Settlement Relief Potential of the Curvature Carpathians and Its Use Degree

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Abstract

The Curvature Charpatians have an important settling potential. The varied geomorphic conditions influenced the number (91) and density (1.4 to 100km^2) of settlements. These developed especially on the lowest hypsometric intervals (500-900m), and here is specific, also, the highest urban habitation limit in the Romanian Carpathians. The valley settlement are the biggest part of the total settlement (ca. 65%). Another features show that the most important potential correspond to valley, depression and border areas.

Curvature Carpathians are situated in the geomorphic regionalization (Posea, Badea, 1984) between the Oituz and Dâmbovița valleys. Anthropogeographically considered, these are covering the area between the Prahova and the Oituz valleys because the Bran-Rucăr Passageway is an individual area of the Romanian Carpathians.

Curvature Carpathians are an anthropogeographic entity of the Carpathians by its potential and especially by its relief use as main part of the mountain landscape.

Among the Romanian Carpahians, the Curvature Carpahians have an average settlement density of 1.4 to 100 km^2 (there are 91 built-up areas - 9 of them belonging to urban settlements). Comparing with the other mountain areas of Romania, the area is below their average settlement density (21.2 to 100 km^2 in the whole Romanian Carpathians, 15.3 to 100 km^2 in the Western Romanian Carpathians 28.5 in the Southern Carpathians). This situation is the result of the interaction between the non-favourability factors in this area.

The following represents favorable factors:

Slopes, especially those below 15^0 declivity are specific for glacis slopes, alluvial fans, terraces and high riverbed; there are the most favorable for settlements (especially in valley corridors, small basins and depressions). There are areas with a remarkable settlement potential (Intorsurii and Comandau Depression, the Cheia, Buşteni, Sinaia, Azuga, Nehoiu, Tesila small basins with glacis slopes and terraces). Declivities of 15-20^0 are specific for the low and middle mountain areas and are advantageous for grazing, tourism and forestry but also for settlements (for the palaeogene flysch area). At the opposite there are the slopes bigger than 45^0 given conglomerates and sandstone's in Bucegi, Ciucaş, Siriu and Penteleu Mts. (these have not an economic use).

Altitude in another morphometric feature that influence the settlement potential. map analysis and land correlation let us limit the altitude intervals with the most important value (fig. 1).

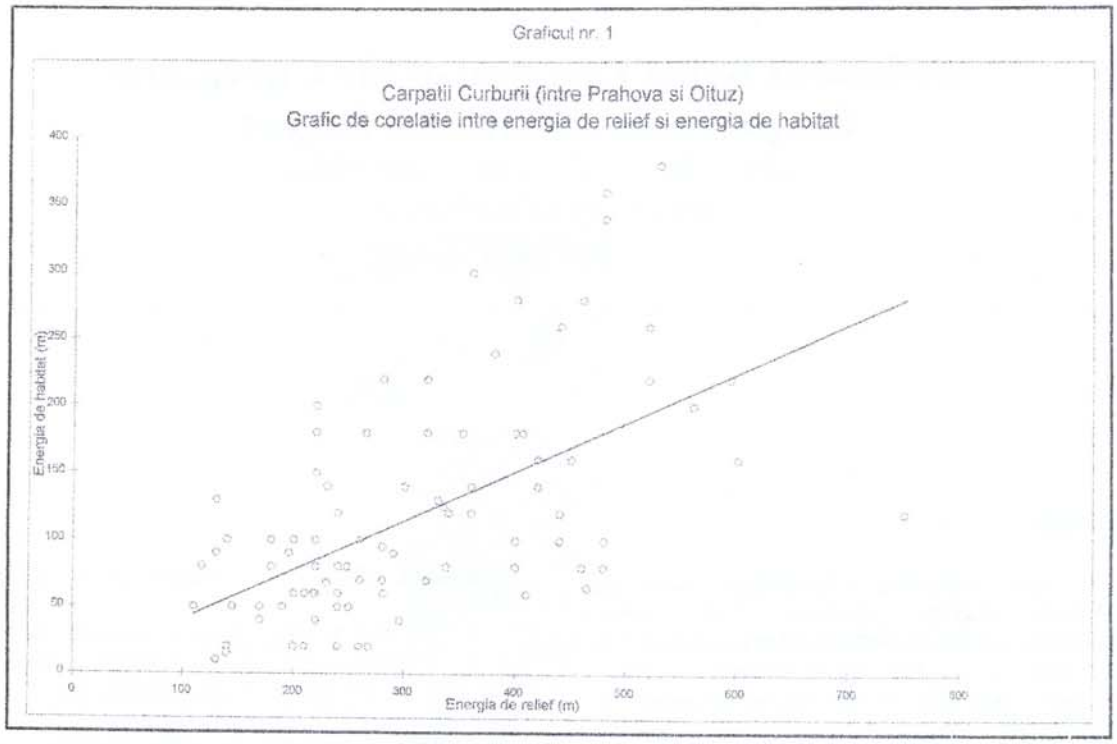


Figure 1. The Curvature Carpathians (between Prahpva Valley and Oituz Valley). Corelation relief energy-habitat energy.

