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Transformation of the tourist and recreational potential of the Carpathian region in modern conditions

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Abstract. The study analyzes the tourist and recreational potential of the Carpathian region in the context of current global challenges, particularly in the context of post-industrial transformations, changing paradigms of natural resource management, and globalization processes. It has been established that the Carpathian region has unique natural resources and an ethno-cultural identity, which can become the basis for the sustainable development of the tourism industry. It has been determined that in order to effectively realize this potential, it is necessary to take into account the economic, social, environmental, and cultural aspects of regional development. It has been established that the study of mountainous regions, especially their tourism opportunities, is a priority for the world scientific community. The contribution of European scientific schools to the development of a sustainable tourism strategy, particularly their influence on the formation of concepts of balanced use of natural resources in the Carpathian region, is assessed. It is noted that the Carpathian region requires further scientific study in order to adapt global ecotourism models to the peculiarities of the local context. It has been found that the number of studies devoted to a comprehensive analysis of the transformation of the tourism and recreational potential of the Carpathian region is limited. It has been found that most works focus on certain aspects of infrastructure development without taking into account modern socio-economic challenges. The impact of changes in tourist preferences after the COVID-19 pandemic is assessed, and the need to introduce interdisciplinary approaches to studying the dynamics of tourist flows and ecosystem resilience is emphasized. The current state of the utilization of the tourist and recreational potential of the Carpathian region is assessed on the basis of a SWOT analysis. The interdependence between geographical characteristics, cultural and economic factors, and the development of local communities is established. The synergy between tourism, ecological farming, and the preservation of traditional crafts is found to be a key condition for the sustainable development of the region. As a result of the study, the prospects for the development of the tourist and recreational potential of the Carpathian region are characterized. It is found that a successful transformation of the region requires a comprehensive state strategy that takes into account current challenges such as climate change, pandemics, digitalization, and the impact of military operations. Opportunities for improving infrastructure, attracting investment, and enhancing the quality of tourism services to achieve sustainable development of the tourism industry in the Carpathian region are assessed.

It has been determined that in order to effectively realize this potential, it is necessary to take into account the economic, social, environmental, and cultural aspects of regional development. It has been established that the study of mountainous regions, especially their tourism opportunities, is a priority for the world scientific community. The contribution of European scientific schools to the development of a sustainable tourism strategy, particularly their influence on the formation of concepts of balanced use of natural resources in the Carpathian region, is assessed. It is noted that the Carpathian region requires further scientific study in order to adapt global ecotourism models to the peculiarities of the local context. It has been found that the number of studies devoted to a comprehensive analysis of the transformation of the tourism and recreational potential of the Carpathian region is limited. It has been found that most works focus on certain aspects of infrastructure development without taking into account modern socio-economic challenges. The impact of changes in tourist preferences after the COVID-19 pandemic is assessed, and the need to introduce interdisciplinary approaches to studying the dynamics of tourist flows and ecosystem resilience is emphasized. The current state of the utilization of the tourist and recreational potential of the Carpathian region is assessed on the basis of a SWOT analysis. The interdependence between geographical characteristics, cultural and economic factors, and the development of local communities is established. The synergy between tourism, ecological farming, and the preservation of traditional crafts is found to be a key condition for the sustainable development of the region. As a result of the study, the prospects for the development of the tourist and recreational potential of the Carpathian region are characterized. It is found that a successful transformation of the region requires a comprehensive state strategy that takes into account current challenges such as climate change, pandemics, digitalization, and the impact of military operations. Opportunities for improving infrastructure, attracting investment, and enhancing the quality of tourism services to achieve sustainable development of the tourism industry in the Carpathian region are assessed.

Keywords: tourist and recreational potential, Carpathian region, sustainable development, socio-economic challenges, tourism marketing, infrastructure.

