FLOOD HAZARDS PERCEPTION. THE RESULT OF AN OPINION SURVEY MADE IN THE LITTLE TOWNS FROM LOWER ARIEŞ CORRIDOR

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ABSTRACT. Flood hazards perception. The result of an opinion survey made in the little towns from lower Arieş corridor. This paper has been prepared based on information obtained from a survey conducted on a sample of 560 residents from the towns of Turda and Câmpia Turzii, residing in areas with different degrees of exposure to the risk of flooding. The residents were questioned about the floods they had suffered and gave varied responses to the degree of flood damage on the population, to the amount of information and the degree of insurance against floods. The questionnaire was structured on different aspects that emphasized: identification, level of experience, knowledge and information; the perception of the causes that generated and amplified floods; the perception involving authorities in prevention and mitigation of flood damage; availability for implementation of voluntary actions, the degree of insurance and aid to flood. In this study it was taken into account the location of households, the previous flood experience, the age and the education level of the respondents.

Keywords: risk, floods, questionnaire, case, perception, degree of insurance, prevention, voluntary work

1. General considerations

Turda-Câmpia Turzii Depression, known in the geographical literature as the Lower Arieş Corridor, is a typical corridor, representing from a structural-systemical perspective, a particular space with complex intercomponents inner relations, but also an important mass, energy and information flux ax. It is seated at the contact between Apuseni Mountains and Transylvania Plain, with a north-west – south-east orientated hilly landscape, presenting a high geographical complexity.

The natural hazards from Lower Arieş Corridor that most appear here are floods, after sudden discharge growth or snow melting (in winter or spring), or after heavy rainfalls. The high waters from 1970, 1975, 1981, 1995 and 2000

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triggered floods in Arieş major streambed, afecting the adjacent localities (Cocean, 2002). Beyond the floods generated by waters overflow, some districts were affected by floods generated by underground water level emergence over terrain level after some very strong rainfalls (June, 2006) or urban high waters caused by some troubles with the sewage network (June, 2010; July, 2011).

For preventing and adjustment of flood effects there have been taken some structural (dikes, non-permanent reservoirs, river flood defences) and non-structural measures (Sorocovschi, 2002). From the last ones, an important role has flood risk perception by the affected or potentially affected population. Floods perception analyze concentrates on taken optimum measures for the prevention or amelioration of floods (Conțiu, 2005).

2. The results of an opinion survey over flood risks perception made to the people in Lower Arieş Corridor.

To know all the flood perception levels, we made an opinion survey using a specific enquiry (Sorocovschi, 2004) among the residents of Turda and Câmpia Turzii. The questions were asked to a 560 people with permanent residence in these two towns, between February and April 2012.

The survey has 17 questions and is divided in 6 categories, according to the floods risk perception problems.

2.1. Identification data

An important factor in floods perception is the location of people's establishments with different floods exposure degrees.

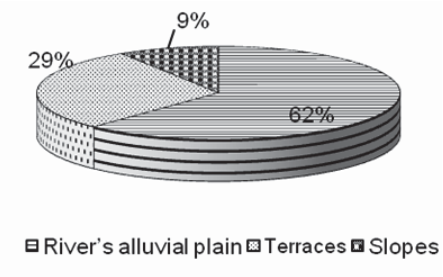

Figure.1. The location of people's establishments

From the respondents, most of them have the establishments in river's alluvial plain (62%), with maximum flood risk. The other establishments are situated on terraces (29%) or slopes (9%), with medium, respective minimum flood risk (Fig.1). The location on river shores involves some impendent risks, assumed in different ways according to everyone's attitude (passive, active, preventive or complex) and action to defend against dangerous water hazards, especially flooding (Pandi, 2002). There have been some situations of sudden urban and terrace flooding that took people under surprise.

Hazards perception depends on many factors that interfere, especially the social ones: age, gender, education level, incomes, etc. The age determines peoples experience and complex perception of extreme events. We can distinguish a low percent of under 30 years (8%) and 31-40 years people (12%), the other groups having a higher percent: 51-60 years (19%), with the highest percents: 41-50 years (29%) and over 60 years (32%) (fig.2).

