting at the appropriate level of the natural factor elements, in these categories works, allowed the authors moving forward to the next step, the one regarding the geodemographical and habitat aspects which characterize the townships of Râciu village. In relation with the geodemographical component it is notable that the authors managed in a succsesfull maner to emphasize, acording to actual tendencies in research and handling , aspects regarding: trends in inhabitants numbers, in connection with these, using tables and graphics in a precise and clear wayt, elements of *population dynamics*, naming natural flow (birth and death) and migration dynamics (emigration and imigartion) followed by *the spreading of the population* and *geodemographical structures* (by sex, age, occupations, nationality and religion), the whole set of problems affecting the villigers making the object of observation over a long period of time and in critical moments in what their evolution means. The second component, the *habitat* one, is presented in a concise way throughout *general considerations upon rural settlements and historical and socio-economical context of the village development* (historical datation, oscilations in evolution, the geo-demographical dimension, viability, roads, settlements function, orographical displacement of the villages core etc.)

The second part of the work is substantial different as length, than the first part (p.139 – 538) defined as a period of historical landmarks and socio-economic development Rîciu Village includes a very diverse and complex issue which was resolved in terms of the most notable in all its aspects, placing it between the covers of the book showing a good knowledge of the facts and then a great toil of the authors Hadrian and Vasile Conțiu.

In accordance with the situation discussed in the appropriate shynthesis, we consider appropriate to mention the basic components of

this part: 1. Toponymy Rîciu Village; 2. The history of the Village; 3. Changes in administrative-territorial organization; 4.Economical activities; 5. Institutions that serve the village population; 6. Education; 7. Church and the faitful ones; 8. Cultural activity; 9. Sports activities; 10. Traditions, customes and folklore; 11. Portraits and medallions from the village Rîciu (p.139-494), plus the chronology. The main events of the Rîciu Village, Epilogue, References, and Apendices (p.495-538).

In regard with toponymy, well researched and played at the level of the towns and parts of the border, showing that it is represented by Romanian names and that „the names found in the area of our village describe the shape or appearance of the place, evoke the nature of land belonging to the village, show the characteristics of the place, the position of the place according to cardinals points, heading altitude to ground or to neighbouring towns. Other names have social character, derived from names of people, property rights, social position of men. There are place names that show the ocupation of the inhabitans, or talk about faith, superstitions and traditions, that preserves the memory of historical events" (p.141 of paper). Significant treatment is given to the component *The history of the village*, which encompases an analyse of the aspects related to archeological remains, villages in medieval times, the involvement of the people from Rînceni Village in the revolution of the 1848/1849, the first World War (1914 – 1918), inhabitants in the second World War, war veterans and the agrar aspects of life in the village between the mid-nineteenth century and the year 1939, then considering briefly the problem of *Changes in Administrative-Territorial Organization* of the village Rîciu localities, all of these very important issues being considered by their specific characteristics, in order for the readers to easily read all the material made available to them.

In relation to representation, appropriate logical sequence and depth required in such cases are pursued *Economical activities* in the area of the village, the larger size of the treatment being given, naturally, tu agricultural activities, followed by industrial activities and services, communication network and transport, banking activities and tourism each of them emphasised in their appropriate particularities.

The fifth component of part two of the valuable work produced by Hadrian and Vasile Conțiu is represented by the *Institutions that serve the village population*, framing the town hall, the human clinic, veterinary clinic and police station, their analyses being performed in accordance with the appropriate degree of complexity.

Education, the sixth component of part two of the paper, is analyzed by its specific aspects, considering primarily its evolution at local and regional levels, then with the carefulness that describes the authors we find presented, certainly in relation with the significance of each of them, Rîciu and Nima Rîciu schools, then „Vasile Oprea" school in Sînmărtinul de Campie, Hagău school, School of Satu Nou (Căciulata), and Coasta Mare school, and regarding to the village center – Rîciu – is being brought forward the establishment of genereal education of high school, operating in the period 1962 – 1972.

