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MEANS OF CABLE TRANSPORTATION. AN INFRASTRUCTURAL COMPONENT OF THE GEOGRAPHICAL LANDSCAPE OF ALBAC -ARIEȘENI TERRITORIAL SYSTEM

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Abstract: A part of the touristic infrastructure is represented by cable or mechanic means of transportation, closely connected to the touristic development of mountain areas. Cable transport is a means of transportation sought exclusively during touristic activities. It is used as an access route for mountain areas equipped with ski slopes. Ski slopes and cable transport play a fundamental role in the development of the mountain tourism industry. They represent the essential foundation of winter offers and their execution must be accomplished prior to that of other types equipment (accommodation, leisure, dining). By increasing the number of functional ski slopes, the touristic development of the Arieşeni skiable area is meant to enhance the touristic potential of this village, especially during the winter season. Another element of this development is the extension of the touristic season during winter by using artificial snow machines which allow skiing during periods with insufficient snow fall. Increasing the number of slopes and extending of the tourist season should also accomplish the expansion of the targeted geographical area from which tourists originate. The total length of the routes in the Albac - Arieseni territorial system which rely on cable transport is of 2750 m while the potential transport capacity is of 2400 persons per hour. The Albac - Arieşeni territorial system relies on three means of cable transport.

Key words: ski slopes, means of transportation, cable transport.

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INTRODUCTION

The only means of transportation sought exclusively by the tourism industry is cable transport, used as a rapid access route to mountain areas and especially skiable areas equipped with ski slopes (Ciangă, 1997).

The Albac - Arieșeni territorial system is included in the administrative division of Alba County, being located in its north-western extremity at the convergence of two mountain systems: Bătrâna Mountains in the north and Biharia Mountains in the south, connected by Vârtop Pass (1160 m). Bătrâna Mountains and Biharia Mountains (figure 1) represent the central sector of

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Apuseni Mountains and are limited by the river Someşul Cald in the north as well as by the river Arieşul Mic in the south (Pop, 2000; Enciclopedia Geografică a României, 1982).

Cable transport

The execution of means of cable transport entails a series of constructions which modify the surrounding landscape. Ski tows and chairlifts require, prior to their emplacement, a deforestation of the area, deep and strong foundations for their support poles so that they sustain a heavy charge. The protection requirements are multiple: ending the advance of projects which affect the environment, carrying out impact studies, a clear delimitation drawn up for soil occupation plans, the delimitation of protected areas, of natural parks and of reservations (Băltărețu, 2010). More than any other industry, tourism is dependent on the environment, it actually represents the main resource and its quality can promote or hinder the development of tourist activities (Cândea et al., 2003).



Figure 1. Geographical position of the Albac - Arieşeni territorial system as part of Apuseni Mountains and Bihorului Mountains

In the case of travel system-Albac Arieşeni the main problem derives from the dualism of the area used for tourism / territory protected from human activities. The resulting state of conflict is due to the uniform strategy of intervention in the structure of the actors involved both in the public and private sectors, and especially of the goals declared / undeclared non synchronous confused and those who deal with planning and maintenance of the territory on the one hand and those who exploit economically the same geographic area. Component proreaction join them and is almost nonexistent, although the structure should be part of the strategy developed by the first category (Gozner and Avram, 2010). In order to construct the ski slopes as well as the means of cable transport that they rely upon, the slopes envisaged should be predominantly north-oriented and situated at altitudes of over 1000 - 2000 meters. The ski slopes and the corridors which accompany the means of cable transportation should be as wide as 20 to 30 meters (Ciangă and Axente, 1996).



Figure 2. Slopes Vârtop I and II



Figure 3. Vârtop I Slope Ski tow

The analyzed mountain area provides scarce examples of cable transport. Two functional ski slopes are found in Vârtop (Arieşeni commune, Bubeşti village). Vârtop I Slope (figure 2), also referred to as the Big Slope relies on a ski tow with a capacity of 680 persons per hour while Vârtop II Slope (figure 3), also called the Small Slope relies on a ski tow with a capacity of 320 persons per hour (General Urban Plan Arieşeni). The Big Slope is 720 m long, 90 m long, measures a 220 meters slope of the land and is rated as red (intermediate) in what concerns its difficulty. It is equipped with night lighting (orange lights) along its length as with ski-slope maintenance machinery. The Small Slope is 430 m long, 50 m wide, measures a 101 meters slope of the land and is rated blue (easy trail) in what concerns its difficulty. It is also equipped with night lighting but its lights are white, similar to natural light, as well as with ski-slope maintenance machinery.



