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The main features of ski tourism development in the territory of the Republic of Belarus

Abstract. *Ski tourism is a common form of tourism worldwide, generally associated with rural areas and activities in the snow. However, it is also offered as a tourist product in urban destinations in indoor and outdoor areas associated with sports. The conducted research considered the main features of ski tourism development on the territory of the Republic of Belarus, a country with a flat terrain character. The landscape-climatic and socio-economic conditions in eight ski tourism centers of the country are analyzed, and their specialization in the presentation of tourist products and the development of basic and specialized infrastructure are discussed. It is noted that the development of ski centers is associated with the popularization of active recreation, and amateur skiing. In the research, it has been determined that it is much more appropriate to examine ski tourism separately in mountainous and flat areas without making comparisons in terms of both landscape and orographic conditions. When the research findings are evaluated in general, it shows that the ski tourism in the Belarus destination is unevenly distributed, and the highest density is in the influence area of the capital Minsk.*

Keywords: *ski tourism, the Republic of Belarus, winter recreation.*

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Introduction

Tourist destinations are one of the central factors of the tourism sector. With their rich content and complex structure, tourist destinations are studied holistically as they are of interest to various disciplines such as geography, ecology, economics, marketing, spatial planning, management, etc. The attractiveness of destinations paves the way for different types of tourism, which are becoming places of experience. One of them is ski tourism.

Ski tourism is one of the most popular and profitable types of tourism, the development of which requires specific conditions in terms of natural resources, the creation of ski infrastructures, and the production of suitable equipment. In the tourism market, there is an increase in the number of ski destinations that are becoming points of attraction through investments in ski slopes, mechanical facilities, and accommodation developed in relation to climatic and geographical conditions.

Ski tourism is created by a large number of tourist flows, the target audience, and special marketing techniques to promote tourist products. Currently, there is globalization in the development of this segment of the tourism sector. According to the 14th Edition of the 2019 International Report on Snow & Mountain Tourism, in the 2017-2018 winter season, there were 2084 ski resorts worldwide, including snowmaking and equipped resorts in 67 countries around the world (Vanat, 2020). This «pre-Covid» period can be considered favorable for the development of the ski tourism industry. The researcher Laurent Vanat has ranked the main ski resorts in the world according to their most objective evaluation indicator – the number of

average annual visits. The most visited ski resort in the world with more than 2.5 million tourists is La Plagne (France). More than 2.0 million visits are in the resorts of SkiWelt Wilder Kaiser-Brixental (Austria), Les Arcs (France), Saalbach hinterglemm leogang fieberbrun (Austria), Ischgl and Samnaun Silvretta Arena (Austria, Switzerland), Whistler Blackcomb (Canada), Madonna di Campinglio (Italy), Gardena / Alpe di siusi (Italy), Val Thorens/ Orelle (France) (Vanat, 2020).

The geography of the largest ski resorts shows that the landscape-orographic factor has the greatest importance for their development. Of the largest ski resorts in the world (51 ski resorts), 80% are located in the Alpine region of Europe, 14% in the ski resorts of America, and only 6% in the non-Alpine ski resorts of Western Europe (Vanat, 2020).

From the methodological point of view, it seems to us important to consider ski tourism in mountainous and apartment areas as two different classes of objects, which are not comparable in terms of landscape and orographic conditions and, consequently, in terms of the capacity of ski centers, but the centers of each class can be very attractive for domestic and international tourism. In this research, the historical development and basic characteristics of ski tourism in the Republic of Belarus were discussed, and an attempt was made to show the current situation by presenting the current potential and supply data related to winter tourism. In this context, the landscape-climatic and socio-economic conditions of the country's eight ski tourism centers were analyzed, and their competencies in providing tourist products and developing basic and specialized infrastructure were discussed.

1. Relevant Literature

Ski tourism is one of the types of tourism in which interest is increasing worldwide. It includes activities in the snow and various tourist services, usually in rural and mountainous areas. In addition, it can be offered to the tourism market as a stand-alone tourism product by adding sports activities that are carried out both indoors and outdoors in urban destinations (Mursalov, 2009). They are usually practiced on snow or ice and require freezing temperatures, such as skiing, skating, and sledding.

Ski destinations are very sensitive to the continuous development of destination plans, branding, and the level of competitiveness. It is a prerequisite for success to manage ski resorts with good planning that takes into account both the landscape and climate that make the destination attractive and the socio-economic conditions (Cihangir Çamur et al., 2021). In the context of ski tourism, investments are made in cable cars, chairlifts, and snowmaking equipment in the destinations, which enable tourism development on the one hand and access to inaccessible mountain slopes on the other. It is well known that modern ski resorts allocate a high level of capital (e.g., 2.79 billion euros in Tyrol, Austria) for investments in technical infrastructure (Bausch & Gartner, 2020). Within the tourism industry, skiing is a vulnerable market segment with a high level of competitiveness that is exposed to numerous threats, particularly global warming, which could hinder long-term growth (Vanat, 2020).