Трансформація туристично-рекреаційного потенціалу Карпатського регіону в сучасних умовах

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Анотація. У дослідженні аналізується туристично-рекреаційний потенціал Карпатського регіону в умовах сучасних глобальних викликів, зокрема у контексті постіндустріальних трансформацій, зміни парадигм природокористування та глобалізаційних процесів. Встановлено, що Карпатський регіон має унікальні природні ресурси та етнокультурну самобутність, які можуть стати основою для сталого розвитку туристичної індустрії. З'ясовано, що для ефективної реалізації цього потенціалу необхідно враховувати економічні, соціальні, екологічні та культурні аспекти регіонального розвитку. Встановлено, що у світовій науковій спільноті дослідження гірських регіонів, зокрема їх туристичних можливостей, є пріоритетними. Оцінено внесок європейських наукових шкіл у розвиток стратегії сталого туризму, зокрема їх вплив на формування концепцій збалансованого використання природних ресурсів у Карпатському регіоні. Зазначено, що Карпатський регіон вимагає подальшого

наукового опрацювання з метою адаптації глобальних моделей екотуризму до особливостей місцевого контексту. Встановлено, що кількість досліджень, присвячених комплексному вивченню трансформації туристично-рекреаційного потенціалу Карпатського регіону, є незначною. З'ясовано, що більшість робіт фокусується на окремих аспектах розвитку інфраструктури без врахування сучасних соціоекономічних викликів. Оцінено вплив змін туристичних вподобань після пандемії COVID-19 та наголошено на необхідності впровадження міждисциплінарних підходів до вивчення динаміки туристичних потоків та екосистемної стійкості. Оцінено поточний стан використання туристично-рекреаційного потенціалу Карпатського регіону на основі SWOT-аналізу. Встановлено взаємозалежність між географічними характеристиками, культурно-економічними чинниками та розвитком місцевих громад. Виявлено, що синергія між туризмом, екологічним господарством та збереженням традиційних ремесел є ключовою умовою для сталого розвитку регіону. В результаті дослідження охарактеризовано перспективи розвитку туристично-рекреаційного потенціалу Карпатського регіону. З'ясовано, що для успішної трансформації регіону необхідна комплексна державна стратегія, яка враховуватиме сучасні виклики, такі як зміни клімату, пандемія, цифровізація та вплив військових дій. Оцінено можливості покращення інфраструктури, залучення інвестицій та підвищення якості туристичних послуг для досягнення сталого розвитку туристичної галузі в Карпатському регіоні.

Ключові слова: туристично-рекреаційний потенціал, Карпатський регіон, сталий розвиток, соціоекономічні виклики, маркетинг туризму, інфраструктура.

Introduction

The main criterion for the allocation of a region is the commonality of national economic tasks based on a set of natural resources used or planned for exploitation, the historically formed structure of economic activity, or the planned structure of economic development (Zhuk, 2022).

The tourist and recreational potential of the Carpathian region is gaining new meanings in the light of globalization processes, post-industrial changes, and the rethinking of approaches to natural resource management. It should be emphasized that the Carpathian region, with its unique natural resources and rich ethno-cultural heritage, is a strategically important element in the development of the tourist industry in Ukraine and Eastern Europe (Kozhukhivska, 2024). At the same time, the development and formation of the tourist and recreational potential of the Carpathian region are the subject of significant interdisciplin-

ary studies that cover not only the economic aspects of using territories for tourist and recreational purposes but also include cultural, national, socio-ecological, and landscape approaches. Taking into account current trends, which are closely related to anthropogenic pressure, emerging trends, climate change, and the need for a transition to sustainable development, the development of the tourist and recreational potential of the Carpathian region requires a comprehensive scientific analysis within the framework of the UN and the World Tourism Organization (Holod, 2018). Given recent world events, the Carpathian region remains a center for tourist and recreational activities for Ukrainians and tourists from Europe, offering unique opportunities for active recreation, health improvement, and cultural exploration, as shown in Table 1.

In the global scientific community, studies of such unique regions, including their tourism opportunities, occupy an essential place. Some scientific schools, such as the Chinese school of regional planning

Table 1. Cluster analysis of the tourist and recreational potential of the Carpathian region

Cluster aspect	Current features
Natural resources	The presence of dense forests, rivers, lakes, and waterfalls, as well as a significant number of national parks and reserves.
Climate	A moderately continental climate with cool summers and mild winters. Suitable conditions for winter sports
Recreational resources	Potential for active tourism: hiking trails, ski resorts, cycling, and rafting.
Cultural and historical heritage	A considerable number of historical monuments, monasteries, and museums.
Mineral waters and resorts	Numerous mineral water springs used for treatment and recreation (e.g. Truskavets, Skhidnytsia).
Accessibility to transportation	A relatively well-developed transportation infrastructure, with rail and bus connections. However, there is a need to improve the transportation network and road quality.
Environmental issues	Issues related to river pollution, illegal deforestation, and the need to protect natural resources.
Prospects for development	Development of ecological and rural tourism, improvement of infrastructure, an increase in the number of hotels and hostels, and expansion of recreational services.

