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THE FLOODS ON SOMEŞ VALLEY- ROMANIA AND THE EDUCATION FOR THE ENVIRONMENT STUDY CASE

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***Abstract* — The present article proposes to explain and analyse the spatial distribution of the flooding phenomenon in the area and to signal the dysfunctions appeared in the system of dwellings in the Someş Valley after some perception from the population partially affected by flooding and the role of the environment education from this perspective. The study of the perception of the population partially affected by the risk of flooding from the localities in proximity with the Someş Valley between the confluence with Lăpuş River and Satu-Mare County represents a quantitative research based on a structured questionnaire created in this sense and applied in the spring of 2005. This region has been chosen for research in this part of the country (North-West) at the contact of three big forms of relief: Codru Hills, Baia-Mare depression and the Someşan Plain, the frequency of floods from the local brooks but especially on Someş River has been rather high, the area remaining even today prone to any kind of floods.**

Key words: risk, flooding, measures, education

I. INTRODUCTION

The area taken under study superposes the system of dwellings along Someş Valley between the confluence with the Lăpuş River and Satu-Mare County (see figure 1), in the Northern-Western part of the country belonging to Băii-Mari Depression and the Someş Plain.

Downstream the reception of Lăpuş, Someş enters West Field where it flows into the area of the big cone of ejection formed by itself. The numerous little courses from downstream of Seini shapes clearly enough the structure and extension of the cone which falls both towards north, towards the Turului basin and south towards the Crasna-Eriu basins. The current bed of Someş River according to A. Bogdan established itself at the beginning of the Suboreal (the beech period). The courses of Homoroade to the south from the current course indicate a strong divagation in their direction, downstream Lipău, the existence of some losses underground Someş being possible towards Homorodul Balcaia (Canaliş) and according to Z. Benedek in the past one can suppose even superficial diffluences towards south. Someş had a stable course even in the last century before building a dam on the inferior sector so the processes that took place must be very recent. Currently on this track there has been built a main cannel to decongest Someş towards Ier which is also used for the irrigations on the plain.

To the overflow of the plain surrounding the city of Satu-Mare the streams belonging to Homorod system have greatly contributed also, organized in the Codru direction. In order to defend against floods and drainage of the underground waters which are very near to the surface, in 1896 was created the Homorod sewer which flows its high waters in Somes at Satu-Mare. Normally their waters are collected by the Homorod own system which downstream the locality Livada continues its way through Keleti cannel, directing to Hungary where it flows again in Somes.

The main settlement systems are: Ardusat, Pomi, Valea Vinului, Culciu Mare, Păuleşti, Cicarlau, Seini, Apa, Mediesu-Aurit, Odoreu.

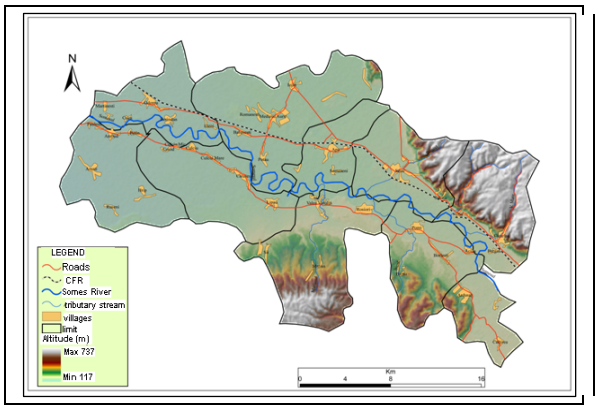

Figure 1. The settlements along the Someş Valley and the confluence with the Lăpuş River and Satu Mare village.

II. MATERIAL AND METHOD

600 subjects living in 30 villages located on the Somes Valley answered the questions. The period of living in an environment, in correlation with other aspects, greatly influence the perception of certain extreme events. As a result, the floods are perceived differently depending on whether the households are situated in areas with different degrees of exposure to extreme events. Consequently, the subjects were chosen based on this criterion. The persons

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interviewed have households located in areas with different degrees of exposure to flooding. Thus, of the 600 people interviewed, nearly all have households located in high-risk area (92.16%) corresponding to the floodplain. The remaining 5.17% and 2.67% of the subjects with households located on slopes and terraces, live in areas with a lower degree of exposure to flooding, such as areas with minimal and medium risk (figure 2).

