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ANALYSIS OF THE DEVELOPMENT PROGRAMS OF THE SKI-INFRASTRUCTURE OF THE TRANSCARPATHIAN REGION

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АНАЛІЗ ПРОГРАМ РОЗБУДОВИ ГІРСЬКОЛИЖНОЇ ІНФРАСТРУКТУРИ ЗАКАРПАТСЬКОЇ ОБЛАСТІ

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In the article the tendencies of development of infrastructure of ski tourism in the Transcarpathian region have been analyzed on the basis of analysis of programs of development of tourist-recreational industry.

Key words: *infrastructure, tourism industry, mountain skiing, skiing complex.*

У статті досліджено тенденції розвитку інфраструктури гірськолижного туризму в Закарпатській області на основі аналізу програм розбудови туристично-рекреаційної індустрії.

Ключові слова: *інфраструктура, туристична індустрія, гірськолижний туризм, гірськолижний комплекс.*

The development and improvement of the tourist infrastructure of the Transcarpathian region in areas with available tourist and recreational resources is one of the main directions of development of the tourist industry. The unique recreational potential of the region, which promotes the development of virtually all types of tourism, and especially skiing, attracts more and more people every year.

The development of tourism infrastructure as an important component of the tourism industry has become a priority area of state policy and regional policy of the Transcarpathian region.

The issues of the state and development of skiing tourism infrastructure of the region are often discussed at thematic conferences and in scientific journals. Most scholars (O. Golovko, M. Malskaya, Medvid LI, N. Gabchak, V. Kyyak M. Rutinsky, F. Shandor) studied the development of skiing in the Carpathian region. N. Gabczak researched the morphological features of the relief and their influence on the location and functioning of the ski resorts of Transcarpathia. F. Shandor considers the development of ski tourism through the prism of sport and extreme tourism. Medvid

L.I. analyzed the peculiarities of the territorial organization of ski tourism and identified the most favorable regions of the Transcarpathian region for its development.

The problem of building ski infrastructure as a component of the tourism and recreation industry in the Transcarpathian region is poorly investigated.

Formulation of the goals of the article (statement of the task). The aim of the study is to analyze the development programs of ski resorts in Transcarpathia, such as Borzhavsky Poloniny and Dragobrat, as well as to determine the directions of optimization of the territorial structure of the regional tourism infrastructure.

Presentation of the main research material. Ski rest plays an increasingly important role in the socio-economic development of the Transcarpathian region. And consequently, the volume of tourist services provided for the given period has increased. Note that the tourist market of services is in the stage of becoming. The main prerequisite for its development are: geographical location, available tourist potential, political stability, competitiveness of tourist services, economic situation [1, p.174].

One of the priority directions of development of our state, according to the Decree of the President of Ukraine of 08.09.2010 №895, is the project "Olympic hope - 2022" whose goal is to create in the Carpathian region a modern sports and tourist infrastructure capable of hosting the Winter Olympics in 2022. The project implementation includes the development, in accordance with the requirements of the International Olympic Committee, of the Olympic infrastructure for budget funds and the construction of tourist facilities for investment funds, a new positioning of the tourist attractiveness of Ukraine, increase of tourist interest, which should give a powerful impetus to the development of the country's sports industry.

During the 2nd session of the Transcarpathian Regional Council of the VII convocation, the "Program for the development of tourism and resorts in the Transcarpathian region for 2016-2020" was approved. In order to implement the measures of this Program of Tourism Management and Resorts of the Region State Administration together with rayon district administrations, city committees, higher educational establishments, public organizations, marketing researches and monitoring of tourist flows in the Transcarpathian region were foreseen [2].

Ski complexes in the Transcarpathian region are characterized by the peculiarities of the infrastructure. An important indicator of the development of ski resorts and resorts is the level of transport - the possibility of using rail, road or air links, transfer to the resort and the possibility of the entrance of vacationers directly to the ski lifts, the presence of parking lots near the lifts with enough parking spaces. Important elements of the infrastructure of ski resorts, which determine the possibility of using slopes for skiing, are the status of ski slopes, the technical condition of equipment (lifts and cable carriageways), artificial snow slopes, their illumination, etc. [3].

