

TOURISM USE OF POST VOLCANIC RESOURCES IN COVASNA, ROMANIA AND THE IMPACT ON THE NATURAL ENVIRONMENT

Camelia Teodorescu, Adrian Nicolae Jipa, Ana-Irina Lequeux-Dinca, Darius Nestoriuc, Ioana Voinea

Department of Human and Economic Geography, Faculty of Geography, University of Bucharest, Bucharest, B-dul N. Balcescu, no.1, Romania

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Abstract

Tourism and natural environments are closely linked, but tourism can create landscape imbalances by exploiting natural resources in a territory. This study presents the expansion of tourism and services in Covasna County, where carbon dioxide emissions and sulfurous gas releases manifest current post-volcanic activities resulting from the Pliocene volcanic activity. Today, these sulfurous gases are used for therapeutic purposes in the form of mofette. In recent years, hotels and guesthouses have been built, and recreational facilities have been expanded. Large forested areas have been cleared for construction, leading to significant natural landscape changes. The Covasna resort is known for its rich and varied mineral waters, which include radioactive mofette. It is an essential destination in Romania, particularly for those seeking treatment for cardiovascular diseases. However, for sustainability reasons, it is essential to maintain a balance between tourism and the natural environment.

Keywords: cardiovascular diseases, mofette, services, landscaping, deforestation

Introduction

Between tourism and the natural environment, there has always been a direct and complex relationship emphasizing both short and long-term effects and determining particular territorial synergies in the light of present societal and land use changes (Dincă, A.-I., 2013). Natural resources have represented the main form of tourist attraction. Tourism, in turn, promotes the understanding of natural elements through theoretical description and practical use of the values that nature provides, even giving them a cultural connotation by including them in the local tradition (Teodorescu et al., 2013), or simply through occasional visual appreciation, through hiking or recreational activities, such as in the case of forest resources (Oprea et al., 2020). However, human activity can create imbalances, sometimes irreversible, through deforestation (Zeľňáková et al., 2017) or any other type of excessive exploitation (Teodorescu et al., 2022). These were very much accelerated in Romania in the post-communist period, especially after property restitution laws, which also referred to forested areas and jeopardized even forested protected areas in the Romanian Carpathians.

Material and methods

For the present study, an analysis of land use changes over different years was conducted, from 1990 until 2023, with 2018 as an intermediate year. The study focused on constructions built for tourism purposes between these years. The information was highlighted through specific cartographic representations. Covasna resort, displaying complex tourism activities, relies on natural resources from the adjacent geographical area. The area analyzed in our study was expanded to comprise the area of hiking activities for tourists in this resort. It can thus be said that not only the town of Covasna itself was analyzed but also the forested area in its vicinity. The attraction of this resort is given by the post-volcanic therapeutic resources, as well as the resources offered by the environmental setting for recreational purposes. On the other hand, the natural resources in this extended analyzed area also represent an economic resource for the Covasna resort. The evolution and gradual changes can be observed through cartographic representations.

Another method employed in this research was the interview survey with tourists in the resort regarding the overall aspect it offers. A total of 62 tourists were interviewed, of which 11 mentioned that they have been visiting Covasna since 1990 every year. This second category was a valuable sample group for our study that was able to notice the changes that occurred throughout this period and provide valuable information. Tourists' perception is an important factor in evaluating the overall state displayed by a resort, in its complexity.

Results

Covasna resort is one of the most attractive resorts in Romania, with carbon dioxide emissions and mineral waters as its primary natural resource. It is also known as the resort of 1000 springs. Besides these hydrogeologic and groundwater resources, there are essential post-volcanic manifestations. These could be considered elements of the continuity of the volcanic phenomena that occurred in the Pliocene and gave birth to the volcanic chain in the area (Harhita-Calimani). The present manifestations are noticeable by the rich carbon dioxide emissions and sulfurous gas and arsenic outgassing. Carbon dioxide that comes into contact with water in the aquifers dissolves and turns into carbonic acid. In addition to the richness of mineral waters and therapeutic emanations, the natural landscape was considered a third therapeutic factor. The Covasna resort is considered to display the most important growth potential among the health resorts in Romania. The consistency of the land use supports these statements, the forest vegetation occupying quite a large area (fig. 1).

