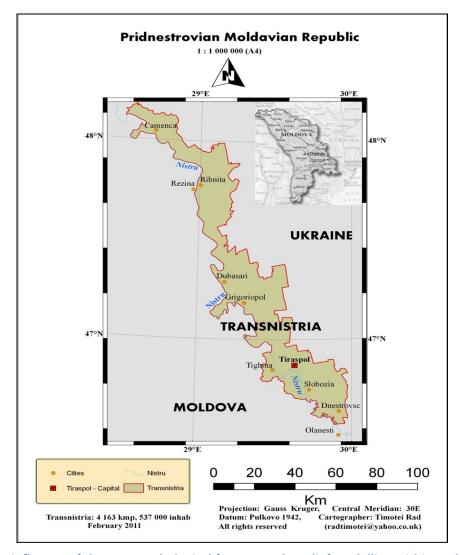
# CINQCONTINENTS REVUE ROUMBINE ELECTRONIQUE DE GEOGRAPHIE



The influence of the geomorphological factors on the relief modelling within Eşelniţa hydrographic basin (Danube catchment/Romania) | The influence of the pedological factor on the relief dynamics within Săsăuş River catchment (Transylvania) | The regional chorotype of the Nişcov River Basin (Romania) | Access to the health services in the context of economic restructuring. Case study: Braşov, Câmpulung and Râmnicu Sărat (Romania) | Mapa político del mundo: entidades no representadas o representadas inadecuadamente | The evaluation of Râuşor ski area (Retezat Mountains/Romania) in the context of becoming touristic resort for local interest | Roads exposure to blizzard phenomenon in the plain area of Buzău county (Romania)

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iosif.daniel@ymail.com

#### Mirela PARASCHIV (Editeur)

mirela.paraschiv@ymail.com

#### **Dragos ONEA (Editeur)**

dragosz.v@gmail.com

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## THE INFLUENCE OF THE GEOMORPHOLOGICAL FACTORS ON THE RELIEF MODELLING WITHIN EŞELNIŢA HYDROGRAPHIC BASIN

#### Daniela VLAD Raluca ALEXANDRU

Ph.D. Std.
Faculty of Geography, University of Bucharest vladdaniela82@vahoo.com

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## The influence of the geomorphological factors on the relief modelling within Eselnita hydrographic basin

Daniela Vlad Raluca Alexandru

The influence of the geomorphological factors on the relief modelling within Eselnita hydrographic basin. Developed on the south-eastern side of Almãjului Mountains, Eşelniţa drainage basin neighbours upon the following basins: upon S - SV with Mala, upon SV - V with Mraconia, upon V - NV with Berzasca, upon NV - NNE with Nera and on the NNE - SE direction with Cerna. The basin has a surface of 77 km<sup>2</sup> and present a 5th degree hydrographic network according to Horton-Strahler ranking system, tributary to Danube by means of Eşelniţa main collector. Developed in a mountain landscape, the basin presents different levels held between minimum altitude of 64 m at the confluence with the Danube and maximum altitude of 1107 m, thus presenting a difference of 1043 m. Geological formations within the basin belong predominant to the Danubian Domain, so in central and upper courses, these are represented by a crystalline foundation and by magmatic rocks of intrusive nature covered by very small areas of sediment located in the northwest (belong to the Lower Jurassic) and in the south-eastern (belongs to the Upper Cretaceous) of the basin. But in the lower course, there are both crystalline and the sedimentary formations, last being integrated to Orsova depression and whose presence is related to the evolution of the Danube. Morphometric indices of Eşelniţa basin allows the distinction of a higher sector, mountainous terrain with high energy under a relatively increased fragmentation and depression sector with low relief energy and also with an intense fragmentation of the existing sedimentary rocks wich favors erosion manifestation in the context of deforestation action.

**Key words:** factors, relief, declivity, slopes, modeling.

Influenta factorilor geomorfologici asupra modelarii reliefului din bazinul hidrografic Eselnita. Dezvoltat pe versantul sud-estic al Munților Almajului, bazinul hidrografic Eselnita se învecineaza cu urmatoarele bazine: la S - SV cu Mala, la SV - V cu Mraconia, la V - NV cu Berzasca, la NV - NNE cu Nera iar pe directia NNE - SE cu Cerna. Conform sistemului de ierarhizare Horton - Strahler, ordinul bazinului Eşelniţa este de 5, prezentând o reţea hidrografică tributară Dunării prin colectorul principal cu același nume. Dezvoltat într-un peisaj montan, bazinul prezintã o diferentã de nivel cuprinsã între altitudinea minimã de 64 m localizată la confluența cu Dunărea și altitudinea maximă de 1107 m, prezentând astfel o diferență de nivel de 1043 m. Formațiunile geologice din cadrul bazinului aparțin predominant Domeniului Danubian, astfel cã în cursurile superior și central, acestea sînt reprezentate de un fundament alcătuit din șisturi cristaline și roci magmatice de natură intrusivã acoperite de areale foarte restranse de sedimentar localizate în nord-vestul (apartin jurasicului inferior [1] și în sud-estul (cretacic superior C3) bazinului. În cursul inferior, se află atât șisturi cristaline cât și depozite sedimentare ale caror suprafețe sînt semnificativ mai mari decât în restul bazinului. Indicii morfometrici ai bazinului Eşelniţa permit deosebirea unui sector mai înalt, muntos, cu energie de relief mare, în condițiile unei fragmentări relativ accentuate și a unui sector depresionar cu o energie de relief redusã și de asemenea cu o fragmentare intensa pe fondul existenței rocilor sedimentare care favorizeazã manifestarea proceselor de eroziune în contextul actiunii de defrisare.

**Cuvinte cheie:** factori, relief, declivitate, versanți, modelare.

#### 1. GENERAL ASPECTS

Eşelniţa drainage basin (Figure 1, Photo 1) collects its water from a reception area of 77 square km by means of omonymous main collector arising from Almãjului Mountains, below Svinecea Mare peak, at an altitude of 1080 m. After the length of a main water course of 26 km at the confluence of Eşelniţa river with Danube, there is a gulf where in accumulation processes act as a result of increasing of basis level.

The change of the initial basis level has occurred as a result of forming the Iron Gates storage lake [1], so that the altitude of the river mouth of Eşelniţa river is 64 m, in accordance with the normal level of lake's retention.

As a result of mechanical treatment of water at hydroelectric, the altitude from the river mouth of Eşelniţa river, may vary, although in general is within the range of 63 - 68 m.

The basin present a 5<sup>th</sup> degree hydrographic network according to Horton-Strahler ranking system, tributary to Danube by means of Eşelniţa main collector.

Developed under a mountain relief, the basin presents a multistage arrangement between the maximum altitude of  $1107 \, \text{m}$  and the minimal altitude of  $64 \, \text{m}$ , at the confluence with Danube, therefore having a level difference of  $1043 \, \text{m}$ . The value of the level difference between the spring, located at  $1080 \, \text{m}$  and the river mouth located at  $64 \, \text{m}$ , is  $1016 \, \text{m}$ .

The geological components within Eşelniţa basin belong to *Danube Field*, having a crystalline bed consisting in crystalline schist represented by crystalline of Poiana Mraconiei, crystalline of Neamţu and crystalline of Corbu, eruptive rocks represented by two granitoidic massifs with intrusive character, inferior Paleozoic age: granite body of Cherbelezu having a northern development within the basin and granite body of Ogradena [2]. The sedimentation formations arranged on the crystalline bed do not cover a major surface, as in the north-western area of the basin there may be found formations belonging to inferior Jurassic (conglomerates, sandstones, argillaceous schist and coals) and in southern area of the basin there are major sedimentary deposits belonging to Neogene (marl, gravel, organogene limestone) and Quaternary (gravel and sands).

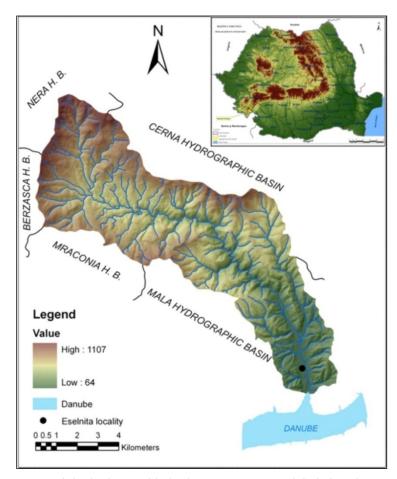


Figure 1. Eșelnița hydrographic basin (Data source: Digital elevation model)



Photo 1. Aspect from the lower course of Eşelniţa basin (Author: Daniela Vlad, May 2012)

#### 2. GEOMORPHOLOGICAL FACTORS WITH ROLE IN SHAPING THE RELIEF Relief

By its morphometric characteristics, relief is a support of the current modeling processes. Morphometric parameters such as form slopes, altitude, density fragmentation, relief energy, slopes and slopes exposition determine decrease or on the contrary, water flow intensification on the slopes, actions carried out under the erosion of soil particles or rocks by infiltration [3].

Being a mountain basin, the relief of Eşelniţa have optimal conditions for expression of erosion, especially on the increased slopes and high relief energy that vegetation is less compact or eliminated from deforestation. Eşelniţa relief within the basin covers a difference of 1043 m, point of maximum altitude is of 1107 m, located in the north, on the watershed, in the area of the origin and the minimum altitude of 64 m, is identify in the lower of the omonymous river valley. By the analysis of the hypsometric map can be seen that the basin Eşelniţa unfolds in five stages of relief with variable proportions:

**Level located below 100 m** (charge 2% of the basin), is identify in the lower basin, in the meadow near the isle formed after Eşelniţa river collect Criviţa tributary until it flows into the Danube.

**Level of 100-300 m** (17%), well developed in the lower course where appears under tentacular form on the tributary valleys Criviţa and Focoanele. This step is less shaped in the middle course where it can be seen just on Cusa valley but also on Eşelniţa valley until to Ogaşu Teiului Mic.

**Level of 300-600 m** (35%), extends in all three courses of the basin but has a broader development in central and lower classes. At this stage takes place Cãpãţâna peak and part of Micşanovãt peak parallel with Criviţa valley. Of valleys, portions of their more or less contained within this stage, are: Ogaşu Fântâna Rece, V. Cusa, Og. Neamţului, Og. Teiului Mare, Pârâu Predelu Mic, P. Predelu Mare, Cireşului, Og. Priboi and tentacular accompany Frasinului valley, Vulpea Mare and Vulpea Micã valleys and Cherbelez valley.

**Level of 600-900 m** has the largest share of catchment area (41%) and occurs in all sectors but a significant extension registers in the middle and upper course which are included most of the Frasinului and Cherbelezu valleys.

**Level of 900 m** is the last stage of the basin hypsometric Eşelniţa located in the upper course distinguished by reduced weight (5%), by having the highest point of 1107 m altitude and the fact that there in lies the origin of Eşelnia river.

In terms of altitude, Eşelniţa catchment areas is analyzed for its distribution on the stage elevation. To achieve the analysis is necessary to calculate the corresponding surface elevation steps set down to a range of 100 m between the contour lines. Further, the values obtained (km) is represented in a system of rectangular axes in which on the abscissa are passed the surfaces values and on the orderded the altitudes (m). Hipsografic curve resulting from the representation of the contour surfaces cumulated from highest to lowest altitudes. Based on this representation can find wich is the area of the basin located above a certain quota [4].

Hipsografic curve obtained has a higher slope at the top (Figure 2), where the defined areas are small and characterized by marked elevations in the range 970 - 1070 where over 1070 m are the lowest in the area. Then follows a development of the curve as a uniform slope from 970 m to 870 m range then begin to decrease until the minimum located at an altitude below 70 m, forming a bottom facing upward convexity, which shows a proportional decrease of the partial surfaces as the altitude decreases. Altitude lead to an increase or decrease of the potential energy of water moving on the slopes and therefore erosion impact depends on this feature. Although not directly influence, the elevation relief is a very important morphometric element in modeling wich lead to a natural setting of the climate and vegetation.

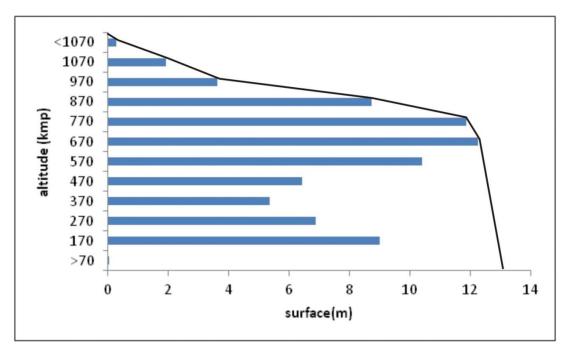


Figure 2. The hipsografic curve of the Eşelniţa basin and the basin surface distribution on the steps of elevation (Date source: Topographic map, 1977)

#### Slopes shape

By analyzing this parameter is identify slopes whose profile can vary even within the same slope. "Generalized, the slopes present both simple aspect - convex or concave right and an infinity of complex shapes based on lithology and structure, the specific modeling and stage of evolution of the landscape" [5].

Water runoff on the slopes with a straight profile of the Eşelniţa basin results in accelerated erosion, soil particles being transported or fragments of rock which in time creates forms of erosion in deep as ravines and gullys. Convex slopes are most vulnerable to erosion and gravitational processes while concave slopes record a reduced risk as to achieve balance profile [6]. Since the upper convex slopes, water flow speed is accelerated due to the shape while the concave slopes, speed is widening its movement towards the middle slope and thus has no time to erosion, arriving too quickly to the slope base. Dynamic slope processes are contingent on both the shape and tilt of the slope, being active due to a favorable geological event such a constitution.

#### Slope length

It runs from the watershed to the slopes base and its influence on the water flow is eloquent especially during heavy rain when "the same slope, lengthening the route of drainage of surface water determine flow increases and intensification of erosion" [5]. According V. Tufescu [7] is expected that at an increase of the slope length of 2 times, erosion will increase by 3.03 times. As water flow on slopes, and increase speed and ability to transport it, being trained in its motion to the slopes base, a quantity of eroded material increasingly higher.

#### **Drainage relief**

Is the expression difference of altitude between the lowest level, respectively the valleys bed and the highest level, namely the peaks of a complex. The higher the altitude difference is, the greater the degree of inclination of the slope and length and thus will risk triggering erosion and gravitational processes [8]. Energy relief values vary in Eşelniţa basin from the minimum interval of less than 100 m/km and a maximum of over 300 m/kmp (Figure 3).

The analysis of drainage density map shows that most of the basin (37%), register values contained in the interval of 200-300 m/sq km, followed by interval of 100-200 m/sq km and that of over 300 m/sq km, both being equal in terms of the share of catchment area (31%).

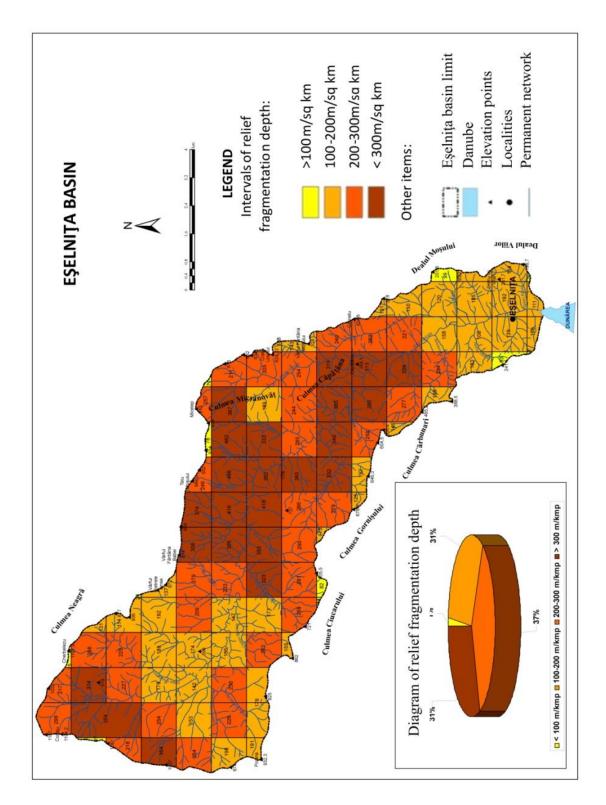


Figure 3. Fragmentation depth map (Data source: Topographic map, 1977)

Unlike other areas related to intervals, the interval of 200-300 m/sq appear as smaller areas in size but spread over the entire basin, being present in all three courses. Values range from 100 to 200 m/sq km, has well-defined areas in the lower and the upper course while those of over 300 m/sq km is located in the central and lower courses. An insignificant percentage of basin area is owned by the range below 100 m/sq km whose areas showing very small extension located on the watershed basin. Lithological influence on the drainage depth is more than evident across the Eşelniţa basin. Thus, on the sedimentary rocks of the lower course of Eşelniţa, in the south, is the smallest amount of fragmentation depth of 18 m/sq km. Instead, on resistant rocks at erosion such those of crystalline nature, torrential processes are reduced, so that values above 300 m/km are recorded in all three sectors of the basin but well defined areas are located in the middle and the lower courses. As the amplitude of the drainage depth is higher the greater is the energy-gravitational potential and intensity of erosion processes is illustrated.

#### **Drainage density**

Is a parameter indicating the hydrographic network density in relation to the area occupied by slopes. At high values of drainage so when there a dense network of valleys and narrow interfluves, there is a large extension of surface slopes with potential for triggering slope processes [9]. Processes acting on the slopes of the Eşelniţa basin are represented by erosion processes through surface washing, runoff water, but also those of gravitational processes as rolling, collapses, landslides. The largest share of catchment area belongs to density with values contained in the range of 5-6 km / km, mean in a proportion of 28% the basin has an above average potential for the development of modeling processes (Figure 4). Other intervals with high values but with a lower proportion in the whole basin are: the range of 4-5 km/sq km (16%), the range of 6-7 km/sq km (19%), the range of 7-8 km/sq km (13%) and over the 8 km / sq km (9%).

Adding the share of these intervals reveal that 85% of the basin generally shows higher densities indicating large share of current process modeling at slopes but also at the water courses.

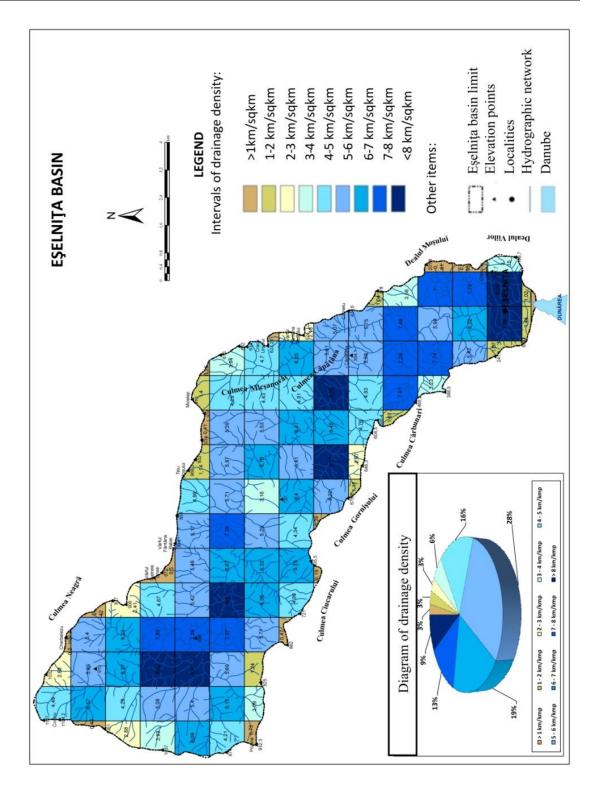


Figure 4. Drainage density (Data source: Topographic map, 1977)

#### Slopes declivity

The analysis of slopes within Eşelniţa basin (Figure 5) illustrates predominance generally of inclined surfaces, areas that have an important [110]

morphodynamic potentially. Causes that determine differences in slopes are varied structure, lithology (rock hard and soft) also fluvial erosion [10].