A review of the tourism literature reveals that there are studies that focus on the image of ski destinations (Hallmann et al., 2015), factors that influence the choice of ski destinations (Klenosky et al., 1993; Sun et al., 2022), motivations of ski tourists (Matzler and Siller, 2003; Dickson and Faulks, 2007; Mladenović and Jovanović, 2019; Bichler and Pikkemaat, 2021), perceptions of ski tourists (Haugom and Malasevska, 2019), satisfaction of skiers (Miragaia and Martins, 2015; Manap Davras, 2021), and loyalty and repeat visits of ski tourists (Alexandris et al., 2006; Faullant et al., 2008, He and Luo, 2020). In addition, the problem of the potential of natural resources in terms of their use by skiers is discussed in detail in the scientific literature in the work of A.I. Zyryanov (2021), A.I. Zyryanov and D. I. Shilov (2020), Chun-Hung (Hugo) Tang and Soo Cheong (Shawn) Jang (2011), M. Falk and E. Hagsten (2016). In ski tourism centers, care is also taken to minimize the negative impact of recreation and tourism on natural complexes through the implementation of an environmental certification system (Weib and Bentlage, 2006).

The development of ski tourism is based on the cluster model considered in the works of H. Konu et al. (2011), E. G. Kropinova and A. V. Mitrofanov (2011), P. V. Panchenko (2011),

E.V. Seredina (2016). According to A. H. Shidov et al. (2019), the main criteria for evaluating a ski resort as a cluster project should include its specialization in the tourism industry and the production of a tourism product, the geographic location of the cluster, the demand/expenditure ratio, and the capacity of the cluster. The effectiveness of the cluster approach in the organization of ski tourism is determined by the natural geographical location of ski centers, their main specialization in tourism services compared to other types of tourism, the need to create infrastructure, including ski slopes, snowboard parks, lifts, equipment rental, the hotel sector.

For the development of ski tourism, various factors should be considered that are important for the destination preferences of ski tourists. Unbehaun et al. (2008) lists these factors from the most important to the least important as follows: "snow secure destination", "winter experience", "size of skiing area", "waiting time at lifts", "high quality of accommodation", "price of accommodation", "the opportunity to ski down to the bottom of the valley", "artificial snow", "restaurants", "outdoor activities", "après-ski", and "shopping facilities". Miragaia and Martins (2015) list the top five factors which tourists look for when choosing a ski resort: "Accommodation", "restaurants and social life", "holiday facilities/services", "quantitative and qualitative characteristics of the slopes", and "distance/access/price".

Haugom and Malasevska (2019) examined how skiers perceive different ski resorts and their weather-related characteristics using data from 400 skiers at a Norwegian inland destination. The researchers found that "daily weather at the time of skiing" and "the price of a lift ticket" were the most important attributes for skiers, followed by "chairlift wait time" and the "percentage of open slopes". Unbehaun et al. (2008), who examined the effects of climate change on skiers' preferences and their tourism activities, concluded that climate change is an issue on winter sports tourists' agendas, that destinations with sufficient/natural snow are strongly preferred, and that loyalty to destinations with low snowfall is declining.

Bausch and Gartner (2020) emphasize that the focus in the Alps is on skiing and the associated winter sports market, and that other important market segments of winter tourism are overlooked. Bausch et al. (2019) note that some tourists (e.g., those who prefer pure winter nature - natural attractions not modified for winter sport - sightseeing itineraries, mountain tours, or a sense of peace and solitude) give up after a trip to the Alps because too little attention is paid to them. In other words, tourists' intention and behavior to revisit the destination will be negatively affected if their expectations are not met.

Bichler and Pikkemaat (2021) sought to uncover the motivational factors that influence skiers' visitation to urban destinations with winter sports infrastructure. In their study, they found that there were five push ("exciting", "knowledge", "relaxation", "achievement", and "family") and six pull factors ("basic assets", "urban assets", "natural scenery", "social events", "economic aspects", and "winter sports activities"). In addition, they typologically categorized ski tourists in urban destinations as «moderate skiers,» «urban recreational skiers,» and «focused skiers,» and pointed out the market potential of combining urban tourism and winter sports.

The study conducted by Tikunova and Krapivina (2014) on the attractiveness of ski resorts in Europe, based on the calculation of the attractiveness index according to the method of evaluation classification (Tikunov, 1985), has shown that the most attractive ski resorts in terms of the main indicators ("duration of the season", "total length of ski slopes", "capacity of lifts") are cross-border ski resorts oriented towards international tourism. This theory is confirmed by the leading position of the countries of the Alpine region – France, Austria, Switzerland, Italy - in the ski tourism sector (Tikunova and Krapivina, 2014). Taking into account additional indicators reflecting the specialization of ski resorts, the variety of services, and the price offer (cost of a subscription, availability of snowboard parks, freeride zones, artificial lighting of ski slopes, and artificial snow on ski slopes), the authors have arrived at a different grouping of ski resorts, which seems questionable. The result of the research is that the countries with several conditions for ski tourists are as follow: the most attractive conditions, Austria, Serbia, Andorra; highly attractive conditions, Switzerland, Italy, Finland, Bosnia and Herzegovina, Germany; attractive ones, France, and Czech Republic; insufficiently attractive ones, Poland, Norway,

Sweden, Romania, Croatia, and Russian Federation; few attractive ones, Montenegro, Greece, Slovenia, Slovakia, Bulgaria, Ukraine, Spain, Belarus, Liechtenstein, and Latvia (Tikunova and Krapivina, 2014).