As far as skiing is concerned, it is necessary to immediately carry out reconstruction of the existing infrastructure at the ski complexes of Transcarpathia. A fairly large proportion of the inhabitants of the region travels abroad to Slovakia, Austria, Italy, etc. Similarly, it is necessary to modernize the equipment, to improve the service and the offered services in accordance with European standards, to connect the bus to these resorts and bring the ski resorts of Zakarpattya to the level of competitiveness with the nearest European resorts.

The development of a complex of tourist and sporting purposes "Borzhavsky Poloniny" according to the project plan is realized within the limits of 2 districts - Mizhhirsky and Volovetsky in the mountain range of Borzhavsky Polonin, namely in the vicinity of the village. Pylypets (17 km to Mizhhirya and 20 km to Volovets settlement).

Committee on Physical Culture and Sports under the Council of Ministers of Ukraine as a result of studying the entire territory of the Ukrainian Carpathians recognized the Territory Borzhavsky rock mass as the most promising in Ukraine for the development of ski tourism and sports. One of the most suitable zones is the north-eastern strip of the Borzhavsky rock massif, which includes the Gimbia (1,491 m) and the Great Verkh (1598 m), because:

1) a general plan of development has been developed and approved in accordance with the

established procedure for this part of the Borzhava Polonin;

2) the general plan of development defined free land plots, on which you can build ski complexes, currently such 3 and the size of all three together - about 1.4 hectares;

3) available infrastructure of the ski resort: the recreation center "Zatyshok" (80 seats); nearby - 2 ski lifts (one - length 1450 m), before the winter season, a ski rental facility is opened. Not far away, in the village Podobovets, there is another ski base - "Podobovets 2000" with the nearby ski lift (1200 m);

4) in the infrastructure of the sports and tourist complex it is expedient to include an unfinished sanatorium in the village. Soyumi of Mizhhirsky district (oriented capacity - 500 beds);

5) advantageous transport: the road Volovets - Mizhhirya, passes in the immediate vicinity of the projected ski area. This provides a 20-minute transport access to the Volovets Railway Station, through which the Uzhhorod-Chop-Lviv-Kyiv railway passes.

On the Volovets-Mizhhirya highway there is a small number of gas stations, in which there is no proper level of services. This also applies to other types of service: car service stations, trade enterprises and catering. In connection with this, the project also provided for the development of ancillary infrastructure and services (Fig. 1).

Construction and operation of hotel complexes, ski resort complexes and sports complexes, as well as reconstruction of existing facilities for accommodation and creation of the necessary infrastructure of tourist ski complexes, according to the project, should correspond to the world level.

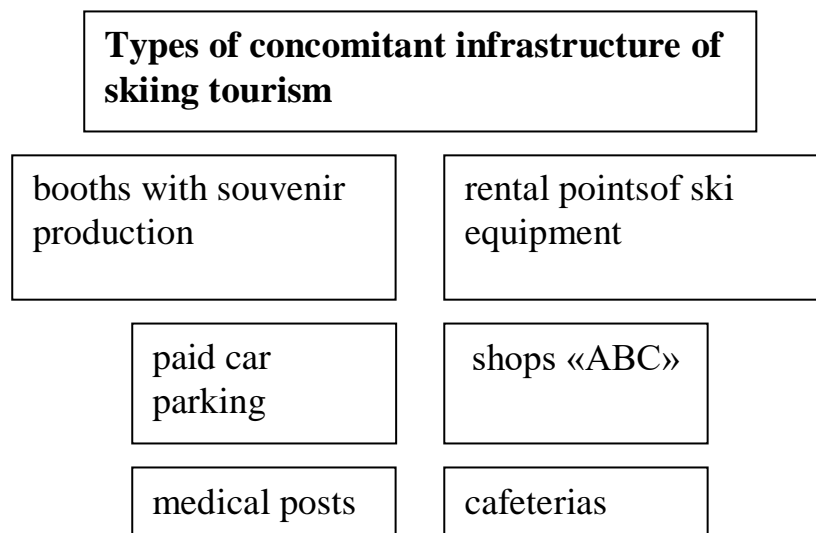


Fig. 1 Types of concomitant infrastructure of ski tourism in Transcarpathian region.

