

THE IMPACT OF TOURISM ON THE ENVIRONMENT IN THE DRAINAGE BASIN OF THE OLĂNEȘTI RIVER

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ABSTRACT. – **The impact of tourism on the environment in the drainage basin of the Olănești River.** In the drainage basin of the river Olanesti, tourism constitutes an important part in the economic development of the local people. The Olănești River basin is developed in both sides of the sectors (carpartic and the subcarpartic). Also, he is characterized by an relief and a climate that favours the development of the tourism, the recreation and especially of the treatment. Tourism is considered a very important sector in the sustainable development of the region, investments in this area are a priority for the community. At the same time, can take into account the a increase to tourist activities, which can lead to a change in the quality of environmental factors.

This article is an analysis of the impact of tourist activity on the Olănești River basin. The motivation of this theme is the variety of forms of tourism in this basin, as well as its characteristics, in particular in the perspective of development in european context. The environmental degradations have gained momentum, which has affected the tourist services. Under the socio-cultural appearance, the negative effects are also important. If it is accepted that the most important functions of modern tourism are the recreational and educational-educational recuperative. Thus, result the relationship between tourism and the environment. The damages to the environment, even in small measure, reduces the possibility of restoring health, by reducing the quality of visitors or those factors that favour the rest (odihna). In addition to issues related to the impact of tourism on the environment, the article presents some aspects relating to the monitoring and prevention of adverse effects.

Key words: tourism, impact, environment, water catchment, Olănești River.

1. Introduction

The Olănești River basin falls in terms of territorial area of the Valcea County. From a geographic standpoint constitutes a component part of the Carpathian space (the Transylvanian Alps, Parang Group, Olănești River having the Căpățâni mountains Springs), and the Getic Subcarpathians (Valcea Subcarpathians).

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References to the space review, including Olănești River basin in this article are made in papers about Geology (V. Dragoș, 1955, N. Mihăilă, 1971), and about the relief of the Getic Subcarpathians and the Căpățâni Mountains. We note the work of the Institute of Geography, the study of geomorphologic Buila-Vânturarița Massif (Badea L., 1998), study about the Valcea Subcarpathians (Dinu Mihaela, 1999, Călin, D. 1988). With regard to the aspects of studies the biogeographic, we remark the works to Maria Ciurchea [1963] and Mihaelei Crăciun [2010], but also the works of Traian Rădoi [1975].

In terms of the lithological composition and tectonic movement, the mountain massifs existing here, have contributed to the current morphological and hypsometric configuration of the Olănești basin. „The depressions of the contact Cheia, Băile Olănești și Păușești-Măglași, are formed, in general on the marly formations, which are becoming more prevalent in the lower sector of this basin ” [9].

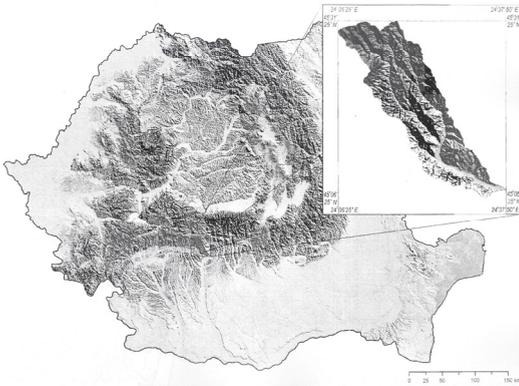


Figure 1. The Geographical location of the Olănești River basin in to Romania.

Also, you can see that in Olăneștiului River basin, the altitudes are contained between of 550-650 m (in the South of the basin, near the confluence with the river OLT just 450 m), around 600 m (on the right bank of the Olănești Valley), 900-1000 m (in Mucenicii Olănești) and over 1200 m (in the Rădița-Mânzu sector). „In the upper sector predominates the crystalline schists of the Sebes-Lotru series, which have imposed the relief average altitudes between 1400 and 2000 m. High values are meeting and on the outskirts of the crystalline lens, in the occupied area of Buila-Vânturarița Crest, composed of limestones of the Jurassic tectonized. In the central part, the maximum altitude marks the Northwest flank, strongly promoted of the Buila Ridge: Vf. Buila (1849 m)-Vf. Vânturarița (1885 m)-Vf. Vioreanu (1866). Gradually, they fall to the Northeast, but it maintains the appearance of the domes, the massive of fragments of Crest: Stogu (1463 m), Stogșoarele (1295 m), etc. ” [14].