It finds a connection between drainage density and drainage relief on gradient slopes so due to their high values it is estimated an increase of the slopes inclination wich favors the increase speed drainage on it. So, depending on the value of slope, water in its movement on the slopes will either infiltrate or it will leak to the surface favoring erosion [11]. Most of the basin presents slopes in the range of 15-25° mean in a rate of 40% slopes are medium and strong tilted type, being exposed to high erosion risk according to the classification of Moţoc *et al.* [6] (Table 1). Slopes with a declivity developed in the intervals of 25-35° and over 35° presents a strong to highly inclination with the manifestation of excessive erosion. Instead at slopes whose inclination is in intervals of 0-7° and 7-15° there is a low risk of erosion to increased and high under the presence of slopes ranging from almost horizontal to slightly inclined.

Table 1. The slopes exposure to erosion depending the inclination and gradient

Slope %		Slope inclination	Type of erosion
a	b		
0-5	0-2	Practically horizontal	Low risk of erosion
	2-5	Extremely low angled	
5-12	5-8	Weakly inclined	Increased risk of erosion
	8-12	Weak	High risk of erosion
12-25	12-18	Middle inclined	Very high risk of erosion
	18-25	Strongly inclined	Extremely high risk of erosion
25-50	25-35	Very strongly inclined	
	35-50	Extremely strong inclined	Excessive erosion

Data source: Processing after Moţoc et al., 1975

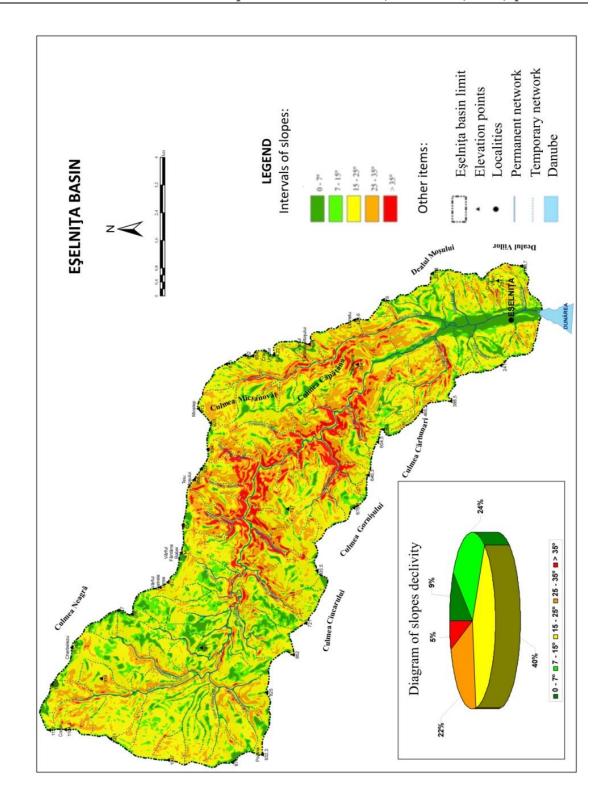


Figure 5. Slopes declivity map (Data source: Digital elevation model)

#### Slopes exposition

Represents an important indicator in current modeling of the slopes within the Eşelniţa basin. Through solar and caloric radiation, southern slopes predominantly oriented are exposed to more disagregation and alteration processes compared to those oriented towards the north.

In the winter season, on southern slopes, snowmelt occurs rapidly and in the summer season they heat up very quickly and thus they easily lose water reserve. In conclusion, the southern slopes presents a hot and dry topoclimate, being exposed to such intense processes of disagregation and alteration, so the event of a strong degradation, sometimes with a movement of materials on the slopes and submission them to the base of slopes under screes form [11].

Southern exposition of slopes within Eşelniţa basin have a share of 15%, showing them a more intense morphodynamic from other expositions, especially to the north, northwest, west, south-west or north-east. On the southern slopes, more exposed to solar radiation, snowmelt will occur more quickly and therefore will be more abundant flow of water. The south-east and south slopes also presents a dynamic active processes.

#### 3. CONCLUSION

Under the aspect of influence exerted by morphogenetic factors geomorphological processes with the role of modeling slopes within the basin are distinguished mainly by all types of erosion, from incipient to advanced forms such as linear and areolar erosion to gravity type of collapses, slumping, rolling and landslides but with a reduced spread.

The landscape is constituted both as support and as a triggering factor and manifestation of geomorphological processes in terms of its characteristics such as altitude, slopes shape and length, declivity, in the context of vegetation with cleared areas and a temperate continental climate with mediterranean nuances where its specific climate elements print a certain pattern of development processes. It adds the exhibition influence on relief modeling by emphasizing disagregation and alteration processes and drainage depth and drainage density whose values indicate higher risk of triggering erosion and gravitational processes.

Morphometric indices of Eşelniţa basin allows the distinction of a higher sector, mountainous terrain with high energy under a relatively increased fragmentation and depression sector with low relief energy and also with an intense fragmentation of the

existing sedimentary rocks wich favors erosion manifestation in the context of deforestation action.

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## THE INFLUENCE OF THE PEDOLOGICAL FACTOR ON THE RELIEF DYNAMICS WITHIN SĂSĂUŞ RIVER CATCHMENT

#### Raluca-Georgiana ALEXANDRU Daniela VLAD Marius Mihai PAISA

Ph.D. Std.
Faculty of Geography, University of Bucharest sataliahti@yahoo.com

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### The influence of the pedological factor on the relief dynamics within Săsăuş river catchment

Raluca-Georgiana ALEXANDRU Daniela VLAD Marius Mihai PAISA

Influenza del fattore pedologico sulla dinamica del paesaggio nel bacino Săsăuș. Il paesaggio ha un'influenza indiretta sullo sviluppo del suolo, attraverso diversi fattori. Una caratteristica importante dei suoli è che essi sono soggetti ad una serie di stadi nella loro evoluzione, ottengono un profilo profondo, con una moltitudine di orizzonti ben differenziati. Questi tipi di suolo influenzano la dinamica del paesaggio del bacino idrografico, attraverso la loro tessitura e struttura, che sono più o meno soggetti a certi processi geomorfologici. In questo caso, causa dell'espansione dei depositi d'argilla, sabbia e ghiaia, i processi di erosione di superficie sono dominanti a causa della pioggia e della rete idrografica e a volte si incontrano frane di terreno.

**Parole chiave:** tipi di suolo, erosione del suolo, bacino idrografico di collina.

Influența factorului pedologic asupra dinamicii reliefului în bazinul hidrografic Săsăuș. Relieful are o influență indirectă asupra dezvoltării a solului, prin diferiți factori. O caracteristică importantă a solurilor este faptul că acestea sunt supuse printr-o serie de etape în evoluția lor, rezultând într-un profil adânc, cu multe orizonturi bine diferențiate. Aceste tipuri de sol influențează dinamica de relief în cadrul bazinului hidrografic, prin textura și structura acestora, care sunt mai mult sau mai puțin predispuse la anumite procese geomorfologice. În acest caz, datorită extinderii depozitelor de argilă, nisipuri și pietrișuri, procesele dominante sunt eroziunea de suprafață cauzată de ploi și de drenajul rețelei hidrografice și pe alocuri alunecările de teren.

**Cuvinte cheie:** tipuri de sol, eroziunea solului, bazin hidrografic de deal.

#### 1. INTRODUCTION

Form a soil genetic point of view, the relief influences the orientation and steepness of slopes and the soil distribution within the basin. The factors that influence the soil developments are represented by landforms, lithology, underground water, climate, vegetation and of course the time and anthropic factors.

The soil is a product of the natural environment and it represents a structured factor, composed by mineral, organic and living organism's compounds that formed and evolved at the continental surface, respectively the upper layer of Earth, with different properties depending on its composition [1].

There were many attempts to classify the soil types along the years, but one of the most known is the naturalist classification of Dokuceaev, that was published in the  $19^{th}$  century in Russia. This classification was based on the premises that soil is a natural organism involved in a strong interaction with the environment.

In the 20<sup>th</sup> century a new system named Soil Taxonomy is initiated within the U.S.A. which focused on the internal characteristics of the soil as a natural resource. Also in the late 20<sup>th</sup> century, in Romania a new system that combined the two theories (American and Russian) was implemented, this classification was to be known as The Romanian Classification Soil System (S.R.C.S.)[2], which included XII soil classes and 34 soil types.

Due to several changes regarding the worldwide soil classification system an initiative of renovation of S.R.C.S. was needed, thus the Romanian Soil Taxonomy System was developed (S.R.T.S.)[3]. Although they are different systems of classification, some of the old classes of soil names can be easily recognized within the new taxonomy, measures taken to facilitate the change.

#### 2. STUDY AREA

The study area is focused on Săsăuş hydrographic basin (Figure 1). Săsăuş morphohydrographic basin is situated within the Romanian territory, in the southern part of Hârtibaciu Plateau, a subunit of the Transylvanian Depression, an unit of Orogen with a plateau terrain, and it is framed by the geographical coordinates 24°49'23" and 24°32'14" Eastern longitude and 45°56'51" and 45°47'54" Northern latitude (Figure 2).

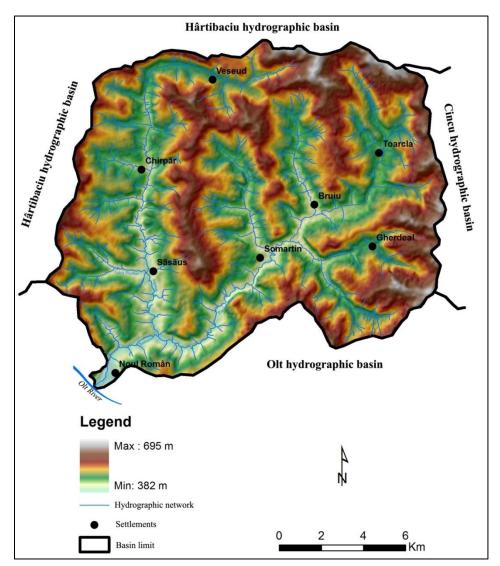


Figure 1. Săsăuş River catchment (Source: SRTM Romania, Topographic Map)

Săsăuș river basin is bordered in the North, Northwest and West by Hârtibaciu River basin, in the East by Cincu River basin and in the South by Olt River basin and it occupies a total surface of 232,21 km<sup>2</sup>.

The geology of the basin area is relatively simple as it overlaps a Neogene sedimentary package belonging to Sarmatian and Badenian, not cemented rocks (sands and gravels) or weakly cemented rocks (friable sandstone, thin horizons of conglomerates, clays and marls).

**Soil properties. Soil genetic type** represents a group of similar soils, separated within a class of soils, characterized by a specific manifestation of one or more of the following diagnosis elements: precise class diagnosis horizon, aquatic properties [4].

Therefore, these traits show the mobility of soil processes influenced by general conditions of climate, hydrology, biology, lithology and anthropic degree of the location where the soil forms and evolves.

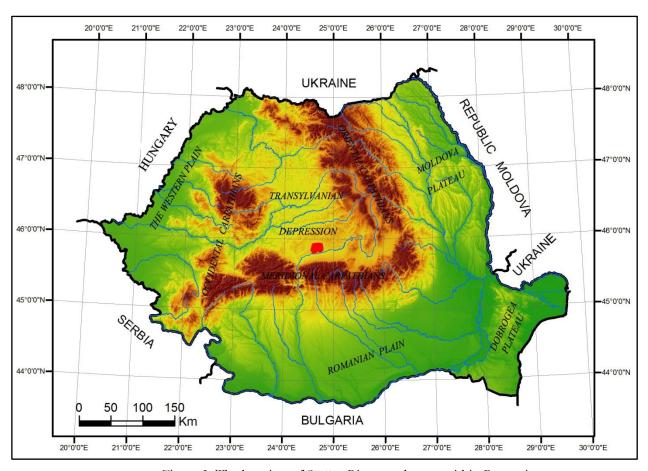


Figure 2. The location of Săsăuş River catchment within Romania (Source: SRTM Romania)

**Erodosols (ER)** are a part of the Antrisols class. They have an explicit profile with strong fragmentation due to erosion. They present an anthropogenic horizon with the lack of A and E horizons due to erosion caused by inadequate land usage and anthropic activities. Also due to intense erosion it presents on the upper layer (B or C horizons) altered soil fragments with anthropogenic horizon of minimum 50 cm thick or 30-35 cm thick in skeletal situations.

Erodosols are perceived as a result from other soils that have been affected by removing the upper layers through intense natural erosion processes or strictly anthropic processes of soil removal [5]. This type of soil (Table 1) is encountered in plateau, piedmont and hilly regions on heavily inclined surfaces that have been affected by deforestation.

Table 1. Soil types encountered within Săsăuş Hydrographic basin

Erodisols	Erodosols
Erouisois	Erouosois
Marshy soils	Gleysols
Albic luvisols (podzolic illuvial clay)	Luvosols
Pseudorendzinic soil	Faeozioms
Alluvial soils	Fluvisols
Brown illuvial clay soils	Preluvosols
Brown eumezobazic soil	Eutricambosols
Brown luvic soils (podzolite soils)	Luvosols
Black clinohydromorphic soils	Faeozioms

(Source: S.R.C.S, 1980; S.R.T.S., 2003)

The main characteristic of this soil is its sandy texture. Considering the soil and climate circumstances of Romania, the wind erosion only affect small plain areas and rarely mountainous areas, thus in the Săsăuş basin this type of soil was mainly eroded by water. Soil horizons are the result of the dominance of one or more sets of processes over other processes through time [6].

Under the aspect of hydric erosion, it occurs in three distinct phases: the first phase, soil particles are detached, in the second sediments are transported to a certain distance from the detachment and in the third phase they are deposited [7].

*Gleysols (GS)* are soils that develop under wet conditions, have a thin (<8 cm) or none at all, Ah horizon and is underlain by a mottle gray or brownish gleyed material. Moss peat that has identifiable plant remains may occur on the surface [8]. Gleysols occur mainly in lowland areas where the groundwater comes close to the surface and the soil is saturated with water for long periods of time.

Conditioned by excessive wetness at shallow depth, this type of soil has oxygen deficit for considerable periods (known as a reduced state) which gives a typical bluish /greenish/ grayish colour to the soil [3]. They usually have a compact clay-loamy texture that makes them difficult to exploit due to their low content of humus and weak structure.

**Luvosols (LV)** fall into Luvisol class and contain as soil subunits: brown luvic soil, reddish-brown luvic soil and albic luvisol soil, specifically with argic B horizon (Bt) with chrome over 3.5 (at humidity) starting from the upper layer, not including the soils with a B argic-natric horizon (Btna).

They are commonly found on depression surfaces near hill, plateau and piedmont regions that reach altitudes between 200-800m (Transylvania Plateau, Moldovei Plateau,

Getic Plateau etc) and also on old river terraces. These soils have a deficit of acid materials (calcium and iron minerals) and are represented by sand, clays, loams and sandstones.

**Faeozioms (FZ)** are a part of Cernisols class, and has held different names over time such as degraded chernozem, podzol and gray forest soil, and it is always defined by the appearance at the surface of a A mollic horizon type (Am).

Faeozioms are often located in cold and damp areas with large extend in plateaus, sub-Carpathian depressions (dep. Sibiu, dep. Brasov etc.), in eastern Transylvanian Plain and also in the higher sector of the Romanian Plain. These soils are developed on flat or weak steep surfaces or on slopes with a reduced drainage system. Faeozioms deposits are found mainly on clayey or clay texture, sometimes coarse, represented by clay or marl-clays.

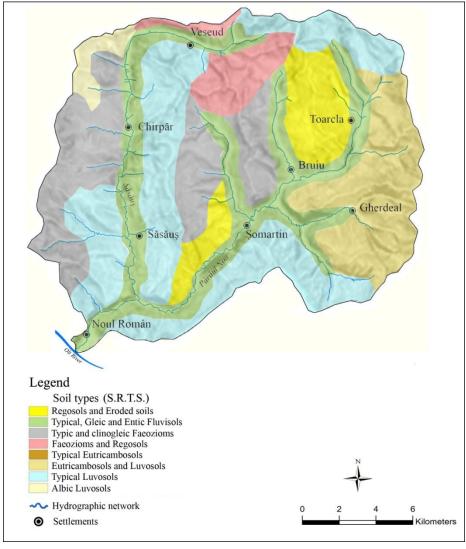


Figure 3. Soil map within the Săsăuş River catchment, according to S.R.T.S. (Source: Soil map of Romania 1:200.000, with adjustments)

**Fluvisols (FL)** are soils having fluvic soil material starting within 25 cm from the soil surface and continuing to a depth of at least 50 cm from the soil surface. They have no diagnostic horizons other than a histic, mollic, ochric, takyric, umbric, yermic, salic, or sulfuric horizon.

According to the I.C.P.A. [9] classification (Figure 3), Fluvisols include alluvial soils, alluvial protosols and colluvisols. These soils are found in relatively young relief units, formed from water flowing actions in delta regions, lake areas or sectors affected by floods from time to time from the floodplains of large rivers in Romania (Olt, Jiu, Mureş, Timiş etc.). Fluvisols are characterized by limited accumulation as an effect of repeated alluvial deposits that block the fixing and development of vegetation [1].

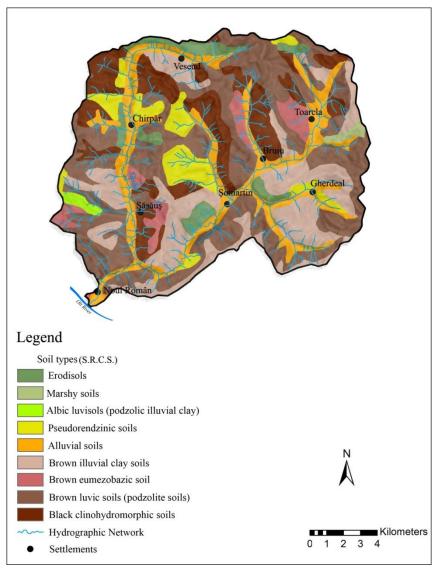


Figure 4. Soil map according to S.R.C.S.

(Source: Corine Land Cover, 2006)

**Preluvosols (EL)** of soils that have an ochric fragment, an argillic horizon, and moderate to high base saturation and in which water is held at less than 1500 kPa tension during at least 3 months each year when the soils are warm enough for plants to grow. They include the former brown illuvial clay soils (Figure 4) and reddish-brown soils with B argic horizon (Bt) without, however B argic-natric horizon soils (Btna).

Preluvosols are developed on deposits of sandstones, conglomerates, sands and clays, and they are found in regions with altitudes between 150-800 m respectively plateaus, hills, piedmonts and high plains with a good drainage (Transylvanian Plateau, Getic Plateau, Northern Dobrogea etc.)

**Eutricambosols (EC)** are a part of Cambosols class and are defined by the appearance at the surface of an A ochric (Ao), A mollic (Am) and a B cambic (Bv) accumulation horizons [10]. They present medium and fine-textured materials derived from a wide range of rocks, mostly in colluvial, alluvial or aeolian deposits. This soil type is generally found on shady slopes of the Eastern Carpathian and Sub Carpathian chain, on flat or depressionary landforms with positive drainage at altitudes between 500 - 1300 m.

These soils generally have a good aeration, without water excess, sometimes being subject to erosion and are commonly used in field agriculture (crops of wheat, corn, potato, etc.) and in specific hill-plateau activities such as grapevines and orchards.