Source: compiled by the author according to (Derzhavne ahentstvo rozvytku turyzmu Ukrainy, 2024)

(Ruan, Zhang, 2021), are actively engaged in the issues of balanced development of mountainous areas, in particular, in the context of tourism activities. The scientific works of Western European scholars such as X. Font, A. Torres-Delgado, G. Crabolu, J. Martinez, J. Kantenbacher, and G. Miller highlight the significance of a sustainable tourism strategy that takes into account the balance between economic development and the preservation of ecosystem integrity (Font, Torres-Delgado, Crabolu, Martinez, Kantenbacher, Miller, 2023). In particular, the concept of «ecotourism clusters» developed by American researchers, namely R. Santos-Lacueva, M. González, and A. Domingo, is being implemented in the Carpathian region, but it requires further adaptation to the specifics of the local context (Santos-Lacueva, González, Domingo, 2022).

Despite the significant number of studies on the tourist and recreational potential of the region (Farmaki, 2020), the Carpathian region remains insufficiently explored compared to European tourist and recreational regions. In particular, most scientific papers focus on studying certain aspects, such as tourism infrastructure, while neglecting the complex factors of the transformation of this potential in the context of current socio-economic challenges (Apriyanti, 2024; Homidov, 2023). Changes in tourist preferences, trends, destinations, and patterns, especially after the COVID-19 pandemic, require new, comprehensive, and systematic research that incorporates interdisciplinary approaches to studying the dynamics of tourist flows, ecosystem resilience, and local community development (Any, Four, Tariazele, 2024). Therefore, the transformation of the tourist and recreational potential of the Carpathian region is one of the key research areas in the field of sustainable development of Ukraine and regional planning in general. The necessity of ensuring the harmonious coexistence of tourism activities with environmental protection measures requires a systematic analysis of current challenges and potential development scenarios (Pasioka, 2021; Prada, 2022). Accordingly, such a comprehensive and systematic approach will enable the formation of new strategies for managing the tourism resources of the Carpathian region while taking into account global and regional trends, optimizing the socio-economic impact of tourism activities on local communities. The application of key global marketing strategies is of great importance in the context of transforming the tourist and recreational potential of the Carpathian region (Malska, 2018).

Regional tourism brands such as «Carpathian Honey», «Euroregion Carpathians – Ukraine», «Carpathian Honey Trails», «Transcarpathian Beaujolais»,

and Wild Wild FEST serve as powerful tools for promotion in domestic and international markets (Kyfiak, 2022). Studies in the field of tourism marketing show that the successful positioning of a territory is based on a clear definition of the region's unique competitive advantages, such as authenticity, national specificity, a clean environment, and opportunities for active recreation (Likarchuk, Andrieieva, Likarchuk, and Bernatskyi, 2022). With the help of modern digital marketing tools, such as social media, content marketing, and influencer marketing, the Carpathian region is attracting new target audiences, including those from the European Union (EU), the United States, Canada, Australia, and Asia, which will significantly expand recreational tourism flows and stimulate the development of local communities.

The purpose of the research is to identify the factors and trends in the transformation of the tourist and recreational potential of the Carpathian region under modern conditions, to determine the possibilities of adapting resources to market requirements, and to outline the prospects for development while ensuring the sustainable use of natural and cultural resources.

Material and methods of the research

The research presented in this publication is based on a comprehensive analysis of open information sources, including bibliographic databases of Ukrainian scientific publications and English-language publications. The statistical data were obtained from periodicals published by leading international organizations, including the State Statistics Service of Ukraine and the international statistical website Statista. The analyzed data served as the basis for identifying the role of the Carpathian region in the tourism landscape of Ukraine and the Eastern European region and for a comparative analysis of the impact of geographical factors and traditional production on the development of Ukraine within the tourism cluster.

Following the results of the research, limited access to relevant open statistical data on the transformation of the tourism and recreational potential of the Carpathian region in modern conditions was revealed. In this regard, the analysis of the impact of tourism and recreational potential on community development was carried out using comparative analysis, visualization, and descriptive and statistical methods. The assessment of the current state of utilization of the tourism and recreational potential of the Carpathian region and the formulation of strategic directions for its transformation is based on a SWOT analysis, taking into account the key provisions of Ukrainian

legislation in the field of tourism and data from the State Agency for Tourism Development of Ukraine.