The estimated cost of the investment project is \$ 25 million. USA. The total area of the territory suitable for the organization of ski slopes - about 250-300 hectares. This territory allows in the future to provide the capacity of the complex for 700 places to 5.5 thousand skiers or 7.5 thousand vacationers per day. This figure is determined in accordance with the environmental requirements in order to ensure the self-healing of the landscape.

The project proposes the following zoning of the territory for the development of Borzhavsky Polonin:

1. The housing zone with the main structures of the base is located on the elevation in the eastern part of the plot, in the tracts of "Lazok" and "Small Lazok". It is proposed to place tourist complexes for 60-100 places with cafes-bars, restaurants, saunas, gymnastics and business premises. On the perimeter of complexes it is expedient to place 2-3-storey cottages mini-hotels for 15-25 seats. In the central part it is advisable to design sports grounds, which is especially needed in

the summer. The capacity of the bases of this queue - up to 475-500 seats.

2. In the future, the residential zone of the II-th queue is proposed to be expanded through the development of the territory between the settlements of the villages Pylypets and Roztok, in place of the former dairy farm. It is possible to arrange a promising residential area with a total capacity of 1500-2000 seats.

It is on these slopes of the Ukrainian Carpathians that it is possible to arrange highways and supersalium tracks that meet the requirements of FIS. Combined with a good indicator of snowiness, this is the main argument in choosing a perspective ski area. The introduction and development of such forms of tourism and recreation on the territory of the complex, such as rural, mountain biking, ecological tourism and high-altitude elite tourism, is required as an alternative to summer recreation in the area.

The Dragobrat ski center project is extremely attractive for fans of skiing and winter sports, as it is the only area in Ukraine where the snow cover lasts for six months. The height of snow in the mountains is an average of 70-80 cm, and the maximum within the valleys - up to 4 meters. Polonina Dragobrat - is located at an altitude of 1200 - 1300 m above sea level, at a distance of 9 km from the Uzhgorod-Ivano-Frankivsk highway. This is one of the most popular among the domestic and foreign skiers of winter recreation and sport. Geographically belongs to the Rakhiv district of the Transcarpathian region, not far from the village. Yasinya To the regional center - 240 km, to the airport - 125 km (city Ivano-Frankivsk), the railway station - 12 km.

The area is included in two important normative and legal documents: the Decree of the Cabinet of Ministers on the training of the Olympic staff, and "Measures for the development of foreign and domestic tourism" (approved by the Cabinet of Ministers of Ukraine dated 27.06.03 No. 390-p).

To implement the project, land plots of 2.5 - 3.5 (construction of a hotel-recreational complex, ski lifts, service infrastructure) ha from the lands of the reserve area are allocated. The strengths of the area include:

- There are 10 tourist and recreational facilities located in the mountain region, in which at the same time it is possible to accommodate about 300 people and 6 ski lifts of anchor type.

- ski runs comply with international standards and are used for international winter sports competitions.

- prospective development of the mountain valley will be carried out according to the developed general plan of development.

The weak points of the area are: bad connection: 2 mountain roads run to the mountain valley (the length of one of them - 9 km, the other - 18 km), both in poor condition.

The plan of the development of the ski center "Dragobrat" presupposes:

- to build a modern hotel-recreation complex in the central part of the Polonyna for 100-150 places;

- to develop a network of servicing of tourists by building cafes-bars, restaurants, parking lots, etc.;

- to improve the infrastructure of tourist services by opening new rental points, sports halls, lighting ski slopes, marking tourist routes, repairing the access road, organizing highly professional excursion services;

- construction of a pendant rope-chair or cab road (length - 2,5 km, elevation difference - 400 m).

The purpose of the construction of this complex is to activate the winter and summer type of rest, which would meet European standards; Improvement and expansion of the existing base for the training of athletes of the Olympic reserve of winter sports; development of infrastructure of service; providing fast, convenient and safe transportation (delivery) of tourists to the mountain valleys. Possible users can be both domestic lovers of active recreation, as well as foreign tourists.