-below 500m altitude there is 5.4% of the whole settlement number (on Oituz valley and Buzău valley - downstream from Nehoiu);

-between 500-700m there is 59.3% of the built-up areas (on the border between the Braşov Depression and along the Buzău and Basce valleys);

-between 700-900m there are more than 25% of the settlements total number - this aspect shows a big habitation potential because of the upper Prahova (Sinaia-Buşteni), Doftana and Teleajen valley and of the Intorsurii Depression.

-between 900-1100m of altitude there is a specific settled area defined by the ±1000m pliocene platform including the towns Predeal and Azuga (af the Prahova Valley), the Pârâul Rece and Poiana Braşov touristical resorts and also the small high basin of Comandău (7.6% of the settlement total number).

Climatic conditions have had a role in the settlement development between 500-1100m of altitude corresponding to average temperatures of 4-5^0 to 6-8^{0}C. The average sunshining duration is more than 1600 hours/year and the average year rainfall is under 1000mm/year. Termic inversions that affect the depression area made an altitude development of some settlements that occupied the less influenced terraces and glacis above the alluvial plains. Climate made possible the climatic resorts development (Predeal, Poiana Braşov, Pârâul Rece, Sinaia).

Slope exposition is a favourable condition on sunny and half-sunny slopes (southern and also southeastern and eastern). The biggest part of the settlement built-up areas (42 or 46%) belongs to this situation (the border areas close to the Subcarpathians, the Intorsurii Depression, the Bâsca Rosilei basin). The following percentages belong to te northerly, northwesterly, northeasterly and westerly slopes (38%). Although dark and half-dark, there were prefered by the older settlement close to the Braşov depression where water sources are important and slopes decrease under 5^0.

Unfavorable factors have had a limitative role upon habitation potential, aving as result the ununiphorm settlement distribution and also their physiognomies.

Relief fragmentation is an essential feature of the mountain areas. Fragmentation density

corresponds to an important drainage density that led to a remarkable increase of slope surfaces and of their declivities. Lythology and tectonics strongly influenced this situation. The biggest values characterize the paleogene flysch lythofacies and also the upper basins of some valleys with an important regressive erosion (on the northern slope where densities are more than 0.5 km/km^2 along the valleys and 2-4 km/km^2 on slopes). Young narrow valleys sectors have not a settlement potential because of the big declivities slopes than finish directly in the thalweg line (northern from the highest mountain axis of Omu-Ciucaş-Penteleu-Goru).

Relief vertical fragmentation closely linked to the valley network generations and also to the neotectonics stopped the settlement development at more than 400-800 m/km^2. Structural slopes in Bucegi, Ciucaş, Penteleu mountains are a specific example. Among the "Clăbucete" sector relief energy is frequently about 100-300 m/km^2, the slopes are gentle; hare forest was partly cut and settlement (temporary) appeared.

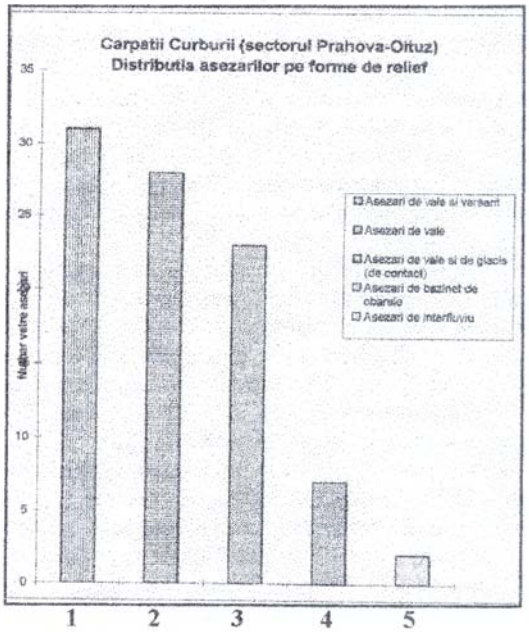
Slope is riverbed morphodynamics are an ensemble of present-day geomorphic processes that limitated the settlement development in high settlement potential areas. In the paleogene flysch areas deforested slopes (during the last 150 years) have a big sliding potential.