Consequently, based on the research results, the interdependence of geographical features and cultural and economic factors in the development of the tourism and recreational potential of the Carpathian region, with a special emphasis on the synergy between tourism, ecotourism, and the preservation of national identity, has been established.

Results and analysis

The country's tourism and recreational potential is an important factor in economic development, contributing to employment growth, investment attraction, an increase in service exports, and an improvement in the country's international image (Liu, Xiao, Fan, Zhao, 2019). However, the transformation of this potential depends on numerous factors, challenges, and prospects, such as infrastructure capabilities, political stability, the environmental situation, and the level of development of tourism services (Calero, and Turner, 2020). Taking into account global trends and challenges, such as climate change, wars, conflicts, pandemics, environmental crises, international terrorism, and extremism, as well as digitalization, modern states are forced to adapt their tourism and recreation cluster to new realities. For instance, the EU is an example of the successful integration of the tourism sectors of many countries, which has created a single holistic map of the tourism cluster (Filipiak, Dylewski, Kalinowski, 2023). At the same time, Ukraine, being a country with significant tourism and recreational potential, still does not fully utilize its capabilities (Aliieva, 2020). A comparison of the main indicators of the tourism industry in the EU and Ukraine makes it possible to assess the scale of the tourism and recreational sector development process and to formulate directions and strategies for further transformation, modernization, and improvement.

Accordingly, tourism and recreational potential constitute a significant component of the economy of many countries, including EU member states (Italy, France, Austria) and Ukraine. The tourism sector contributes to GDP growth, provides a significant number of jobs, attracts investment, and promotes infrastructure development (Ruiz-Real, 2022). The review of statistical data enabled researchers to conduct a comparative analysis of the scale and dynamics of tourism development in the EU and Ukraine, identifying key concerns and potential areas for industry transformation in both regions. Until the COVID-19 pandemic, the EU tourism sector had demonstrated steady growth

and was one of the important components of the overall economy of the EU and most member states since the budget of such countries as Italy, Spain, Bulgaria, and Greece was largely dependent on the tourism cluster. In 2019, the contribution of tourism to EU GDP was approximately 13.2%, which demonstrates the importance of tourism as a driving force for economic growth in the region. In addition, the tourism cluster provided about 23.1 million jobs, accounting for 12.1% of total employment in the EU, confirming its importance in the labor market (Statista, 2024).

It should be emphasized that in 2019, the EU countries received more than 746 million international tourists, with the following countries attracting the most tourists: Austria, France, Luxembourg, Portugal, Spain, Italy, Sweden, and Germany. The tourism sector has shown a stable annual growth of 4–6%, exceeding the global average, indicating the successful integration of tourist services and active infrastructure support for the sector across all EU member states. At the same time, it is worth considering that the COVID-19 pandemic brought significant changes to the tourism industry and its further functioning. In 2020, the number of international tourists visiting the EU decreased by 68.2% (Statista, 2024). As a result, revenues fell significantly and jobs were lost. Nevertheless, the sector began to gradually recover in 2021–2022, demonstrating a high level of resilience and ability to adapt to new trends, opportunities, and challenges.

Despite its considerable potential, Ukraine's tourism sector is not as large or developed as that in the EU. According to the State Statistics Service of Ukraine, in 2019, tourism accounted for only about 2% of the country's GDP, which is significantly lower than in the EU (Derzhavna sluzhba statystyky Ukrainy, 2024). This share indicates that tourism remains a secondary industry in the country's economic structure, although its development could significantly contribute to economic growth as is the case in Italy, given that Ukraine has similar tourism potential, especially in the Carpathian region, which has comparable prospects to the Ötztal Alps. Moreover, it is worth noting that Ukraine's tourism industry is also weaker than that of the EU in terms of employment. In 2019, the sector created about 1.1 million jobs, accounting for about 5% of the employed population.

According to statistics and infographics on the number of international tourists, about 14 million tourists visited Ukraine in 2019, which is significantly fewer compared to some EU countries. This difference in indicators can be explained by weak tourism infrastructure, insufficient investment, and the lack of a clear state strategy for the industry. The COVID-19

pandemic had a significant impact on Ukraine's tourism sector, as the number of international tourists decreased by 70.2% in 2020, according to the State Statistics Service of Ukraine (Derzhavna sluzhba statystyky Ukrainy, 2024).