In a condition of an natural normality it is presented the problem regarding *the Church and its faithful ones* belonging to the fifteen localities of Rîciu village, first of all regarding to the general aspects, notably in relation with the evolution of the confessional phenomenon, after which the specific settlements and the event from 1989, the orthodox Churches from Sînmărtinul de Câmpie, Ulieş, the Monastery "The Virgin Mary's Ascension" from Sânmărtinul de Cîmpie and the Orthodox Church from Rîciu are detailed. The year 1989 – freedom and faith. The Greek-Catholic Churches from Rîciu, Nima Rîciului and Ulieş, the Othodox Church from Coasta Mare with "St's Nicolae the Hierarch"patronage and the Othodox Monastery from Nima Rîciului with the "God'a Ascension" patronage.

The present paper is continued with other four components enlisted in the second part, having in regard, in the most complex treatment, the Cultural activity, the Sports activity,Customs, Traditions and Folklore, Portraits and medallions from the village Rîciu, followed by other neccesary problems at the ending of a demarche like this, the Chronology respectively. The main events of Rîciu village, Epilogue and Apendices.

At the ending of this synthetic regards of the excellent work written by Hadrian and Vasile Contiu, tied body and soul with the Rîciu

Village (Comlod's Valley, Transilvania plain), we note the fact that this one represents a model of presentation under all aspects: enlisting the whole set of problems characteristic to o rural settlement, the presentation of the territories realities according to the logic and profoundness required to this purpose etc., fact that allows us to congratulate them strongly.

Prof. univ. dr. GRIGOR P. POP

MIRCEA ALEXE, Studiul lacurilor sărate din Depresiunea Transilvaniei, Presa Universitară Clujeană, 2010, 241 pag.

My colleague and friend Alexe Mircea from the Faculty of Geography of the Babes-Bolyai University in Cluj-Napoca offered me the occasion, this year, with the publication of his book *Studiul lacurilor sărate din Depresiunea Transilvaniei* (*The study regarding the salt lake from Transylvanian Depression*), to make a pleasant effort to present the first Romanian synthesis concerning this topic. The book is, actually, the updated version of his Ph. D., and presents also his extensive efforts over several years in the research at all easy. The book was published with the financial support from the Faculty of Geography in Cluj. The result is excellent: a volume which appeared in good condition, with color plates, which once again reflects the value and tradition of the geographical school from Cluj. The scientific reviewers of the monography are outstanding professors with outstanding results in the geographical research: prof. Dr. Victor Sorocovschi, prof. Dr. Peter Gâştescu, prof. dr. George Romanescu and prof. dr. Ioan-Aurel Irimuş.

The book is structured in the following way: *Prefaţă* (p. 9-10), *Introducere* (p. 11-12), followed by chapter 1, *Elemente de unitate teritorială şi subordonare regională* (p. 13-17), chapter 2, *Istoricul cercetării lacurilor sărate din Depresiunea Transilvaniei* (p. 18-20), chapter 3, *Premise naturale şi antropice în geneza şi repartiţia lacurilor sărate din Depresiunea Transilvaniei* (p. 21-47), chapter 4, *Evoluţia cuvetelor lacurilor sărate din Depresiunea Transilvaniei* (p. 48-126), chapter 5, *Bilanţul apei lacurilor sărate* (p. 127-145), chapter 6, *Trăsăturile fizice, chimice şi biologice ale apei lacurilor sărate din Depresiunea Transilvaniei* (p. 146-176), chapter 7, *Valorificarea calităţii apei şi a nămolurilor din lacurile sărate* (p. 177-188), chapter 8, *Gospodărirea lacurilor sărate din Depresiunea Transilvaniei în contextul dezvoltării durabile* (p. 189-220), *Concluzii* (p. 223-225) and *Bibliografie* (p. 227-241).

In the foreword, signed by the scientific coordinator of the doctoral thesis, prof. dr. Victor Sorocovschi, the contribution of the book and the quality of the scientific research are outlined.