Old delluviums cover almost the whole slopes in the Basce and Buzău basins. Here farms and houses occupy stable-considered landslide waves (locally reactivated by overgrazing and bad agrotehnics). Even houses and farms started during the history a migration movement from the slopes and the source basins to the valley sectors (Vinetişu, Păltiniş, Nemertea, in the Bâsca Rosilei basin, Mlajet, Păltiniş along the Buzău valley).

Gully erosion is also important having it maximum affect at about 1200m altitude. The alluvial fans become vulnerable during floods in deforested area; the village number exclusive situated on alluvial fans is lesser in the Buzău and Basce valleys.

Riverbed processes are complex. On the narrow thalwegs floods are changing quickly the landscape. Floods in deforested basins areas led to radical morphology change of the largest riverbed sectors (the situation of floods in the 70's that destroyed almost all the building in the Buzău riverbed).

Relief influence upon the settlements is different in this area. There are 91 built-up areas that have been classified in the geomorphologic site typology (graph. 2). The map and the terrain analysis led us to the following categories establishing:



1. **Settlements of valley and slope**
2. **Settlements of valley**
3. **Settlements of valley and glacis**
4. **Settlements of spring basin**
5. **Settlements of interfluve**

Figure 2. Curvature Carpathians (the sector Prahova-Oituz. Settlements distribution on the relief forms.

-bottom valleys settlements on terraces, glacis slopes and high riverbed (30.7% of the total number); these are showing the remarkable potential along the valleys (the Vrancei Mts., the Oituz valley but frequently along the Buzău Valley, the Basce basin including the small basin of Comandău); the relief influence reflects especially in their liniar-lenghthened type (Lepşa, Ferăstrău-Oituz, Vama Buzăului);

-settlements on the main valley slopes (34%) - are much more than the first as an effect of the last 150 years evolution that led to a migration of the settlements from the secondary valley slopes. This was the effect of the decreasing role of mountain ridge old roads (Boncuţa, Tabla Buţii passes). This is the situation of all the main valley landscape evolution like the Upper Prahova Valley where settlements develops also in altitude like Predeal and Sinaia towns that were strongly influenced by the transcarpathian road (1849) and railway (1879)-double and electrified, today with european transit role.

Along the Buzău valley on high terrace remnants or on old landslide waves old farms

remained alternating with hayfields with temporary settlements and orchards. The main village centres develops along the Buzău river, alon the Buzău-Braşov transcarpathian road (Nehoiu, Nehoiaşu, Siriu along Baza, Gura Teghii on Bâsca Rosilei river). These settlements have complex physiognomies where concentrated-compact shape (along the valleys) alternate with scattered ones (on slopes and tributary valleys).

-alluvial fan settlements, on piedmont, piedmont glacis and valley mark the border between the mountains and the Braşov Depression (23% of the total). Here there are even big urban built-up areas like Braşov, Săcele, Covasna that appeared first along the valleys or slopes and covered after piedmont fields and alluvial cones in the border area. The city of Braşov (the biggest in the Romanian Carpathians) appeared in the Schei Valley, in the mountains and cover now the piedmont area; Săcele and Covasna were closely linked to the mountains but now develops in the Braşov Depression area. Their settlement is frequently concentrated Zagon, Ojdula, etc.) but in the mountains scattered and linear ones appear (Braşov has a complex one as an effect the German colonization during the XII-XVth centuries).

-small source basin settlements (7.6%) are the oldest forms and are characteristic for the submountain area (Slon, Secăria, Stănilă), for the "Clăbucete" mountain areas, but also for more men settlements (Predeal, Timişu de Sus). In the Buzău and Basce rivers basins some villages leaved in some small source basins few scattered farms (Paltiniş, Bâsca Rosilei, Vinetişu, Paltineni, etc.). These are using as site slopes covered by stable delluviums and also alluvial fans even glacis slopes, having scattered structures (in some situation there are lenghtened like for Predeal at the Prahova sources).

-interfluve settlements (2.1%)-there is rare because of the lack of water sources; there are affected by abandonment on the southern slope of the Curvature Carpathians (between the Teleajen and Râmnicu Sărat rivers). Temporary settled houses are specific for the "plaiuri" landscape of the area near the big under mountain area (Maneciu, Ceraşu, Bisoca, Nereju, Jitia, etc.).