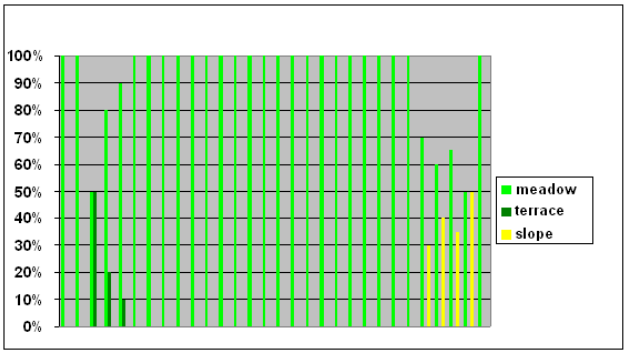

Figure 2. Distribution of households and communities on relief stairs

The hazard perception is a complex process, which is formed at the junction of several factors, including the social ones (age, sex, education, income, etc.) which have an important role.

The experience and the attitude of the individual to extreme events depend on age.

The age groups in which there are included the interviewed subjects are of different importance: the first age group (19-30 years) and the last one (> 60 years) have roughly equal shares (21.34% and 20.16%), and the second group (31-60 years) has a share of 58.5%.

Following the structure of the sample by genders, it is noted that the percentage of men (65%) is much higher than the percentage of women (35%). In the towns with settlements along the Somes Valley, the structure is as follows: approximately in most localities, including the town Seini, the proportion of men is higher than that of women, excepting the localities Valea Vinului, Păuleşti, Mărtineşti, Eteni, Apa, Cicărlău and only in three localities (Cărăşeu, Ambud şi Lunca Apei) the percentage is equal.

The level of education influences the level of perception of extreme natural events and individual behaviour during their deployment. Of the total interviewed subjects, about 33% have a low education level (with 1 to 4 classes), 38.9% (with 5 to 8 classes), 16.7% have finished the vocational school and only 3.35% have finished a higher education form. The interviewed subjects in the villages of Pomi and Seini have a higher level of education compared to the subjects from the other localities, reaching a percentage of 20% in each of these two.

The gained experience together with the direct personal knowledge of previous hazard events have an important influence on their perception, giving more accurate images of their probabilities of occurring in the future. The past experience is closely linked to other factors such as the current attitude, the personality and the hope for the future, the training of the population and the traditions of the authorities' intervention.

In numerous situations the individuals learn about hazards from many other indirect sources including the mass-media which can influence the individual or collective perception by the fact that it can exaggerate or diminish the consequences that certain extreme events can have. From the surveyed ones 49,67% asserted that they have not been affected by floods, and the rest of 50,33% declared that they had problems as a result of these events in the sense that they were affected in different degrees, passing through both material damage and wounded people. Towards this situation resulted from the statistic interpretation at the level of the region (the systems of dwellings along Someş Valley between the confluence of the Lăpuş River with the Someş River and Satu-Mare county) there appear differentiations at the level of those 30 localities. Towards this situation resulted from the statistic interpretation at the level of the region situated there appear differentiations at the level of subjects from the localities disposed in this.

Thus, the declarations of the surveyed subjects there result material damage generated by the floods present at a higher level in the localities Cărăşeu, Arieşul de Câmp, Aciua which correspond to the reality. However in the localities Petin, Ambud, Berindan, Eteni, Apa, Seini and Săbişa the damage detains the most reduced percentage, the last two even 0%. The power in impregnation in the memory of the floods is underlined by the fact that all the surveyed people who suffered as a result of this declared that they can appreciate with exactness the year in which the flood took place. Among those who had the problems connected to the floods 64,12% indicate the year 1970 (April-May), 25,46%, year 1975, 6,42% don't remember exactly and the rest of 4% other years. The most favorable period for the floods has been established as being the spring. Among the subjects who declared that have not been affected by floods (49.67%), the majority live in stable areas of the slope or terrace, who do not have agricultural terrains on the banks of the Someş or they are at a big distance from this.