#### 3. RESULTS

Whitin Săsăuş River basin the pedological factor determines the type of processes that occur with a certain frequency. Along the main river valleys (Valea lui Trifan, Valea Vizina, Gherdeal, Veseud valleys) the main active process is erosion caused by water, especially lateral erosion, where the river is undermining a bank on one side of its channel and the eroded material falls into the river and disintegrates; instantaneously, the river shifts toward the bank that is being undercut.

The areas occupied by pastures, hayfields and meadows (with slopes ranging from 10<sup>0</sup>-15<sup>0</sup>, presenting an average inclination) are overlapping Panonian and Sarmatian formations of sands, gravels and clays which favors the development of rainfall erosion on the slopes and also the forming of torrential organisms.

In certain areas of the catchment, especially in the Northern Sector of Vizina Valley, South-West on Săsăus Valley and East on the left side of the Pârâului Nou, Gherdeal, Pandea, Valea Caprelor, Valea Bleşăraua and Valea Lungă valleys the main processes are those caused by landslides and mass movement of bedrocks that overlapp clay deposits. These

areas are associated with grasslands areas, hayfields and meadows, with Sarmatian and Quaternary substrate deposits (gravel, sand and marls).

The most susceptible soil to erosion include: eroded soils, brown eu-mezobasic soils with sandy-clay texture, clay-loamy and clay textures. Within Săsăuş River basin these soils are frequent on the slopes of Valea Lungă, Valea Ilimbav, Valea Vizina, Gherdeal and Pârâul Nou valleys. Also the reddish-brown luvic soils, clay-illuvial brown soils, black clinohydromorphic soils, pseudorendzinic soils, brown eumezobazic soils, brown luvic soils with clayish texture, sandy-clay and clay textures are prone to erosion, being encountered especially on the slopes of the following valleys: Gherdeal, Valea Caprelor, Valea lui Trifan, Veseud.

#### 4. CONCLUSIONS

The relief has a direct impact in soil development through different processes such as rock movement, and an indirect impact by slope orientation which contributes to the uneven repartition of heat and moisture and therefore the evolution of different types of soils. The analysis of the soil types helps to determine what process can affect that certain soil so that measures can be taken in time to prevent or even stop extreme processes to occur. Soil erosion is a naturally occurring process on all land. The agents of soil erosion are water and wind, each contributing a significant amount of soil loss each year in the catchment. The landslides that occur in the catchemnt area are dependent on several factors which include soil texture, depth to the bedrock and slope shape.

#### 5. ACKNOWLEDGEMENTS

#### Invest in human resources!

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## THE REGIONAL CHOROTYPE OF THE NIŞCOV RIVER BASIN

#### **Adriana BOGDAN (MARGALIN)**

Ph.D. Std.
Faculty of Geography, University of Bucharest
adrianamarga@yahoo.com

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#### The regional chorotype of the Nişcov River basin

Adriana Bogdan (Margalin)

Le chorotype régional du bassin versant de Nişcov. Le bassin versant de Nişcov est un système construit par plusieurs éléments qui se trouvent toujours en relations entre eux. Ces relations ont déterminé le développement général du système. Un rôle important dans l'organisation de l'espace revient à la société par les adaptations continues du cadre naturel aux nécessités propres humaines (l'exploitation des ressources naturelles, la construction des voies de communications, l'emplacement des localités).

**Mots-clés** : chorotype, pôle de croissance, axe de développement, flux, synapse, tropisme, région répulsive.

Chorotipul regional al Bazinului Râului Nișcov. Bazinul Nișcov este un sistem alcătuit din mai multe componente aflate în interacțiune. Relațiile dintre acestea au determinat dezvoltarea regională a sistemului. Un rol important în organizarea spațiului îl are societatea, prin adaptarea continuă a cadrului natural la propriile necesități (exploatarea resurselor naturale, construirea căilor de comunicație, amplasarea așezărilor).

**Cuvinte cheie:** chorotip, pol de creștere, axă de dezvoltare, flux, sinapsă, tropism, regiune repulsivă.

#### 1. INTRODUCTION

The Nişcov River Basin is located in south - eastern Romania, in Buzău Subcarpathians (Curvature Subcarpathians) (Figure 1). Nişcov River is a right tributary of the Buzău River. Its position is very important because it explains the torrential character of this tributary.

The Nişcov River's flows are "low and unsteady in low-rainfall periods and rich and unsteady, too in the rainy periods" [1]. The Nişcov flows through the Romanian counties: Prahova and Buzău. It flows into the Buzău river, est of Buzău city. Its total length is 40 km.

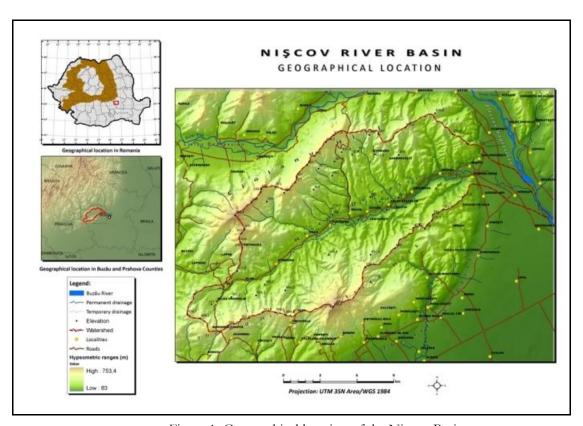


Figure 1. Geographical location of the Nişcov Basin

The Nişcov basin is a complex region who has several subunits: Lapoş- Ciolanu Hill in northern (Fântâna Hoţilor Peak- 753,4 meters), Nişcov Depression in the center of the basin and Istriţa Hill in southern (Istriţa Peak- 750 meters).

#### 2. THE REGIONAL CHOROTYPE OF THE NISCOV RIVER BASIN

The "chorema" is a modern method propused by the French geographer Roger Brunet [2]. This method is used for highlighting the development features of the Niscov

system and how the community has organized its own living space. So, chorema is an "alphabet of space". "With its help it can be seen the reality of this space and the diversity of spatial structures that belongs to this system" [3].

The Nişcov Basin is represented by a policentric structure and an asymmetric spatial configuration. The polycentric character is given by the high number of communal centers - Verneşti, Nişcov, Grăjdana, Tisău, Haleş (Photo 1). The asymmetric character is generated by positioning the main polarizing center (Buzău) in the Eastern region and this is possible because the subunits of the relief are likely to lead to such a configuration. The main axis is established according to this configuration of the relief.



Photo 1. Vineyard at Verneşti (Bogdan Adriana, September 2010)

The regional chorotype is established "for understanding the regional trend, the orientation of the main flows and for viewing the weaknesses and geospatial involutions" [4]. The major elements that led to the establishment of the regional chorotype (Figure 2): growth poles of different sizes and functional groups, the existence of an external polarization center with different rank and functions (Buzău), development axes of regional and local interest, characteristic types of the relief's units with a typical economic profile (in Ciolanu and Istrița Hills the economic profile is mixed - agriculture, grazing and oil exploatation and in Nișcov Depresion - an agriculture profile), anthropogenic flows, synapses (connections established with extra - regional centers).

Analyzing the regional chorotype of Nişcov Basin we can see the integration of two synthetic patterns of space organization:

- **the centripetal pattern**: is conditioned by the existence of a single polarizing center Buzău, who has the main role in coordinating the whole system. Buzău is a large settlement, located East of the Nişcov Basin. "This city guides the main flows of matter, energy and information from Nişcov Basin and has an important role in maintaining a balance of the development and functionality system" [3];
- **the axial pattern**: is conditioned by "the existence of the development axes. Along these axes are shown the intraregional polarizing centers with different sizes and functionalities" [3]. So, the Nişcov Regional System has a <u>main longitudinal development axis</u> that is located in the center of this area and that is conditioned by morphological aspects and by transport infrastructure. The Nişcov System has <u>a main transverse axis</u> (from Haleş to Ciolanu Monastery and further, to Măgura) and <u>eleven secondary axes</u>, too. The secondary axes are mostly perpendicular to the Nişcov River or to the main development axis.

The main longitudinal development axis follows the main river - Nişcov and the most important road from this region - the "100 H" County Road. This axis has boosted the development of the largest settlements in the Nişcov system. This is about the most important polarizing centers (the villages that have a communal residence function - Verneşti, Tisău) and two other centers who have the second polarizing rank (Nişcov, Izvoru, Haleş). The flows of matter, energy and information come in and come out from the Nişcov system along this main axis, permitting the connection with the furthest and the most important polarizing center (Buzău).

The Nişcov Valley represents a "meeting space between the natural phenomena and the human activities. The main direction of natural processes follows the longitudinal vectors (Nişcov River and the silts) and the transverse direction is less useful (landslides, rain wash)" [7]. From ancient times, the anthropogenic component had contradictory directions: "in a first phase, the population sought safe valley's areas, away from flooding and geomorphological processes, but near drinking water and then, in a later stage, they shifted to the corridor, where carried the main industrial and agricultural occupations" [7].

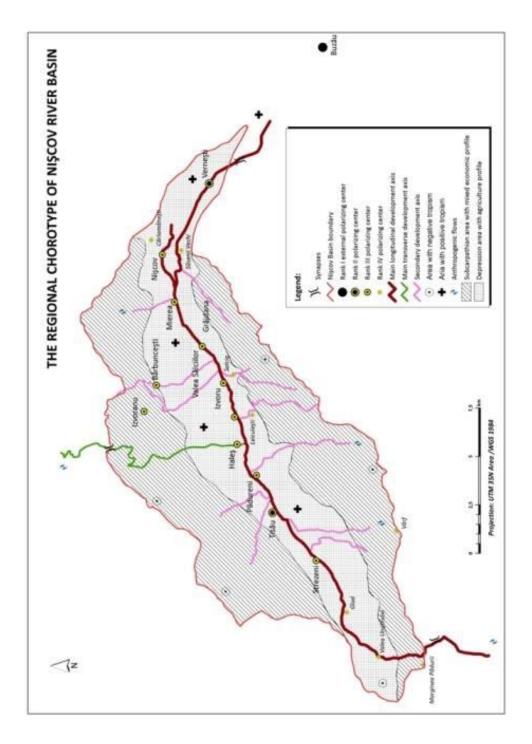


Figure 2. The regional chorotype of Nişcov Basin

Along the Nişcov River are achieved the main flows of goods, raw materials and passengers. None of the listed centers "does not have the strength to become the attraction

center of the region because the transverse inserts are weak. If natural elements have usually only one direction, from upstream to downstream, the human being and its activities have bi-univocal move along the development axes" [7].

<u>The main transverse axis</u> follows the Haleş Valley (Photo 2) (Haleş is a tributary of Nişcov River) and the "203 G" County Road (between Haleş and Măgura localities) for establishing contact with the polarizing center outside the Nişcov system, Măgura locality.



Photo 2. Intensive grazing in Hales Basin (Bogdan Adriana, June 2012)

The secondary axes (third-order axes) have local significance, being much more of the same type in the system, corresponding of Nişcov tributaries or communal roads. These axes, by directing flows of matter, energy and information have coalesced the settlements in the region.

The discrepancies related to economic development have determined the identification of two types of areas: with <u>positive tropism</u>, with negative tropism and balance area. "*Tropism means an accommodation and orientation tendency of an organism in one direction, under the influence of external excitation..."* [8].

- <u>areas with positive tropism</u> (Verneşti Buzău area), including: the concentration of activities (from secondary and tertiary sectors) and the geographical position in the center of the system, the transport infrastructure, witch is less developed compared with other parts of the system, the main concentration of population (young and active);
- <u>areas with negative tropism</u> (in the Eastern side of Nişcov system and the highest peaks)-include areas with isolated data, situated at the edge of the system; the population is aging and the profile is predominantly agricultural;

- balance areas - are near the main development axes of the Nişcov system.

Between the polarizing centers inside the system and outside centers were established relations. Buzău is an important center meaning the orientation of economic flows and workforce. The others centers have less importance because they serve mainly to satisfy the social needs of the population and because the distances between them are large.

Despite the fact that the system configuration is asymmetric, its coherence is ensured through synergy cooperation and complementary of the local components.

The analysis of space components allows us to express it as a chorema, based on the idea that "space is made by setting the basic structures that are in a relatively small number" [9]. Natural flows (matter and energy) enter in the Nişcov Basin from the west, north-west as oceanic air masses (weather flows) and from high-subcarpathian area (hydrological flows).

In this system there are two <u>repulsive regions</u>: the Nişcov slopes because they have risk areas (landslides, depopulation, aging, unemployment, subsistence agriculture and underdeveloped infrastructure).

The <u>attractive region</u> is the Nişcov axis. In the twentieth century, the industry has resulted in propelling the whole region, putting pressure on the environment and human society, which was forced to face a significant flow of people. The lack or poor development of infrastructure caused the widening of regional disparities, so that some parts are true unattractive "islands" [7]. Opposed them, there are areas where human activities running pressure on the natural environment by: purchase of building materials (Verneşti - sand, gravel, clay), planting vines and fruit trees (plum - medium height hills, apple, pear, cherry), massive deforestation (Photo 3), intensive grazing (cattle), oil exploitation in Tisău.



Photo 3. Deforestations at Glod (Bogdan Adriana, June 2009)

#### 3. CONCLUSION

The Niscov system is a region with a high natural potential. This characteristic is given by the relief resources and configuration. These are good for placing the settlements and the means of communication.

The "society signature" on this space is obvious. The human being has modified this subcarpathians area through deforestations, intensive grazing (important in producing the landslides), construction materials and oil exploitation, roads construction (modifying the riverbeds) and agricultural use. All these have determined the population migration from repulsive areas to attractive ones. Because of that, the region has an asymmetric character.

The evolution of Niscov basin will be possible through the development of synapses between this area and other areas from nearby. The achievement of these links will be relieved because in 2011 the roads had been modernized (the 100 H and 203 G County Roads had been rehabilitated and the second part of 203 G County Road had been built-Leiculesti/ Izvoru/ Haleş).

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## ACCESS TO THE HEALTH SERVICES IN THE CONTEXT OF ECONOMIC RESTRUCTURING. CASE STUDY BRASOV, CAMPULUNG AND RAMNICU SARAT

#### Simona SUDITU (POPESCU) Mihaela PLOAIE (TEODORESCU) Cristina MOLDOVAN (PAKULAR)

Ph.D. Std.

Faculty of Geography, University of Bucharest Doctoral School of Geography "Simion Mehedinţi" moldovancristina\_geo@yahoo.com

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## Access to the health services in the context of economic restructuring. Case study Brasov, Campulung and Ramnicu Sarat

Simona SUDITU (POPESCU) Mihaela PLOAIE (TEODORESCU) Cristina MOLDOVAN (PAKULAR)

Accesso ai servizi sanitari nel contesto della ristrutturazione economica nei municipi Râmnicu Sarat, Campulung e Brasov. Questo studio affronta una serie di questioni riguardanti l'accesso ai servizi sanitari delle persone nei municipi Ramnicu Sarat, Campulung, Brasov nel periodo post-comunista. I cambiamenti economici, politici e sociali dopo il 1990 hanno portato alla configurazione nella forma attuale del sistema sanitario, con effetti importanti sulla popolazione. L'approccio comparativo delle situazioni nei tre municipi con caratteristiche diverse come numero di abitanti, posizione e livello di sviluppo economico, ha permesso l'identificazione di elementi comuni, come per esempio: il regresso del sistema sanitario pubblico a favore di quello privato, bassa qualità delle cure e diminuzione del personale medicale. L'accento è stato messo sull'analisi degli indicatori che rivela il grado di sviluppo del sistema sanitario riportato a 10000 persone.

**Parole chiave:** sistema sanitario, atto medicale, personale medicale, tenore di vita.

Accesul populației la serviciile de sănătate în contextul restructurării economice. Studii de caz: Brașov, Câmpulung și Râmnicu Sărat. Prezentul studiu abordează o serie de aspecte privind accesul la serviciile de sănătate ale locuitorilor din municipiile Râmnicu Sărat, Câmpulung și Brașov din perioada post-comunistă. Modificările economice, politice și sociale de după 1990 au dus la configurarea în forma actuală a sistemului de sănătate, cu efecte majore asupra populației. Abordarea comparativă a situațiilor din cele trei municipii cu caracteristici diferite de număr de locuitori, așezare și grad de dezvoltare economică, a permis identificarea unor elemente comune, ca de exemplu: regresul sistemului medical public în favoarea celui privat; scăderea calității actului medical și scăderea numărului de cadre medicale. Accentul a fost pus pe analiza indicatorilor ce relevă gradul de dezvoltare a sistemului de sănătate raportati la 10.000 locuitori.

**Cuvinte cheie:** sistem sanitar, act medical, cadre medicale, nivel de trai.

#### 1. INTRODUCTION

The Romanian healthcare system has suffered radical changes during the transition period, followed by the deep economical and social changes that affected Romania. The lower quality of the medical educational system, ageing, the mismanagement of financial and human resources are some of the main causes that contributed to the decreasing of public confidence in the healthcare system [1]. Statistical data analysis shows a decrease in the number of patients to a doctor Campulung and Brasov city, which is not reflected in the quality of medical act. In Ramnicu Sarat the number of patients to a doctor was growing because of shortage of doctors. Also, it was highlighted the development of the private health system, but it has relatively slow pace. The major consequence is on one hand, the inadequacy of the healthcare system to population requirements, on the other hand a growth of the morbidity and mortality rate, which ultimately led to lower the quality of life in Romania [2].

#### 2. STUDY METHODS

For this study bibliographic materials were corroborated with statistical data on which the graphic was drawn. Through analysis, synthesis and comparison of the dynamic of health system and the access of population to the health services in post-communist period in Ramnicu Sarat, Campulung and Braşov is intended to be provided.

#### 3. STUDY OF AREA

Brasov is one of the largest and most developed cities in Romania, with a population over 264.000 inhabitants, located in the valley of the Carpathians Curvature. Climatic conditions and the degree of ageing of the population have favored a high rate of disease. Ramnicu Sarat belongs to the third largest county in size, the Southeast Region of Romania, Buzau and geographically belongs to the Ramnic Plain, a subunit of the Romanian Plain. With a population of 39.324 inhabitants (2010), is the second largest town of the county. Fair River terraces created by the typical Carpathian basin, Câmpulung developed the city called after, the second largest in the county of Arges, with a population of 36.539 inhabitants (2010).

#### 4. RESULTS

Many political, social and economic changes have influenced the structure and evolution of demographic indicators. Declining birthrates, a direct consequence of decreasing in the young population and the elder population growth, caused a phenomenon

of demographic ageing. The mortality and infant mortality rates indicate the health of the population and development of the healthcare system [3].

The standard of living, working conditions, the quality and accessibility to the health services, low healthcare system resources are reflected in the current state of health of the population, with direct implications for social development [4].

In Romania, the economic decline caused the degradation of the health system, which remained low until 1999-2000. After 2000, due to the enlargement process of privatization of the healthcare system, the public healthcare system monopoly has lost ground to the private system. So, there was an increase in private health institutions and a decline to extinct the public institutions. It is observed a development of individual medical offices, and the trend of increase of the number of the private hospitals. The development of the private health system is determined by the economic development of the cities and the population served by them [5]. For example, in Brasov three private hospitals were built, while in other cities they do not even exist. The biggest changes have occurred in dental offices where the transition from a dominant public system to a dominant private system has been made. Currently, the ratio is clearly favorable to private system, such as in Brasov there are 59 public dental offices and 159 private dental offices, in Campulung the ratio is 5-31 for private dental offices, while in Ramnicu Sarat the same ratio is the 7-12. This is because the legislation does not include medical insurance for dental treatments. Where centralized insurance covers medical services, the private sector was unable to develop. Therefore, in small towns, like Ramnicu Sarat and Campulung there are very few private health institutions. Changing health insurance legislation would allow the development of the private system. Infrastructure in the health system belongs, therefore, to the largely public system. So, as required, in the three cities mentioned a number of health units were developed proportionally to the population served. Analyzing the evolution of the number of hospitals, major changes are observed in some of them, while in others the situation remained the same since the fall of the communist regim. Most affected by the changes were dental offices, medical offices specialists, pharmacies, where the ratio of public/private has changed in favor of the private [6].

