



THE IMPORTANCE OF GEOGRAPHICAL HAZARDS ANALYSIS FOR THE DEVELOPMENT OF TOURIST FACILITIES IN MOUNTAIN AREAS

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Abstract *Diagnostic analysis is a necessary tool for tourism planning, because it highlights the encouraging and restrictive factors for tourism in a specific area, indicating, at the same time, the necessary measures to be taken in order to ensure an optimal development. In the tourism planning process, decision makers have an image of the vulnerability of the territory to various categories of risks and consequently, they may adopt a variety of solutions and models, customized according to the existing natural conditions. In accordance with the restrictions imposed by these, one can establish the new locations and choose the placement of facilities and equipment in the field.*

Key words:

Natural and anthropogenic risks, vulnerability, tourist resources, tourist planning

1. Introduction

Tourist development of a territory is an interdisciplinary action that starts from detailed studies on the physical-geographical space and the social-economic system in question, and ends with the retroaction of tourist exploitation. In order to optimize the functionality of the improvable system, it is necessary to know and describe the behavior of components and the interaction between them, since any mutation that has occurred can change the balance of the system (Erdeli and Gheorghilaș, 2006). Tourism planning is a process meant to enhance the value of a territory and its resources, but these actions must be addressed in a systemic manner, in close correlation with other systems (natural, social, economic, demographic etc.), with which interact spatially and functionally, in a dynamic balance. In this context, a strategy for tourism planning must take into account the “territorial” realities of the respective geographical space, as well as the elements of influence acting on the quality of environment, seen as a place for rest and recreation. In this paper, we understand by risk a major adverse event potentially affecting tourism industry. Vulnerability analysis and the identification of the areas with a high degree of risk in relation to certain categories of natural and anthropogenic risks is particularly useful, and guides decision-makers to

choose the best planning solutions, differentiated according to the nature of the geographical space.

2. Literature review

The concept of vulnerability is discussed at large in numerous studies, and the detailed analyses cover both the process causing vulnerability due to the physical exposure to natural hazards and the intensity of the disaster, in terms of its consequences (Thywissen, 2006). Our attention is thus divided by two opposing forces - on the one hand the processes causing vulnerability, which can be observed, and on the other hand, the physical exposure to various types of hazards. At the same time, vulnerability involves a combination of factors that determine the degree to which one's life and property are threatened by a natural or anthropogenic event, either known or unknown. This particularly concerns the potential destructions and human and material losses. It is generally admitted that vulnerability is a highly complex concept that involves the degree of exposure and resilience. Vulnerability is a characteristic of all people, ecosystems, and regions confronting environmental or socioeconomic stresses (Kasperson et al. 2003).

An important role in preventing the events that trigger disasters is played by the actions meant, on the one hand, at raising the people's awareness of risk and, on the other hand, at teaching them how to manage it

(Smith, 2007). Thus, one needs to use correctly the terms indicating the gradual negative effect of extreme events on the population. In the literature, the most common debates refer to the use of terms hazard and risk, for reasons pertaining to their perception in everyday language. As a common term for the two somewhat synonymous notions, one can use the term dangerous phenomena, because they have a negative impact on the population. When the phenomenon or the hazard, exceeding certain critical values in its dynamics, harms society, it becomes a risk; and the scale for its quantitative evaluation consists in general considerations, such as high, medium or low risk (Greco, 2004). For a real appreciation is imperative to study vulnerability, i.e. to analyze the potential of natural phenomena to cause casualties and property damage. According to the IDNDR (International Decade for Natural Disaster Reduction, 1992), vulnerability is the degree of loss (from 0% to 100%) resulting from a phenomenon able to produce casualties and property damage, but at the same time, it may be a direct consequence of the supertech modern society (Armaş, 2006).

In recent decades, the increasing human and material loss caused by extreme natural phenomena has led to the development of specific studies aimed, on the one hand, at establishing the evolution trend of these phenomena in time and space, and on the other hand, at finding the possible strategies to mitigate them. All knowledge about the risk phenomena stems from the need to quantify the phenomena with negative impact on people, so that to forecast, prevent and control them (Greco, 2004; Keller, Blodgett and Clague, 2012). Thus, global research is oriented towards the systematization and clustering of risk phenomena, the finding of a unique measurement system, the establishment of assessment criteria and parameters, the choosing of acceptable risk levels, and the studying of risk phenomena affecting territorial planning.

Tourist activities and tourism industry are not immune to disasters, natural risks or social crisis. „Tourism is especially vulnerable to a range of disaster occurrences because it depends on so many components and individual businesses” (Murphy and Bayley, 1989:36). Various studies have demonstrated the effect of disasters on the planning activities in tourism industry (Miller and Ritchie, 2003; Cioccio and Michael, 2007; Hystad and Keller, 2005; 2008), others have emphasized the importance of providing adequate information to stakeholders, local decision makers and, implicitly, local community (Faulkner and Vikulov, 2001). Many tourist areas may be affected by natural hazards and risk phenomena, as well as by the lack of tourist development strategies and policies. Based on

considerations relating to sustainable tourism development, we argue that the implementation of appropriate policies in the tourism industry of our country is vital, but the reflective studies on this issue are generally few, considering that "research on the implementation of tourism policy is weak"(Dodds, 2007:297).