The main components of the investment project and the volume of necessary investments:

- construction of a modern hotel-recreation complex in the central part of the Polonyna for

100-150;

- construction of a steam-chair or cab road (2,5 km) from the tract "Diana";
- installation of modern ski chairlifts on Mount Stig for extreme types of tourism (para, hang gliding);
- development, marking and promotion of tourist (including sports) routes: ski, pedestrian, ecological;
- construction of new food establishments;
- creation of a network of shopping malls for the sale of souvenirs, sporting and tourist inventory, goods for everyday consumption;
- lighting of ski slopes (first of all on Mount Stig);
- laying and equipping of the sports track on biathlon, the completion of the construction of the winter stadium for freestyle;
- repairment of the access road (9 km) to the Dragobrat valley;
- major overhaul of the high-voltage transmission line;

In total - about 13 million dollars USA.

This direction of development of our state, and especially the Carpathian region, has a number of important consequences for the region's economy:

- formation of a positive image and investment attractiveness;
- attraction of foreign investments in projects of construction of sports, skiing and resort infrastructure;
- a powerful impetus for the economic development of the western region, the transformation of the Ukrainian Carpathians from the outskirts of European tourism into one of the leading centers;
- creation of one of the largest mountain resorts in Eastern Europe;
- providing a breakthrough in the development of the tourism industry;
- creation of new jobs in the region;
- reconstruction of the existing infrastructure in the region [5].

But to increase the inflow of tourists to the Transcarpathian region, one should not focus only on such far-sighted projects as "Olympic hope -2022". There is a need to undertake major actions to develop and improve the quality of tourist services in the region. For today, the main way of improving the attractiveness of the city and the region for tourists is to create new and development of existing tourist services. Priority directions for tourism development in the region should be: popularization of tourism product, tourist branding, reconstruction, improvement and development of existing tourism infrastructure, road and information infrastructure.

Conclusions of the study. Consequently, the study provides grounds for predicting a phased process of development of the tourism industry in Transcarpathia. This is facilitated by natural and climatic conditions, favorable transport and geographical location, available potential of tourist and recreational resources, etc. Further development of the tourist infrastructure of the region requires first-class construction and major repairs of the transport routes; attraction of investments into reconstruction of the material and technical base of existing accommodation and catering establishments; construction of social infrastructure objects; creation of information centers that would provide information on tourist routes and their infrastructure equipment. Each component of the tourist infrastructure of the Transcarpathian region needs a separate, integrated, systematic approach to improvement and reform.

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ДОСЛІДЖЕННЯ ТА АНІМАЦІЯ ПРУЖНОГО ГАСНИКА КОЛИВАНЬ В ПАКЕТІ MATHCAD

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STUDY AND ANIMATION OF THE EMBROIDERY MASSAGE IN MATHCAD PACKAGE

Ignatishin Mykola, Pelekh Yaroslav

Анімація складних механічних систем з повторюваними рухами представляє інтерес з точки зору активізації уяви при їх вивченні та дослідженні. Побудовано в пакеті Matcad, математичну модель та анімацію динамічної системи пасивного пружинного гасника коливань. Проведено дослідження дії, пружинного динамічного поглинача з застосуванням побудованої моделі та анімації.

Ключові слова: пружинний динамічний вібропоглинач, анімація, mathcad.

The animation of complex mechanical systems with repetitive motions is of interest in terms of animation of imagination in their study and research. Built in the Matcad package, the mathematical model and animation of the dynamic system of the passive spring oscillator. A study of the action of a spring dynamic absorber with the use of the built model on the animation was carried out. The motion of two mass mechanical systems of the kerosene is represented by a system of four differential equations of the 1st order. The numerical solution is obtained and transformed into an analytical formula with the use of the Mathcad package. The built-in program in the Matcad package gives the opportunity to simulate the work of the chopper with various external influences, not only with harmonic periodic force, but also with shocks, vibrations of different nature and law of the forces of resistance of the external the environment.

Keywords: spring dynamic vibrating absorber, animation, mathcad.

Механічні гасники коливань широко застосовуються у техніці. Вони призначені для гасіння коливань механізмів, машин, будівельних споруд тощо. Причиною виникнення небажаних коливань можуть бути техногенні та природні чинники, наприклад, землетрус. Широке застосування мають пакети прикладних програм, що можуть бути використані не



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