In facing the natural disasters the majority of people do not have enough personal experience. Therefore, they take from different sources beliefs regarding the individual and collective behavior in case of danger. When the direct personal experience in the domain of disasters is reduced or is even missing, as in the case of many people, individuals learn about hazards from more sources, including the mass-media. The risk communicators can influence the individual or collective perception through the correctness of the content of the material that they transmit. The weather forecast and the hydrological one have as goal the population's warning concerning the probability that a natural hazard to affect an area at a certain period of time. Consequently the habit of watching this type of weather forecast can have an important role in reducing the disastrous consequences that the floods can cause.

III. RESULTS

From the total of surveyed subjects, 39,33% watch regularly the weather forecast, with a somehow lower

percentage (28,17%) there are those who watch it occasionally, 19,17% watch it very rarely and those who do not watch at all reach a percentage of 13,33%. From the total of subjects with their dwelling in Seini, Păuleşti, Cicârlău, where the level of education is better, a higher percentage (60-65%), watch the weather forecast regularly in comparison with those who live in other localities.

The receptivity of information through mass-media is influenced to a certain extent by age and sex. Thus, under 40 very few people are those who declared that they often watch the weather forecast. The majority of those who watch the weather forecast are over 40, the women being predominant. Concerning the level of acquired information and knowledge interesting results have been obtained as a result of testing the dispositions referring to the mode of acting in case of floods. Almost two thirds from the surveyed subjects (60,5%) declared that they do not know how to act, which indicates the fact that the level of informing and the experience of the surveyed subjects are reduced. Among those who declared that they do not know to act in case of flooding, the higher percentage comes to the subjects living in the localities Seini, Cărăşeu, Odoreu şi Cicârlău. Among those who gave an yes answer 65,7% were men.

Thus, in each locality it is illustrated that men know how to perform better than women. Testing on the wish of leaving the town (region) showed some interesting conclusions. Consequently, more than half of the interviewed subjects (66.83%) consider that flood risk is not a reason to leave the region, only at the authorities' recommendation, resulting the fact that it will create panic during the crisis period, which may provoke such an extreme event; but a fairly high percentage (22.5%) is represented by people who want to face the flood. The percentage of those who would leave home / region at their own initiative is very low (10.67%), resulting thus the fact that residents would hardly separate from what they have built in a lifetime.

The relative high proportion of those who would face the flood and leave their home on their own initiative (33.17%) demonstrates that during the rescue actions assumed by authorities or private individuals a chaotic situation might start.

For the localities, the answer to the three variables required maintains varied enough proportions, detecting different behaviours. In Pomi, almost half of the respondents (40%) do not leave the region unless the authorities recommend it, in comparison with Seini, Apa and Vânătoreşti, where the percentage is much higher (85%). In Paulesti, 35% are willing to leave town on their own initiative, less in the other localities or even nobody in Mărtineşti, Vânătoreşti, Eteni, Apa, Seini and the rest prefer to face the flood.

A large proportion (70%) of the interviewed subjects stated that high rainfall is the primary cause which determines the floods and in a smaller proportion (18.33%) they answered that the floods were caused by high rainfall and the snow melting. A 7.17% is the percentage of respondents who gave as a response that the floods were caused by the snow melting, 3% stated that the main cause of floods was the ice amassing and only 1.5% mentioned as a cause the blocked bridges.

The analysis of the respondents' answers shows that 39.17% of them are relying on the authorities' intervention. More than a half (60.83%) declared that in case of floods they could contribute to the actions taken by the authorities. The majority of those are male (65.2%), which means 298 individuals. Among those who rely on the authorities' intervention, the majority are women and young inexperienced people or people over 60 years.

Of the total of the interviewed subjects, 17.33% believe that they do not know if the authorities do everything they should do for the flood prevention, 54.5% believe that the authorities do not do everything they should do and only 28.17% consider that the authorities do everything they should do against the flood, consequently having a positive perception. The actions taken by the authorities to prevent the flood are diverse and can be grouped into structural and nonstructural measures.

Among the common structural measures are: the dams, the spatial accumulation, the cleaning and the maintenance of watercourses, the land treatment, etc. Among the actions undertaken, the highest frequency has the work of cleaning and straightening of watercourses. Therefore, 39.17% of the subjects answered that for the flood prevention the authorities have undertaken such actions in all the areas of the examined region.