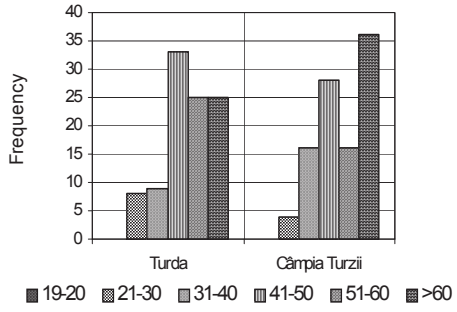

Figure 2. Subjects distribution by age

Analyzing gender sample's structure, we observe that men percent dominates Câmpia Turzii town, with 70%, and in Turda they have a smaller percent than the women have (45%).

The survey analyzed people that belonged to all social classes, with different education degrees: from all subjects, 10% have a lower education degree, most having graduated vocational school (28%) or high school (39%), and 23% graduated a higher education establishment (fig,3).

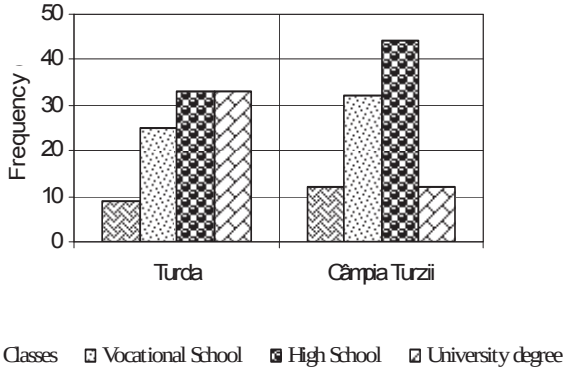

Figure 3. Subject's education degrees

2.2. Level of experience, knowledge and information

The level of experience and information, together with direct personal knowledge, outlines the complexity of the perception act according to extreme hazards, inducing openness for a better organization in preventing hazards effects, or, in contrary, a harmful ignorance.

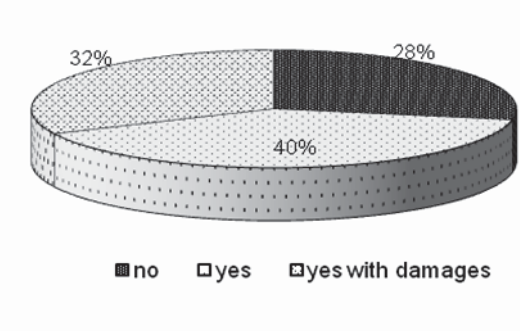

Figure 4. Perception of flood effects in studied regions

From all subjects, 28% declared that they were never flooded, and from the flooded ones, 32% declared they had damages (fig.4). No person declared that there were recorded dead or wounded people.

For the persons with no personal experience in facing such extreme hazards, an important information role had mass-media and other extern sources. Weather and hydrological forecasts had the function to warn the people against the possibility of a major event to strike in a certain time. From all subjects, 60% listen to forecasts regularly and 8% represent those who are indifferent to forecasts (fig.5).

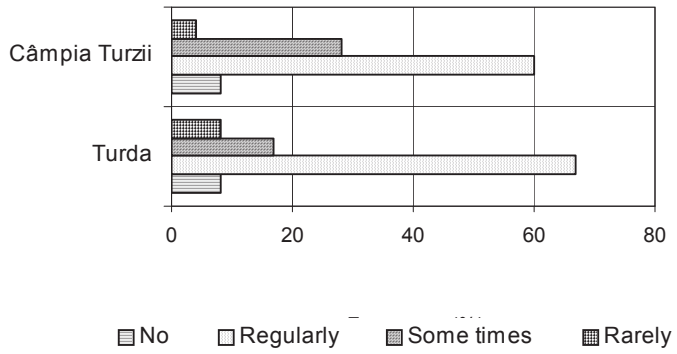

Figure 5. Checking forecasts frequency in towns

If is analyzed the subjects availability to act in case of floods, many subjects (70%) have said that they know how to act in time of floods and after them.