The development to the Olănești basin, both in the Carpathians space, and in the Subcarpathians, its determinant for her elongated form. Pelvic shape indicates a significant decrease in the level of core, who favored the linear development, especially in the Subcarpathians sector.

Characteristic relief is composed of „a peak with limestones that belongs

of the Căpățâni Mountains through Căndoiaia peak (1405 m), Stofu peak (1494 m), Buila Vânturarița peak (1463 m) ”[2]. The slopes are devoid of vegetation, towering over the narrow and deep valleys. The slopes created by the action of external agents have the same character throughout the region Olanesti-Cheia. "North of the extension to ... Păușești-Măglași, Vlădești-Râmnicu Vâlcea is a group of hills over 700 m high, developed on the paleogene and miocene formations in monoclinale in which dominates the successions of the cost "[15].

The annual average rainfall have 700 mm values (at Râmnicu Vâlcea) and over 1200 mm (on top in the Căpățâni Peak, and also on the northern slope of the Buila-Vânturarița Massif).

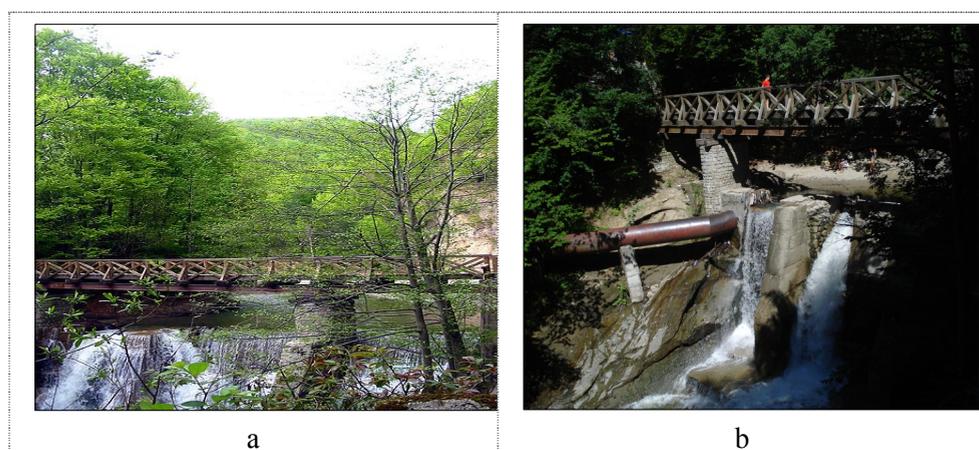


Photo 1. Pedestrian bridge situated above the Olănești River (picture achieved in spring 2001 and in summer 2010¹).

Hydrographic network of the Olănești Valley is well developed, having regard the springs to an altitude of about 10 meters, where springs and an orientation is towards NW-SE. The Olănești River (38 km) is main tributary of the Olt River. Tributary on your right, in turn gathers the waters of the Creek of Valea lui Stan (Photo 2).

The soil presents a wide variety of types and stages of evolution. "In the depressions are found aluvio-proluviale deposits. In the Căpățâni Mountains the type of barkis the residual, and in the Subcarpați, at the top, where the rocks are tougher and compact, it forms a thin crust of weathering residual, ..., While on the peaks where are predominate the clay and the marl (with hisurely mountainsides), landslides have caused a mixture of material from crust with that solidified and with that unaltered rock "[14].

¹ The 2001 year, was the year when the flood occurred, and that led to the destruction of pedestrian bridge. After this year, the bridge had to be rebuilt.

The localities in the Olănești River basin are: Râmnicu Vâlcea, Băile Olănești, Păușești-Măglași and Vlădești.

2. Results and discussion

2.1. The natural tourism potential

The Baile Olănești resort -450 m alt – has a continental climate of the hills, with cool summers and mild winters. The Olănești Valley is sunny to the South, so during the summer cloudiness is only 4/10, and the rainfall are abundant in to spring. The inclination of the slope and the permeability of the soil, determines an moisture with a value of only 50% (July-august), but increases in the winter months at 80-85%.