Starting in 2020, there was a significant decline in revenue from international tourists due to the COVID-19 pandemic, but the market began to recover after 2021. In response to changes in tourist demand, attention shifted to developing local tourism and improving the quality of services. Growing interest in ecotourism and active recreation in the Carpathians contributed to an increase in international revenues in 2023. The State Statistics Service of Ukraine predicts that by 2030, the Carpathian region will almost reach pre-pandemic levels of revenues from international tourism (Derzhavna sluzhba statystyky Ukrainy, 2024). In 2018–2019, international tourism experienced steady growth, with the number of arrivals increasing from 2.1 million to 2.5 million and revenues rising from 1.4 billion USD to 1.7 billion USD. However, the COVID-19 pandemic led to a sharp decline in both tourist numbers and revenues in 2020, resulting in profits dropping to 0.8 million USD and revenues falling to 0.6 billion USD (Derzhavna Sluzhba Statystyky Ukrainy, 2024).

A gradual recovery of international tourism began in 2021 and has continued to the present. By 2023, the number of tourists had risen to 1.9 million, with revenues reaching 1.3 billion USD, driven by growing interest in ecotourism and infrastructure improvements. Data for 2024 indicate that international tourism has nearly returned to pre-war levels, with 2.3 million tourists and revenues of 1.5 billion USD (State Statistics Service of Ukraine, 2024) (Table 2).

Table 2. Estimates of tourist and recreational potential in 2018–2024

Year	International tourist arrivals, mln.	International tourism revenues, billion USD
2018	2.1	1.4
2019	2.5	1.7
2020	0.8	0.6
2021	1.2	0.9
2022	1.4	1.1
2023	1.9	1.3
2024	2.3	1.5

Source: compiled by the author according to (Derzhavna sluzhba statystyky Ukrainy, 2024)

In the period from 2018 to 2024, the tourist and recreational potential of the Carpathian region underwent a significant transformation, reflecting both

global challenges and the gradual recovery of the industry after COVID-19 and the Russian-Ukrainian war. The flow of tourists, even during the war, is an important indicator of this transformation and modernization. While in 2018–2019 it grew steadily and reached 2.7 million people, in 2020, due to the COVID-19 pandemic, this figure dropped significantly to 2.2 million, and in 2021, it reached its lowest point of 1.8 million people. However, since 2022, there has been a recovery in tourist flows. Even given the situation of war, the number of tourists reached 2.3 million in 2023, and the growth amounted to 2.6 million people in 2024. Along with this, the region's infrastructure has been expanding; that is, the number of recreational facilities has increased from 10,000 in 2018 to 15,000 in 2022, which indicates the stable development of the tourism sector. However, there was a drop in the number of recreational facilities in 2023–2024, which is directly related to the impact of the Russian-Ukrainian war (Derzhavna Sluzhba Statystyky Ukrainy, 2024).

Revenues from tourism in the Carpathian region showed similar dynamics. In 2018–2019, there was an increase in revenues to 12 billion UAH, but in 2020–2021, the pandemic led to a decrease in revenues to 9 billion UAH. Since the beginning of 2022, the tourism sector has begun to recover, with revenues reaching 11.5 billion UAH, and in 2023, they increased to 13 billion UAH (Derzhavna Sluzhba Statystyky Ukrainy, 2024). According to the State Statistics Service of Ukraine, in 2024, tourism revenues within the Carpathian region reached 14 billion UAH, which is the highest figure for the entire period (Fig. 1). Therefore, the tourist and recreational potential of the Carpathian region demonstrates a steady recovery from the pandemic crisis and its continued functioning during the war, as evidenced by an increase in tourist flows, the expansion of recreational facilities, and an increase in tourism revenues.

In the current conditions, the potential of the Carpathian region requires careful analysis to identify strengths and weaknesses (Moskviak, 2022), opportunities, challenges, prospects, and threats. A SWOT analysis allows for a systematic and comprehensive assessment of internal resources and external factors that may affect the development of tourism in the Carpathian region. This, in turn, will make it possible to formulate relevant strategies that will help maximize the potential of the Carpathian region, overcome existing problems, and adapt to new tourism trends (Table 3).

Thus, the Carpathian region has considerable opportunities for tourism and recreational development, which will serve as the basis for economic sustain-

ability and social modernization (Opanasiuk, Melnyk, 2020). In our opinion, given the global challenges such as wars, conflicts, terrorism, climate change, urbanization, and demographic changes, it is important to develop plans for the transformation of the Carpathian region by 2030. Effective strategies should include the use of digital technologies, the attraction

of foreign funds, and the professional development of employees in the tourism industry.