Chapter 1 is extremely useful and it is not written just to „fill in" the pages of the book, or just because of an old habit, but, in this case, it is very clear, with an information exposed very fluently. The author presents the main geographical characteristics of the Transylanian Depression, with the updated opinions. This is followed by a short description of the regional elements of the Transylvanian Depression. The author published a map with the repartition of the salt lakes, with the points from Ocna Dej, Sic, Cojocna, Turda, Ocna Mureş, Ocna Sibiului, Jabenița and Sovata.

The second part of the book presents the state of research regarding the salt lakes. It is interesting that starting from the 16th century there are documents that mentioned the importance of the salt lakes in Transylvania. In the 19th century serious preoccupations regarding these aspects appeared, especially related to the quality of the salt water.

The third part of the book is extremely interesting. Mircea Alexe describes the natural resources and the genesis of these lakes. The author presents numerous hypothesis related to the formation and the movement of the salt deposits. Then the climatic changes are discussed, as they are extremely important in this topic, if we start from the idea, and the author did this, that „a lake is born when water is filling in a depression" (p. 31). With the same importance are the hydrologic elements (surface waters, underground waters). At the end of this chapter the author discusses the spatial repartition of the salt lakes in the Transylvanian Depression (p. 46).

The fourth part of the book is the richest in information. Mircea Alexe presents the lakes beginning with Sovata and Jabenița. The text is illustated with suggestive figures. The author presents the situation regarding the lakes from Ocna Dej, Sic, Turda, Ocna Mureş and Ocna

Sibiului. Numerous aspects presented here are very well documented and well written. We were directly interested in some of them, because we can connect some of this information with the archaeological realities.

Traces of former salt exploitation appeared in the Roman era. We know today several points on the territory of Cluj county: Cojocna, Sic, Pata and Ocna Dejului. At Cabdic the salt exploitaion is mentioned on a 1837 map.

In the fifth chapter the author realizes a statistic of the salt lakes, beginning with the presentation of the methodological aspects. After that, some case studies are discussed.

The next chapter presents the phisycal and chemical aspects of the water.

Chapter seven presents the way in which there are capitalized these salt lakes. Mircea Alexe inform the reader on the qualities of these waters.

The final chapter presents the most important aspects regarding the valorification of these lakes. The author begins with the presentation of the general principles of the capitalisation of these lakes, from which one is very well underlined: the priciple of solidarity, which means, as the author observes, that „a collaboration between all the involved factors in the problem of the valorification of the waters: state, local comunities, the administrators of the waters" (p. 191).

At the end, the conclusions are presented as well as the bibliography (over 300 titles). The book is very useful. We do not say this because it fits well in the project. The aspects discussed are extremely important nowadays. Some of them are very anchored in the present. The 41 lakes from the Transylvanian Depression have a total area of almost 305,000 meters squares. The tourist potential of these lakes is huge. We only need to see the importance of these „treasures" and to try to educate the large public regarding this potential.

At the end we like to mention a rare aspect these days: the book is written in a simple and clear way, easy to read. All these qualities of this book which I have the honour to present permit me to recommend it for the lecture to the specialists in geography, but in the same manner to the archaeologists.

FLORIN FODOREAN, Ph.D.[1]

[1] *Faculty of History and Philosophy, Department of Ancient History and Archaeology, fodorean_f@yahoo.com*

Puşcaş, Angelica, *„Ascultări din lumea satului: Introducere în etnografie"*, [Narrations From The Rural World: Introduction Into Ethnography], volume I, Cluj Academical Press Publishing House, Cluj-Napoca, 2009, 164 p.

At the Cluj Academical Press Publishing House, an interesting "introduction into ethnography", entitled "Narrations from the rural world", has seen the light of the printing press, the author herself, being partly, a product of the world she is evoking.

The title surprises at first reading, but we very quickly realize that from this wide universe of the Romanian folk civilization – the foundation of Romania – given its vastness, whose frames of life are difficult to be comprised in multiple tones, only few "narrations" were possible to be grasped.