To the question: "Are you willing to leave the town/region where you live if appears the probability of flooding?", the majority (53%) answered "only if the authorities recommend it", and a smaller percent (22%) would left on their own (fig.6). The answers vary according to gender and age: people between 50-60 years, especially women, declared that they would leave their homes "only forced by authorities" because they found it difficult to leave their belongings at such age. Those who prefer to face the flood (10%) are especially men between 30-50 years, who think they can face any danger, not being aware of its gravity.

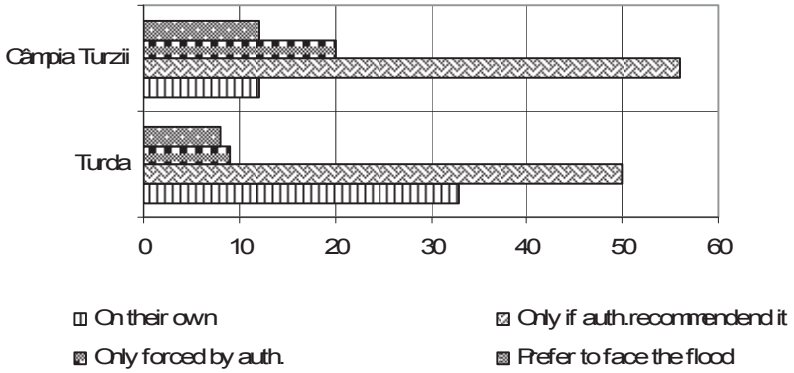

Figure 6. Subjects availability in living town/region in case of flooding.

2.3. The perception of flood generation and amplification causes

The way subjects perceive the causes that generated amplified floods depends on their information, experience and knowledge level.

Over 55% of the total ones said the heavy rainfalls was the main flooding cause, 14% mentioning snow melting as a cause, too. Few subjects said that flooding's cause was bridge obstruction or ice piling-up (fig.7).

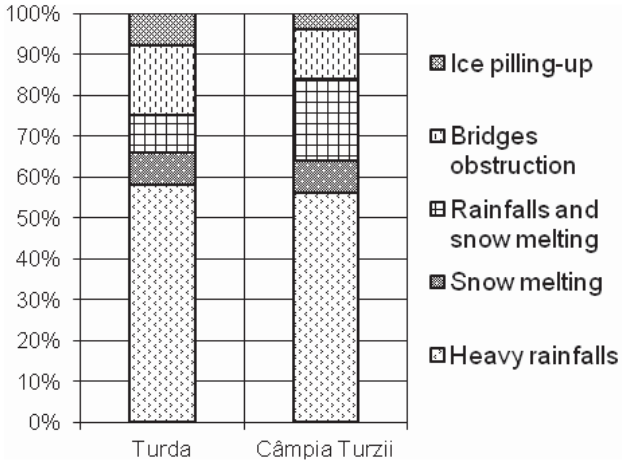

Figure 7. Causes that generated and amplified flooding

2.4. The authorities' implication in preventing and reducing flood damages

To understand the way people perceive authorities implication in preventing, controlling and reducing flood damages, subjects have been asked four questions.

The subjects' majority (86%) said that they are willing to take the necessary measures to reduce flood damages till authorities' intervention. There are few people relaying on authorities' intervention, the majority old people.

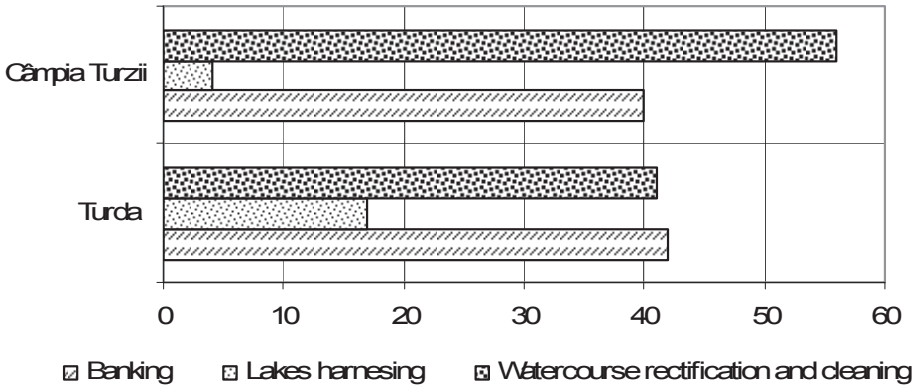

Figure.8. Actions undertaken by authorities to prevent flooding.