One of the primary tasks in transforming the Carpathian region within a tourist and recreational context is to diversify the tourist product based on innovative approaches. Standard tourist services should be replaced with distinctive, specialized of-

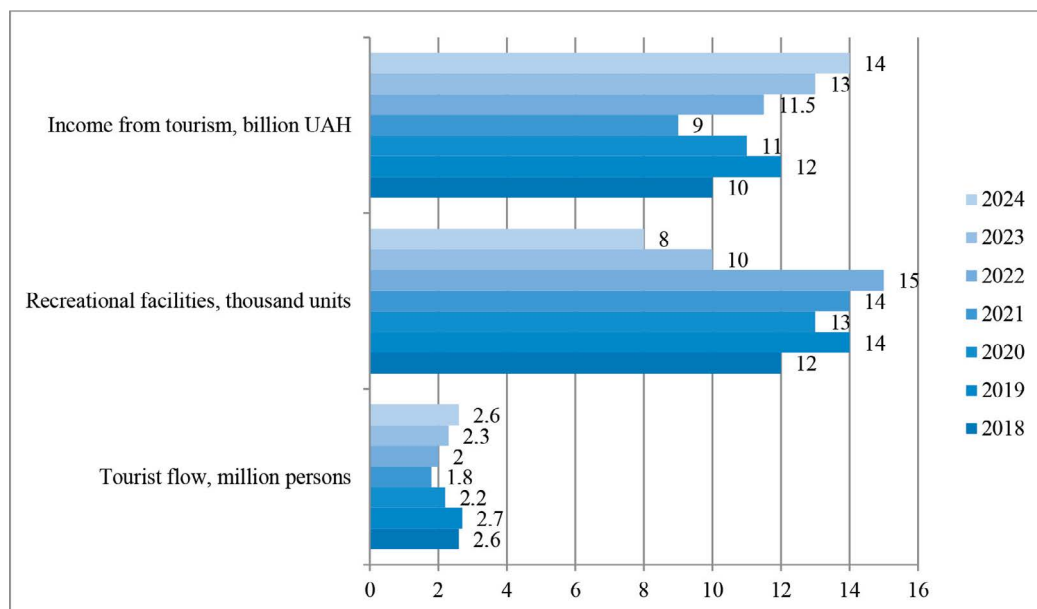


Fig. 1. Dynamics of tourist and recreational potential of the Carpathian region (2018-2024)

Source: compiled by the author according to (Derzhavna sluzhba statystyky Ukrainy, 2024)

Table 3. SWOT-analysis of the transformation of the tourist and recreational potential of the Carpathian region in the context of modern challenges

Prospects	Challenges
<ul style="list-style-type: none"> - diverse natural resources (mountains, waterfalls, forests, rivers, natural parks); - cultural and historical heritage (traditions, architecture, folk crafts); - favorable climate for health tourism (clean air, mineral waters, therapeutic mud); - geographical proximity to EU countries, which promotes cross-border tourism; - development of ecological and active tourism (trekking, skiing). 	<ul style="list-style-type: none"> - poorly developed infrastructure (poor condition of roads, limited number of modern hotels and catering facilities); - low level of state investment in the tourism industry; - insufficient quality of tourist services and facilities; - lack of systematic promotion of the region at the international level; - environmental problems caused by uncontrolled construction and deforestation in the Carpathian region.
Opportunities	Threats
<ul style="list-style-type: none"> - steady development of ecotourism and green tourism; - attracting foreign investors and funds to improve infrastructure in the Carpathian region; - expanding the market for tourism services through digital platforms and marketing; - popularization of the Carpathian region as an international tourist destination; - comprehensive development of medical and health tourism due to the unique natural resources. 	<ul style="list-style-type: none"> - environmental risks, such as landslides, soil erosion and landscape destruction due to uncontrolled urbanization within the Carpathian region; - socio-economic challenges, including migration and unemployment during COVID-19 and the war; - competition from the part of other tourist regions (both in Ukraine and abroad); - unstable political and economic situation in the country, which may limit investment; - potential climate change affecting seasonal tourism.