From the very beginning, however, we must emphasize the fact that these "narrations" or echoes, which the author brings before us, in warm tones, with vast resonances, are well chosen, they are synthetical and they represent the essence, the matrix of the rural civilization. In addition to this, the symbolism of the cover – a peasant woman with a bundle, spinning the wool, seems to synthesize, so well, the world of the Romanian village, for to the woman it is given and she is the one who has the role (mission) to hand down the elements of identity, just as Queen Elisabeth of Romania has very well observed that "the future of the country is woven by the woman".

The first volume is structured in seven chapters, differing one from another as far as their length is concerned.

In the first chapter, *„Ethnographical approaches. General notions and the paradigm of interdisciplinarity"*, the author sets the conceptual background, marks the stages and the great Schools of Ethnography, she points out its interdisciplinary character and its relations with other sciences, such a necessary step in the approach of any other subject or discipline.

Chapter II, *"Romania. Viewpoints in proportion to the taxonomy and the ethnographic – territorial units."*, as a result of the fact that "as a nation, we have the privilege to expose an extremely polished and colourful ethnographic mosaic, birthed from the labour of an effervescent millenary history", gives to the author the occasion

to establish the connection between the Carpathian space (with its morphological elements) and the local communities which populate them and under whose activity they were transformed and have received an identity – these are the *"countries"*, that were "forged" in time, inhabited by "local communities whom were claiming them back, whether they are from the region of Maramureş, from Vatra Dornei, from Năsăud, from Ţara Bârsei, from Bran etc. After this, the author makes the account of the ethnographical regions and sub-regions of our country, locating them in the geographical areas, according to the elements of relief, of running waters, elements of national folk costumes and of folk architecture, etc. The author could have mentioned as well, in our opinion, the ethnographical regions which, temporarily, are at this moment, outside the real borders of our country – Bucovina, an ethnographical region by itself, Basarabia, where ethnographical regions such as Hotin (as one of interference with the region of Bucovina, with an unending "chain" of beautiful rural settlements established between Sulița Nouă and Hotin), Codrilor, the area of Chisinau and of the Field of Basarabia (of Bugeac) which is so heterogeneous.

Ethnography comes to confirm once again – if it was still needed! – the affiliation of these historical provinces to Romania. Likewise, it had to be even more emphasised – the author made references – to the Latin-Romanian element from the Balkan Peninsula, known nowadays under the generic name of Vlach or Aromanians. There is an effervescence of Romanian life there that must be supported, either we speak of the Serbian Craina, of the region of Vidin from Bulgaria, of Epir situated in the Pindus Mountains, where Ianina and Avdela are beautiful Aromanian centres, of the Meglen region or of Macedonia, where we encounter Aromanian settlements, with lively etnographical representations; who has not heard of the traditional circle dances from Ianina, Avdela or of "paiduşca" and "gaida", such a proud Macedo-Romanian folk dance? If initially they were some shepherds, skilled artisans and transporters emerged from among them– tradesmen, people of culture, numerous Maecenas and there are many more other examples. However, the very Aromanian anthem, entitled "*Parinteasca Dimandari*" refers to the perpetuation of the ancient language and customs.

"The typology of the households" is the topic of the third chapter, and it is continued in the next one as well entitled *"Concerning residing and residences. Pre-Christian and Christian rituals in proportion to the home and to the homeland."* The author accomplishes a typology of the agricultural households according to the functional criteria, of the structure that creates an impact and of the internal administration, as well as a regionalization in conformity with the geographic criterion, just as in the 4th chapter she undertakes an "incursion" into the evolution of the fact of residing, of inhabiting. This brings the opportunity for interesting associations with pre-Christian and Christian rituals, in the symbolism of signs – see the approach of *"the circle"*, within their semiotics, with regard to the three major elements of the village: the peasant population, the rural home (the precinct of the village) and the homeland. In the final part of the chapter, she lays emphasis on the typology of the peasant houses and households, of its annexes, of the pieces of furniture, in an evolutional and regional way, accompanied by beautiful examples and graphic models. The power of synthesis is obvious and whoever has seen Mrs. Puşcaş at the Museum of Folk Civilization from Sibiu, or in other places as well, presenting to the students the artefacts of the folk civilization with much eagerness, skill and passion, cannot remain indifferent.