In Brasov city (Figure 1), there is obviously an increase in the private sector: family medicine offices, dental offices and pharmacy and a decrease in public sector. A spectacular growth is registered in the number of pharmacies. The number of pharmacies and dental offices in the private sector has exceeded the public sector. Comparatively, concerning the number of hospitals it remained the same in the public sector, respectively 11, for the entire

period. Private hospitals have strongly appeared to maintain the system. Only in 2010, a number of 3 hospitals were built.

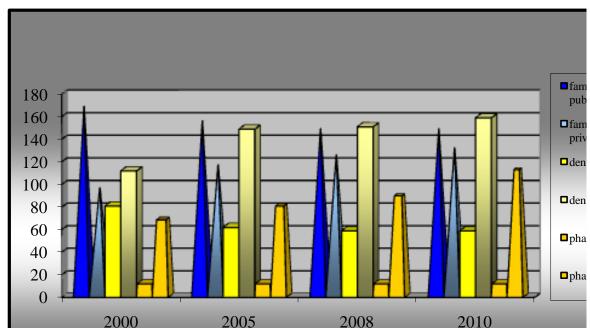


Figure 1. The evolution of ratio public/private - Brasov Source: INS - County Statics Brasov [9]

In Ramnicu Sarat (Figure 2), the situation is similar but to different proportions. Private healthcare facilities are higher in number, detrimental to the public healthcare facilities. What is specific for this town is the lowering in the number of private medical institutions after the year 2008, caused by the economic crisis installed at national and European level. As the number of hospitals does not register any change, there is a single state-owned hospital left for serving the population of the town and the surrounding areas. It has a little capacity to provide advanced services due to a lack of adequate medical facilities in some sections (e.g. ambulance service is very poorly developed with only two ambulances available). A negative effect of restructuring local public health system is the significantly reduced number of hospital beds by 39% between 1990-2010. In the first 10 years of the post-communist period the number of beds was 16%, and in the last 10 years the number of hospital beds was reduced by 28%. In 2010, according to statistics, the number of beds in local hospitals was 405, insufficient for population in the town (39.324) inhabitants) and the surrounding areas. Reporting the number of beds per the 10.000 inhabitants a weak feature in this regard (10.000 inhabitants in 2010 to number of beds was 102) is clearly shown.

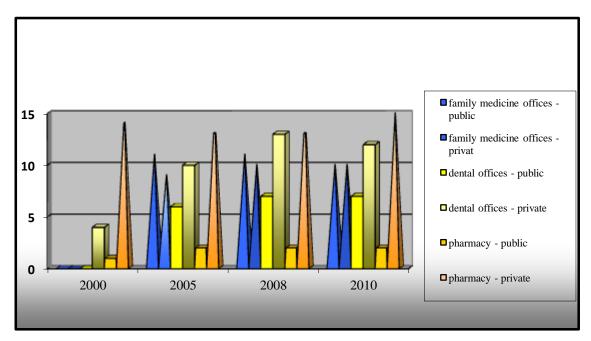


Figure 2. The evolution of ratio public/private – Ramnicu Sarat Source: INS – County statistics Buzau [9]

In Câmpulung (Figure 3) the same changes in public/private ratio can be observed. The medical offices specialists, family medicine offices, dental offices and pharmacies belonging to private sector are growing numerically, while the state-owned medical offices number stays the same or in some cases even disappears. After several rounds of restructuring, in 2010, in Campulung only two hospitals operated, one of them specialized in lung diseases, with 90 beds. The Municipal Hospital, the second largest in the county of Arges, offers medical assistance to various specializations in its 8 sections and 11 chapters, an operating theater and 3 laboratories. Both hospitals provide outpatient services. Primary assistance is provided by the four medical clinics, 22 specialty offices and 24 family medicine offices. Ambulance Service serving emergency offering assistance by 3 doctors and 18 nurses is equipped with three ambulances and a SMURD machine. According to statistics obtained from IJS Arges [9], in 1997 in the private sector were active 7 and 15 dental surgeries in 2000, the ratio was 7-16 in 2005, 23-30 in 2008 and in 2010, 26 -31. Dental technical laboratories operated exclusively in the private sector, the number of 5 in 1997, reaching to 8 in 2010. A different situation stands out among family medicine offices where the share is held by the public sector. According to I.J.S. Arges, in 2004, in the private sector, 22 surgeries worked and 7 surgeries in public sector, in 2005 the ratio was 4-23, in 2008 it was 2-23 and it reached to 2-22 in 2010.

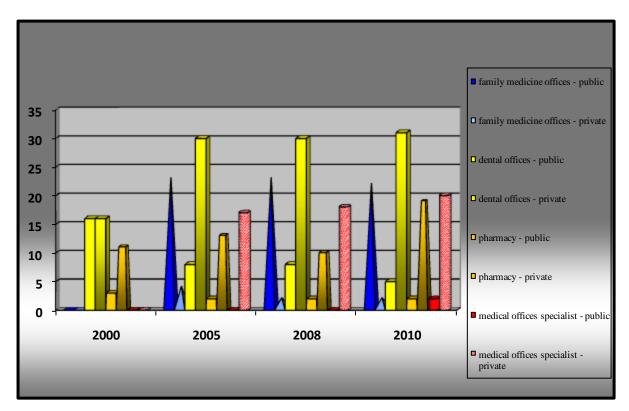


Figure 3. The evolution of ratio public/private – Campulung Source: INS – County statistics Arges [9]

In conclusion, it appears that the number of public hospitals has very little decreased and the changes are insignificant. Also, there is an increase in private establishments, especially those that require major investments. Only big cities, like Brasov, succeeded in developing private hospitals.

Regarding the number of physicians per 10.000 inhabitants is an indicator that shows the level of health system development, and studying the time evolution of this indicator shows its trend. The chart no 4 shows an increase in physicians per 10.000 inhabitants for cities like Câmpulung and Brasov and a dropping for Ramnicu Sarat. The largest increase is seen in the city of Brasov, which shows a concern for health system development in particular by private appearance. It should be noted that from the cities analyzed, Brasov underwent the most severe decline in number of population after the fall of communism, which was reflected in the increasing number of doctors per 10.000 inhabitants. For the city of Campulung, there is also an increase of this indicator, actually generating the same situation: fewer people [7]. In Ramnicu Sarat the situation is different, generated by the reduction of 33% in the number of doctors and the fell by 5% of the number of inhabitants.

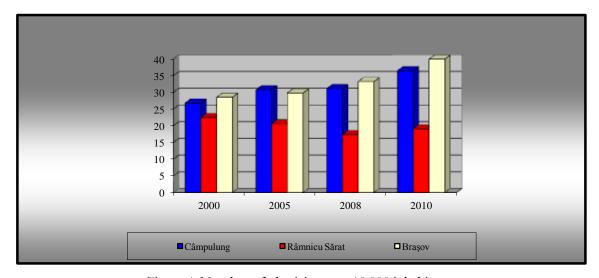


Figure 4. Number of physicians per 10.000 inhabitants Source: INS – County statistics Brasov, Campulung, Ramnicu Sarat [9]

In Ramnicu Sarat, starting with 1965 until 1990, the medical staff numbers increased by  $\approx 74\%$ , as a consequence of the actions of the communist state policy for improving the health system by increasing the number of health facilities nationwide. According to statistics, the number of doctors in the public sector was 85 people in 1990, 87 in 2000 and 58 in 2010 (a decrease of 31.7% on the entire interval). The number of physicians in the public sector serving 10.000 inhabitants decreased between 2000 to 2010 (from 20,7 to 14,74) unlike the private sector where the growth was 2,37 doctors per 10.000 inhabitants in 2000 and 4,32 in 2010. The ward staff in public sector decreased by 13% and the ward staff in the private sector amazingly increased by 310% (from 20 to 82 people). The number of physicians in the private sector is small (in absolute 17 physicians), which shows poor development of this sector. All these figures indicate a shortage of medical personnel in the city. The number of physicians in the private sector is small (in absolute 17 physicians), which shows poor development of this sector. Statistical analysis indicates an increase in the average number of persons / physician from 475 (1992) to 675 (2010) due to the decreasing of the population and the doctors. The number of persons / hospital bed is in the same situation recording an increasing from 65 to 97.

In Brasov, in the communist period, the medical staff increased by approximately 91%, due to the increasing number of city population and its economic development. After 1990, many failed reforms of the system decreased the quality of care and led to fewer medical staff. The emergence of university medical education, in Brasov, had as an effect a significant development of the health system. The number of doctors slightly increased from 924 in 2000 to 1033 in 2010. The number of inhabitants per doctor fell from 350

people to a doctor in 2000 to 250 people to a doctor in 2010. This is mainly due to a shrinking of population of the city with about 100.000 inhabitants in the last 20 years.

The total number of doctors in Campulung slightly increased in 2005 and in 2008 returned to the 2000 year levels. The private sector has been steadily increasing, while in the public sector, the total number of physicians has gradually decreased between 2000 to 2008, then increased. The number of family doctors has been declining both in public sector and in private sector. The number of doctors per 10,000 inhabitants increased by 36.06%, during 2000-2010, reaching 36,45% in 2010. The report of inhabitants / physician has evolved, from 373,23 in 2000 to 274,38 in 2010.

Analyzing the number of dentists (Figure 5), there is a growing number of dentists per 10.000 inhabitants for each of the studied cities. The largest increase is observed in Campulung, while the lowest is observed in Brasov. In Brasov, the number of dentists per 10,000 inhabitants decreased, even in the range 2000 to 2005, after which there is a slight increase. However, their number no longer reaches the level of the year 2000. Moving to private practice, a number of dentists was eliminated, most of them migrating in search of employment. If we think that the city population has declined, we reach to the conclusion that the number of dentists has dramatically decreased in the last 10 years [8]. In 2010, there were in Brasov, a total of 106 dentists in the private sector and 6 dentists in public sector.

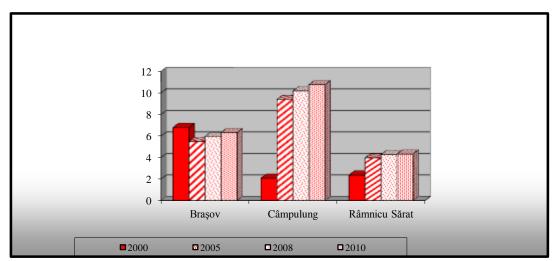


Figure 5. Number of dentists per 10.000 inhabitants Source: INS – County statistics Brasov, Campulung, Ramnicu Sarat [9]

In Ramnicu Sarat during 2000-2010 the number of dentists working in private sector, per 10.000 inhabitants was superior to the dentists in public sector. The Framing of the health system is poor: many specialists are moving towards the larger urban centers or

abroad. In Campulung, the increasing of the total number of dentists was 333,33%. The private sector has been steadily increasing while the number of public sector registered fluctuations. This decreased the number of inhabitants per one dentist, from 4810,56 to the starting period, up to 928,67 at the end.

The most dynamic sector in large cities is the number of pharmacies and pharmacists (Figure 6). We could notice this in the case of Brasov, where the number of pharmacists per 10.000 inhabitants incumbent has doubled in the studied period. This demonstrates an explosive evolution of drug sales amid state subsidies. In small towns like Ramnicu Sarat and Campulung, the development was either slow or erratic, possibly due to the reduced staff, but also to the lower power to invest.

In Ramnicu Sarat all pharmacies belong to the private sector, their number ranging from 13 in 1998 to 15 in 2010. The number of pharmacies per 10.000 inhabitants registered a slight increase (from 3,10 in 1998 to 3,81 in 2010) because of a shrinking population and of the low growth in the number of pharmacies. The number of pharmacists per 10.000 inhabitants increased. In Campulung, in the private sector, 5 pharmacies (1997) operated. In 2000 their number reached to 11 in 2005, and there were 13 in 2008, as the economic crisis the number of pharmacies dropped to 10 (effect among registered pharmacists), and by 2010 increased to 20 units. Although overall there was an increase of 91,67% of the total number of pharmacists, it increased until 2008, then began to decrease, and then increased again by 2010. Similarly, the number of pharmacists has evolved from the private sector, while in the public was slightly decreasing. The report inhabitants / pharmacy increased from 3607,92 in 2000 to 1574,70 in 2010. At the same time, the ratio of pharmacists per 10.000 population increased by 129,24%, being 6,35 in 2010.

In the health system there is a shortage of medical staff. In the city of Brasov a decrease of ward staff can be observed, especially after 2008 when workplaces were blocked in all areas of the budget system. A part of the medical staff has emigrated or changed their jobs. Most of them are working in the private sector, part time. Being not full time employed, they do not appear in statistics. So it was when the statistics indicate a very small number of health professionals working in private enterprises. Concerning the ward staff in the public sector, in Ramnicu Sarat it decreased by 13% while in the private sector it increased by 310% (from 20 to 82 people). An upward trend recorded the number of people / nurses, which increases in the period under study from 126,43 to 146,73. In the studied period, the city of Campulung ward staff number decreased to 5,62%.

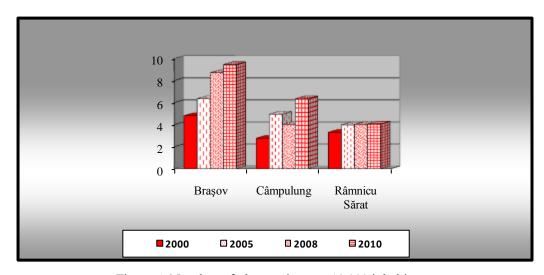


Figure 6. Number of pharmacists per 10.000 inhabitants Source: INS – County statistics Brasov, Campulung, Ramnicu Sarat [9]

While the private sector grew steadily, the public one has been seriously shaken. But the weakening of the total population, residents report / environmental health framework went from 97,29 in 2000 to 86,23 in 2010 and the average staff per 10.000 inhabitants increased from 12,82% to 115,96 in end of this range. After fluctuating, the staff development environment to a doctor decreased overall with 17,19%, reaching 3,18% (Figure. 7).

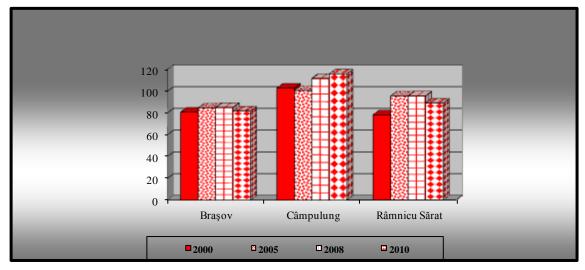


Figure 7. Number of ward staff per 10,000 inhabitants Source: INS – County statistics Brasov, Campulung, Ramnicu Sarat [9]

#### 5. CONCLUSIONS

The carried-out study came to the conclusion that there is a general tendency to privatize hospitals, especially in big cities like Brasov. Privatization takes place especially in the clinics or offices than in hospitals, requiring fewer financial resources and lower maintenance costs. The most important medical services are performed in public hospital system. The health staff, reported to 10.000 inhabitants, is increasing, this being due mainly to a shrinking of the population and less to the reform of the system. The urban has an average of 30 doctors per 10.000 inhabitants. The national average is well below this value (19 doctors) [10], but European standards are more than 35 doctors per 10.000 inhabitants. Labor migration from the medical field affects more cities than small towns, the result being a decrease in quality of healthcare. In areas where there is no health insurance coverage, as it is the case with dental care, the private sector grew more.

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### MAPA POLÍTICO DEL MUNDO: ENTIDADES NO REPRESENTADAS O REPRESENTADAS INADECUADAMENTE

#### Timotei RAD

Estudiante en la Cartografía Universidad Babes Bolyai, Faculdad de Geografía, radtimotei@yahoo.co.uk

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## Mapa político del mundo: entidades no representadas o representadas inadecuadamente

#### Timotei Rad

#### Harta politică a lumii: teritorii nereprezentate sau reprezentate inadecvat.

Harta politică a lumii reprezintă probabil cea mai răspândită sursă de informare asupra realității geografiei politice a planetei noastre. Mesajul acestei informații este realizat și transmis de cartografi, acestia având responsabilitatea de a îl realiza de o manieră exactă, completă și actualizată și de a îl transmite (prin reprezentare grafică) în mod adecvat. Articolul punctează entitățile politice ce trebuie sa apară pe harta politică a lumii: state independente, cvasi-state, state de jure, state de facto, state liber asociate, "federacies", teritorii dependente și teritorii internaționale discutând deasemenea aspecte legate de folosirea de simboluri potrivite la reprezentarea grafică a acestora. Articolul dorește să aducă în discuție importanța nevoii canalizarii de energie pentru realizarea unei hărți mondiale politice adecvate. Demersului teoretic i se alătură efortul practic personal reușit până în momentul de față: 5 hărți cuprinzând 6 state de facto și unul de jure.

**Cuvinte cheie**: harta politica a lumii, state de facto, state de jure, state liber asociate, "federacies", teritorii dependente.

#### World political map: territories unrepresented or inadequately represented.

The political map of the world is probably the most common source of information regarding the reality of the political geography of our planet. The message of this information is created and transmitted by cartographers. They have the responsibility to realize an exact, complete and up-to-date message and also to communicate it properly (by graphic representation). The article points the political entities that should appear on the political map of the world: independent states, quasi-states, de jure states, de facto states, free associated states, federacies, dependent territories and international territories and discusses issues related to the use of appropriate symbols for their graphic representation. The paper is an appeal to make a proper political map of the world. The theoretical approach is attached by the author's practical effort: 5 maps including 6 of the de facto states and one de jure state.

**Keywords**: world's political map, de facto states, de jure states, free associated states, federacies, dependent territories.

#### 1. INTRODUCCIÓN

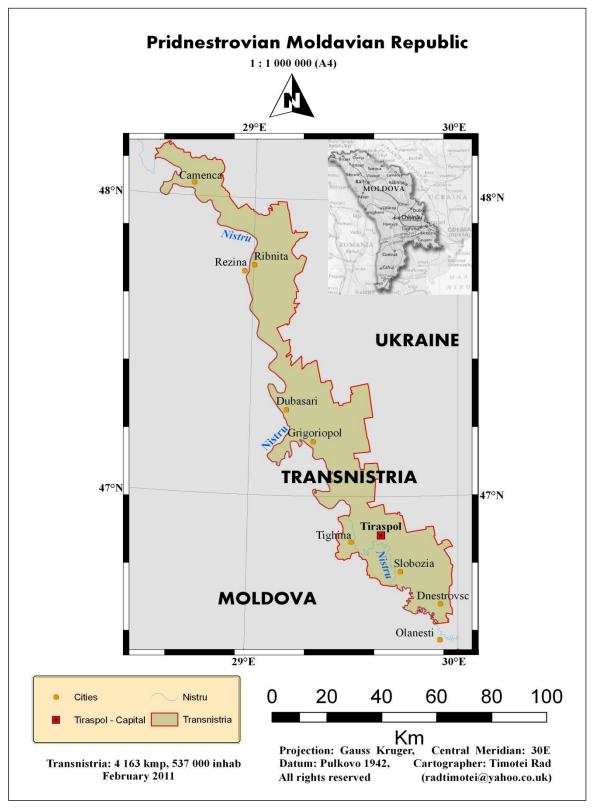
En el tercer volumen del "The Times Atlas" editado en Londres en el año 1955 en la página XII se afirma: "In an atlas which is designed for international reference it is necessary to point out that the boundaries which are shown strictly represent the de facto or actual state of administration" [1]. En el primer volumen del "The Times Atlas" editado en Londres en el año 1958 en la página XVI se afirma: "The first bussines of an atlas is to record geographical facts on the merits of the political status quo, and not opinions. This atlas presents de facto situations which are more often relevant to daily needs than complex de jure factors. It portrays a politically imperfect world as it is and not as it ought to be, and acquaints the traveller with the authority he will find in operation at any geographical point whether it is, or is not, that which his patriotism or his conscience is ready to acknowledge. Nevertheless the de jure conditions are represented subordinately" [1].