Source: compiled by the author according to (Derzhavne ahentstvo rozvytku turyzmu Ukrainy, 2024; Derzhavna sluzhba statystyky Ukrainy, 2024; Moskvik, 2022; Turystychna Asotsiatsiia Ukrainy, 2024)

fers that cater to modern trends and tourists' needs in order to make the Carpathian region more competitive. In particular, the development of eco-tourism and ethno-tourism will serve as a catalyst for the creation of tourism clusters. In this regard, the concepts of the «green economy» and «circular economy» should be implemented and further developed, since such concepts will help preserve biodiversity and minimize environmental damage. For example, one of the ways to achieve successful diversification is to increase the percentage of people employed in the tourism sector. By 2030, according to the State Statistics Service of Ukraine, this figure is expected to increase by at least 11.1% due to the introduction of new tourism initiatives, such as gastronomic tourism, medical tourism, and outdoor activities (Turystychna Asotsiatsiia Ukrainy, 2024). In addition, the key strategy for transforming the tourism and recreational potential of the Carpathian region by 2030 has been outlined (Turystychna Asotsiatsiia Ukrainy, 2024). The strategy is related to specific numerical indicators that represent the intended development goals. The strategy aims to ensure the long-term development of the region, taking into account modern challenges such as climate change, digitalization, and the globalization of economic processes. The primary goal of the strategy is to increase the diversity of tourism products through innovative methods. With the growing competition in the global tourism market, it is crucial to move from traditional tourist offers to niche-market specializations, such as eco-tourism, ethnological tourism, gastronomic tourism, and health tourism. This will enable the Carpathian region to expand the number of jobs in the tourism sector, and by 2030, it is planned to increase employment by 12.3%, which is a significant indicator of the economic and social impact of this strategy (Turystychna Asotsiatsiia Ukrainy, 2024).

We believe that the modernization and expansion of infrastructure are necessary to guarantee the accessibility of tourism resources in the Carpathian region. Such a process should be accompanied by the introduction of modern logistics routes, which will further have a positive impact on the growth of tourist flows, both domestic and international. In particular, the creation of high-speed rail lines and the improvement of road quality should both increase the speed of tourist movement and improve the quality of their travel. By 2030, one of the most significant indicators will be an increase in the region's transportation capacity by 27.3% (Derzhavna sluzhba statystyky Ukrainy, 2024). It is obvious that in the future, continuous improvement of infrastructure for ecological transport

will be necessary, accompanied by the creation of bicycle paths and charging stations for electric vehicles.

Investments from both individuals and institutional partners and donors from abroad are required to further ensure long-term financing of infrastructure projects and enhance the recreational value of the Carpathian region. One of the important components of this process is the establishment of partnerships between the public and private sectors, as well as the reduction of barriers for international investors. Accordingly, investment projects should be aimed at the ecological modernization of infrastructure, the creation of new hotels with a high degree of energy efficiency, the introduction of renewable energy sources, and the development of transport infrastructure. The volume of foreign direct investment, which is expected to grow by 24.3% by 2030, is one of the most significant indicators of this trend, according to the State Statistics Service of Ukraine (Derzhavna sluzhba statystyky Ukrainy, 2024).

Accordingly, the introduction of digital platforms for travel companies is crucial for increasing the effectiveness of their initiatives and improving tourist flow management. That is, the creation, implementation, and operation of digital ecosystems will provide an opportunity to improve tourism services as well as increase the number of people who can access tourist resources. Such apps and platforms will include artificial intelligence components that personalize services and incorporate blockchain technology to ensure the transparency of financial transactions. By 2030, the share of digitized tourism enterprises will increase to 78.1%, according to the State Statistics Service of Ukraine (Derzhavna sluzhba statystyky Ukrainy, 2024). This involves the use of Big Data, which will facilitate the analysis of tourist interests and the development of optimal tourist routes, as well as a system of intelligent management of tourist flows that will prevent the overloading of specific places.

Domestic researchers emphasize that the Carpathian region has significant potential in the context of human capital development (Moskviak, 2022; Opanasiuk, Melnyk, 2020). Professional training of specialized staff in the field of tourism, hotel, and restaurant management is crucial for maintaining high standards of customer service. This necessitates expanding professional training programs and increasing the number of international business trips for young professionals. At the same time, the Tourist Association of Ukraine notes that by 2030, an increase in the percentage of employees with modern skills in the field of service and digital technologies (61.2%) will be one of the most significant indicators (Turystychna Asotsiatsiia

Ukrainy, 2024). Moreover, given the ecological sensitivity of the Carpathian region, the transformation of tourism potential should be accompanied by environmental protection and preservation of natural landscapes. One of the important aspects is the implementation of the principles of sustainable management of natural resources, including reducing greenhouse gas emissions, more efficient use of water, and controlling the growth of tourist areas. By 2030, the percentage of tourist facilities using renewable energy sources is projected to reach 41.1%, and the Tourist Association of Ukraine expects an increase in the region's protected areas by 24.8% (Turystychna Asotsiatsiia Ukrainy, 2024).