Chapter five *"Fundamental economical activities and trades. Customs and traditions included within the work cycle"* refers to the *"economical dimension"*, the only *"authoritative governor of any society, regardless of the stage of evolution that was attained"*, as the author asserts at its beginning. Traditional activities are mentioned – growing of plants and animal breeding – fruit growing and viticulture, with references to the tools that were used, to the toponymy derived from these occupations and to the calendar of the agricultural labours. Referring to these occupations, such as the manufacturing of wood or woodworking, approaches the qualities of the different types of wood, the main pieces of furniture and the symbolism of the signs used for decoration. The chapter ends with the description of the fishing activities, hunting, of bee keeping, of picking berries from the woods, with the help of some specific terms, ways of acting and tools that were used.

In chapter six *"Spiritual faculties of the humane",* and seven *"Recollections of the folk calendar"* a transition is done from the material world of the rural civilization to the one of the customs, traditions, rituals, with their bright sides, as well as with the darkness and gloom that come with the folk civilization, related to the stages of life, to specific activities or to certain practices and holydays.

The folk calendar it is presented to us in a native folk language, also including the corollary of the specific activities, each with its significance that is explained to us, including the symbolism and the positive/ negative connotations of the days of the week, we seem to be transposed into other former times.

The book captivates you, it is easy to read, it captivates you and it draws you toward the roots, it impels you to ask yourself questions, to relate yourself to the facts that are exhibited, to meditate on and to permanently "check" your place, your position, as against the topic.

An expert in the details of the presented topic, the author passes easily from one idea to another; starting from a topic (theme), undertakes incursions into places you never expect to ever go, related either to the traditional labours, toponymy, or to the customs and beliefs, associating them organically into a whole that represents the rural world of the village, from where she herself originates from. The author graduated the Faculty of Geography from Cluj in the year of 1997 as valedictorian, in a period of time when great professors of the faculty were at the apogee of their career – Professor Gârbacea, Professor Mac and Professor Pop. After a short time, while she worked as a researcher at the Academy Subsidiary from Cluj, she was admitted, by examination, in the higher education, at the Extension of the University from Zalau, at the very beginning, and later, again by examination, at the Human Geography Department of the University from Cluj.

The book continues the ethnographic legacy of the School of Geography from Cluj, such brilliantly represented by Valer Butură, Laurian Someşan or Nicolae Dragomir, and within the national context, the one of the Sociological School of Dimitrie Gusti, such productive and outstanding in results during the best period of the Romanian culture, the interwar period, when the research of the rural Romanian universe represented a priority, in order to know it in a profound way. By knowing it in its essence, the following step was to achieve the researches and the corrections so needed and expected – in the field of hygiene, of family planning, of the corrections of few vices, but unfortunately this stage could not be unfolded, for a alien ideology, foreign to our nation – communism, was introduced by the force of the tanks of the Red Army. The consequences for the Romanian village were very severe and it is probable that the author will approach this topic in the 2nd volume.

In conclusion, the book of madam Puşcaş Angelica, is in the same time exciting, synthetic and profound, it offers us a pleasant and instructive reading, both to the geographers and to the non-geographers alike.

PĂCURAR ALEXANDRU, Ph.D.