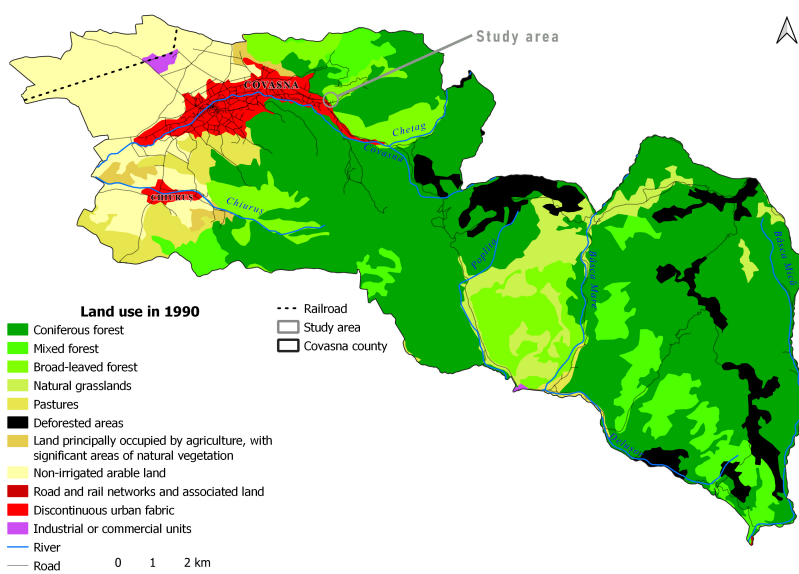


Fig. 1: Land use in the neighborhood of Covasna resort in 1990

After 1990, the economic and social situation in Romania changed once with the political changes and the transition from the centralized communist economy to the market economy. Significant changes occurred, including for the tourism domain, but also for the less organized forest exploitation. The need for investments and the construction of 4-star hotels has become a necessity, given the growing attractiveness of the area. However, this is reflected negatively in the surrounding forest area through deforestation, but also through the less pleasant image of logging roads (fig. 5), as also signaled for other regions in Romania (Dincă, A.-I., 2013). It should be mentioned that tourism has not been the most important factor leading to logging in this geographical area, but could also be counted among these factors. In 2018, more logging areas can be distinguished, especially towards the southwest, but also in the northeast of the settlement where, in addition, the resort hotels were built (fig. 2). Between 2018 and 2023, logging continues, but there are also small areas of re-logging. In the southern part of the settlement (fig. 3), small logging areas could be noticed, giving the impression that there is a possibility of further expansion of accommodation structures. By 1990, in the eastern part of the resort and relatively isolated from the rest of the settlement, there were only two buildings, namely the Cardiology Hospital and the hunting house of President Nicolae Ceausescu (today) in conservation. This one is now positioned at a reduced distance from the two 4**** hotels, Hotel Clermont and Hotel TTS (fig. 4). Another local attraction is the "mocănița" or the narrow gauge railway line (fig. 6). This is not yet operational. Still, works are being in progress copying other similar good practice examples already existing and with tradition in Romania (Dincă, A.-I., 2013). It can also be used to extend the visitor area. Other smaller tourist buildings have also appeared. However, the four-star hotels that were built have, in addition to the necessary interior facilities, also exterior facilities, which may affect the forested area nearby. Large car parking spaces and extended recreational areas for adults and children are examples of this. Covasna resort needs 3-star and 4-star accommodation, and this has been achieved by modernizing already existing units in the central area. This is beneficial for recreation and tourism, but the need for tourist expansion may affect the environment.