The temperature reaches a maximum of + 21.2°C during the month of July and a minimum of -3.8°C in January. The average temperature is 9.2°C. This resort is defended and surrounded by the hills, and she did not knows about strong winds. The weak winds knock from the southern sector (approximately 106 days/year). Weak currents brings the ozonate air masses, which refreshes continuously the atmosphere of the resort. The atmospheric pressure of only 964,7 mm ensures, together with the other climate elements a healthy environment conducive to recovery. Thus, the climate is mild, moderate, with shades that have allowed the maintenance and development of plant associations from Balkan and Mediterranean. At the same time, the favored the development of the multiple forms of tourist activity.

The natural tourism potential is distinguished by the many forms of relief and thermal ressources. The existing natural resurces, has offered the optimum conditions to meet a wide range of touristic motivations: the rest, leisure, sports, spa treatment, etc. Hence, the tourism is dependent upon environment, this being his support frame. The development of the tourist sector has major implications on the environment, in particular on water resources (the presence of underground mineral waters), transport facilities or sewage treatment plants. The impact of tourism on the environment depends greatly on the types of tourism practiced, by the tourists ' behavior, as well as the quality of the services offered from the tourism.

Also, on the Olănești River basin can be found a number of 14 nature reserves and nature monuments, such as: Yew Reservation from Cheia Keys (the Cheia stream), Stogu Nature Reservation, Rădița-Mânzu Natural Reservation, the Beautiful Lake Reservation of Mosoroasa, Munteanu-Murgoci Cave, Clopot Cave and Cave with the lake. That nature reservation is a decisive point in the clarification of the conditions characterizing the biopedogeographic from the entire region, and is an attraction for tourists.

2.2 The main forms of tourism

Among the main forms of tourism, can be found in the drainage basin of the river including Olănești, remember: health tourism, business tourism, sports tourism, vacation and tourism, weekend tourism, etc. However, the main point of interest you are mineral springs. They attract a significant number of tourists who come here to relax and benefit from the treatment against a range of diversified diseases.

You need noted the diversity of the agrement forms, what can be found on the surface in the Olănești River basin. The National Vânturârța-Buila Park overlaps with surface on the Olănești River basin. Tourism in the protected areas range is variated from trekking, to recreational outings and to winter sports. So, exist a number of trails for casual or professional hiking, what there have been established for speleological tourism routes. This form of tourism (speotourism) could be better developed and even promoted, during which it would capitalize on the multitude of caves open on the surface of the basin, providing the possibility of employment of some professional guides.

There are tourist programs through which can be visited many hermitages, churches and monasteries. We remarc the cloisters in the mountains or those located on inaccessible roads, as well as: Iezer, Pahomne and Pătrunsa Hermitage belonging of Băile Olănești city.

2.2.1. *Spa tourism*

The health tourism (treatment) is a specific form of tourism that combines various forms of treatment and spa treatment at the same time, using the existing natural resources in that region (i.e. mineral and thermal waters with therapeutic effects). An attraction for tourists is the Căpățâni Mountains, where they emerged more than 30 sources Souces that have favored the emergence of Baile Olanesti resort.

From existing documents, it follows that in 1852 year, at Băile Olănești, they came, in additiona to the soldiers, but and various categories of patients. In the 1873, may be regarded the year when this resort appeared. Also, in this year, the waters here are medaliated at different exhibitions in Europe (Vienna International Exhibition). Thus, the springs from Băile Olănești are designed to be protected from flooding. Are builded new shelters, used nowadays. The mineral waters are studied in 1887 by Grigore Cobalescu, at the same time as those at Călimănești. After 1895 year, a period of about 30 years, this resort are entering into oblivion, and the springs will being covered with alluvial materials on the hillsides[1].

The diversity of the lithological, groundwater to produce varying degrees of mineralization, and also organizes different types of waters (sulphurous, bicarbonate, calcic,, sodic, chloride, iodine and bromine), which offers a great range for treating many diseases. These sources are emphasized by a series of treatments applied, depending on the type of source (mineral or mud). Also, they

are secured on the adequate facilities in carrying out investigations, medical analysis and diagnosis. The qualities of the mineral waters are used in internal, external straps, via aerosol inhalation treatment, mineral water injections, vaginal irrigation with mineral water.