Settlement energy (the development in altitude of the built-up areas) helped us to the investigate and to evaluate the relief energy and the settlement energy (fig. 3) using topographic maps (1:50.000) made possible to observe the biggest potential sites.

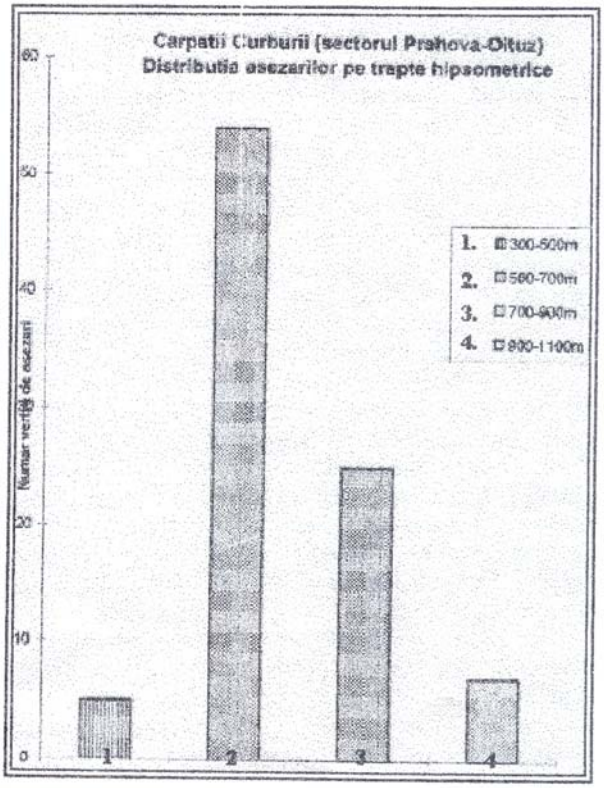


Figure 3. Curvature Carpathians (the sector Prahova-Oituz.

We can't observe a correlation between the two valves. This effect of the fluviatile relief biggest potential. The valley relief has not big relief energy among the largest valley sectors (the biggest is specific for the young narrow valleys).

A better correlation is a characteristic of the most vertical-dynamic settlements that generated big settlement energies (on the Upper Prahova Valley : Sinaia 300m, Predeal 180m, Buşteni 120m, Azuga 140m). Another situation is given by the coexisting among the same village of a valley built-up area with scattered farms on slopes or in small source basins (on the Buzău and Bâsca Rosilei valleys: Păltiniş 440m, Nehoiu 380m, Nemertea 220m, Gura Teghii 180m, Siriu 120m, etc.).

A similar situation appeared in the Intorsura Depression scattered villages area where farms use the alluvial riverplain and the low terraces (Barcani 150m, Floroaia 140m, Sita Buzăului 180m, Sarămaş 100m, etc.).

On the northern border (to the Braşov Depression) settlement uses the terraces cut in the piedmont cones and also high riverbeds and erosion glacis slapes.

The correlation between the relief and the settlement energies has a positive trend like for Zagon (90m), Covasna (70m), Zăbala 100m), Săcele (130m), Râşnov (100m) even Braşov (180m in the mountain area built up area).

We can observe that the valley and depression areas have the most important settlement potential.

The settlement potential used is different from one situation to another. Morphology has been an essential element of the settlement network development especially for the first stages. The urban development and even the rural one in the last century made the relief as a secondary factor. This is the example of the town of Sinaia that leaved the terraces complex "climbing" on slopes where there were made some arrangements after 1880 (drainage, gully erosion prevention, etc.) in a stage of a rapid urban development.

Another problem is the displacement of some farms and houses from unstable land areas affected by landslides and gully erosion to the much more stable terraces (the Buzău river basin). The relief role still remains important because of the big land vulnerability on the deforested-sliding areas. The risk remained big along the Buzău and Bâsca river valleys where meander evolution affected the slope (landslide masses covered). Different works stopped only in small areas these processes (the Baiu Mts.).

The smaller density of the settlement in there areas could be explained by the fact that on a little surface the settling conditions are favorable only along the valleys and in depressions. Above the 1100m limit and especially above that of 1400m the level of temporary settlements (sheepfolds at 1350-1450m frequently, chalets and forest houses) is important. Present day morphodynamics are a permanent limitative factor for the settlement territorial development being a result of an active neotectonics.

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