Figure 4. Piatra Grăitoare Slope

Piatra Grăitoare (Speaking Rock) Slope (figure 4) is situated near Vârtop I Slope, at the distance of a 5 minutes' walk through the woods. It is oriented towards the west-northwest and is situated on the side of Vârtop Pass which is included in the administrative territory of Bihor county. The slope is 1600 meters long, and it offers three alternative trails, rated with different levels of difficulty (blue, red and black), relying on a modern four-seat chairlift. The execution of the three new different slopes at Arieşeni-Vârtop has been completed at the beginning of December 2010. They are equipped with night lighting and a chairlift (figure 5) with a capacity of 1400 persons per hour, measuring 1095 meters in length.



Figure 5. Piatra Grăitoare Slope Termina

The construction of the slopes is financed by Nucet's local administration and by Bihor county's Regional Council as part of the project *"Skiing in Romania"* which is subsidized by the Ministry of Regional Development and Tourism.

A two-level parking (figure 6) has been constructed at the base of the Piatra Grăitoare Slope. Unfortunately, it does not fully resolve the need for parking space.



Figure 6. Piatra Grăitoare Slope parking and chairlift

The three slopes (figure 7) are situated at the convergence of Alba County and Bihor County's borders. They are quite accessible due to National Road 75 which runs across their base, as they are the most renowned ski slopes of the Apuseni Mountains.



Figure 7. Vârtop slopes (Arieșeni)

The regular skiing season starts in December and ends in March. At the beginning of each year The Snow Celebrations (Serbările Zăpezii) are organized. Near the two ski slopes, a sleigh slope is also constructed. Next to the Vârtop slopes, snowmobiling, sleighing and paragliding are practiced.

The North Star (Steaua Nordului) Slope is situated in Albac and until 2009, this was a slope that some considered *"European"*. It passed through the households of residents living in the area, accompanied by its ski tow, night lighting and artificial snow machinery. The track was short, it had a southern orientation and a reduced level of difficulty. It was transformed into a learning slope until the investor realized that no one would use it and closed it in the end. The construction of ski slopes has started in Gârda de Sus commune. The gradient is favorable, the degree incline is constant and cable transportation will be ensured by a reused chairlift (figure 7).



Figure 8. Reused chairlift in Gârda de Sus commune

The project foresees three slopes: a 1100 m one, a second one measuring 1600 m and a third one, 2000 m long. The local administration has provided the land while the investor finances the project. A ski bus (figure 8) will ensure the transport of tourists across the impressive Arieş Valley, following the route Albac, Scărişoara, Gârda de Sus, Arieşeni-Vârtop. The eco bus has already been acquired and it awaits its future usage.



Figure 9. The slope and ski bus of Gârda de Sus commune

Besides the possibility of ruining the natural beauty of the region, this project is also disadvantaged by an altitude (735 m) which is somewhat unfavorable to snow durability. By comparison, the Arieşeni-Vârtop slopes reach as high as 1200 meters in altitude.

The inauguration should have taken place in 2009 yet it was delayed, presumably due to the

recession. The locals hoped that the new slopes would be put to use at the beginning of the 2010-2011 winter season. Unfortunately, another winter has passed and this project is still on hold.

An similar investment is proposed in Bubești - Arieșeni. Five slopes will be constructed in the Vârtop-Gălășoaia-Bubești area, equipped with two chairlifts and a ski tow. A parking lot will be situated at the base of each of the main slopes.



Figure 10. Slope proposals for Bubeşti (Arieşeni) (Source: Google Earth render (A), Ortophotoplan 1:5000 adaptation (B)

Bubești 1 slope will be around 2700 m long and will stretch between Vârful Cornul Berbecului Peak and Bubești-Arieșeni village. Bubești 2 slope will be approximately 2100 m long, stretching between Cornul Berbecului Peak and Bubești village, an alternative descent to the skiers climbing up to Cornul Berbecului Peak. In order to reach the top of these slopes, tourists will climb from Vârtop by chairlift or they can choose to climb from Bubești. Bubești 1 and Bubești 2 slopes start at Cornul Berbecului Peak at an altitude of 1600 m, while the finish line is situated at 1080 m. The two slopes will rely on a modern, high-capacity chairlift. Gălășoaia-Bubești Slope will connect Cornul Berbecului, Vârtop and Bubești slopes. It can also be used as an alternative descent, as its level of difficulty is lower. However, it does not directly rely upon a cable transport installation. Gălășoaia-Bubești and Gălășoia slopes will be rated as intermediate in what concerns their level of difficulty thus being preferred by most skiers.



Figure 11. Slope proposals for Bubești (Arieșeni), topographic map 1:100,000 adaptation

Gălășoaia slope will be the shortest one and will rely upon a chairlift. In this case, Gălășoaia-Bubești slope can be chosen by skiers as an alternative descent. Cornul Berbecului slope will be the longest, as its planned length is of 3000 meters.