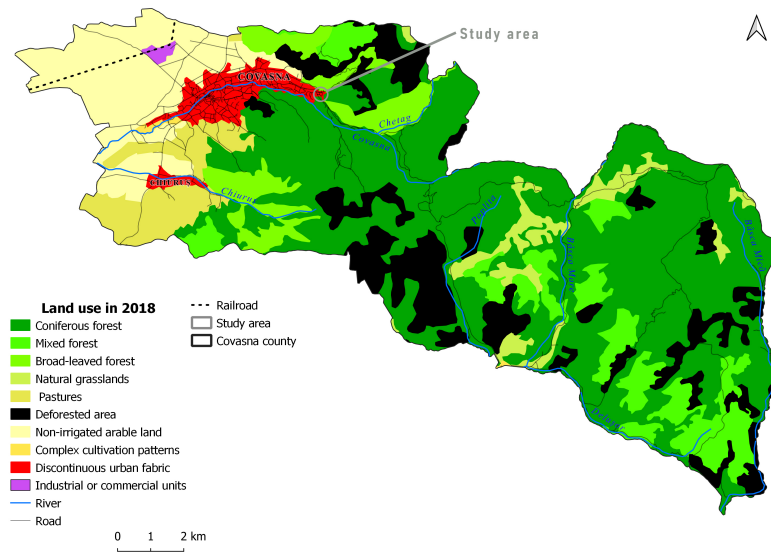


Fig. 2: Land use in the neighborhood of Covasna resort in 2018

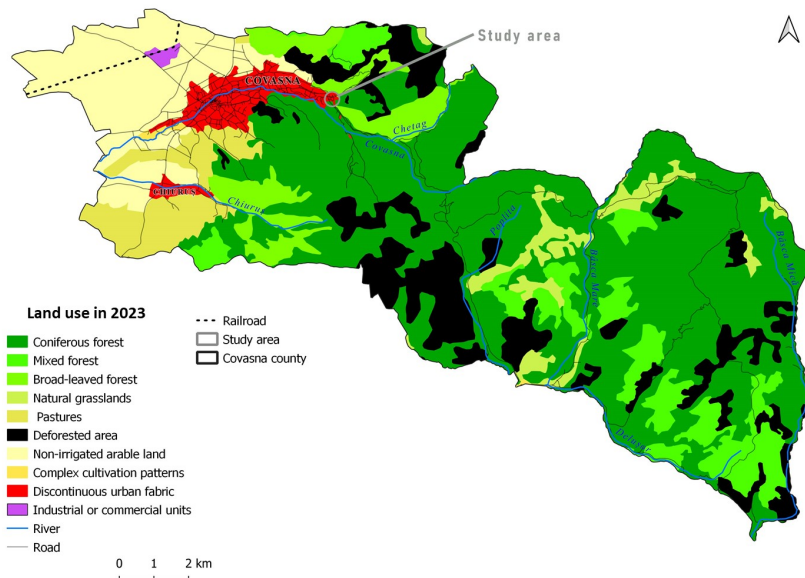


Fig. 3: Land use in the neighborhood of Covasna resort in 2023.

Referring to tourists' perception of the resort's appearance and its landscape, the 11 interviewees who had visited the resort before 1990 remarked on changes in the appearance of the forest, access roads, and the modernization of accommodation facilities. Many of these responses are somewhat nostalgic coming from silver tourists mainly associated to health tourism in Romania and clearly emphasize important deforestation and its essential impact on the landscape.

„It is beautiful, but the naturalness is slowly disappearing. It used to be a resort with a particular, intimate atmosphere. Now, it looks like a resort without personality. Only the "Devil's Pool" with its mud reminds of the old times. The forest is there, but it's young, replacing the cut trees. It's still good!" (Ion Ispas, 76 years, Bucharest).

"We come with pleasure every year in Covasna resort. But we see the changes, and we are disappointed to see how much the forest is cut down..." (Vasile Popa, 71 years, Cluj Napoca);

"I have been coming here since 1984. The forest is gone! Today they are just shoots!" (Ana Mihaie, 89 years, Satu Mare)