The instalations used in the treatment bases, are made up of the treatment balneotherapy facilities, pumprooms for furnishings for climatoterapie crenoterapie, hydro-and thermotherapy, etc.

2.2.2. Mountain tourism

The mountain was always in the top of the preferences of the tourists, thanks to its accessibility throughout the year. By the mountain, binds both: the practice of tourism of summer and winter tourism. The mountain favorable conditions can provide for the interweaving with these two forms of the tourism (tourism spas and weekend tourism). He is a fragile environment, that is facing a series of obstacles caused by topographic and climatic conditions.

In the construction of mountain areas, have adopted different solutions and models that take into account the natural conditions, distribution in the territory, of an accommodation and catering equipment, the network of roads and means of transport, recreational facilities, the option between concentration and dispersal. From this point of view, there are two types of arrangements: a) Isolated points (small tourist reception), distributed around the mountaintop and inside it. b) Resorts with complex functionality, intended for a large number of tourists [10].

2.3. Accommodation capacity

The existing accommodation base in the entire basin hidrografic, is represented at the level of 2008 through 18 hotels, 3 campsites, 1 motel, 1 cottage, 7 Villas and 18 guesthouses. In terms of the evolution of the number of units, in the period 2001-2008, existing an increase of 21 units in the 2001 year, to 50 units from of 2007, followed by a slight decrease to 48 units in 2008. The vast majority of the units are located in the perimeter of the Băile Olănești resort.

The evolution of the accommodation capacity increases and declines in both overall and for each type of structure. The period 2001-2003 is characterized by an increase in the number of seats, followed by a sharp decrease in 2004, the year in which the values are of the 2,260 jobs, in comparison with the 2424 jobs in the 2003. For the period (2005-2008) are marked a evolution of the curve, similar to the previous period, with continuous growth until 2007, and then a decrease in the level of the year 2008 (Fig.2).

In terms of the number of arrivals to tourists, in the spas of the Valcea Subcarpathians for to 2002, 2008, and 2010 years, you can notice a moving curve, with increases of the tourists to 76.149 (2002) and 88.275 tourists (2008). In terms of the types of structures favorites are the hotels with 91.5% and the camping sites with 3,43% (in 2002 year), and the hotels and farmhouses with 82,2% respectively 12.3% (in 2008).

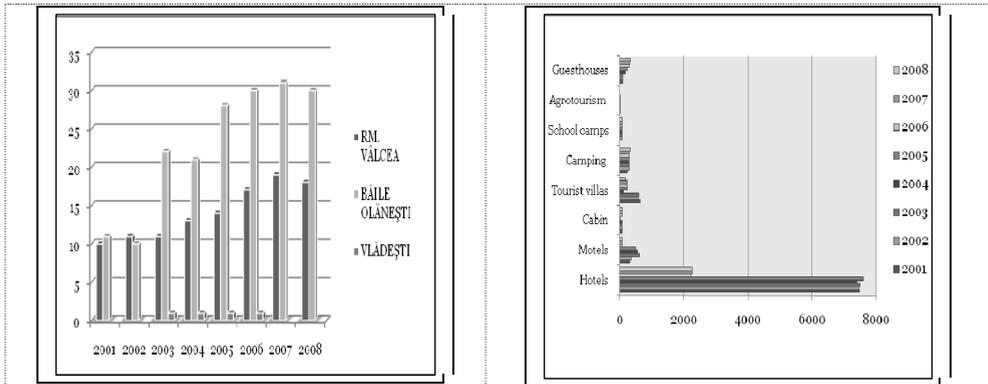


Figure 2. The evolution and distribution of the number of accommodation capacity in the Olănești River basin (2001-2008).

The evolution of overnight stays in the drainage basin of the Olănești River is also an important indicator, and can see that the prevailing structures are located within the resort of the Băile Olănești city and Râmnicu Valcea city. The curve of overnight stays is moving, with values of the tourists at 455.863 (2002), followed by a significant increase of 521.330 tourists (2008), and a decrease of up to 428.468 tourists in the 2010 year.