Countries with flat terrain in Europe are Denmark, Lithuania, Latvia, the Netherlands, the Republic of Belarus, and Estonia. The natural conditions of these countries allow the development of ski tourism in the conditions of low absolute and relative heights of undulating land, temperate continental climate with constant snow cover, transitional climate from temperate continental climate to marine climate with unstable snow cover, and marine climate without snow cover in winter. As a result, the ski centers of these countries have a length of equipped slopes of varying complexity of no more than a few kilometers. In countries with no or unstable snow cover, artificial conditions for skiing in the mountains have been created – nylon coating of slopes in Denmark, indoor complexes in the Netherlands, Lithuania. Their advantage is the possibility to use these slopes all year round. A distinctive feature of the ski centers in the lowlands is the extensive development of winter recreation, the creation of slopes for cross-country skiing and ice rinks. As indicated on the websites of these ski resorts, their capacity is designed for several thousand visitors. For example, Snow Arena-Drusininkaj is designed for 1000 visitors, and the centers Otepa, Silichi and Logoisk – for several thousand people. On weekends and during competitions and mass events, up to 10 thousand visitors can come. The largest ski centers in the flat countries of Europe are listed in Table 1.

Table 1. Large ski centers of the flat countries of European region

Country	The highest point of the country (m)	The largest ski centers	Special infrastructure
Denmark	170.86	Silkeborg, DanParcs Rønbjerg, Gjern glegene DanParcs Søhøjlandet Center	Nylon slope, all year-round artificial slopes
		Hedelands Ski Centre	All year-round artificial slopes, ice ring
The Netherlands	322.00	SnowWorld Landgraaf	2 indoor ski slopes, 1040 m, snowpark
		Snowworld Zoetermeer	2 indoor ski slopes, 420 m, snowpark
Lithuania	293.84	Snow Arena-Drusininkaj	2 indoor ski slopes, 600 m, 1 open ski slope 640 m.
		Liepkalnis - Vilnius	10 open slopes, 2600 m, snowboarding
		Mortos Kalns	1 open ski slope 500 m, snowboarding, cross-country ski trails
Latvia	311.94	Ozolkans	5 open slopes, 2500 m
		Riektsu Kalns	16 open slopes, 4900 m, snowboarding, cross-country ski trails
		Milnzkalns	11 open slopes, 1600 m snowpark
The Republic of Belarus	345.00	Logoisk	5 open slopes, 5000 m snowboarding, cross-country ski trail
		Silichi	10 open slopes, 4090 m snowpark, cross-country ski trail
Estonia	318.00	Kuutsemäe	7 open slopes, 200-500 m each, snowboarding
		Kivioli	4 open slopes, 2000 m springboard, snowboarding
		Otepa	Snowboarding, cross-country ski trails, ice ring

Resource: tripmydream.com, 2023; ski-atlas.ru, 2023; logoisk.by, 2021; silichy.by, 2023; http://skistop.ru/resorts/indoor/netherlands/snow_world_netherlands/; <https://touristam.com/gornolyzhnye-kurorty-estonii.html>

Despite the flat terrain of the Republic of Belarus, a number of ski centers have emerged that cater to both domestic and international tourism. The scientific rationale for the development of ski centers as a new direction of nature management is considered in a number of works by Belarusian scientists (Pirozhnik, 2009; Zaitsev and Petrushevich, 2011). However, the problem of the creation and development of ski centers in Belarus has not received much attention in the scientific literature. In this regard, the aim of the work to conduct a comparative analysis of the development of ski centers in Belarus seems relevant and practically significant for the development of the tourism sector.

2. Materials and Methods of Research

In this qualitative study, data were collected through document research. An attempt was made to identify the main features of the development of ski tourism in the Republic of Belarus based on the available documents and records. The documentary survey method uses all kinds of scientific studies, reports, and websites as documents (Karasar, 2008). In this study, about eighty documents consisting of websites, articles, and tourism reports were used using the documentary survey method. In addition, the methodological basis of the study is comparative geographical and cartographic methods. The subject of the study is the ski parks and ski resorts of the Republic of Belarus, the location of which is shown in Figure 1.

The peculiarities of ski tourism development on the territory of Belarus are determined by the flat terrain with elevations, a temperate continental climate with a stable snow cover in winter. Winter sports are very popular in the country, so the various types of ski tourism and recreation are aimed at meeting the demand of domestic mass tourism. At the same time, the visa-free regimes for many countries, the developed hotel sector in major cities, and favorable transport infrastructure create conditions for the development of international ski tourism in Belarus.

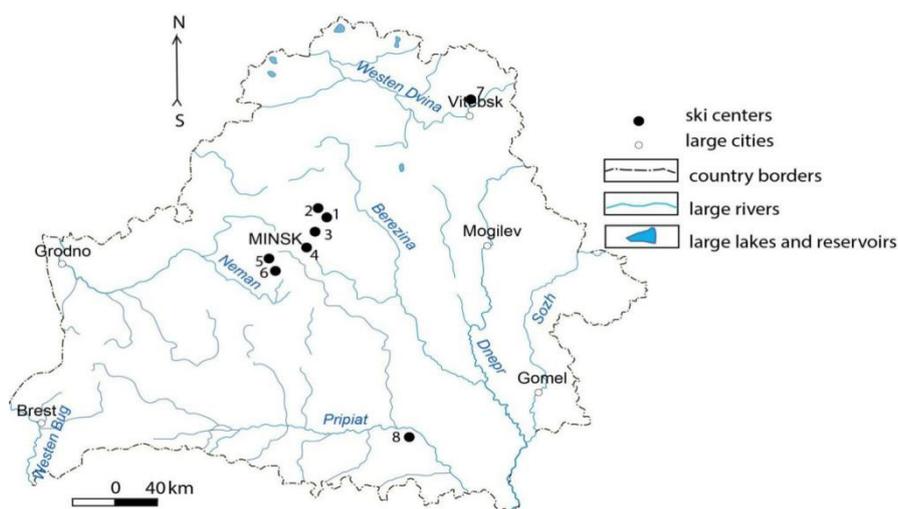


Figure 1. Ski centers of Belarus

1-ski center «Silichi», 2-ski sport and recreation complex «Logoisk», 3-Olympic training center for winter sports «Raubichi», 4-educational and entertainment ski center Solnechnaya Dolina (Sunny Valley), 5-ski complex «Westa», 6-active corporate recreation park «Yakutskie mountains», 7-ski center «Ruba», 8-sport and recreation ski complex «Mozyr».