A percentage of 27,33% confirmed that the authorities underwent actions which concern the dams, these along the Someş. Almost half of the surveyed subjects (46%) answered that the authorities announced a population in order to prevent the floods and therefore the damage caused as a result of these events have been diminished. In exchange half of the surveyed subjects (50%) declared that the authorities had not taken any measure regarding the reduction of the damage.

Out of the surveyed subjects 42,7% would participate in voluntary work in the actions for preventing the flooding through different ways. The percentage of those who did not involve in these works is quite high, over a half (57,3%) with little differences from one locality to another (the lowest percentage in Pomi / – 35% and the highest in Potău – 80%), differences caused by age, the majority being over 60 years old (79%) among which the most were women and the rest of 25% due to other reasons. The disposition of voluntary actions is of 28,6% for men and 14,1% for women.

The youngsters are willing to participate in different activities of prevention, fight and reconstruction so that the majority of the surveyed subjects of an age of 40 declared that they are eager to volunteer. Almost a half of the surveyed subjects have been affected by floods (49%). Among these only 25,6% received aid from authorities. From their declarations there resulted that the percentage of those who benefited of allowances is higher in localities such as Pomi (84,6%), Aciua (67%), Păuleşti (57,1%) in comparison with the other localities close to the bed of the Someş River who had to suffer as a result of floods. The fact that a high percentage of the people asked (74,4%) did not receive any aid though have been affected by floods (219

people out of 302), indicates a certain mistrust from their part concerning the role that the authorities have in solving the communities' problems. of course that the explanation consists firstly in the fact that they did not allocate material goods or even protect their lives in case extreme natural phenomena able to generate a lot of damage. Thus, only , 28 out of 600 people (4,7%) declared that they are insured in case of floods, the rest of 95,3% gave a negative answer concerning this topic

IV. CONCLUSIONS

By individualizing the systems of dwellings along the Someş Valley (from the confluence of the Lăpuş River with Someş up to Satu Mare County) under the aspect of anthropic organization of the geographical space results thus from the long evolution of the communities in the historical conditions specific to this area. These communities manifested a continuous adaptation to the physical-geographical conditions (floods in the present case).

The anthropic component constitutes the most dynamic factor in the geographical landscape but also the most vulnerable in front of extreme geographical phenomena, encountering losses of human lives. In order to prevent and combat the effects generated by extreme events in the researches region the priority must be given to raising the public opinion's awareness concerning the correct perception of floods and the responsibilities that each should take at an individual level by the collectivity and the local administration. The harmonious integration of the community in the environment can be done only basing on an adequate educational process in which more responsible factors must involve.

Making an incorrect perception regarding the actions undergone by the authorities in order to prevent and combat the floods can have disastrous consequences in the management of risks induced by this event. The willingness to participate in save actions, prevention and fight against floods as well as the remaking of some areas affected by such natural phenomena is high sometimes with important differences imposed by certain factors (sex, age, distance etc) as the current paper tried to emphasize. Expanding this idea, the fundamental "equation" of life on this planet consists in finding a balanced relationship between the economic necessities and the ecological capacity of the planet, understood as a real capital of nations.

The human being represents an active factor in the spatial and temporal dynamics of the biotic environment in general, and of the forests in particular. The actions of the anthropic factor can and must have only a positive finality especially that more and more scientists consider the degradation of the environment as a whole and of the forests in particular as the most dramatic crisis of the humankind.

Environmental education should be started in the family, and then continued in kindergarten, school, university etc. This is because a real protection of nature will be possible only when the people will change their mentality and are aware that they live in nature and not vice versa. We can not miss it, any "tricks" we invent. If we take this into account, environmental problems will be acknowledged and internalized, the effects will be visible.

In general, while a passerby on the street threw down a package on the pretext that "there are still others who threw garbage, I threw I do not see, we will not have a clean environment. Everyone must have a position on the issue in question and to appreciate our common goods. In this respect, the experts' advice is to organize various activities with environmental goals for a deeper knowledge of the environment, output in nature, excursions, seminars, workshops with wide participation (not only for specialists and specialized teachers), whereas to protect the nature means to protect the very lives and health of everyone.

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