Sturdza, M. Dim., coord., – ***„Familiile boiereşti din Moldova şi Ţara Românească. Enciclopedie istorică, genealogică şi biografică"* [The Boyar Families of Moldavia and Wallachia. A Historical, Genealogical and Biographical Encyclopedia], vol. I, fourth grade format, *Simetria* Publishing House, Bucharest, 670 p., 2006.**

An impressive and elegant volume about the boyar families of Moldavia and Wallachia was published under exceptional graphic conditions by the *Simetria* Publishing House. It is a "historical, genealogical and biographical encyclopedia" coordinated by Mr. Mihai Dimitrie Sturdza, co-author, an expert in the field. A study of such extension needs no presentation, it is recommended by itself. Just browsing it gives you the thrill of intellectual pleasure and you don't know what to look at, what to read first: the text that "flows" so pleasantly, like a "story" (do not forget that this is an encyclopedia!), the multitude of reproductions of engravings from books and journals of the time – particularly from the 18th -19th centuries, when the number of travel accounts from the Romanian Principalities had increased, we only mention the delightful reports published in journals

such as "*L'Illustration*" and "*Le Tour du Monde*" from Paris, "*Illustrierte Zeitung*" from Leipzig or "*The Illustrated London News*" from London -, the photographs of the members of boyar families, the images of properties and house interiors, the happenings recalled, the receipts, signatures and closing formulas of documents and letters – you'd be surprised at how much an apparently simple signature can tell! -, the reproductions of the votive pictures of churches, the images of cultural and social institutions founded, the urban sequences, etc., briefly, the remarkable and astonishing, exhaustively rich iconography. To all this, genealogical tables in the first place, and the text so rich and varied, so dense and colorful are added, which introduce the reader to the past atmosphere of the recalled places and families.

Published under the auspices of the "Sever Zotta" Romanian Institute of Genealogy and Heraldry of Iaşi, the first volume has been the object of laudatory presentations and reviews signed by famous names of Romanian culture: Paul Cernovodeanu, Ştefan S. Gorovei, Neagu Djuvara, Dan Berindei or Constantin Bălăceanu Stolnici. What could I say more? Almost nothing, but enough to bring to the attention of geographers this monument of culture, at a time when geography is no longer a succession of dates and places, i.e. locational geography, but should articulate and correlate with other sciences in order to describe a terrestrial space. And then, which are the identity elements of that space, in our case Romania? Language and pop and cult culture, the succession of historical events (history) and the geographical characteristics of the place, i.e. geography. These can characterize the identity of a place, of a geographical space. Consequently, this book is useful for any man of culture, be it humanistic, scientific or technological. In the Introduction, Ştevan Gorovei writes (p. 7): "The near future will decide the importance, the utility and the merits of this book, as the use of its treasure of information will make it an authority for researchers in various fields".

The coordinator and co-author of this encyclopedia is Mr. Mihai Dimitrie Sturdza, born in 1934, with primary studies in Iaşi, secondary and university studies in Bucharest. After he was arrested and incarcerated between 1952-1954, he attended philological studies at the University of Bucharest and, after graduation

in 1960, he was a school teacher in Vlaşca county and later, a technical translator in Bucharest. In 1963, he became a resident of France, where he resumed his university studies, graduating from the Institute of Political Sciences in Paris, and became an employee of the French Ministry of External Affairs and an official interpreter for the Romanian language of the French presidents General de Gaulle and Valéry Giscard d'Estaing. Between 1986-1995, he was a political editor of Radio Free Europe and in 1991, he settled in Romania.

Mihai Dimitrie Sturdza has a passion for genealogy, as he writes in the chapter "*Genesis, Collaborators, Sources*": "In 1950, before the age of 17, I met in the house of engineer Ferdinand Bartsch or in that of the old journalist and genealogist Emanoil Hagi-Moscu all the Romanian genealogists of the time. Now, half a century later, I have the honor to publish their work". What a profession of faith, assumed at so young an age! We can only bow before the master who, as a disciple, chose to follow his vocation, honoring in this way his masters as well as his race, because he is the great-grandson of the ruler of Moldavia, Mihail Sturdza (1834-1849). His scientific and journalistic record is prodigious; we only mention "*Dictionnaire Historique et*

Généalogique des Grandes Familles de Grèce, d'Albanie et de Constantinople", an extensive work published in two editions (1983, 1999), which created sensation in the Francophone and the Balkan scientific world. Could this have been an exercise applied to the Balkan space to which all the Romanian Principalities were connected "by invisible threads", with a view to the elaboration of what Mr. Mihai Dimitrie Sturdza offers us today? This is all too possible!