In order to analyze the ski centers of the country, the following criteria were selected for their evaluation:

- prerequisites for the development of a ski center, which were evaluated by indicators of the favorability of the landscape-climatic and socio-economic characteristics of the site;
- the specialization of the center in the tourism industry and the production of tourist products;
- the development of infrastructure and a wide range of services.

The evaluation of the favorable landscape and climatic conditions includes the absolute height and vertical separation of the natural relief in the area of the ski center; the height of the artificial relief and the created height differences on the ski slopes; the average daily air temperature in winter; the height of the snow cover; the amount of precipitation in the cold season; days with snowstorms. The favorability of socio-economic conditions is evaluated by the indicator of the accessibility radius of the ski center for large cities that generate tourist demand.

Specialization in the production of a tourist product is determined by the characteristics of the main specialized services of the ski center, analyzed by the indicators of the length and types of ski slopes, as well as additional specialized winter recreation services, including snow parks, ice rinks, springboards, tobogganing, and biathlon tracks, etc.

The capacity of each center is determined by the indicators of the development of basic recreational infrastructure, including hotels, restaurants, and a variety of services, which also includes the total number of lifts, ski equipment rental points, the availability of lighting on the slopes, the seasonality of the ski center. Infrastructure for additional services is considered the presence of wellness centers, bathing complexes, and other infrastructure for recreation outside the ski season. Reference books, thematic maps of the national atlas of Belarus, cartographic and reference sources on the official websites of the state institution «Republican center for hydrometeorology, control of radioactive contamination and environmental monitoring» (rad.org.by, 2023), as well as ski centers and resorts (logoisk.by, 2021; silichy.by, 2023; rau.by, 2023; westa.by, 2023; sdolina.by, 2023; yago.by, 2023; www.ski.ru, 2023), have been used during conducting the research.

3. Results and Discussion

The pronounced geographical unevenness in the placement of ski tourism facilities on the territory of the Republic of Belarus is due to a combination of landscape-orographic and socio-economic factors. All ski resorts are located in the hills. The concentration of ski centers is in the central part of the Minsk Highlands, where Silichi, Logoisk, Raubichi, Solnechnaya Dolina, Yakutskie Mountains, and Westa are located. Hilly-Moraine erosional and Kame-Moraine landscapes with large-hill relief are widespread in this area, with the exception of the «Sunny Valley», which is located within the boundaries of small-hilly relief. The absolute marks are from 250 to 345 m, the vertical dismemberment of the natural relief in the area of the centers «Logoisk», «Raubichi», «Silichi», «Solnechnaya Dolina» is 30-20 m / km², and in the area of the centers «Yakutsk mountains», «Westa» decreases to 20-15 m/km² (National Atlas of the Republic of Belarus, 2002). Taking into account the artificially created relief, the largest differences in altitude indicated on the official websites of the centers are 100 m in Silichi Center, 80 m in Logoisk Center, 60 m in the Yakut Mountains, and 60 m in Solnechnaya Dolina and «Westa» - about 40 m.

The Mozyr ski center is located in the southeast of the country and is characterized by the fact that in terms of physical and geographical conditions, it is located within the borders of Belarusian Polesia, a region characterized by flat marshy lowlands. However, the center itself was created within the boundaries of the Mozyr Plateau with a medium-hilly relief of a hilly, morainic and erosive landscape. Despite the low absolute values of - 220 m, the vertical dismemberment here reaches 20 m / km², the height difference on the tracks is 35 m.

In the north-eastern part of the Republic of Belarus, within the borders of the Surazh Plain, there is the ski center «Ruba». The landscape and orographic conditions for the development of ski tourism are given here by the considerable local roughness on the high bank of the western

Dvina valley, the vertical dismemberment is about 10 m/km², the height difference on the slopes is 40 m (National Atlas of the Republic of Belarus; <http://hotel-pripyat.by>).

The climatic conditions throughout the country, characterized by a temperate continental climate with mild and humid winters, are quite favorable for the development of winter recreation. The meteorological elements were analyzed on the basis of the weather stations located near the ski tourism centers in Vitebsk, Minsk, and Mozyr (Table 2). The snow cover forms in November and the stable snow cover lasts for at least one month in December. The duration of the season for all ski centers covers the period December-March, in some years the season can be extended to the first decade of April. Climatic resources for ski tourism on the territory of the Republic of Belarus in winter show territorial differences. The height of snow cover depends on the amount of solid precipitation and air temperature during the period of snow accumulation. The average snow depth in the Vitebsk region is 18.9 cm, in the Minsk Upland region - 13.3 cm, and in Mozyr it drops to 11.3 cm. From north to south the amount of winter precipitation decreases, and winter air temperatures in February change from -0.6 °C in Vitebsk and -0.2°C in Minsk to +0.7°C in Mozyr. The unfavorable meteorological conditions for the activity of ski centers include the days with snowstorms, the number of which naturally decreases from north to south.