This strategy envisages the large-scale introduction of digital technologies in the tourist sector, including the use of Big Data, artificial intelligence, and blockchain technologies. By 2030, it is planned to reach 91.2% of the level of digital integration of tourism enterprises, which will enhance the efficiency of managing tourist flows, improve the quality of service, and promote the personalization of tourism services. Accordingly, such an effective transformation of the region is impossible without attracting investment. The investment attraction strategy envisages the development of public-private partnerships and the creation of favorable conditions for investors by simplifying regulatory procedures. By 2030, it is planned to increase the volume of foreign direct investment by 20%, as noted by the State Agency for Tourism Development of Ukraine. According to the Vision introduced by the State Agency for Tourism Development of Ukraine, investments will be directed to the environmental modernization of infrastructure, in particular, the construction of energy-efficient hotels, the use of renewable energy sources, and the improvement of transport infrastructure (Derzhavne ahentstvo rozvytku turyzmu Ukrainy, 2024).

As noted in the DART Vision, the accessibility of tourist resources in the Carpathian region largely depends on the level of development of transport infrastructure, and accordingly, the Ministry of Infrastructure of Ukraine and DART plan to expand and modernize transport corridors, create high-speed railways, and improve the quality of roads, which will increase the level of mobility of tourists. An increase in transport capacity by 31.1% by 2030 will be one of the key indicators (Derzhavne ahentstvo rozvytku turyzmu Ukrainy, 2024). Mariana Ihorivna Oleskiv, the head of the State Agency for Tourism Development of Ukraine, notes that it is important to ensure the development of infrastructure both in Ukraine and in the regions (Derzhavne ahentstvo rozvytku turyzmu

Ukrainy, 2024). The Carpathian region is ecologically vulnerable, and, therefore, its transformation should be carried out with consideration of environmental constraints. The strategy for preserving ecological balance involves the implementation of sustainable management of natural resources, including the rational use of water resources, control over the development of tourist areas, and reduction of greenhouse gas emissions. Therefore, as noted in the DART, 40% of tourist infrastructure facilities are expected to use renewable energy sources by 2025, which is especially relevant in the context of war (Derzhavne ahentstvo rozvytku turyzmu Ukrainy, 2024).

Conclusions

Based on the research results, when analyzing the contribution of the tourism sector to the GDP of the EU and Ukraine, a significant difference can be noted. While in the EU, tourism accounts for about 10% of GDP, in Ukraine, this figure is only 2%, which, in turn, demonstrates that the tourism industry in Europe is of much greater economic importance and has a significantly more developed infrastructure. Infrastructure development also differs significantly between these regions. EU countries are actively investing in transportation, hospitality, travel services, and innovative technologies to increase the attractiveness of their tourist destinations. In Ukraine, insufficient infrastructure and a lack of systemic investment hinder the development of the industry. Accordingly, the development of the tourism sector in Ukraine lags far behind the EU in terms of its contribution to the economy, the number of tourists, and employment. The transformation of Ukraine's tourism and recreational potential requires comprehensive investments in infrastructure, service development, and the implementation of a national strategy that takes into account international trends and challenges of the modern tourism market.

The transformation of the tourism and recreational potential of the Carpathian region in modern conditions requires a systematic approach that combines innovative technologies, sustainable development, and efficient use of natural resources. In response to global challenges such as climate change, urbanization, wars, terrorism, and growing tourist demand, it is essential to introduce digital platforms to increase the region's competitiveness, develop infrastructure, and create conditions for investment attraction. In addition, preserving ecological balance and developing human capital are key elements for ensuring sustainable tourism growth by 2030.

Sustainable development of the Carpathian region requires close cooperation between the public and private sectors, as well as the involvement of local communities in planning and management processes. The implementation of a comprehensive strategy will increase economic activity and employment, as well as preserve

the region's unique natural and cultural resources. A well-balanced diversification of tourism products, environmentally responsible use of resources, and the introduction of modern innovations could become the basis for the sustainable development of the Carpathian region as a European-level tourist center.

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