In the first pages of the book, which are explanatory, introductory and evocative, the coordinator of the book thanks his collaborators, offers us a short personal CV, as well as information regarding the genesis, collaborators and bibliographic sources – printed documents, manuscripts and oral sources.

Mr. Daniel Ciobanu describes the high boyar offices of the two Principalities and the "*Introduction*" is signed by Paul Cernovodeanu, who makes a synthesis of Romanian genealogical research, and by Ştefan S. Gorovei, who emphasizes the merits of the undertaking initiated by Mihai Dimitrie Sturdza, after several praiseworthy attempts of other genealogists.

Follows the bulk of the presentation of the boyar families of Moldavia and Wallachia, in alphabetical order: letter A, completely – 25 families, and letter B, up to Bogdan, i.e. 36 families, to be continued in the next volumes.

The utility of such a work for geographers in general and humanistic geographers in particular, in addition to its being a monument of culture, is obvious because the main directions of human geography – population and settlement geography, economic geography and social geography find memorable pages in this book. A simple list of elements in which a geographer may be interested – without claiming to be exhaustive – includes the management and income generated by properties, the price of agricultural land, the work-servitude relationships, admirably described on page 394 in the Başotă family, the "dowry and expense sheets" such as those of the Bărbătescu family on pages 337-339, the engravings and photographs showing various aspects, from human physiognomies, clothing, traditional costumes, old occupations of the inhabitants, to boyar mansions and palaces, house interiors, and the aspect of localities with emblematic streets and lay or religious buildings, inns, means of transportation, cadastral maps, all of which are important elements of our evolution towards emancipation, which miraculously occurred so soon in the 19th century and in the early 20th century. The unusual mixture of "peoples" who were eventually naturalized in the Principalities: Greeks, Albanians, Armenians, French, Hungarians, Swiss, Germans, Russians, etc. is also described, as well as the first industrialization attempts, such as those of Eugeniu Alcaz in Buhuşi or Panait Balş in Torceşti, with his „steam turbine factory", in fact a huge mill.

The authors reserve a special mention to the presence of Romanian traces abroad, such as the impressive "Wallachian" Church of Lvov, founded by Miron Barnovschi, to cite only one of the very many churches left by Romanian boyars in the space adjacent to the Principalities, particularly in the Balkans, then we get acquainted with old measurements units, trades that no longer exist or names of goods that sound so exotic today.

The volume ends with a number of pages illustrated with examples of church foundations, family portraits, votive pictures, cadastral maps, followed by notes to genealogical tables and indices of subjects, authors and persons, which significantly enhance the scientific value of the book.

What impresses about what I do not hesitate to call this monument of culture is the multitude and variety of aspects treated by texts written in different time periods, in different styles; the exceptional merit of the coordinator (who also has the quality of co-author!) consists in his capacity to assemble them smoothly, as well as in the great number and variety of illustrations. The copies of documents, the engravings, signatures, maps, portraits, the many, very many photographs harmoniously complete the text, giving the informed reader an intellectual comfort when reading the encyclopedia. A lucid, meticulous and organized spirit, in the manner of French encyclopedists, Mr. Mihai Sturdza explains this for us: "The boyar class, a social category, a political class, an economic force, cannot be completely understood by the presentation of its bone structure alone, the genealogical tables, or by a succession of texts, no matter how much this might reflect its mentality, or even by the publication of a volume of illustrations evocative of the local color and atmosphere of the time.

This is why we have considered useful to include in the present anthology all the three categories of documentation mentioned above" (p. 16); here is an excellent idea of the coordinator of this book.