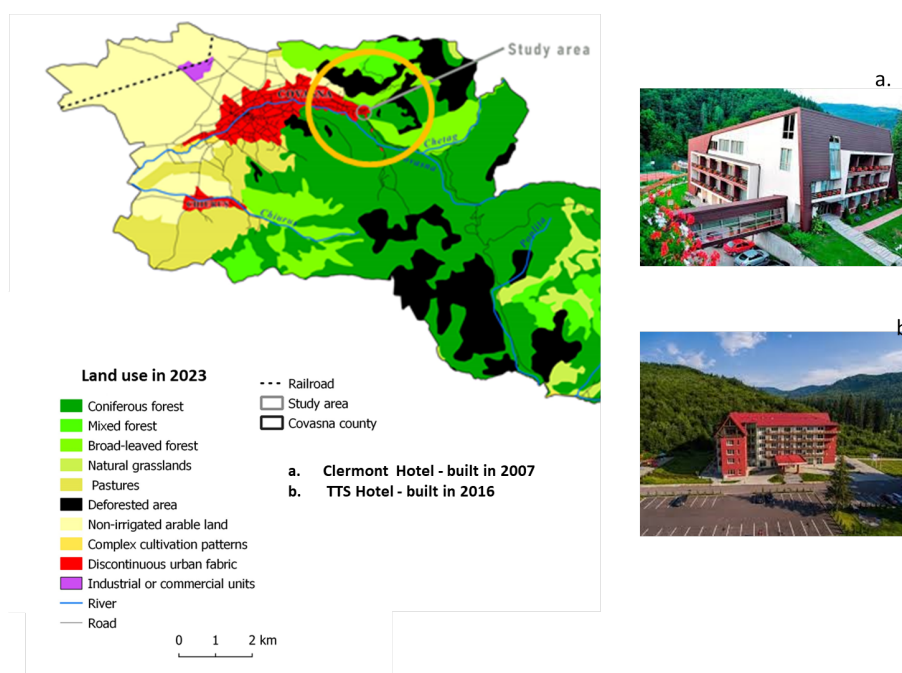


Fig. 4: Extension of the built-up area with hotels in the forest area.



Fig. 5: Deforested forest area



Fig. 6: The hotel structure that appeared after deforestation



Fig. 7: The access road for transporting wood

Discussion

In Romania important post-volcanic springs and resources are grouped around Covasna resort. The mineral waters are linked to the watershed, existing in the river deposits or the alluvial deposits of its tributaries. In the geographical area of Covasna, carbonated, bicarbonated, sodic, calcareous, magnesium and arsenical springs predominate. Their degree of mineralization depends on the proximity or distance from the aquifer, the transverse fracture, and the radiation systems that affect the underlying phyllium deposits (Pisota et al., 1975). The mofette are used for therapeutic purposes for cardiovascular diseases. For this purpose, several accommodation structures including a hospital for cardiovascular diseases have been built here in Covasna. Each hotel structure has a treatment center based on local resources. During the communist period until 1990, tourist activities were concentrated in Covasna resort in the existing structures located in the central area. They were oriented towards exploiting the existing natural resources, especially of mofetta type and mineral waters. The forests occupied a relatively large and uniform area and were represented by coniferous and mixed forests (fig. 1). Until 1990, there were no 4-star hotels. The Hospital for Cardiovascular Diseases occupies an eastern marginal position in the vicinity of the forest area, and the paths that could be used for recreational purposes used to be narrow and unpaved. Hiking was the only recreational activity that could take place outside the hotels.

Conclusion

Many of the sites where deforestation has taken place are now occupied by shoots and young forests. There are measures in place to prevent "clear-cut" logging and to control logging, but there is also an obvious tendency for hotel and guesthouse construction to expand into the area once occupied by forest. The forest area might not be heavily affected if the logging rules established by the local administration are respected. Along the *mocanita* routes or tourist roads, rest areas (shelters with a minimum of infrastructure needed by tourists) made of natural materials could represent the mix between tourism and the natural environment without destroying the latter.

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Souhrn

Zdroje minerálních vod, emanace plynů ze sopečné činnosti a lesní prostředí umožnily vznik a udržení turistických aktivit v letovisku Covasna. Předpokládáme, že některá z těchto složek bude nadhodnocením zničena. V takovém případě vede nerovnováha k likvidaci celého systému a právě tento detail je třeba vzít v úvahu.

Contact:

Lequeueux-Dinca Ana Irina
E-mail: ana.dinca@geo.unibuc.ro

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