The upper half of this slope has a high degree of difficulty while its lower half is considered intermediate. It will rely on a chairlift which will have a terminal at the meeting point with Gălășoaia slope and one at the highest point of the slope.

Chairlifts will be installed for Bubeşti-Cornul Berbecului and Vârtop-Cornul Berbecului routes. In the latter case, an intermediate terminal will be located at the intersection of Cornul Berbecului and Gălăşoaia slopes. The cable transport installation is a four person fixed-grip chairlift which consists of numerous chairs attached to a constantly moving wire rope. The rope is stretched and flexed by the drive bullwheel which is located at the low end of the installation. The cable is supported well above the ground by towers equipped with pulley assemblies and access stairs for maintenance personnel. Four person chair carriers are connected to the cable at 37,4 m intervals. At a 14,40 second step, the installations moves at a 2,60 m/s speed, with a capacity of 1000 persons per hour. The loading and disembarking of passengers is performed at an average rope-speed of 2,60 m/s (according to Bubesti - Vartop's Zonal Spatial Plan- P.A.T.Z.)

In order to increase the level of comfort provided to tourists as they embark at the bottom terminal, the loading area will be equipped with a moving platform and automatically opening doors. They are activated by sensors, opening and closing according to the proximity of carriers to the embarking area. Thus, as a chair approaches, the doors are opened, allowing the simultaneous entrance of four persons directly on the moving platform. This platform moves at a constant speed of 1.0 m/s so that passengers are seated at a relative speed of 2,6 - 1,0 = 1,6 m/s.

Beside increasing the safety and comfort level of passengers as they embark, using a moving platform allows the chairlift to function at an increased speed (2,6 as opposed to 2,3 m/s), therefore reducing transportation duration as well as the total number of carriers simultaneously moving on the wire rope.

In the case of the Cornul Berbecului ski tow, the drive terminal is located at the bottom of the installation while the return bullwheel is situated at the upper terminal. The bottom terminal which allows skiers to attach themselves to the rope is located at an altitude of 1270 m, while the end terminal is situated in the Gălășoaia area, at an altitude of 1320 m, at the highest point of the slope. The route unites the two terminals in a straight line. The cable is supported by metal pillars equipped with rubber lined reels. Gălășoaia slope will also be equipped with a ski tow (Bubești - Vârtop P.A.T.Z).

CONCLUSION

Each slope will measure an average width of 40-60 meters and will be equipped with artificial snow installations, snow leveling machines, ticket machines and parking lots. All slopes will use appropriate markings, conventional signs and protection nets, according to the specifications of the H.G. 263/2001, requirements which must be met in order to receive the approval of the national authority for tourism.

However, compared to other such regions (such as Braşov and Prahova), the studied area is in shortage of cable transportation means.

Due to the importance of tourism nowadays, it is necessary to find solutions for harnessing the natural and man-made resources of which can be achieved through a territorial tourism planning (Gozner, 2010). Tourism planning should be accomplished in relation to tourism development and even economic progress but must take into account the requirements of the natural and human environment.

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REFERENCES

Băltărețu Andreea Mihaela (2010), Amenajarea turistică și dezvoltarea urbană, Editura Universitară București;

Cândea Melinda, Erdeli G., Simon Tamara, Peptenatu D. (2003), Potențialul turistic al României și amenajarea turistică a spațiului, Editura Universitară, București;

Ciangă N. (1997), Turismul în Carpații Orientali. Studiu de geografie umană, Editura Presa Universitară Clujeană, Cluj-Napoca;

Ciangă N., Maria Axente (1996), *Mijloace de transport pe cablu – componentă infrastructurală a peisajului geografic și turismului carpatic*, Studia UBB, Seria Geographia, XLI, 1-2, Cluj-Napoca;

Gozner Maria (2010), Turismul în sistemul teritorial Albac - Arieșeni și impactul acestuia asupra mediului, în Analele Universității din Oradea, Fascicula Construcții și Instalații Hidroedilitare, vol. XIII- 2, Editura Universității din Oradea, Oradea;

Gozner Maria, Avram Maria, (2010), Situația rezervațiilor naturale din cadrul sistemului teritorial Albac – Arieșeni, Analele Universității din Oradea, Seria Geografie, Editura Universității din Oradea;

Pop P. Gr. (2000), *Carpații și Subcarpații României*, Editura Presa Universitară Clujeană, Cluj-Napoca; *** (1982), *Enciclopedia Geografică a României*, Ediura. Stiintifică și Enciclopedică, București.

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