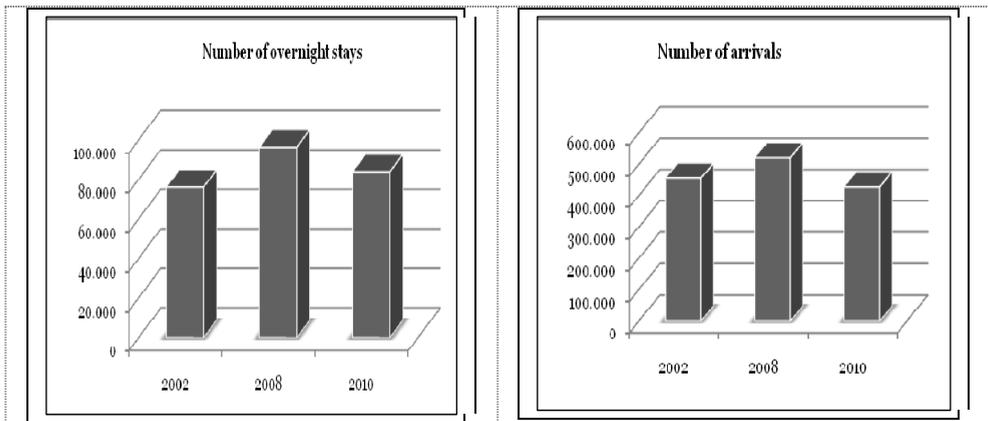


Figure 3. The number of arrivals and overnight stays in the Olănești River basin (2002, 2008, 2010)

3. The effects of tourism on the environment

The relief, the forests, the rivers, the lakes, the monuments of nature or of art and architecture, the air, the mineral waters constitute the elements of the

environment, representing at the same time and touristic resources what favors the development of tourism. The resources are varied and complex and mostly unspoiled. They constitute an attraction, and the activity what they generate, are more valuable and more attractive, by answering some very different motivations. To perform a tourism with high efficiency, it is necessary to the existence of an natural environment, unspoiled, and the products degradations to the environmental are higher, the tourist services are more affected.

As regards the consequences to position of the hidrographic basin, they have been treated in terms of favourables and restrictives impose the basin. Suitability of this settlement is imposed by the diversity of landforms, tourism potential, water resources, forestry, mineral waters and favorable climate. On the other hand we have the restrictives imposed by the region, and here we are referring to the floods, geomorphological hazards (landslides, prăbușirile), etc.

3.1. Impacts on the vegetation and the fauna

The presence of the landscapes and of the attractive elements of the flora and fauna, to led the development of turistics activity, that takes place in a controlled fashion, but and often uncontrollable. Those effects are even irreparable for the components of the environment.

The occupied areas of forest are being extended in the mountain sector compared to the subcarpathian area. The climate is in general calm, to the shelter, and he favors the presence of the formations, the landslides of the wind existing sometimes in the starting point of the valleys, in the Bărbătescu-Folea sector. Characteristic are the forests of beech, on the right bank of the Olănești valley and Debrădet valley, juniper tree on the scree and the limestone rocky region from the massif of Buila-Vânturarița, forests to the sessile oak in the lower sector of the Olănești River basin and, at altitudes above 1250 m, include alpine meadows and the forests of spruce.

The tourist paths led to the degradation of the alpine meadows, of the carpet and even the soil, in the vicinity of the most popular monuments of nature (e.g.: The Cheia Canton, The Arnăuților Cave, etc.) Thus, the composition of the vegetation in the vicinity of tourist routes underwent major changes both in terms of quantity and quality (often, the trees are situated in the recreation areas, are deteriorated, by cutting off branches, either by recording their on the bark and plants with special colouring. The appearance are endangered or disappearing entirely).

The Olănești basin hosts a large variety of birds (capercaillie, hazel, partridge, bats), and animals (lynx, tree marten, stone marten, roe deer, wolf, fox, badger, wild cat). In fast waters of the mountain and among the rocks, live trout, the chub, the barbel and the cobits [3].

The presence of the caves in the Olăneștiul Key and from the Cheile Key, attracted a considerable number of tourists which led to degradation them, through the demise of the speleotherm, through changes in habitat parameters, by filling their mouths, or by burning of the walls. At the same time, species of animals and birds can be influenced by the human activities, having the effect of reducing species diversity, the unintentional disruption the living environment, the mammals or birds, poaching, direct transmission of diseases from dogs to wild animals, etc.