Table 2. Climatic indicators in the areas where the ski centers of Belarus are located

Indicators	Weather stations (°C)		
	Vitebsk	Minsk	Mozyr
Average air temperature °C			
January	-6.0	-5.1	-4.6
February	-0.6	-0.2	+0.7
Precipitation for November-February, mm			
medium	58.0	40.9	38.3
maximum	73.5	47.5	64.7
Snow cover height for November-February, cm			
medium	18.9	13.3	11.1
maximum	32.0	26.0	22.0
The number of days with snowstorms	>25	20	<15

(according to the State Institution «Republican enter for hydrometeorology, control of radioactive contamination and environmental monitoring»)

Depending on the local landscape and climatic conditions, the activity of ski centers is most favorable in the central part of Belarus on the territory of the Minsk Highlands, where the main ski centers are located. In the areas of Ruba and Mozyr objects the natural conditions are less favorable for the formation of large ski centers. Taking into account the orientation of the country's ski centers towards domestic tourism, the main socio-economic indicator that determines the advantageousness of their territorial location is the distance to major cities. The optimal distance from the city is no more than 30 minutes, taking into account the type of road and speed limits. From this point of view, ski centers are divided into those located within the city limits - «Solnechnaya Dolina» (within the city of Minsk), «Mozyr» (within the city of Mozyr). These centers fully rely on the city infrastructure, but their capacity is limited by the size of the place.

Large ski centers are located mainly within 30-40 minutes from Minsk along the highways of national and international importance. They are the centers «Raubichi» (travel time 34 minutes, distance from Minsk 26 km), «Silichi» (respectively 36 minutes and 38 km), «Logoisk» (respectively 41 minutes and 39 km) located to the north of Minsk, in the southern direction from Minsk there is a center «Westa» (respectively 37 minutes and 39 km). The location of the Yakutskie mountains center is less favorable (respectively 54 minutes and 48 km). The location of the ski center «Ruba» is also favorable (20 minutes and 17.4 km to Vitebsk). A winter sports cluster has formed north of Minsk, based on two of the country's leading ski centers - Silichi and Logoisk, where national skiing competitions are held, and the Raubichi biathlon center, which is known as a center for Olympic training in winter sports and hosts international competitions in biathlon and freestyle. As can be seen from the data in Table 3, the most comfortable conditions for active mass ski tourism have been created in the centers «Silichi» and «Logoisk». The slopes here are the longest (4000-5000 m) and are characterized by the presence of slopes of difficulty «green», «blue» and «red» according to the international classification, snow parks, and springboards of increased complexity, whose characteristics meet international standards.

Table 3. Special services of the ski centers of Belarus

Ski center official website	Ski tracks				Additional services of winter activities
	Num- ber	Total length of tracks (m)	Level of tracks complexity	Additional tracks	
«Silichi» https://silichy.by	10	4090	for beginners, easy, medium	extreme park (snowpark, springboards, half-pipe)	skating ring, snow tubing, sledding
«Logoisk» https://logoisk.by	5	5000	for beginners, easy, medium	snowboarding	roller ski track, snow tubing
«Raubichi» http://rau.by	-	-	-	springboards, freestyle zones	biathlon tracks, cross-country ski trail, ice ring
«Solnechnaya dolina» http://sdolina.by	2	350	for beginners, easy	extreme park (snowpark, snowboard park)	attraction of sledge-rail track, snow tubing
«Westa» https://westa.by	3	749	for beginners, easy		cross-country ski trail, snow tubing
«Yakutskie mountains» https://yago.by	1	480	easy	snowboarding	cross-country ski trail, snow tubing
«Ruba» https://probearus.by/ catalog/recreational/ gornolyzhnye-kurorty/ gornolyzhnyy-centr- ruba.html	4	900	for beginners, easy	snowboarding	snow tubing
«Mozyr» https://www.ski.ru/az/ resort/395	2	420	for beginners, easy	snowboarding	sledge track toboggan, ice ring

(compiled by the authors according to the data of the official websites of the ski centers)

The centers Silichi, Logoisk, Raubichi, which are national ski and biathlon centers, are characterized by a good supply of specialized and basic infrastructure and a range of additional services. In terms of development and quality of services offered, these centers meet international standards and are oriented not only to domestic but also to international tourism (Figure 2).