Referring to the selection of texts so different in nature and to their integration into a final logical organic form, Mr. Mihai Dim. Sturdza shows that they have in common "the invisible thread that connects all these texts and all these people. This is the thread that has woven the destiny and the history of an entire social class, from its appearance six centuries ago until its recent disappearance. By following this thread, I brought my contribution to the elaboration of a necessary history of bygone Romanian boyars" (p. 17).

The encyclopedia initiates a reparatory action, restoring the honorable place that Romanian boyars held during the course of our history, from the maintenance of statality in an extremely difficult geopolitical context to the social and political emancipation of the Principalities. Romanian boyars entered a phase of decline at the end of the 19th century, with the development of industrial and banking capitalism, to which they had also contributed. The final blow was given at the end of World War I, when the most extensive agricultural reform in Europe took place in our country. More than 6 million hectares of agricultural land were transferred to peasants, the soldiers who had fought in the war. The boyars changed their occupations from landowners to industrialists, bankers, merchants or they chose liberal professions, becoming lawyers, doctors, architects or even agronomists. They produced many models for society in all the areas of life and they were a class that induced progress, leaving material traces worthy of their position. If in Romania, part of the churches, monasteries, mansions (in their majority) were irreversibly destroyed or mutilated, these are preserved in all their splendor abroad, even if their owners have changed.

As a geographer and a Transylvanian, as one who was born and educated in Braşov, which gives me a round perspective on the whole space inhabited by Romanians and an awareness of the larger space (I am of those who believe in geographical determinism), I am slightly disappointed because once again, in an extensive study, Transylvania has been excluded from the body of the country which it so eagerly joined. This vast and well documented book will not be complete without Transylvania, the inclusion of "the past of the old cnezial and noble families from Transylvania, Banat and Maramureş" being imperatively necessary. It is impossible for Mr. Mihai Sturdza not to have noted this deficiency; the inclusion of Transylvania would have certainly involved a huge additional effort, because different social and nobility structures are involved and, if the Romanian noble families initially showed their Latin origin, after 1437 they underwent a forced process of denationalization and gradually diluted into the heterogeneous, mainly Hungarian nobility body. The ice should be eventually broken and all historical Romanian provinces should be treated together!

However, the reading of this almost inexhaustible source of information which is the first volume of the historical, genealogical and biographical encyclopedia "*Familiile boiereşti din Moldova şi Ţara Românească*", so skillfully coordinated by Mihai Dim. Sturdza, a genuine master in the field, gives me great satisfaction.

The book has benefited from unanimous appreciation; of the numerous comments, I present to geographers those of two outstanding personalities of our culture. Thus, Prof. Neagu Djuvara wrote on the publication of this book: "The publication of this impressive and long-expected book makes me very happy. From now on, this will be an indispensable instrument in Romanian historiography, where the role of boyars in the history of the Principalities, even before the "dismounts", was almost completely occulted – not only in the communist era but also before. This is not an apology and - even less – a panegyric of the boyars, but an objective recognition of the overwhelming presence of this small social group in the history of the country until the end of the 19th century. I have no doubt that the book will have at least the same success as the wonderful volume published by Mihai D. Sturdza in Paris a long time ago, "*Les Grandes Familles de Grèce, d'Albanie et de Constantinople*". I look forward to the sequel to the first volume". Academician Dan Berindei emphasizes the fact that "the boyars played a decisive role in the destinies of the Romanian people. Among others, the continuity of our statal life for more than half a millennium was due to them. Mihai Sturdza, who himself descends from a large and old boyar

family, by working with passion and untiring diligence for decades, has made a necessary reconstitution, offering us through this volume the first part of a monumental work. We owe him gratitude and the appreciation of his tremendous efforts. Thanks to the present book, the boyars start to regain the place that they deserve in the complex processes of the formation of the Romanian nation".

As a final conclusion, it should be mentioned that the encyclopedia is an instrument of culture indispensable to geographers, to whom I strongly recommend it, which should not miss from any library and, by paraphrasing the distinguished historian Neagu Djuvara, "I look forward to the sequel to the first volume".

PĂCURAR ALEXANDRU, Ph.D.