The use of means of transport for moving into desired tourist areas, indirectly lead to degradation of habitat through facilitating access of a large number of people (see section 2.2. Accommodation capacity) By the year 2010, the car acces to the Key is through the Canton River (not exist a special roads).

3.2. Impact on air quality

The air is also a factor particularly important in determining the quality of the environment in the drainage basin of the Olănești River in Romania. The most common factor of pollution of the atmosphere are nitrogen oxides and carbon monoxide, resulting in burnt offerings fuel (automobile circulation). Also, the particles of soot and sulfur dioxide pollute the air and result from the burnt offerings of solid fuels (wood and coal) for heating and preparing food for both camping areas and determine a livable high risk of air pollution. House warming in the Olănești River basin is approximately 15% in centralized-coal, 5% has individual heating and the remaining 70% of the population uses individual stoves heating with wood as fuel. Thanks to reduce such emissions, the respiratory system can be seriously affected.

Intensification of automobile circulation from tourism, to altered the quality of the treatment factors and influencing directly the specific spa treatments into the Baile Olanesti resort. A significant effect on the environment is the quality of the tourism in these underground mineral waters. All of these negative phenomena have an intensity and an destructive action and bigger at the end of the week, "when the pressure of tourism" is strong.

3.3. Impact on water quality

The water is an important factor in the ecological balance, and its pollution represent an actual problem with consequences for the population and the environment. The effects of water pollution are complex and varied, depending on the nature and the concentration of the impure substances.

In the case of surface waters, one can be seen, with the naked eye, how the traders wish to obtain high incomes. So they placed a series of the accommodation structures or the food structures, leading to the destruction of the riverbeds of the rivers (see Băile Olănești resort where the Central hotel and Stogu hotel have been located just above the Olănești River).



Photo 2. The Băile Olănești resort (a. Central Hotel; b. Stogu Hotel)

At the same time, it must be considered as, main sources of pollution, the organic substances (such as crude oil, tannin, carbon hydrates, etc.). They are coming from existing gas stations near water courses or from the accidental discharges, from the waste disposal in riverbeds, either by operators, or by the locals. The substances, prin the discharge in the Olănești River leading to the destruction quality of the flora, fauna and soil.

Drinking water used in the Băile Olănești, comes from the homonymous river, water that is captured and treated to the North of the resort. In regards to this wastewater treatment plant, it was built in 1950 and renovated in 1974. The location to the treatment plant is in an unfavorable area. Here, the land is likely to be unstable and to be surpe. It is for this reason that require urgent modernization, both from the point of view of strengthening, as well as especially of water treatment procedures.

Regarding the population connected to the drinking water networks, statistical data highlights that in the year 2010 out of the total population (4696 inhabitants) in the Băile Olănești resort, about 55,3% are connected to the drinking water. The rest of the population it nurtures individually from the deposit aquifers. Particularly important is the plight of those connected to the sewerage, their number being particularly low. Thus, in the same year, of the total population (4696 inhabitants) only 42.5% were connected to sewerage. These situations are worrying for the medium (in many cases, the population uses the toilets in the yard, through the digging of pits, which are then covered with Earth).

The tourism can cause a negative impact on the environment and through the intensive use of the waters for recreational facilities, or due to modifications to the structures of the infrastructure Upstream of the water treatment station, from April until the end of September, the tourists installed tents. This is a problem both

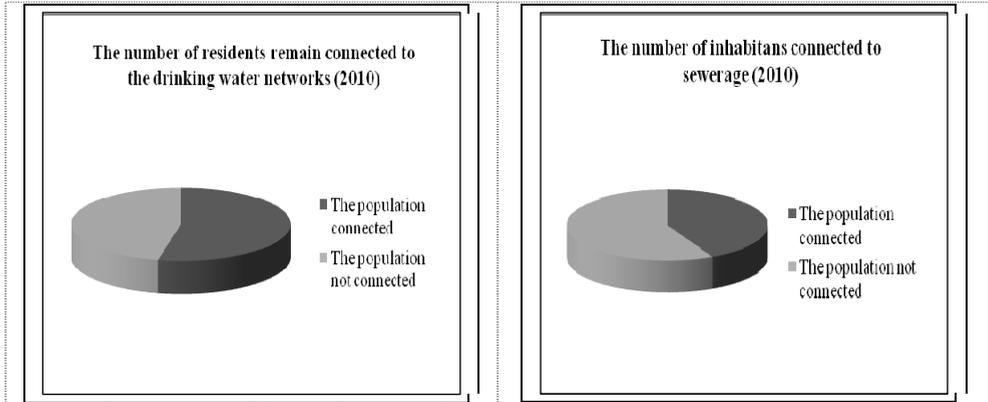


Figure 4. The number of inhabitants connected to the networks of drinking water and sanitation (2010) (Source: processing data)