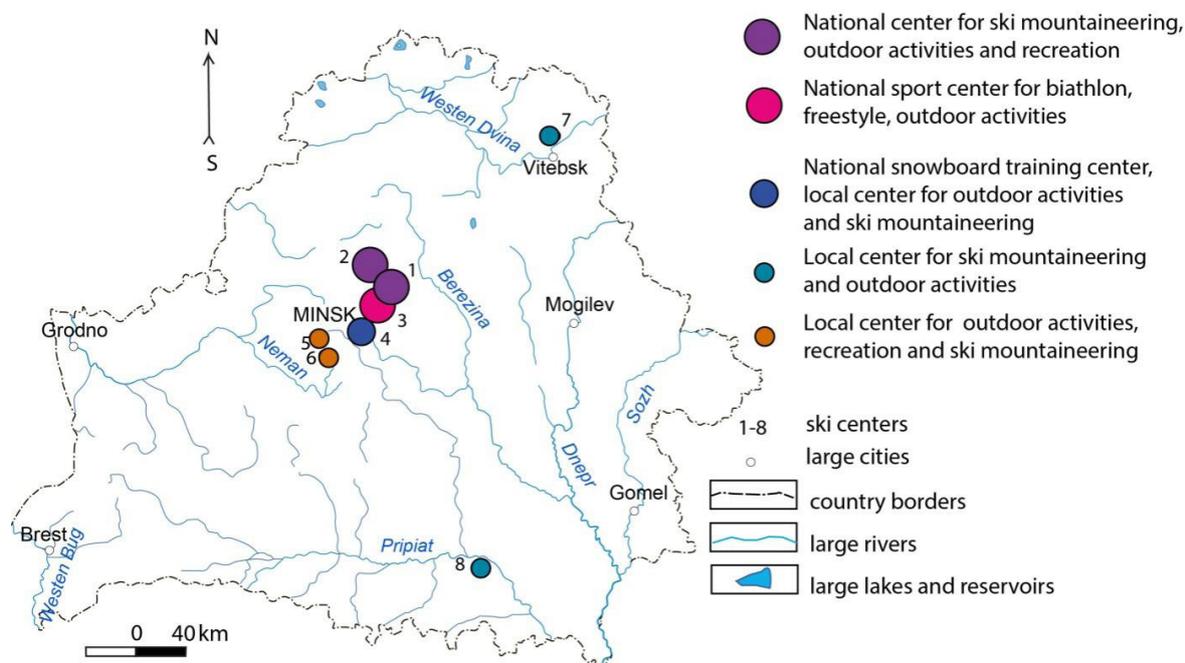


Figure 2. Specialization of ski centers in Belarus
1-8 the numbers of ski centers corresponding Figure 1

The sport and training concept is an important part of most ski centers. The centers «Ruba», «Mozyr» and «Solnechnaya Dolina» offer training groups for ski mountaineering, freestyle, and snowboarding. The ski centers «Solnechnaya Dolina», «Ruba», «Mozyr» are focused on active recreation of the local population due to their location in the cities or in their immediate vicinity. At the same time, the center «Solnechnaya Dolina» is intended for the mass recreation of Minsk residents and has a unique simulator for training of the national snowboard team.

The recreational orientation is typical for the Yakutskie mountains and the centers of Westa, where the ski slopes can be considered as an additional offer for active recreation (Table 4).

Table 4. Infrastructure of the ski centers in Belarus

Ski center	Specialized infrastructure			Basic infrastructure		Additional services
	lifts, units	inventory rental	track lighting	catering	living	
«Silichi»	4	+	+	restaurant, cafes	hotel, guest houses	bath complex, health complex
«Logoisk»	2	+	+	restaurant, bar	hotel, guest houses	bath complex, gym
«Raubichi»	2	+	+	restaurant, cafes	hotel, guest houses	bath complex, gym

«Solnechnaya Dolina»	1	+	+	restaurant, cafes	-	gym, snowboard trainer
«Westa»	2	+	+	restaurant, cafes, bar	hotel, sanatorium	SPA center
«Yakutskie mountains»	1	+	+	cafe	-	corporate entertainment events
«Ruba»	2	+	+	-	-	-
«Mozyr»	1	+	+	cafe	-	-

(compiled by the authors according to the data of the official websites of the ski centers)

As shown in Table 4, the basic infrastructure in the country's ski centers shows considerable differences. Standard living conditions in hotels and guesthouses are typical for the centers «Logoisk», «Silichi», «Raubichi». Hotel rooms are equipped with a bathroom, shower, TV, air conditioning, refrigerator, and free Wi-Fi access. The hotels have restaurants, cafes, and saunas. The guest houses are also equipped with bathrooms, refrigerators, TVs, showers, and Wi-Fi, which meets international requirements for centers of this level. The Raubichi complex has the largest number of rooms - 3 hotels with 283 beds and 15 guest houses with 10 beds each (Table 5).

Table 5. Means of accommodation and catering in the ski centers of Belarus

Ski center	Hotels, guest houses		Restaurants, cafes, bars	
	number, units	capacit, beds	number, units	capacity, person
«Silichi»	Hotel - 1	90	Restaurants- 3, cafes - 2	300
	Guest houses - 12	28		
«Logoisk»	Hotel - 1	50	Restaurant- 1, outdoor terrace - 1	350 200
	Guest houses - 1	48		
«Raubichi»	Hotels - 3	283	Restaurants- 2, cafes - 3	300
	Guest houses - 15	150		
«Westa»	Hotel - 1	188	Restaurants, cafes, bars, verandas	850
	Sanatorium- 1	375		
«Yakutskie mountains»	-	-	cafe, open terrace, gazebos	80 500
«Solnechnaya Dolina»	-	-	cafe, open terrace, gazebos	120 135
«Mozyr»	Hotel «Pripyat» of the town	246	Restaurants, cafe, bars	350
«Ruba»	-	-	-	-

(compiled by the authors according to the data of the official websites of the ski centers)

There are most differences in post-skiing services, reflecting each center's individual approach to attracting tourists. In Silichi there is a wellness center with health-promoting phyto-procedures, breathing exercises, urethral gymnastics, Nordic walking, halotherapy and amber therapy, and a steam bath with peeling. Sports activities include cycling, cable car, trolley track, tennis, volleyball, basketball, and mini soccer.

In the centers «Logoisk» and «Raubichi» such services are less varied, are less advertised on the market, and are mainly associated with the possibility of visiting saunas or bathing complexes. On the territory of the Raubichi sports complex, there is a medical and rehabilitative center.