En el curso "Land Adminstration" cuya ponente es Jane Drummond, como parte del pro-grama del master "Geospatial and Mapping Science" de la Universidad de Glasgow; afirma que uno de los roles de los cartógrafos, en lo que respecta a la administración del territorio, consta en definir los límites/bordes.

El proceso para definir los límites administrativos de la forma que sea (individual o internacional) supone tres pasos o etapas:

- adjudicación (asegurar en el terreno para que las partes estén de acuerdo sobre sus delimitaciones)
- delimitación (crear los "bordes matemáticos"/ trazar en el mapa los bordes conforme a las coordenadas)
  - demarcación (marcar los bordes)

No obstante, estos pasos son específicos de las causas donde existe consenso entre las partes, pero los límites o bordes pueden ser discutidos, es decir, un territorio de estas características antes de decidir los límites se va llamar "territorio en disputa". A continuación, se termina el proceso a través de una decisión jurídica y los límites acordados, pero antes de la demarcación de los bordes, el territorio y los bordes se van a nombrar "de jure" (sin embargo en casos de disputa de territorios internacionales el término "de jure" se utiliza también en casos como el de Transnistria es "de jure" parte de Moldavia, pero de hecho es un Estado "de facto" (Mapa 1). En los que respecta a los Estados, nombramos Estado "de jure" a aquellos se encuentran en la situación en la que la legislación internacional los reconoce como Estado independiente, pero estos no controlan su propio territorio (Palestina, República Árabe Saharaui Democrática). Si las partes coexisten



Mapa 1. Transnistria

pacíficamente o están obligadas respetar algún borde sin que esto tenga una base legal o reconocimiento, el caso se llama Estado "de facto".

Nuestro estudio se centra en los bordes internacionales y a continuación, vamos a discutir sobre estos y sobre el modo en el que cualquier realizador de mapas políticos debería tratar los bordes, responsabilidad no tan sencilla. En caso de que los límites internacionales existen, el cartógrafo tiene que ser capaz de representar los distintos niveles de los límites internacionales (pero tendrá que especificar claramente que bordes se adjuntarán, en nuestro estudio incluimos: estados independientes, casi-Estados, Estados "de jure", Estados "de facto", Estados libre-asociados, "federacies", bases militares, territorios dependientes y la Antártica (territorio internacional); no incluimos los territorios en disputa y los bordes marítimos).

¡En el panorama internacional no solo hay Estados independientes/reconocidos/miembros de la ONU! ¡Nunca ha sido así! Hasta hace poco el derecho internacional aceptaba colonias, protectorados, administraciones fiduciarias, y hoy tenemos: Estados "de jure", casi- Estados, Estados "de facto", Estados asociados, territorios dependientes etc.

Existen límites en la edición de mapas/atlas políticos. Se tiene que tener en cuenta lo siguiente:

- límites dependiendo del tipo de público al que van dirigidos: escuelas, universidades, familias, de referencia mundial. No se van a poder representar en un atlas o mapa político del mundo, destinado a alumnos todos los tipos de estados mencionados más arriba. Pero los atlas destinados a público en general, un grupo de personas que tiene una cultura elevada deberían aparecer todos estos detalles.
- límites de quien decide el contenido de los atlas/mapas. Hay que tener en cuenta que el edición de estos puedes estar supervisada por el gobierno- pero no es el caso de nuestro país. Por lo tanto en nuestro caso los límites se resumen en el profesionalismo de los editores de mapas y atlas. Te todas formas en un país en el cual hay movimientos de sucesión no se va a permitir que aparezca en los mapas los Estados "de facto". En nuestro caso aunque el gobierno no tiene tanto peso, dependemos de las decisiones de las autoridades escolares y universitarias, ya que ellos eligen los manuales, mapas y atlas, y sus decisiones tienen que ver con las de las editoriales. Porque se edita lo que se vende. Pero un producto realizado profesionalmente se va a vender. Sin embargo, las editoriales tiene una influencia considerable y usualmente no tienen en cuenta la opinión de los cartógrafos, o no disponen de cartógrafos cualificados, y aunque dispongan de ellos, para la realización de un mapa político de calidad, no es suficiente con contar solamente con cartógrafos, también

son necesarios conocimientos sólidos de la legislación internacional en el campo de los límites.

#### ¿Entonces cómo debería ser un mapa político del mundo?

Primero veremos qué es lo que ponen a nuestra disposición los mapas políticos del mundo según los atlas. Sigo este detalle desde aproximadamente unos siete u ocho años en cada mapa político del mundo o atlas que pasa por mis manos, todos muestran los Estados miembros de la ONU, que son reconocidos internacionalmente, además de algunas excepciones: los Estados "de facto" más conocidos (Taiwan); los territorios en disputa más conocidos (Kashmir). Las excepciones no están basadas en ninguna regla rigurosa, se representan con el mismo tipo de borde (símbolo lineal) un territorio en disputa como el de Kashmir al igual que un Estado "de jure" como el de Palestina; es importante remarcar aquí la importancia de la redacción adecuada de la relación política utilizando símbolos lineales y de las áreas (para cada tipo de frontera y Estado). Hay algunos mapas que representan también los territorios dependientes, pero nunca he encontrado un caso en el que se representen todos... lo que es imposible si no se especifica la fecha en la que ocurre dicha realidad política. ¿La fecha? El motivo por el cual es necesaria es que la mayoría de estos territorios modifican su estatus-quo (Mayotte fue un territorio dependiente de Francia hasta hace muy poco, pero ahora es un departamento sobre el mar, lo que significa que está un parte integrada en Francia. Nueva Caledonia, territorio dependiente "sui generis" de Francia en 2014 va a realizar un referéndum con el cual tendrá la posibilidad de ser independiente etc.).

Más abajo en forma de un corto estudio sobre un caso, voy a redactar la situación si está o no representada de unos territorios clasificados más abajo en dos de los más prestigiosos atlas a nivel mundial (Tabla 1):

Territorio Reader's Digest World's Atlas (2004) The Times Atlas of the World (2007)República Turca de Representado Representado Chipre del Nord Alto Karabaj No representado No representado Transnistria No representada No representada Tamil Eelam (de facto No representado No representado hasta 2009) Somalilandia No representado No representado SADR No representado No representado

Tabla 1. Situación si está o no representada de unos territorios

Cook, Niue (Estados	Representadas como parte de Nueva	Representadas como parte de
asociados)	Zelanda	Nueva Zelanda
Islas Marianas del	Representadas como parte de E.E.U.U	Representadas como parte de
Norte, Puerto Rico		E.E.U.U
("federacies")		
Palaos (Estado	Representado	No representado
independiente)		

Por consiguiente vamos a ver qué Estados y tipos de bordes debería contener un mapa político del mundo en la fecha de 20 febrero 2012 (no se van a incluir los territorios en disputa ni los bordes marítimos).

#### 2. DEFINICIONES/ESPECIFICACIONES

Un Estado "de facto" es un territorio independiente que tiene todas las características de un estado independiente, solamente no puede hacer parte de las comunidades internacionales y sus relaciones internacionales son limitadas (como por ejemplo el comercio), sin embargo, Trasnistria tiene un comercio con casi sesenta países (Estados reconocidos/miembros de la ONU).

Más abajo voy a desarrollar las definiciones encontradas para los Estados descritos más arriba:

#### Estados de facto

- 1) "Existing or holding a specified position in fact but not necessarily by legal right. Literally of fact". (Oxford Dictionaries) [7].
- 2) "Exercising power or serving a function without being legally or officially established." (The Free Dictionary) [8].
- 3) "Existing in fact, having actual effect, force, or possession whether or not it is formal, legitimate, moral, or rightful. Used usually as an opposite of de jure." (Business Dictionary) [9].
- 4) "A *de facto* government is a government wherein all the attributes of sovereignty have, by usurpation, been transferred from those who had been legally invested with them to others, who, sustained by a power above the forms of law, claim to act and do really act in their stead. The *de facto* boundaries of a country are defined by the area that its government is actually able to enforce its laws in, and to defend against encroachments by other countries that may also claim the same territory *de jure*" [10].

5) "The *de facto* state is a secessionist entity that receives popular support and has achieved sufficient capacity to provide governmental services to a given population in a defined territorial area, over which it maintains effective control for an extended period of time"

#### Estados "de jure"

Conforme DEX (Diccionario Explicativo) el término "de jure" significa "formula que invoca el carácter jurídico o legal de una situación. Traduciendo "de derecho", "según la ley" En el caso de los Estados "de jure" son Estados según el derecho internacional pero la realidad es distinta.

#### Estados libre asociados

"An associated state is the minor partner in a formal, free relationship between a political territory with a degree of statehood and a nation, for which no other specific term, such as protectorate, is adopted. The details of such free association are contained in a Compact of Free Association or Associated Statehood Act and are specific to the countries involved. All free associated states either are independent (with status of subject of international law) or have the potential right to independence" [12].

De hecho la mayoría de los casos de Estados libre asociados deriva en un territorio menor que cede el ministerio de externa y la defensa a otro Estado más poderoso a cambio de unos beneficios económicos. El Estado más poderoso (por ejemplo E.E.U.U.) tiene el beneficio de tener bases militares cerca de rivales como Japón.

#### **Federaciones**

A federacy is a form of government where one or several substate units enjoy considerably more independence than the majority of the substate units [13].

### 3. ESTADOS INDEPENDIENTES/SOBERANOS Y RECONOCIDOS INTERNACIONALMENTE

Vamos a desarrollar aquí una lista de los Estados miembros de la ONU: Afganistán, Albania, Alemania, Andora, Angola, Antigua y Barbuda, Arabia Saudita, Argelia, Argentina, Armenia, Australia, Austria, Azerbaiyan, Bahamas, Barein, Banglades, Barbados, Belgica, Belice, Benin, Bielorrusia, Birmania, Bolivia, Bosnia y Herzegovina, Botsuana, Brasil, Brunei, Bulgaria, Burkina Faso, Burundi, Butan, Cabo Verde, Camboya, Camerun, Canada, Catar, Chad, Chile, China, Chipre, Colombia, Congo – Republica del, Congo – Republica Democratica del, Corea del Norte, Corea del Sur, Costa de Marfil, Costa Rica, Croacia, Cuba, Dinamarca, Dominica, Ecuador, Egipto, El Salvador, Emiratos Arabes Unidos, Eritrea, Eslovaquia, Eslovenia, Espana, Estados Unidos, Estonia, Etiopia, Filipinas, Finlandia, Fiyi, Francia, Gabon, Gambia, Georgia, Ghana, Granada, Grecia, Guatemala, Guinea, Guinea-Bissau, Guinea

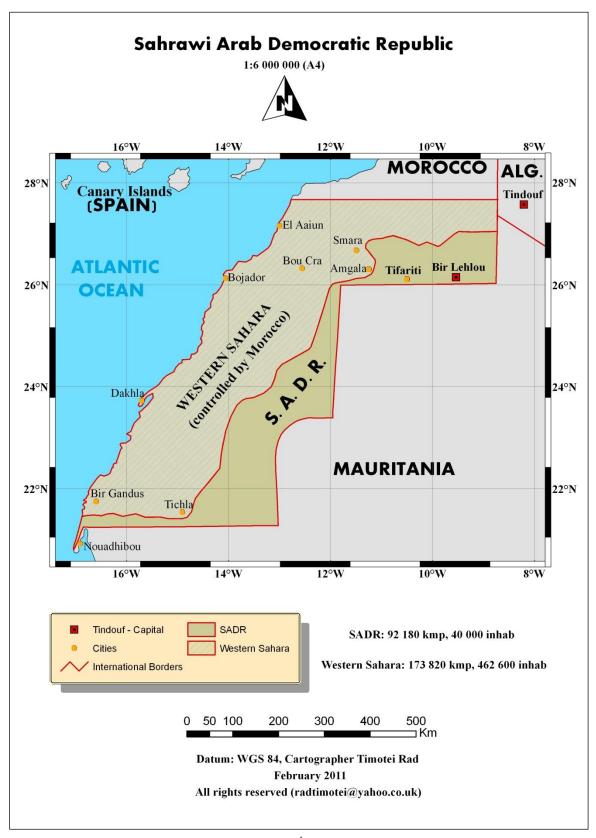
Ecuatorial, Guyana, Haiti, Honduras, Hungria, India, Indonesia, Iran, Irak, Irlanda, Islandia, Israel, Italia, Jamaica, Japon, Jordania, Kazajistan, Kenia, Kirguistan, Kiribati, Kuwait, Laos, Lesoto, Letonia, Libano, Liberia, Libia, Liechtenstein, Lituania, Luxemburgo, Macedonia, Madagascar, Malasia, Malaui, Maldivas, Mali, Malta, Marruecos, Marshall – Islas, Mauricio, Mauritania, Mexico, Micronesia, Moldavia, Monaco, Mongolia, Montenegro, Montserrat, Mozambique, Namibia, Nauru, Nepal, Nicaragua, Niger, Nigeria, Noruega, Nueva Zelanda, Oman, Paises Bajos, Pakistan, Palaos, Panama, Papua Nueva Guinea, Paraguay, Peru, Polonia, Portugal, Reino Unido, Republica Centroafricana, Republica Checa, Republica Dominicana, Ruanda, Rumania, Rusia, Salomon – Islas, Samoa, San Cristobal y Neives, San Marino, San Vincente y las Granadinas, Santa Lucia, Santo Tome y Principe, Senegal, Serbia, Seychelles, Sierra Leona, Singapur, Siria, Somalia, Sri Lanka, Suazilandia, Sudáfrica, Sudan, Sudan del Sur, Suecia, Suiza, Surinam, Tailandia, Tanzania, Tayikistan, Timor Oriental, Togo, Tonga, Trinidad y Tobago, Tunez, Turkmenistan, Turquia, Tuvalu, Ucraina, Uganda, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Yibuti, Zambia, Zimbabue.

#### 4. CASI ESTADOS Y ESTADOS SOLO "DE JURE"

**Casi estados:** <u>Vatican</u> (observador ONU), <u>Soberana Orden Militar y Hospitalaria de San Juan de Jerusalén, de Rodas y de Malta</u> (observador ONU).

Republica Autonoma Monahala del Monte Athos no puede incluirse en esta categoría ya que es una simple región autónoma sin relaciones diplomáticas y estatus internacional, aunque tenga algo en especial y se necesita visa para poder entrar en su territorio, hay más de un caso parecido a este.

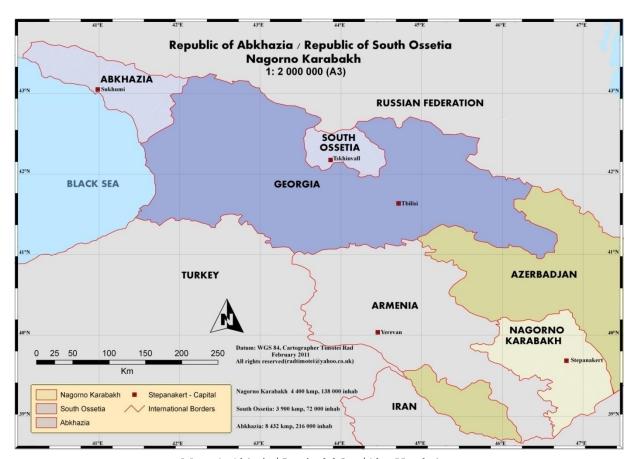
Estados solo "de jure": Palestina (reconicida por 129 miembros de la ONU + República Árabe Saharaui Democrática [2] pero de es controlado por Israel); República Árabe Saharaui Democrática (Mapa 2) (reconocida por 83 miembros de la ONU [3] de los cuales con 57 tiene lazos diplomáticos, no control su territorio ya que tiene el gobierno en exilio en Tindouf - Argelia).



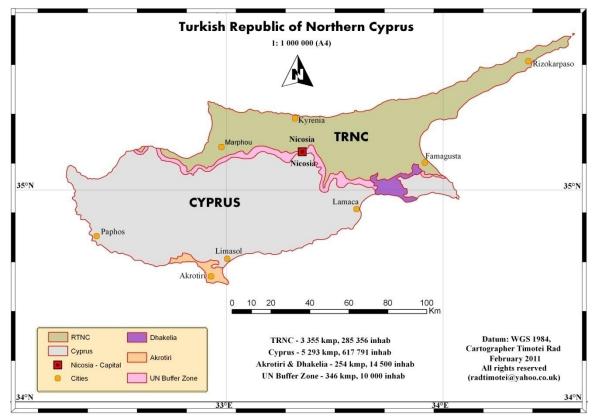
Mapa 2. República Árabe Saharaui Democrática

#### 5. ESTADOS "DE FACTO" RECONOCIDOS PARCIALMENTE O NO RECONOCIDOS

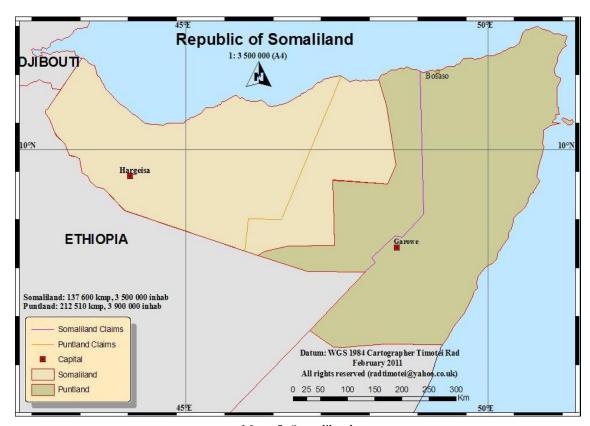
Republica China/Taiwan [4], Kosovo (reconocida por 88 miembros de la ONU) [5], Kosovo representa un caso único, ya que es un protectorado de la ONU), Abjasia (reconocida por 6 y Osetia del Sur, Alto Karabaj y Transnistria), Osetia del Sur (reconocida por 5 miembros de la ONU y Abjasia, Alto Karabaj y Transnistria), Alto Karabaj (Mapa 3) (reconocida solo por estados no-miembros de la ONU: Transnistria, Abjasia y Osetia del Sur), República Turca de Chipre del Norte (Mapa 4) (reconocida por 1 miembro de la ONU), Transnistria (reconocida solo por estados no-miembros de la ONU: Abjasia y Osetia del Sur), Somaliland (no reconocida por ningún Estado) [6] (Mapa 5), Kurdistan. En la historia reciente Biafra, Chechenia, Republica Krajina y Tamil Eelam fueron Estados "de facto" por varios años pero al final, al ser derrotadas, con excepción de Eritrea que ha llegado a convertirse de Estado independiente y reconocido, miembro de ONU.