3. Methodology of research

In order to conduct a detailed analysis regarding the development opportunities for tourist facilities one needs to identify and map the areas with high vulnerability to certain types of natural and anthropogenic risks, which have a direct impact on the tourism planning of the mountain areas. Undoubtedly, the role of geomorphologists in determining appropriate strategies for assessing risk management is particularly important and their inclusion in the group of national and international experts is considered auspicious (Alcántara, 2002:109). To achieve the purpose, in a first stage the main types of hazards existing in the study area must be identified, and in this respect, we analyzed the extreme values of the phenomena in order to calculate the probability of their occurrence. By analyzing maps and satellite imagery taken at different years of reference, we were able to observe the natural evolution of extreme events and the exceeding of certain thresholds or critical intervals, when the system passed from a steady state to an unbalanced one. In parallel, we studied both the characteristics of some phenomena that are considered hazards and their impacts, using several variables: intensity, duration, triggering speed, areal expansion, material losses and long-term effects.

After processing this information, the second phase includes the development of synthetic risk maps, which were the result of analytical and synthetic integration of a large number of variables that encompassed both natural and social elements. The complexity of issues related to risk representation, the variety of phenomena occurring on a relatively small perimeter and the mappings at different scales, which require an adaptation of the map legend, conditioned the grouping in several types and subtypes. Consequently, a number of partial maps should be created to represent the areas with high vulnerability to certain types of natural and anthropogenic risks, i.e. the areas vulnerable to torrentiality, avalanches, silting, deforestation and overgrazing.

Finally, a correlation between the tourist exploitation of the investigated territory and the areas with a high degree of vulnerability should be made. This correlation of information, grouped in a synthetic cartographic material, is a useful tool for tourism planning process.

Thus, policy makers are provided with an insight into the vulnerability of land to different categories of risks and consequently they may adopt appropriate solutions and models to mitigate the negative effects that may arise as a result of the manifestation of such phenomena. Accurate information on the vulnerability to various risk phenomena helps establish some guidelines in the territorial management, paving the way for the implementation of new tourist facilities in the stable areas or, on the contrary, allowing the application of protection and even conservation measures in the vulnerable ones.

4. Discussion and reflections

The research directions should aim, on the one hand, at the clear outlining of the tourist areas and, on the other hand, at identifying the territories prone to geographical risk phenomena. By correlating the two categories of information, one should be able to map the areas that may endanger the safety of tourists. We like to believe that this cartographic material is a useful tool for the tourism planning process, inasmuch as the decision-making factors have thus at their disposal an image of the territory's vulnerability to different categories of risks and consequently may take appropriate actions and may use custom models, depending on the existing natural conditions. In accordance with the restrictions imposed, the local authorities can better choose the location of facilities and equipment in the field.

Prospective research is closely linked to the natural and social economic systems, and it is intended to highlight the factors that encourage or, on the contrary, restrict the tourism planning of a territory. However, studies are absolutely necessary in order to understand the evolution of the phenomenon in perspective, since the introduction of the future parameters of the study area in the decision models allows their verification and refocusing during the modeling process. Starting from the overall characteristics of the elements that make up the geographical space within the study area several potentially dangerous phenomena have to be identified. The detailed analysis has to take into account a number of variables - intensity, duration, triggering speed, areal expansion, material losses and long-term effects - that allow an objective characterization of the geographical risk phenomena and also contribute to the assessment of their impact. By correlating the information in the field with geomorphological maps and satellite imagery taken at different years of reference, it is possible to observe the natural evolution of extreme events and to map the main areas with high degree of vulnerability, in relation to certain categories of natural and anthropogenic risks.

The whole set of tests on the existence and manifestation of dangerous phenomena that threaten tourists' safety result in the development of a tourist map showing all the areas with high vulnerability. Accurate information on the vulnerability to risk phenomena helps to take appropriate measures for the safety of the stationary tourists or of those following certain tourist mountain routes. On the other hand, it is a useful tool for tourism planners, who thus become aware of the existence of certain risks and consequently may adopt a variety of solutions and models to mitigate the negative effects.

5. Conclusions

The planning process and the tourist capitalization of the area are part of a wider scheme meant to highlight the value of a territory and of its resources. In consequence, this should be done based on a systemic vision, in close correlation with the other systems (natural and socio-economic), all interacting spatially and functionally in a dynamic equilibrium. Starting from the idea that the planning process necessarily needs a diagnostic analysis to reveal the encouraging or limiting factors, our study aimed at identifying and mapping the areas with high vulnerability to certain types of natural and anthropogenic risks, with direct impact on the use and tourist capitalization of the mountain ridge and its adjacent territories. The development of a tourism planning strategy should take into account both the realities imposed by the elements that make up the respective geographical space, and the factors that control the quality of environment, seen as a space of rest and recreation.

This study has its own limitations regarding the set of multivariate analyses. An assessment of natural hazards is more pertinent when using GIS techniques, based on multivariate analyses, in a spatial and temporal context as it "can help hazard risk managers and the public to understand how complex hazards and their consequences will affect the vulnerable communities" (Chen et.al., 2003:559). In the event the natural risks will recur, people should become aware of them: „tourism disaster management should plan for increased awareness of previous disasters and the accompanying impacts that emerge during subsequent disaster seasons" (Hystad and Keller, 2008:161). Taking into account that tourist activities are less considered in the assessment and mitigation of the risks included in the DRR paradigm (Disaster Risk Reduction), the future studies should focus both on the long-term impacts and on the management aspects related to tourism.

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