Solnechnaya Dolina does not have its own accommodation facilities, as the center is oriented to the accommodation infrastructure of the city of Minsk. Catering is provided by a café in alpine chalet style with wooden and wrought iron elements in the interior. Guests have at their disposal 3 floors, a fireplace hall (with a capacity of 45 people) and a hunting hall (75 people). In the center of Mozyr, which is also located within the city, tourists are accommodated in the city hotel Pripyat, which has 194 rooms with 246 beds (<http://hotel-pripyat.by>). Ruba center does not provide accommodation and catering during the winter season but is aimed at local lovers of skiing vacations in Vitebsk. In the center of the Yakutian Mountains there is only one cafe with 80 seats, which operates all year round, while the main services are focused on corporate recreation in the summer season upon prior request. Thus, skiing here is not a specialized direction.

The center «Westa» is characterized by a unique location and positions itself as a multifunctional complex for a variety of recreational activities. The ski slopes are a small part of the promoted sports orientation and active recreation. In addition, Westa offers the rental of bicycles, roller skates, boats, and catamarans, there are gymnasiums and sports halls, tennis courts, volleyball and soccer fields, a barbecue area, and the aqua zone of the center consists of three swimming pools. The wellness center, located in Westa, offers more than 100 wellness treatments, including spa treatments, massages, saunas, stone therapy, and body wraps. Accommodation facilities include a 188-bed hotel and a 375-bed sanatorium, and the entire complex receives more than 5.000 guests per year.

The geographical location of ski centers in the Republic of Belarus is inconsistent. Most of them are located within the sphere of influence of the city of Minsk, only the ski resort «Ruba» is located near the city of Vitebsk. The conducted analysis has shown that Silichi, Logoisk, and Solnechnaya Dolina are developing steadily among the ski centers. It is promising to create ski centers in each regional city of the Republic of Belarus. Taking into account the modern technologies of artificial covering, ski centers can be opened in the cities of Gomel and Brest. The cities of Grodno and Mogilev have favorable scenic-orographic and climatic conditions for opening ski centers with open slopes. The population in the regional centers, which is 340-500 thousand people each, creates favorable conditions for the formation of a sustainable tourist demand for skiing vacations.

4. Conclusion

The analysis of literary sources has shown that it is useful to study ski tourism in mountainous and flat areas as two different classes of objects, which are not comparable in terms of landscape and orographic conditions. Ski resorts with developed infrastructure are located in the mountains, especially in the Alpine region. The Alpine mountains and the surrounding regions with their unique "ecosystem", "climate", "topography", "landscape", and "seasonal cycle" determine the ski tourism potential and the activities to be realized. Among the most important factors influencing the success of mountain destinations in developing their capacity for ski tourism are the amount of snow, the suitability of the terrain for sports activities, and architecturally attractive infrastructure (Undzhieva, 2020). Of the 1945 ski resorts worldwide, 39% are located in Central Europe (Switzerland, northern Italy, southeastern France, Austria, and southern Germany), where the Alps are located. On the European continent, there are only two countries with more than 200 ski resorts and more than 4 ski lifts: France and Italy. Although

there are many ski resorts in Germany, most of them are small ski resorts (Vanat, 2022). Overall, it can be said that the developed destinations in the Alps and its sub-regions are characterized by a high level of equipment.

The peculiarity of the ski centers in the lowland countries lies in the overall development of winter recreation. Some of the prominent features of Denmark, Lithuania, Latvia, the Netherlands and Estonia, the countries among the lowland states within Europe, for ski tourism and the recreational activities they offer are as follows:

Denmark, one of the flattest countries in the world, which includes Greenland, the largest island in the world, has a total of 5 ski resorts. These are Hedeland, Kolding, Bornholm, and Nuuk and Angmassalik in Greenland. These ski resorts have limited (few) covered ski facilities, T-bar lifts, chair lifts and limited vertical downhill skiing. In addition, in Greenland, where snow is plentiful, skiers have the option of heliskiing, i.e., being dropped into the mountains by helicopter and skiing 2000 meters vertically down to sea level (Vanat, 2022).

The highest point in Lithuania is only 294 meters above sea level. Snowfall usually occurs between September and February. The country has 11 ski resorts with 5 or more lifts. The Liepkalnis ski resort in the capital city of Vilnius has a total of 10 slopes 2.6 km long, 10 lifts and an artificial snowmaking system. It is planned to build a symbolic building complex in this area to make it a center for recreational activities. For several years, Lithuanians have been practicing cross-country and night skiing in hilly areas several hundred meters high, about 80 kilometers from the capital, with 4 or fewer lifts and several lifts (Vanat, 2022).

The highest point in Latvia, another Baltic republic, is 311 meters above sea level. An average of 800,000 skiers ski or snowboard at 12 resorts with 5 or more lifts. The ski resorts include Riekstkalns (8 slopes), Milzkalns (8 lifts), Zviedru Cepure (summer toboggan run), Ventspils-Lemberga Huts amusement park (3 lifts, Snowmaking and adventure park in summer), as well as Sigulda and its surroundings (6 ski resorts, entertainment centers), Zagarkalns and Ozonkalns near Cesis (chairlift, snowmaking, snowpark, beginner and children's area, ski schools and cafes). In these areas it is possible to practice alpine skiing, cross-country skiing and/or night skiing (Vanat, 2022).