Over 68% from all subjects consider that authorities are not doing their best to prevent flooding, 18% are satisfied with authorities' actions, and 14% have no opinion in this case.

The actions undertaken by authorities to prevent flooding may vary, from structural ones, more frequently, like banking, cleaning and maintaining watercourses, reservoirs harnessing.

Most subjects declare that there have been done river banking (40%), some watercourse cleaning and rectification (48%) and only a few have knowledge of some lake harnessing (fig.8).

As for authorities' measures to reduce flood damages, the answers varied from town to town. 29% from all subjects said that they have been informed about the imminence of a flash flood (fig.9). After flash flood started, authorities helped to people's evacuation (26%) and facilitated water evacuation (45%).

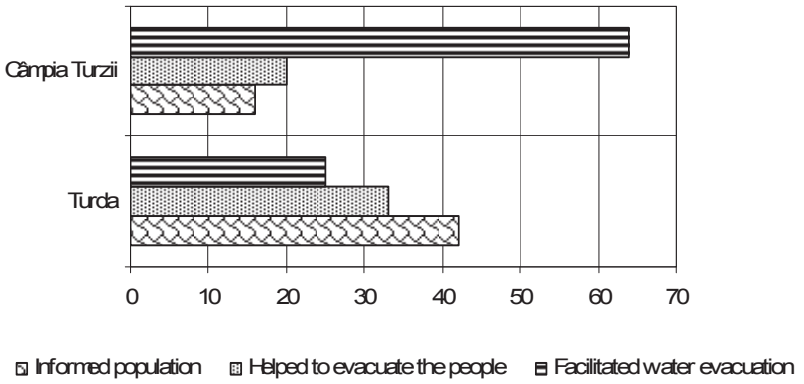

Figure 9. Actions undertaken by authorities to reduce flood damages.

2.5. The availability for volunteering

The general desire for people's implication in volunteering is reflected by the high level of danger awareness. 78% from all subjects would want to participate into volunteering actions. We can observe that men are more willing to enter in such volunteering actins than women (fig.10).

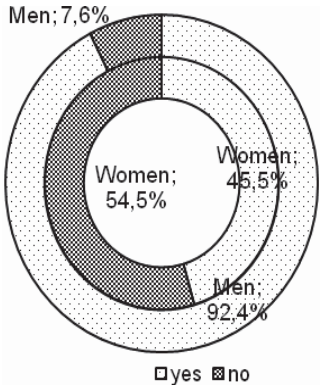

Figure.10. Availability for volunteering

And so, over 90% of men would participate through volunteering actions to help prevent flooding, by building dykes, cleaning river courses, repairing bridges. The less willing to take such measures are old persons, from men side and also from women side.

2.6. Level of insurance and assistance in case of flooding

An important measure to prevent damages generated by extreme natural hazards is property and life insurances. The level of flood insurance is determined by some factors: level of risk awareness, previous experiences, education level, *financial situation*, the presence of laws about compulsory insurance.

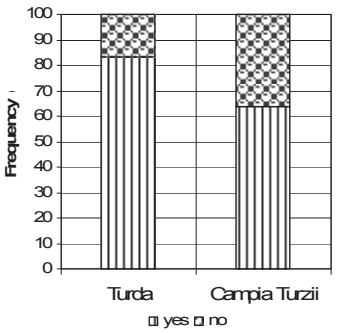

Figure.11. Level of flood insurance.

From all subjects, 30% say that got help after the floods from 1975 that have created a lot of damages. The experiences of some recent urban floods, mass-media information and insurance legislation helped increasing the insurance level in the last decade. 75% of all subjects said they have insurance against natural disasters, and, of course, against floods (fig.11).

3. Conclusions

To improve the actions of preventing and reducing extreme natural hazards in this region, we must pay a special attention to public awareness about the right flood perception and about the peoples, and also local authorities' responsibilities.

Correct people information according to risk exposure, people awareness about insurances, encouraging the participation into flood effects preventing and reducing actions, collaboration with local authorities in rebuilding damaged zones, will allow an harmonious integration of community with the environment and will help reducing extreme natural hazards effects.

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