in terms of water use River (for hygiene, etc.), as well as, be using the wood from the forest for slats and especially of debris that remain after their departure (coals burned, empty bottles, papers, etc.). The same situation is encountered vis-à-vis The 3bis spring , when in the summer of 2001, at midnight they held increases to the water flow, which have caused flooding throughout the Băile Olănești resort. The worst was, however, that in the riverbed, the tourists have installed the tents and they were surprised by these floods.



Photo 3. The Olănești River (a. Upstream of Baile Olanesti resort (Source: internet); b. across the street from River Plaza Mall) (Source: Ana Roangheș)

A particular problem is the discharge of stormwater from the parking lot of the mall River Plaza Mall, as well as those nearby, directly in the Olănești River. With regard to the waste water arising from the accommodation, but and housing population in the Olănești River basin, it is necessary to create a new wastewater treatment plant in Băile Olănești, for which the City Council has signed a contract with Sean Olanesti (project value exceeding 30 million lei).

A special situation is of the mineral waters. This is characterized by a great vulnerability in the case of exogenous factors. This intervention may cause adverse effects on their physical and chemical parameters change (based on these therapeutic resources have been declared). The first interventions in connection with the caption of the mineral waters, dating from the 19th century. After 1990 year, have been arranged these springs. Thus, the lower Valley of the River Tisa is completely dyked and the slopes are cimented against the falling rocks.

The degradation phenomena encountered (in particular the mineral waters and the thermo-mineral waters) resulting from non-compliance with the general principles of the protection and exploitation. This impose the limitation of the operation of deposits in relation to approved reserves, the geological works in accordance with the provisions of the research and special projects, avoiding the exploitation of deposits up to exhaustion and not a rational exploitation. The solution was, in the case of the Băile Olănești resort, application of the measures such as the introduction of a perimeter protection of sources Souces (since 2009, has been denied access, to unlimited sources of tourists. This, it can be done only on the basis of access cards).

3.4. The impact on soil

The soil is a valuable resource, which is prone to polure. The tourist activities are a way of environmental degradation in the area, thanks to the objectives that can be visited, and especially the Băile Olănești resort. Annually more than 200,000 tourists visit the area (both Romanians, tourists and foreign tourists). It is assumed that most negative effect of the environmental effect, appear only in the summer season, when coming a large numbers of tourists and are discharged a lot of the waste water. At the same time, this discharges of the waste, fertilizers, etc have effects not only for the water, but also and for soil.

The negative effects for the soil, are registered and consist of the land subsidence, increased exposure to soil landslides, damages on the geological forms (caves, potholes), damage to the banks of rivers, increased risks for natural fires.

The excessive deforestation, leads to a high degree of exposure to the landslides. In this sense, will be remark the Băile Olănești resort, where, in may 2012, to national road (64A), on a stretch of 40 m, a landslide occurred affecting the natural gas pipeline.

Conclusion

The tourist potential of being an integral part of the environment, the existence and development of objectively depend on for its quality, may be regarded as a possible indication of quality for its environment. In general, it can be seen that where the environment can be preserved in its parameters, it can practice and tourism, and where he suffers from deterioration, it diminishes. Therefore, protecting and preserving its qualities are becoming a necessity for travel. To harness sights, It takes a careful education to the tourists (often can be realized by calling on the support of the authorities, but also to the volunteers care working on the different actions aiming at the protection of the environment). The development of the tourist sector has major implications on the environment, in particular habitats, water resources, water supply facilities and wastewater treatment plants.

Regional strategy aimed at finding ways to reduce, capture and retention, collection of the main existing pollutants.

With regard to the activities of the tourist, of the Băile Olănești resort, is known that annually more than 80,000 tourists arrive here, which is why it is necessary to take special measures to protect the environment.

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