Mapa 3. Abjasia/Osetia del Sur/Alto Karabaj



Mapa 4. República Turca de Chipre del Norte



Mapa 5. Somaliland

#### 6. ESTADOS LIBRE ASOCIADOS, ESTADO EN UNION POLICA Y BASES MILITARES

**Estados libre asociados:** <u>Niue, Las Islas Cook</u> – asociadas a Nueva Zelanda. Entre los Estados independientes hay otros tipos de casos de asociación (San Marino, Monaco, Butan, Palaos, Las Islas Marshall, Micronesia etc.)

**Estado en union polica (federación)**: Puerto Rico, Las Islas Mariane del Norte (en unión política con E.E.U.U); <u>Groenlandia</u>, <u>Las Islas Feroe</u> (en unión política con Dinamarca); <u>La Isla Man</u>, <u>Las Islas del Canal</u> ("crowndependencies" o en unión política con el Reino Unido), <u>Aaland</u> (en unión política con Finlandia); <u>Azore y Madeira</u> (en unión política con Portugal) <u>Norfolk</u> (en unión política con Australia).

La diferencia entre los Estados libre asociados y "federacies" es que los primeros se pueden desvincular de la unión.

**Bases militares**: Guantanamo Bay (base de E.E.U.U en Cuba), Akrotiri si Dhekelia (bases del Reino Unido en Chipre).

## 7. TERRITORIOS DEPENDIENTES Y ANTÁRCTICA (TERRITORIO INTERNACIONAL)

Reino Unido (Anguila; Bermudas; Caiman; Montserrat; Islas Turcas y Caicos; Islas Virgines Britanicas; Falkland; Islas Georgias del Sur y Sandwich del Sur; Santa Helena (esta incluiendo Asuncion y Tristan da Cunha); Gibraltar; Pitcairn, Teritorrios Britanicas del Oceano Indian).

E.E.U.U. (Guam; Wake; Samoa Americana; Las Islas de Pacifico <Baker, Johnston, Jarvis, Howland, Kingman, Palmyra>; Midway; Navassa; Bajo Nuevo Bank; Serranilla Bank; Islas Virgines Americanas).

Francia (Polinesia Francesa; Wallis y Futuna; Nueva Caledonia; Clipperton; Santo Pedro y Miquelon; San Martin; San Bartolome; Teritorrios Australes si Antarcticos Franceses).

Australia (Islas Cocos; Isla de Navidad; Islas Heard y McDonald; Islas del Mar del Coral).

Noruega (Bouvet, Pedro I).

Nueva Zelanda (Islas Subantarcticos del Nueva Zeelanda).

España (Plazas de soberania).

Marruecos (Sahara Occidental).

**Antárctica** es un territorio internacional aunque unos país revindican o administran algunas partes de ella: Chile, Argentina, Reino Unido (Territorios Británicos Antárcticos),

Francia (Territorios Australes y Antárctica Francesa), Australia (Territorios Antárcticos del Australia), Nueva Zelanda (Territorio Ross), Noruega (Territorio de Reina María).

En el paréntesis aparecen las denominaciones bajo las cuales unos Estados administran partes de la Antárctica como territorios dependientes. Francia administra territorios antárticos junto con "Territorios Australes"- islas del océano Índico del sur, de este Estado aparecen también en territorios dependientes de Francia.

#### 8. CONCLUSIONES

Todos estos territorios dependientes tienen un carácter inestable, constantemente uno de ellos modifica su estado, por eso es muy importante mencionar la fecha en un mapa político del mundo (<u>Insular Chile</u> – Islas Sporadicas hacen parte de la región Valparaise, aunque son parte de Chile; <u>Guadalupa, Martinica, Guyana Francesa, Reunión, Mayotte</u> son departamentos sobre el mar que pertenece de Francia; <u>Svalbard y Jan Mayen</u> son territorios sobre el mar de Noruega, y partes integradas en el país; <u>Curação y Bonaire, San Martin, Sint Eustatis si Saba, Aruba</u> ya no son territorios dependientes de Paises Bajos; Las <u>Islas Ashmore y Cartier</u>, <u>Isla Lord Howe y Macquarie</u> son parte de Australia; Las Islas del Principe Edward, en el Árctico, son parte de Sudáfrica.

Entidades políticos que deberían aparecer en cualquier mapa político del mundo, sin tener en cuenta como los hemos clasificado: 259 < 193 (Estados independientes)+2 (Casi Estados)+2 (Estados "de jure") + 9 (Estados "de facto") + 2 (Estados libre asociados) + 9 (federación/unión política) + 3 (bases militares) + 38 (territorios dependientes) + 1 (Antárctica).

Es muy posible que no todo el mundo esté de acuerdo con esta clasificación. Pero esto es normal si pensamos que una clasificación de este tipo sería responsabilidad de un especialista en la legislación internacional. Este tema es delicado y supone unos conocimientos sólidos en más de un área y de un esfuerzo interdisciplinar, que lleva mucho tiempo y trabajo en el caso que lo realice una sola persona.

El objetivo de este material es de modificar la dirección que hay que llevar a la hora de empezar a documentarse para hacer un mapa político del mundo lo más correcto, sino perfecto, porque aún queda mucho para poder convertir en esto los mapas actuales, proyecto en el cual me gustarías estar implicado. Adjuntado está demostrado el esfuerzo personal puesto para realizar este trabajo. De momento he conseguido realizar mapas individuales para 6 Estados "de facto" y un Estado "de jure" los cuales estarán integrados en el proyecto final.

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# THE EVALUATION OF RÂUŞOR SKI AREA (RETEZAT MOUNTAINS) IN THE CONTEXT OF BECOMING TOURISTIC RESORT FOR LOCAL INTEREST

#### Oana - Alina LUPULESC

Master Degree in Touristic Space Management and Hospitality Services Faculty of Geography, University of Bucharest  $xelly\_02401@yahoo.com$ 

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## The evaluation of Râuşor ski area in the context of becoming touristic resort for local interest

Oana - Alina Lupulesc

L'évaluation du domaine skiable de Râuşor pour le déclarer ressort touristique d'intérêt local. Cette étude est destiné pour attirer l'attention sur le domaine skiable du notre pays. Aussi que notre bien-connu ressort touristique d'hiver, en Roumanie il y a autre montagne compartiments où on peut skier. Un tel lieu est cela de Râuşor en Mont du Retezat (Montagnes Coupées) où, grâce à son position favorable (exclusivement sur le versant du nord), la saison d'hiver dure jusqu'à la fin d'Avril. Dans ce papier on tient à souligner les aspects favorables pour déclarer le complexe touristique de Râuşor ressort touristique d'intérêt local, faisant une évaluation de son domaine skiable et analyser les indicateurs touristiques spécifiques. Tandis, on veut utiliser les résultats obtenus pour proposer quelques directions de développement ainsi que le Complexe Touristique Râuşor améliore ses conditions et services offerts aux touristes et, pour quoi non, pour deviendra connu au plan national, non seulement local, comme jusque' à présent.

**Mots clés:** Râuşor, évaluation, indicateurs touristiques, conditions favorables, développement touristique.

Evaluarea echipării domeniului schiabil al Complexului Turistic Râușor în contextul declarării stațiune turistică de interes local. Prin acest stdiu doresc să atrag atenția asupra potențialului schiabil în România. Pe lângă stațiunile noastre consacrate, în România există și alte unități montane în care schiatul este posibil. Un astfel de loc este și Complexul Turistic Râușor din Munții Retezat care, datorită poziționării sale propice (exclusiv pe versantul nordic) face ca sezonul de iarnă să țină uneori chiar pâna la sfârșitul lunii aprilie. Prin această lucrare mi-am propus să scot în evidență favorabilitatea declarării sale stațiune de interes local prin realizarea unei evaluări a domeniului schiabil din cadrul său, analizând indicatorii turistici specifici. În același timp, pe baza rezultatelor obținute, îmi doresc să propun câteva direcții de dezvoltare, astfel încât Complexul Turistic Râușor să își îmbunătățească condițiile și serviciile oferite turiștilor, și de ce nu, să devină cunoscut și pe plan național, nu doar local, cum este în prezent.

**Cuvinte cheie:** Râușor, evaluare, indicatori turistici, condiții favorabile, dezvoltare turistică.

#### 1. INTRODUCTION

This paper, "The Evaluation of Râuşor Ski Area in the Context of Becoming Touristic Resort for Local Interest" through its approach, aims to realize an analysis and evaluation of the equipped ski area of Retezat Mountains, concentrating upon the evaluation of the skiable area of Râuşor Touristic Complex, in order to find the favorable conditions for declaring it touristic resort for local interest.

Nowadays, Râuşor is a mountain locality equipped with accommodation units, ski slope and cable transportation (ski lift). A mountain touristic resort is a resort situated in a high altitude area centered on practicing winter sports, which can be equipped with cable transportation (ski cable, cableway and chairlift) and a diversity of improvements suitable for winter sports [1]. The ski industry, or snow tourism nowadays, is a significant generator of revenue and is different from alpine tourism because of its seasonal, spatial and temporal concentration [2]. Also it encompasses activities such as downhill skiing, tobogganing, cross country skiing and snowboarding together with accommodation provided in ski resorts and/or chalets [3].

Therefore, in order to gain the status of a mountain touristic resort, there are needed several studies which should show the favorability for practicing winter sports. In this context, this paper aim is to highlight the natural conditions for establishing at Râuşor a local winter resort, using a touristic evaluation.

#### 2. METHODOLOGY

This study approaches several methods due to its interdisciplinary characteristics as a touristic analysis. Therefore, it combines traditional methods such as analysis, synthesis, comparison, directly and indirectly observations, descriptions and cartographic methods with modern ones, such as map interpretation and mathematic terrain modeling. On the same time this study centers on using diverse software for calculating indicators formulas took into consideration, as well as graphic interpretation of the results. Also, there were used software for processing and map making necessarily for localizing the study area.

Another method used was the terrain one, consisting in measures and data purchasing needed for analyzing and evaluation of the skiable domain. This method was applied starting with the 2011 winter holiday and continued until the second week of April 2012. During this time terrain observation were made periodically in order to register the number of tourists and also for measures regarding the descend speed of a skier, the periodicity for using cable transportation, slope's optimal capacity etc. Also during this period it was applied a quality questionnaire for tourist (435 tourists) in order to see their

opinion regarding skiing at Râuşor. The most important questions for this study refer to the following issues (Table 1).

Table 1. Quality questionnaire for tourists' satisfaction

Question	Answer
What is your skiing level?	a) beginner; b) medium; c) advanced;
	d) not skiing
How often do you ski at Râușor?	a) Once a month; b) twice a month;
	c) each week-end; d) sometimes
Why did you choose to ski here?	a) Discovering a new area; b) accessibility;
	c) less tourists; d) other (name it)
Which is the reason for coming here?	a) For skiing; b) for the children;
	c) as a companion; d) other (name it)
Where did you find about CTR?	a) Relatives, friends; b) internet;
	c) promotion materials; d) other (name it)
Are you using the accommodation	a) Yes; b) no
provided here?	
How do you find the conditions of the	a) Poorly maintained; b) well maintained;
ski slope?	c) very well maintained
When you come at Râușor, do you visit	a) Yes; b) no
other touristic objectives in the area	
too?	
Are you unsatisfied about the ski	a) Yes (name it); b) no
conditions provided?	
Would you recommend to your friends	a) Yes; b) no
this location?	
Will you come here again?	a) Yes; b) no; c) maybe
Age, sex	

Realized by the author, according to the issue's interest

#### 3. STUDY AREA

For territorial-administrative point of view localization, Râuşor Touristic Complex is situated in the Romania's West Development Region, in Hunedoara District, at Râul de Mori. From the cultural space point of view, it is situated in Haţeg Country, a well defined cultural zone in Hunedoara (together with Zarandului Country, Deva –Mureş Valley area, Orăștie

area, Hunedoara and Valea Jiului) (Figure 1) which gives it a special status in the district, due to its localization in an important touristic area and also for its surroundings, such as Retezat National Park and Hateg Country Geopark.

Considering the geographical position, Râuşor Touristic Complex (CTR) is situated on the northern and north-western slopes of Retezat massive, at 1250 – 1300 m altitude between Valereasca and Custura Prelucii ridges, at the confluence of Valereasca with Ştevia creek (Figure 2).

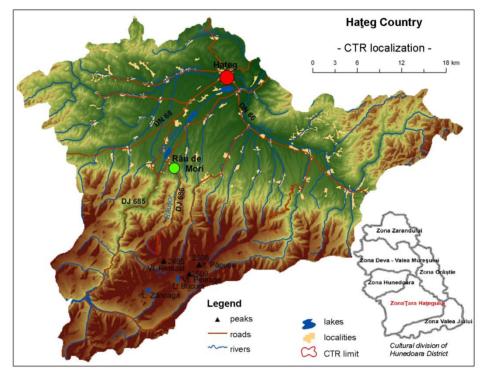


Figure 1. Position of Râuşor Touristic Complex in Haţeg Country (author, 1:50,000 topographic map processing and Hunedoara cultural regions)

This altitude determines the existence of a rich fir and spruce forest which provides a well oxygenated climate with real benefits on human body. On the same time, its northern position confers a snow cover, which sometimes maintains from December until April (when there is a very snowy year).

Râuşor Touristic Complex is the only set up area in Haţeg and Retezat regions where winter sports can be practiced that confers a privileged status in the context of a future touristic development plan and conversion into a local touristic resort. Also, for a future development we must take into consideration the fact that this resort is situated in the buffer limit of Retezat National Park, therefore all improvements and development strategies must be taken with a minimal environmental impact.

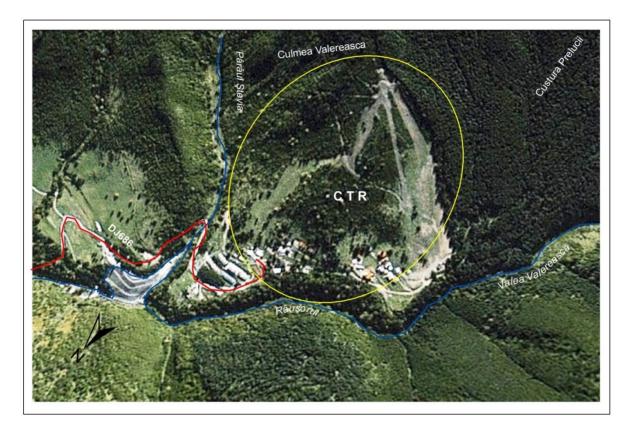


Figure 2. Detail on geographic position of Râuşor Touristic Complexe (author, Google Earth image processing)

Also, due to its high-value natural capital given by its position in the Carpathians [4], the ecotourism or tourism should embrace rural or cultural values instead only practicing sports as it is in the present.

The touristic accessibility is quite easy so that tourists can get here either on road or railway. Therefore, the main route through Râuşor is from Haţeg, where is a crossroad between national roads DN68 to Caransebeş and DN66 to Petroşani; also we can get here by railway through Subcetate with minibus to Haţeg and then to Râul de Mori. Through Haţeg we follow DJ686 road which goes up to the botton of the ski slope; another way is to follow the roads mentioned above and touristic marks to Râuşor.

Considering the touristic infrastructure [5] (accommodation, food and beverage, transportation and other complementary services), CTR provides the following facilities and services: accommodation resorts, a food and beverage unit, ski slope, cable transportation (ski lift) and a center for renting ski equipment and snow transportation mobiles for tourists entertainment (snowmobile, sleight etc).

Therefore, CTR provides accommodation for a total of 316 tourists in 17 chalets and guest houses and 96 table seats in the slope's restaurant. The area's surface of the skiing

domain of Râuşor is 5, 4 ha, with a ski slope of 1 200 m length on 350 m high elevation. The cable transportation has a length which covers the entire length of the ski slope and supports 25 skiers the same time with an optimal transportation capacity of a 700 skiers/hour. The additional facilities offered for tourist consists in a renting center for ski equipment at the bottom of the ski slope and other centers in accommodation units, facilities for artificial snow, snow compaction equipment, night light. There is also a rescue service which functions 24 hours/day.

#### 4. RESULTS AND DISCUSSIONS

Regarding the studies addressed to the ski industry, so far there are few studies using the GIS. One of the studies assess the environmental impact of proposed ski resorts in the northeastern Italian Alps [6], and another one is using the GIS model in order to propose sites for future resorts [7]. Taking into consideration all of these, in order to establish a future ski resort is needed an evaluation to determine on the one hand the impact of the improvements upon the environment and on the other hand to see which are the positive conditions in establishing a new ski resort.

For evaluating the conditions of Râuşor's Touristic Complex ski domain, it was taken into consideration the natural conditions such as orientation and slope, and indicators regarding the correction coefficient, average hourly touristic flow, optimal slope capacity and simultaneously slope indicator.

**Side aspect** is one of the most important natural conditions for localizing a winter resort. It was taken into consideration the slope orientation as a prime factor for the localization of a winter resort due to the fact that it directly influences the snow cover. Therefore, favorable for winter sport is a northern – north-western position, which determines minimal sunlight degree and a huge amount of solid precipitations (snow).

This position (Figure 3) offers favorable ski conditions starting with the end of November, but mostly with children's winter holiday on December, until the end of Mars – mid-April, and even the beginning of May, during heavy precipitation years (as the year, 2012).

As explained before, in the above figure we observe the northern position of the Râuşor's ski slope and the additional mountain hill (to Haţeg), on the right side of Râuşor's Valley, compared to the opposite side, on the left of the valley, with a mostly eastern orientation; for this part of the mountain hill there are already projects for expanding the skiable domain of the complex.

Regarding the favorable snow cover, due to precipitations in January and February this year (2012), it maintained in very good conditions at a 30 - 40 cm thickness over the ski slope and 60 - 70 cm on the other parts, where there weren't any actions for maintaining the ski slope, until mid-Mars. Nevertheless, the number of tourists was law in mars, as it can be seen in the following picture (Photo1, 2).



Photo 1. CTR – Favorable snow cover and low number of tourist (author, January 2012)



Photo 2. The 2 levels of CTR ski slope (author, 26 Mars 2012)

**Ski slope inclination**. It represents the difficulty degree of the ski slope for practicing winter sports and it is taken into consideration when establishing a new winter resort. Together with the orientation, the slope inclination is an important factor in determining the favorability so, as far as there are more slopes of an easy and medium difficulty level, there is a higher favorability for practicing winter sports.

Therefore, according the minimal criteria for approving the ski slopes in Romania [8], there is a direct relation between the ski slope difficulty and slope inclination, so that the lower inclination is, the lower difficulty ski slope level is (Table 2).

*	•			
Average slope inclination (°)	Ski slope difficulty			
10	Very easy			
20	Easy			
30	Medium			
40	Difficult			

Table 2. Relation between ski slope inclination and difficulty level

According to Ţigu, G. (2001) [9]

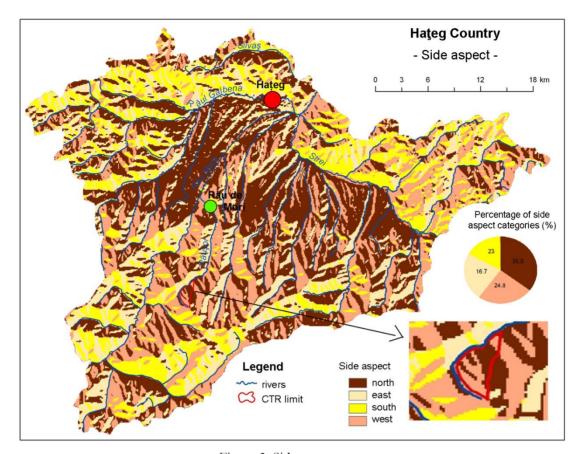


Figure 3. Side aspect map (author, 1:50,000 topographic map processing)

Regarding the CTR ski slope inclination, as it can be seen in the Figure 4, the slope inclination is between  $10, 1 - 20^{\circ}$  and  $20, 1 - 30^{\circ}$ , giving an easy-medium difficulty level.