The Netherlands is one of the countries with many ski halls, but no ski resorts, only ski domes. It is known that the country has a ski culture and about 1 million people travel internationally to participate in ski tourism (Vanat, 2022). Estonia offers a wide range of opportunities for winter sports enthusiasts due to its climatic conditions. With 9 ski resorts with 5 or more lifts, cross-country skiing and snowshoeing are much more popular than alpine skiing. Downhill skiing, snowboarding and night skiing are available at the resorts. Otepää, where the World Cup stage in Cross-Country skiing events is held, is called the «winter capital» of Estonia. To sum up, the Baltic republics and Belarus have many similarities in terms of geography and natural features, as well as winter tourism and skiing.

The Republic of Belarus differs from other European lowland countries in landscape and climatic characteristics (the maximum absolute altitude is 345 m, the average air temperature in January varies from -4.60 °C in Mozyr to -6.00 °C in Vitebsk, the average snow depth varies from 11.3 cm in Mozyr to 18.9 cm in the Vitebsk region), which favors the development of ski tourism in the country. The analysis of the conditions for the development of this type of tourism has shown that they are unevenly distributed over the territory of Belarus, with the highest concentration in the zone of influence of the capital Minsk. The city has a professionally organized transport network that ensures accessibility. Minsk is a thriving tourist destination with a growing number of international airlines, newly established routes, and direct flights from all over Europe.

Of national importance is the ski resort «Silichi-Logoisk», which is characterized by the largest number of slopes (10 and 5) and their length (4090 and 5000 m), including three levels of difficulty. Tourists are accommodated in hotels and guest houses (the total capacity for two centers is 261 beds), and they are provided with a varied menu in four restaurants and two cafes (for 650 people). The wellness center is used to attract tourists to Silichi. In terms of the development and quality of services offered, the Raubichi center stands out, with a developed

basic infrastructure (three hotels with 283 beds and 15 guest houses with 10 beds each) and the presence of a medical rehabilitation center.

The conducted comparative analysis has shown that the development of ski centers in Belarus combines sports orientation with the popularization of amateur skiing, snowboarding, and tubing. Ski and snowboard slopes develop most actively in ski centers. The ski centers also organize cross-country ski trails, ice skating rinks, and toboggan runs. All centers have training slopes, and the development of infrastructure corresponds to the capacity of the centers. The conducted analysis has shown that Silichi and Logoisk are experiencing a steady development among ski centers. The development of ski tourism in the center «Yakutskie Mountains» is problematic due to the lack of winter accommodation, and in the center «Westa» ski tourism is considered only one of the many types of outdoor activities, while the ski slopes are not open every season. The development of Ruba and Mozyr ski centers into commercially successful projects requires investment in their infrastructure and the obligatory opening of a café for visitors. The positive experience of developing ski centers in flat areas can be useful for other countries with similar landscapes and climate conditions.

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Основные особенности развития горнолыжного туризма на территории
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Абстракт. Лыжный туризм представляет собой широко распространенную форму туризма, связанную с активными занятиями на снегу, и пользуется популярностью во всем мире. Эта форма туризма обычно ассоциируется с сельской местностью, однако также предлагается и в городских районах, в помещениях и на открытом воздухе, связанных со спортом. В данном исследовании были изучены основные особенности развития горнолыжного туризма в Республике Беларусь, которая характеризуется равнинным рельефом. Были проанализированы ландшафтно-климатические и социально-экономические условия в восьми горнолыжных центрах страны, а также рассмотрена их специализация в предоставлении туристических продуктов и развитии инфраструктуры. Было отмечено, что развитие горнолыжных центров связано с ростом популярности активного отдыха и любительского катания на лыжах. В результате исследования было установлено, что горнолыжный туризм следует рассматривать отдельно в горных и равнинных районах, не проводя сравнений между ними по ландшафтным и орографическим условиям. В итоге исследования становится ясно, что горнолыжный туризм в Беларуси распределен неравномерно, с наибольшей концентрацией в зоне влияния столицы Минска.

Ключевые слова: горнолыжный туризм, Республика Беларусь, зимний отдых.

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Беларусь Республикасы аумағындағы тау шаңғы туризмінің дамуының негізгі
ерекшеліктері

Аңдатпа. Шаңғы туризмі – қарлы туризмінің кең тараған және бүкіл әлемге танымал түрі. Туризмнің бұл түрі тек ауылдық жерлерде ғана емес, қалалық жерлерде, спортқа арналған жабық және ашық алаңдар да өткізіле береді. Осы зерттеу тегіс жер бедерімен сипатталатын Беларусь Республикасындағы тау-шаңғы туризмінің негізгі даму ерекшеліктерін қарастырады. Елдің сегіз түрлі шаңғы орталығының ландшафттық-климаттық және әлеуметтік-экономикалық жағдайлары сарапталып, олардың туристік өніммен қамтамасыз ете алуы және инфрақұрылымды дамытуға мамандануы зерттелді. Шаңғы орталықтарының дамуы әуесқой шаңғы спортының танымалдығы артуына байланысты боп шықты. Тау-шаңғы туризмін таулы және жазық аймақтарда зерттегенде осы аймақтардың ландшафттық және орографиялық жағдайларын салыстырмай, жеке-жеке қарастыру керектігі анықталды. Зерттеу нәтижесінде Беларусьте тау шаңғы туризмі біркелкі тарамған, ең көп шоғырланған орталығы халық тығыздығы жоғары Минск астанасының аумағы екені белгелі болды.

Түйін сөздер: шаңғы туризмі, Беларусь Республикасы, қысқы демалыстар.

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