On the same time, in the map detail we can see that the ski slope has a medium level, fact which increases the touristic attractiveness, due to the fact that number of at least medium skiers in winter resorts is higher than the beginner's. Also, we observe that lower inclination is at the bottom and outside the ski slope so that beginner skiers are not crowding the ski slope area.

Nevertheless, the Photo 2 shows two level of ski slope difficulty: one with an easy-medium level of  $10 - 15^{\circ}$ , preferred by all skiers, and one medium-difficult level with  $25 - 30^{\circ}$ , which unfortunately, due to the lack of cable transportation cannot be used by the advance skiers. But this is not quite an impediment as during our research it was observed that there were many advanced skiers who preferred to ascend the slope without cable transportation precisely due to the fact that that area of the ski slope is not used by other tourists.

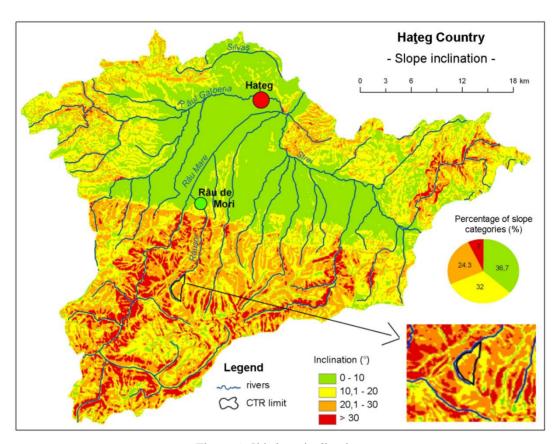


Figure 4. Ski slope inclination (author, 1:50,000 topographic map processing)

**Correction coefficient** is another important indicator due to the fact that it correlates the length with the width of the ski slope so that formulas for different indicators could be applied.

Râuşor has a skiable potential of about 4 500 m, but due to the poor facilities for cable transportation, there are used only 1 300 m. Therefore, in order to calculate the indicator for the evaluation of Râuşor Touristic Complex it was taken into consideration only the length that is fitted with cable transportation because the other areas would be irrelevant for our study, because they are not used by tourists.

International studies show that conventional width for a ski corridor is between 30 and 350 m with an index of about 6, 0 m/accommodaion seat [10]. Between these values is needed a correction coefficient which varies into following values (Table 3).

According to this correlation, for further indicators, it will be applied a coefficient of 5, 00 due to its width at about 150 m.

Ski slope											
width	15	20	35	40	50	60	100	150	200	250	350
(m)											
Кс	0,50	0,67	1,00	1,33	1,6 7	2,00	3,53	5,00	6,67	8,33	10,0 0

Table 3. Correction coefficient connected to the ski slope width

According to Erdeli G., Gheorghilas A. (2006)

Connected to the above indicator we can calculate the average hourly touristic flow [5] (D) of the ski slope, calculated for a conventional length of 30 m for different slopes categories, using the following formula:

$$D=\frac{V}{d}$$
 ,

- V average speed of a skier: 5 km / h for easy slopes; 11 km / h for medium slopes; 25 km / h for difficult slopes
- d minimum distance between 2 skiers who descend the ski slope on the same time, without disturbing each other: 6 m for easy slopes; 15 m for medium and 20 for difficult slopes,

which can have the following values: 850 skiers/h for very easy slopes, 1 100 skiers/h for easy slopes, 1 750 skiers/h for medium and 2 250 skiers/h for difficult slopes. Due to the fact that Râuşor has a medium ski slope it follows that the average hourly flow is about 1 425 skiers/h.

An indicator correlated to the above one is the elevation difference [11] (Z), which represents the straight distance that a skier could perform during a day and which can take the following values: 500 m for easy slopes (beginning skiers), 1 400 m for easy slopes (advanced skiers), 2 700 m for medium slopes (perfected skiers), 4 000 m for difficult slopes (consecrated skiers).

According to these, during the research period, we found that the elevation difference that a skier performs during a skiing day at Râuşor is about 2 050 m. On the same time, the elevation difference [10] (DH/m) represents the ski slope length that a skier perform from the top to the bottom of the slope. Therefore, the 154 m elevation difference on 980 m slope length is very favorable for practicing skiing at Râuşor.

*Slope's optimal capacity (Q)* correlates all the above indicators and it offers a real imagine of the skiable area at a given time. We find it after the following formula [11]:

$$Q = \frac{D X K_c}{\frac{Z}{DH}} ,$$

D – average hourly flow

Kc - correction coefficient

Z - elevation difference performed by a skier during a day

DH – slope's elevation difference

Appling this formula, we found that the optimal capacity of the ski slope at Râuşor is about 535 skiers. Same time, according to data collected from the local authorities [12], the ski slope can support a maximum capacity of 1 200 skiers/day. Comparing the results, we see discordance between the calculated capacity and the one given by local authorities, discordance based on the lack of statistical data regarding the touristic flow for Râuşor and the hopefulness of the ski slope's owner regarding tourists at Râuşor.

**Simultaneously indicator** [13] (IS) shows the number of skiers who are on the same time on the skiable area and it represents the sum between the number of skiers on the slope (Np), skiers on the cable transportation (Nt), the ones waiting at the ski lift (Na) and ones resting (Nr):

$$IS = Np + Nt + Na + Nr ,$$

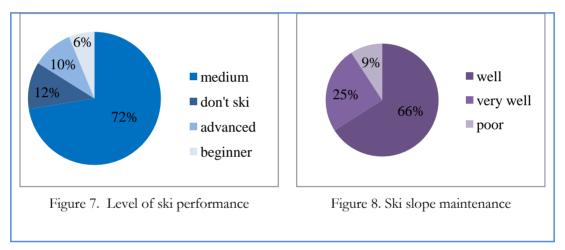
For calculating this indicator we used data obtained during our terrain research, taking into consideration only the week-ends (Saturday and Sunday) due to the fact that, for this study, the other days of the week are irrelevant because of the low number of tourists: 768 tourists for all period with an average of 43 tourists/day compared with week-end, 2 496 tourists with an average of 227 tourists/day. Thereby, we obtained the following values: Np = 75; Nt = 25; Na = 19; Nr = 111, obtaining a value for the simultaneously indicator of about 209 skiers, which if we compare with the average week-end tourists number, we find that tourist are coming at Râuşor not only for skiing, but also for sledding, hiking and only as simple companions.

The same time, if we compare the simultaneously indicator with the optimal capacity, we see that the last one is two times the first one considering our results, showing that the Râuşor's Touristic Complex ski slope is not used to its real potential, fact that is a really good thing due to its situation into the buffer limit of Retezat National Park.

Except calculating these indicators, we applied a questionnaire for making a complete image about the services offered here and for finding out what tourists' opinion regarding Râuşor Touristic Complex are. Thereby, we found that tourist have complaints

regarding cable transportation and the fact the it doesn't offer any complementary activities for tourists who are not skiing and that there is only one ski slope and quite short; also they said that it was difficult to find out about this area due to the fact that is not enough promoted on the internet. Nevertheless, they were satisfied about the fact that it is not as crowded as other ski area such as Buşteni or Predeal and were delighted about the snow cover thickness.

Strictly regarding the questions asked in order to apply a quality questionnaire for the ski conditions provided by the Râuşor Touristic Complex, we found that 72 % of the tourist practice skiing at a medium level and only 10 % of Râuşor skiers have a high level of perfection as advanced skiers; also, from all tourists interviewed there are 12 % of them who don't practice any winter sports at all (Figure 7).



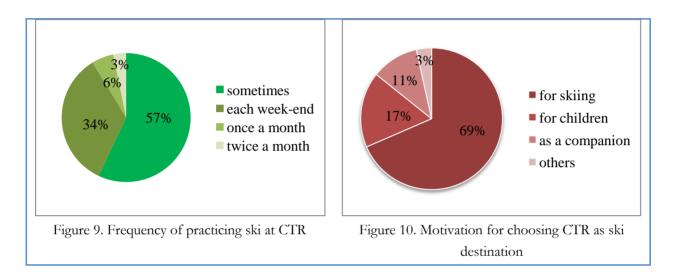
Another issue of the questionnaire was about the ski slope maintenance (Figure 8). During our period of research, we found that most of the skiers find that the ski slope at Râuşor is well maintained, 66 % from the interviewed and 25 % of them consider the slope is very well maintained and were very satisfied about the conditions for skiing in here, while only 9 % of the skiers considers that the slope is poorly maintained in order to sustain winter sports.

We also consider important to see and analyze the frequency which tourist choose Râuşor as winter destination for skiing and their motivation.

Therby, 34 % of the tourist chooses to come at Râuşor each week-end all along the winter season, while most of the tourists (57 %) come only sometimes according to their time availability (Figure 9). On the same time, most of the tourist chooses Râuşor strictly for its destination for practicing winter sports, 69 %, while 28 % are coming here for their children entertainment or as simply companions (Figure 10). Regarding tourists' complaints they refer mostly to the fact that the slope's length is quite short and cable

transportation does not covers it entirely. Nevertheless, 47 % of them would recommend Râuşor as winter sports destination, while 67, 3 % would come here again.

Another important aspect for the Râuşor Touristic Complex evaluation regards the age of tourists choosing to come here for skiing. During the research period we noticed that most of the tourists are teenagers and adults passionate by ski and snowboard-ing, 15 % children between 5 and 14 years old, while only 7 % of the tourist here are over 50 years old and retired.



Analyzing the touristic indicators and questionnaires, we could find some development directions and strategies in order to improve Râuşor's Touristic Complex services and touristic activities that can be practiced here. Therefore, we consider as a priority the following: developing the whole area for skiing, fitting all slopes with cable transportation, finishing the parking at the bottom of the slope and the acces road from Râul de Mori to Râuşor, introducing road transportation to Râuşor, providing complementary activities for non-skiing tourists, organizing sportive competitions and winter camps for students, building a touristic center and realizing a partnership between local authorities and community to ensure a better management of the Râuşor Touristic Complexe and touristic activities.

#### 5. CONCLUSIONS

Through this paper we tried to realize an evaluation of Râuşor Touristic Complex in order to find out if it is suitable for becoming a local winter resorts by analyzing its natural conditions and calculated specific touristic indicators.

During our research we found that the defining note for the touristic activities at Râuşor is given by the natural conditions, especially by the slope orientation and slope inclination which provide excellent skiing conditions. On one hand, the northern position sustains a favorable snow cover during the whole winter period, and on the other hand, the slope inclination determines a medium difficulty for the ski slope, preferred by almost all skiers encountered during this study.

On the same time, for further development of Râuşor Touristic Complex is needed a touristic strategy which should cover all touristic fields, starting with finishing the improvement actions for the ski slope, cable transportation and complementary facilities and finishing with the promotion and management of the touristic complex.

Therefore, we can say that, thanks to the favorable natural conditions and the favorability of its territorial position, Râuşor Touristic Complex is competitive with other winter resorts and locations and it could become a winter resort for local interest, but in order to achieve this status it needs a significant improvement for tourist facilities and services and also for tourism promotion.

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# ROADS EXPOSURE TO BLIZZARD PHENOMENON IN THE PLAIN ZONE OF BUZĂU COUNTY

#### **Romulus - Dumitru COSTACHE**

Master Degree in Hydrology and Climatology, Faculty of Geography, University of Bucharest romuluscostache2000@yahoo.com

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## Roads exposure to blizzard phenomenon in the plain area of Buzău County

Romulus - Dumitru Costache

L'exposition à la tempête de neige des routes dans les plaines de Buzău. Les plaines des Buzău represéntent unes des plus vulnérables zones au phénomène de la tempête de neige. Cette phénomèn produit le plus grand dommage en ce qui concerne la functionnement des routes, causant souvent leur bloc. Les plus vulnérables routes dans cette zone, en fonction de leur importance économique, sont les routes reliant les villes de Buzău, Râmnicu Sărat et Pogoanele avec les résidences du comté voisin, et la route européen 85 avec la région du Moldavie. La carte de la vulnérabilité des routes dans les plaines de Buzău montre que les routes plus exposé sont E85 et DN 22 (entre Râmnicu Sărat et Brăila).

Mots-clés: tempête de neige, vulnérabilité, routes, plaines de Buzău.

#### Expunerea la viscol a căilor rutiere din zona de câmpie a județului Buzău.

Zona de câmpie a județului Buzău este una dintre cele mai vulnerabile areale la fenomenul de viscol. Acest fenomen produce cele mai mari pagube în ceea ce privește funcționalitatea căilor de comunicație rutiere, generând deseori blocarea acestora. Cele mai vulnerabile drumuri din această zonă, prin prisma importanței lor economice, sunt drumurile naționale ce leagă orașele Buzău, Râmnicu Sărat și Pogoanele de reședințele județelor vecine, și drumul European 85 care leagă Bucureștiul de Moldova. Pe "Harta vulnerabilității căilor rutiere din zona de câmpie a județului Buzău" se observă că cele mai expuse artere rutiere sunt E85, și DN 22 (Rm. Sărat - Brăila).

Cuvinte cheie: viscol, vulnerabilitate, drumuri, zona de câmpie a județului Buzău.

#### 1. INTRODUCTION

Blizzard is a typical climate risk phenomenon of the South-East region of Romania, which occurs in the second half of November [1]. This phenomenon occurs in the plain area of the county of Buzău as a result of an atmospheric coupling between the Eastern European anticyclone and the Mediterranean depression which is centered in the southern part of the Balkanic peninsulas (Figure 1) [2].

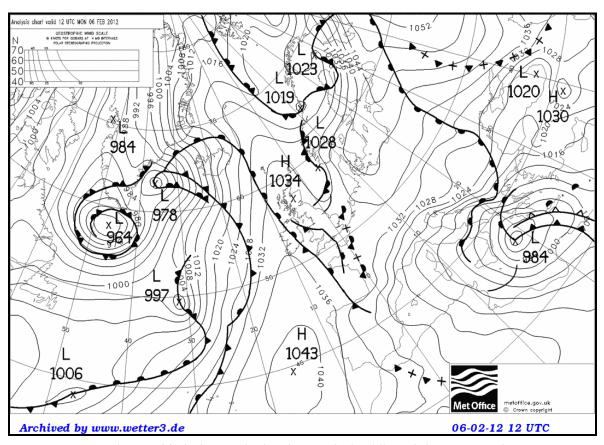


Figure 1. Typical synoptic situation producing blizzards in SE Romania Source: http://www.wetter3.de/Archiv/archiv\_ukmet.htm

Generally speaking, the blizzard phenomenon occurs when snow fall is associated with a wind speed exceeding  $20 \, \text{km}$  / h [1]. It can also occur in the absence of the snow fall, in the case of snow cover preexistence, when snow cover is winnowed by strong wind, this specific phenomenon being called 'ground blizzard' [3].

The strongest of these hazards are associated with wind speeds that exceed  $120 \, \text{km}$  / h [4]. The great blizzard in February 1954 has marked the history of Romania weather, when snow banks reached several meters in the Southern and South-Eastern part of Romania [5].

The most affected social and economic objectives by the producing of such a climate risk are the roads and the biggest problems are caused by heavy snow in the near field. These problems are generally related to heavy snow falls on road vehicles and the economic loss which is caused by the long-term closures of the roads. Such a severe weather episode occurred in the late January and in the early February, when three blizzard episodes caused a long-term closure of the roads, generating economic losses among the transporters and the national GDP on the long-term [6].

#### 2. METHODOLOGY

In order to assess the roads vulnerability in the plane zone of Buzău county, I used a proper methodology. This methodology was never used before, because there is no existing study regarding the roads exposure to the blizzard phenomenon using the same vulnerability factors.

In this study, the GIS techniques which are embedded in ArcGIS 9.3 and Global Mapper 12 software were used. Firstly, due to these programs, the study area was delimitated and after that, the road network was identified by using the criteria of county, national and european roads [7].

The length of the roads was calculated for each category of road, in order to to set the overall roads density in the plains of Buzău County.

The roads vulnerability factors were established by giving each of them vulnerability scores in order to obtain the roads vulnerability in the plains of Buzău County final map. These factors are mainly related to the geographical location of the roads within the study area, to the roads orientation depending on the dominant direction of the Crivetz, to the roads economic importance in the study area and to the snow-drift potential in the study area.

Related to the geographical position, the roads in the south-western area study were awarded 1 point of vulnerability (Figure 2), meanwhile the roads in Râmnicu Sărat City area were awarded up to 3 points of vulnerability, because here wind is more intense and the blizzard phenomenon occurs more frequently.

Regarding the roads orientation to the Crivetz, longitudinal wind direction roads (NE-SW) were awarded 1 point of vulnerability (low), meanwhile perpendicular oriented roads (SE-NW) were awarded 3 points of vulnerability (high) (Figure 3).

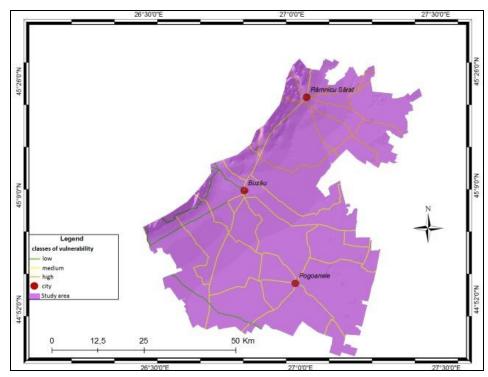


Figure 2. Road vulnerability to blizzard from the geographical perspective (Data source: http://www.openstreetmap.org/)

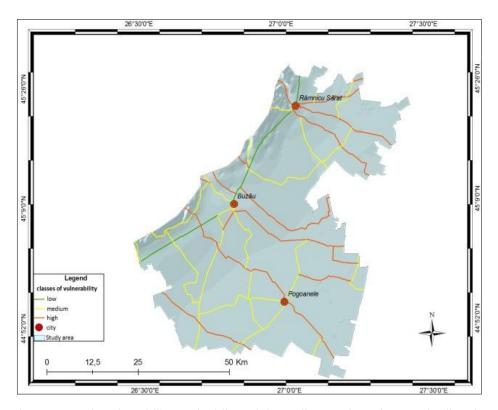


Figure 3. Roads vulnerability to the blizzard depending on the Crivetz main direction (Data source: http://www.openstreetmap.org/)

Regarding the economic importance of the study area roads (Figure 4), 1 point of vulnerability (low) was awarded for remote county roads that do not necessarily connect to a major urban center or other highway, and 4 points of vulnerability (high) were awarded to E85 which is the most important analyzed artery crossing the area.

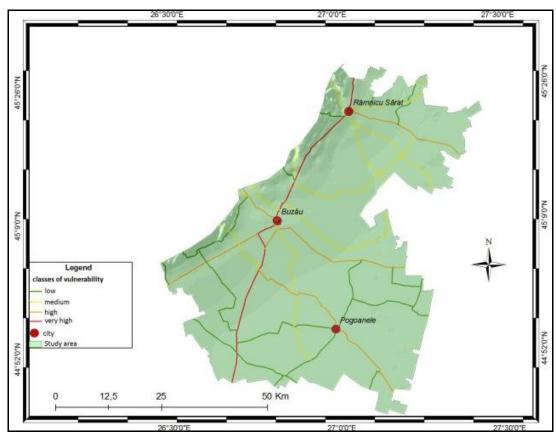


Figure 4. Roads in terms of vulnerability to storm from the economic importance point of view (Data source: http://www.openstreetmap.org/)

Finally, the snow-drift potential for the study area was included (Figure 5). The snow-drift potential was obtained by integrating factors such as land use, slope aspect and negative landforms. The village buildings which are located in negative landforms represent the most exposed to blizzard areas. Corine Land Cover 2006 data source was used in order to obtain the land use information and the SRTM data (obtained from Geospatial site) [8] was used in order to determine the slope aspect and the negative landforms.

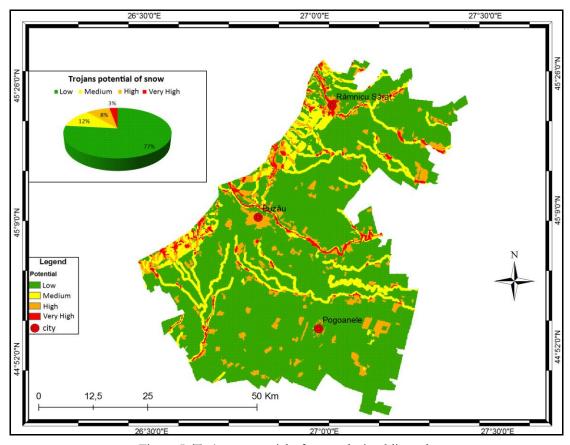


Figure 5. Trojans potential of snow during blizzards

(Data source: Processed Srtm data and Corine Land Cover 2006 data using Arc Map 9.3)

By integrating the four mentioned factors, we obtained the roads vulnerability to blizzard in the plains of Buzău county final map (Figure 14).

#### 3. STUDY AREA

The Plain of Buzau County is situated in the South-East of Romania (Figure 6), being under the direct advection influence of cold continental winter air masses [9].

The land configuration in the study area causes the channeling of the cold air coming from the northern Russian Plain through the corridor between the Carpathians Curvature and the Măcin Mountains (Figure 7) [10].

This channeling air corridor, on that specific gap, causes the wind power lines thickening in this part of the country (Figure 8), which leads to wind speed increase and blizzard frequency increase.

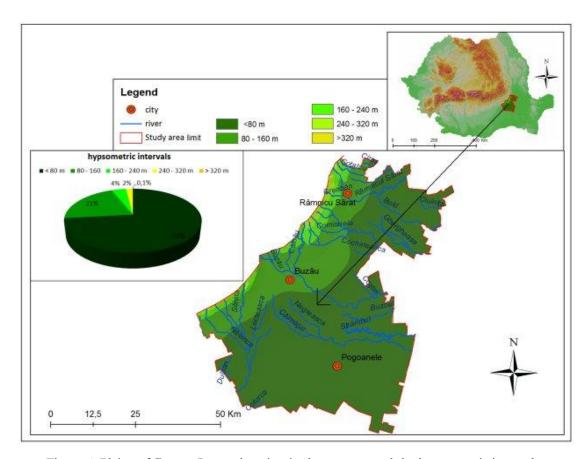


Figure 6. Plains of Buzau County location in the country and the hypsometric intervals (Data source: Processed Srtm data using Arc Map 9.3)

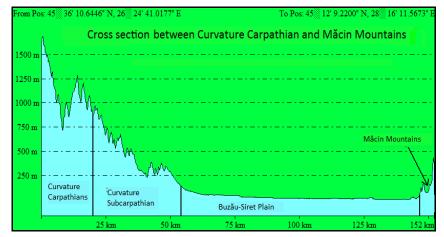


Figure 7. Cross section between the Curvature Carpathians and the Măcin Mountains (Data source: Processed Srtm data using Global Mapper 13)

The plains of Buzău County have low relief altitudes, and a 92% prevalence of flat surfaces in the study area (Figure 9), which cause the maintaining of high wind speeds, as a result of the low friction coefficient between the horizontal air and the land surface.

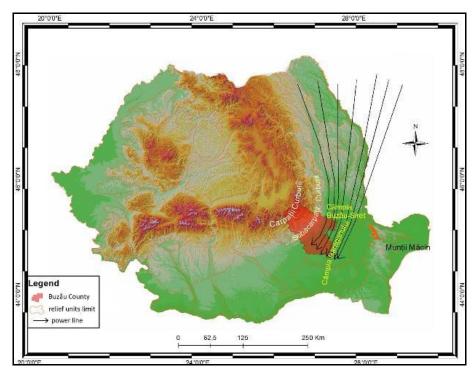


Figure 8. Wind power lines thickening in the South-East region of Romania (Data source: http://earth.unibuc.ro/)

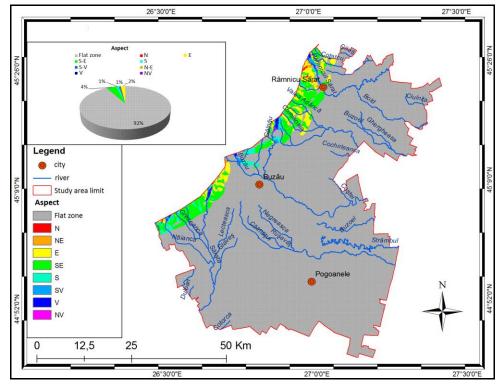


Figure 9. The aspect in the plain areas of the Buzau County (Data source: Processed Srtm data using Arc Map 9.3)

The physical and geographical characteristics of the study area had made it the most vulnerable to blizaard of all regions, beside Bărăgan and southern Moldova areas.

The average number of days with blizzard phenomenon, which was obtained by mediating values between 1990-2012 at Buzău meteorological station, is of 5.9 (Figure 10) [11].

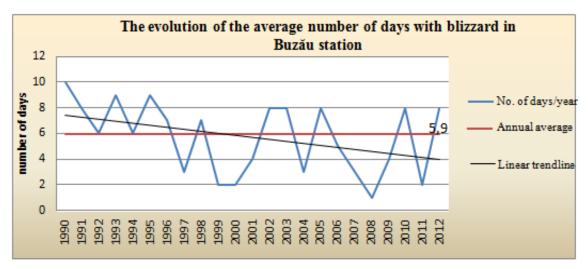


Figure 10. The evolution of the number of days with blizzard at Buzău station (1990-2012) (Data source: www.tutiempo.es)

This parameter shows a clear decreasing tendency during the study period, which is pointed out by the linear trend line.

The greatest weight of days with blizzards has been registered in December and January, when 28% and 27%, respectively, of all the annual average cases occur, followed by February when 25% of the phenomenon cases occur (Figure 11) [11].

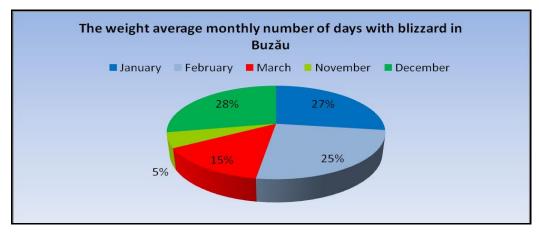


Figure 11. The weight average monthly number of days with blizzard in Buzău (1990-2012) (Data source: www.tutiempo.es)

In the study area, such as in other areas of our country, the roads are the most affected by the blizzard phenomenon. The main problem regards the snow-drift of the roads which is caused by the wind which blows the snow from the field to the road. After this process, the motors vehicles are snow-bond.

The plains of Buzău County are crossed by a number of 756 km of county, national and European roads. The most numerous are the county roads, with a length about 500 km, followed by the national and E 85, with a length of 88 km in Buzău County (Figure 12).

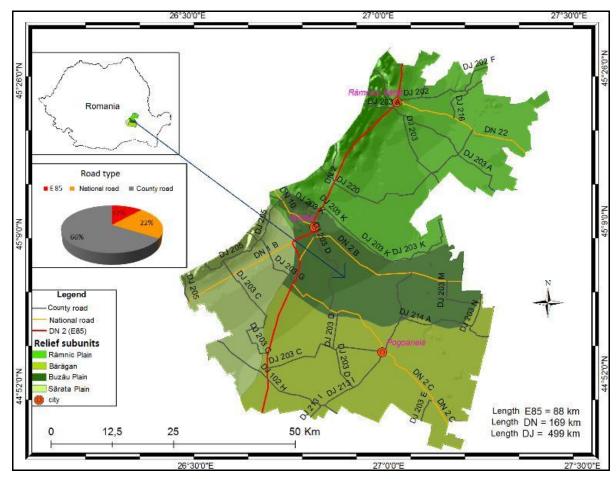
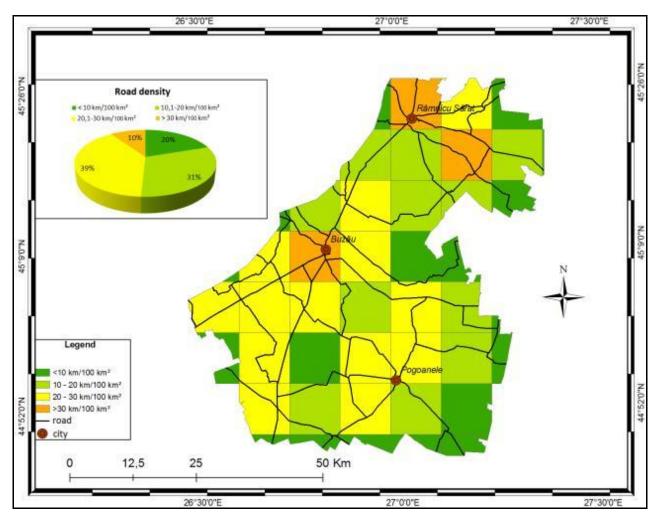


Figure 12. The relief subunits and the roads in the plains areas of Buzău County (Data source: http://www.openstreetmap.org/ and http://earth.unibuc.ro/)

The highest roads density of the study area are recorded around the main urban centers (Râmnicu Sărat and Buzău). There are more than 30 km of roads lenght related to a surface of 100 km<sup>2</sup> (Figure 13).

#### 4. RESULTS AND DISCUSIONS

After the summation of the roads vulnerability factors, the roads vulnerability in the



plains of Buzău county map was finally obtained (Figure 14).

Figure 13. Road density in the lowlands of Buzău County (Data source: http://www.openstreetmap.org/)

According to this map, roads with low vulnerability to blizzard phenomenon are represented on the map with the yellow color and share 8% of the total length of the main streets in the study area. These are the western county roads which are located at the contact area of the Buzău Plane and the Sub-Carpathians Curvature. The roads with low vulnerability are also found in the south-western part of the county, on the 102 H county road.

The roads with an average vulnerability to storm hold over 34% of the total length of the main streets of the area investigated. These include primarily county roads in the Bărăgan Plain with low economic importance, and DN 10 which is less exposed to the Crivetz.

41% of the roads have a greater vulnerability to blizzard phenomenon. These are all the national roads included in the study area and the county roads in Râmnicu Sărat town, where blizzard is more intense.

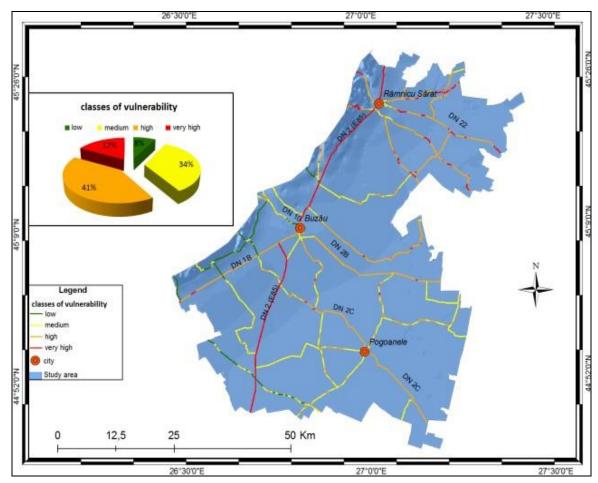


Figure 14. The roads vulnerability to blizzard phenomenon in the Buzău County's plains (Data source: http://www.openstreetmap.org/, Corine Land Cover 2006 data and Srtm Data)

17% of the road length has a very high vulnerability to blizzard phenomenon. In terms of economic importance, the most exposed to blizzard phenomenon is the E85 road. The DN2 road has a high vulnerability to blizzard also.

According to the results, the roads vulnerability to blizzard phenomenon in the plain zone of Buzău county is high, as there is a constant risk of road bed snow-drift. For example, the most vulnerable areas have demonstrated that snow bed can frequently exceed 50 m height, whereas the economic loss (cused by the E 85 road closure) can exceed several milion Euro per day.

The advantage of this study's methodology is that the main vulnerability factors, which cause the roads snow-drift, are integrated, and that the main factor, which is the economical factor, is also integrated. This methodology can be successfully used for studying

other areas vulnerable to blizzard phenomenon.

In the future, the study will regard the E 85 road, from the southern county limit to Buzău city, in order to improve the roads vulnerability to blizzard phenomenon highlitghing, and in order to improve the intervention by posting snow reaks and planting forest areas, after identifing the vulnerable areas.

Preventive measures for blizzard phenomenon effects depletion are very important because these preventive measures are the best way to avoid human and economic loss.

### 5. SOLUTIONS REGARDING THE CONTROL ON THE NEGATIVE EFFECTS OF BLIZZARDS

These measures are divided into different kind of types:

#### a. Unstructural:

- drivers training on their awareness of the blizzard risks, on the proper way of acting in case of the blizzard phenomenon occurring.
- instructing the authorities in order to improve their intervention in case of disaster.
- improving the accuracy of ANM forecast.

Unstructural measures are very important because there was a great human and economic loss caused by the insufficient instruction of the authorities and drivers regarding the way one should act in case of severe blizzard phenomenon.

#### b. Structural:

- forest plantations around the village and on the roads edges, related to the dominant wind direction. Walnut trees are recommended.
- the enlarging and the use of more snow breaks
- the acquisition of a proper equipment by the local authorities in case of snow drifts.

Planting forests is the best way to protect the roads from snow-drifting and also to avoid soil erosion which has become a serious problem in the Bărăgan area.

#### 6. CONCLUSIONS

As a result of the physic and geographical characteristics of the Plains of Buzau County, the most common climatic risk phenomenon that occurs in this area is blizzard. The study area has the greatest vulnerability of all the regions in Romania to blizzard phenomenon, and the roads are the most affected, regarding the social – economic objectives. In order to highlight the spatial distribution of the roads in the study area which are exposed to the phenomenon, I've created 'The roads vulnerability to blizzard phenomenon in the Buzău County plains map. According to this map, most of the roads are

of medium and high vulnerability to blizzard, meanwhile the most important road which provides the connection between Bucharest and Moldova, E 85, is of very high vulnerability.

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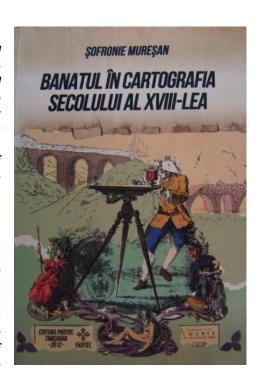
#### Şofronie Mureşan, 2011, Editura Partos, Timişoara, 405 p, 100 maps

As regards this major work it is scientific fundamentaling the historical and geographical context in which was placed the province of Banat (cartographical represented the mid twe1fth century by geographer Sariff a1 Idrisi) wealthy cartographical material gisting the specific area of interest.

In a unitary style is enlightened of cartography from the eighteenth century in the geographically multi-cultural central Europe.

Through the structure support of the work is laying stress on analysis of the main cartographic documents (the third and fourth chapters) in a tense political Europe and the attention is focused on reshaping the territories.

Through this work it is stand out specifics of structural components (the fifth chapter) perspectives completing as ethnic mobility analysis and specificity of infiltrations of foreign populations as the particularities of the settlements.



Economic side, treated in the seventh chapter, follow with cartographic documents commercial and strategic importance of Banat in Central Europe space.

This situation led to administrative reorganization, the separation of military from civil administration, which culminated in strengthening the province's eastern border.

Study cartographic documents relating Banat from the eighteenth century it lightening to follow our progress of methods of cartographic representation and indirectly to the most accurate reconstruction of the evolution and dynamics of socio-economic and political processes of the Banat.

Dragoș Onea

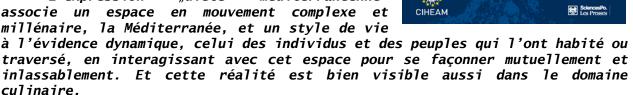
Cette fois, je vous propose brièvement deux ouvrages récemment apparus en France qui font appel à la géographie de la santé. Le premier c'est l'édition 2012 du volume Mediterra qui s'interroge de la diète méditerranéenne. Le second c'est la quatrième édition Santé et Environnement, un ouvrage qui parle des risques associés aux facteurs environnementaux (Iosif Daniel).

#### Mediterra

Centre International de Haute Etudes Agronomiques Méditerranéennes, 2012, Presses de Science Po, 526 p

Pour la santé de la planète et celle des 1es produits alimentaires présenter des caractéristiques de plus en plus tournées vers la double exigence de sécurité sanitaire et de durabilité environnementale. Cet ouvrage est consacré à la diète méditerranéenne et elle constitue les résultats du treizième rapport régional du CIHEAM (Centre International de Haute Etudes Agronomiques Méditerranéennes). Le gros volume de 520 pages est composé de 22 chapitres qui correspondent aux 22 articles indépendants. Les éditeurs ont choisi partager le volume en huit sections: origines. alimentation. environnement. responsabilité. producteurs, santé et politique. droit, s'agit donc d'un ouvrage complet sur la diète méditerranéenne.

L'expression "diète méditerranéenne" associe un espace en mouvement complexe et millénaire, la Méditerranée, et un style de vie



Comme l'a dit le secrétaire général du CIHEAN, ce Mediterra, comme dans les éditions précédentes, offre des clés de lecture et des analyses à destination du grand public et de la communauté d'acteurs opérant en région méditerranéenne. Il se veut à la fois outil pédagogique et catalyseur de décisions. Plus largement, l'ouvrage cherche à positionner les thèmes de l'agriculture et de l'alimentation au centre des débats scientifiques et politiques sur la Méditerranée et à placer une réflexion sur cet espace stratégique au cœur des discussions sur la sécurité alimentaire et le développement agricole dans le monde.



William Dab, 2012, Presses Universitaires de France, Collection Que sais-je? 128 p

L'état de santé des populations est déterminé aussi par la qualité de l'environnement, c'est-àdire de l'air respiré, de l'eau bue, la radioactivité, le bruit etc. "Chacun a le droit de vivre dans un environnement équilibré et favorable à sa santé" sont les mots de la Charte de l'Environnement promulguée en 2005 et, sur l'idée qu'il existe un environnement menaçant pour l'homme, nous devons avoir avant nos yeux les principaux risques, pour les connaître et pour les combattre. En ce sens, cet ouvrage se propose de développer les principaux concepts et méthodes de l'évaluation des risques environnementaux.

La vie et la santé résultent des interactions entre l'homme et son milieu. L'environnement est considéré l'un des quatre types de facteurs influencent la santé et on considère qu'environ un quart du fardeau des maladies est dû à des facteurs environnementaux modifiables. M. Dab, parmi les nombreuses conclusions pertinentes, considère les mots clés dans l'analyse des



SANTÉ ET ENVIRONNEMENT

William Dab



relations entre l'environnement et la santé, étant l'exposition et la dose. Autrement dit, l'intensité du contact entre l'homme et les agents présents dans les différents milieux et la qualité de la substance effectivement active sur les cibles au sein de l'organisme humain.

L'auteur souligne aussi les nouveaux dangers liés au risque environnemental et qui ne sont pas qu'infectieux. Les maladies chroniques, les cancers, les asthmes, les eczémas sont les nouvelles menaces. La liste des nouveaux facteurs de risques augmente elle aussi. Ici on parle des carburants automobiles (notamment le benzène), la charge chimique atmosphérique, hydrique ou alimentaire, les particules ultrafines ou les composés issus des réactions photochimiques.

Daniel Iosif