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REGULATORY MECHANISMS FOR ENSURING ECOLOGICAL SAFETY OF TOURIST DESTINATION TERRITORIES

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Purpose. To calculate the norms of recreational load on tourist destinations in administrative districts of Ukrainian Carpathian region and their theoretical justification by using regulatory mechanisms for ensuring ecological safety. **Methodology.** We have analyzed recent publications on sustainable tourism development and ecological aspects of tourism. We have justified the relevance of the development of new research direction in the field of ecological safety, namely ecological safety of tourist destinations. We have studied the regulatory mechanisms for ensuring ecological safety within tourist destinations such as the determination of ecological limits for tourism activities. **Results.** We have defined the expediency of implementation of traditional limiting indicators of tourism activities and implementation of norms of recreational load as the regulatory parameters for ensuring ecological safety. As a result we have calculated norms of recreational load on ecosystems of tourist destinations in administrative districts of the Carpathian region. According to the calculations the recreational load norm in Carpathian region in summer is 119 people per km² and in winter 61 respectively. Norm of recreational load in Ivano-Frankivsk region in summer is 121 people per km² and in winter 62 respectively. Norm of recreational load in Lviv region in summer is 113 people per km² and in winter 53 respectively. Norm of recreational load in Chernivtsi region in summer is 119 people per km² and in winter 53 respectively. Norm of recreational load in Zakarpattia region in summer is 136 people per km² and in winter 84 respectively. **Originality.** We offer to implement the complex of ecological studies for determining the norms of recreational load on tourist destination ecosystems and therefore to regulate quantitative indicators of tourism development taking into account the calculated norms of recreational load. **Practical value.** The results of the study should be used in the process of developing plans for tourism infrastructure and tourist flows development in Carpathian region. *References 12, table 1, figures 5.*

Key words: ecological safety, regulatory mechanisms, recreational load, tourist destination.

РЕГУЛЮЮЧІ МЕХАНІЗМИ ЗАБЕЗПЕЧЕННЯ ЕКОЛОГІЧНОЇ БЕЗПЕКИ НА ТЕРИТОРІЯХ ТУРИСТИЧНИХ ДЕСТИНАЦІЙ

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Обґрунтовано актуальність екологічних досліджень територій туристичних дестинацій. Проведено аналіз публікацій останніх років з питань збалансованого розвитку туризму та екологічних аспектів туристичної діяльності. Обґрунтовано актуальність розвитку нового напрямку досліджень в галузі екологічної безпеки – екологічної безпеки територій туристичних дестинацій. Розглядаються регулюючі механізми забезпечення екологічної безпеки в межах туристичних дестинацій, а саме визначення екологічних меж туристичної діяльності. Визначено доцільність застосування традиційних лімітуючих показників туристичної діяльності, а також запровадження нормативів рекреаційного навантаження як регулюючих показників забезпечення екологічної безпеки. Розраховано нормативи рекреаційного навантаження на екосистеми туристичних дестинацій адміністративних областей Карпатського регіону. Пропонується запровадження у практику комплексу екологічних досліджень визначення нормативів рекреаційного навантаження на екосистеми туристичних дестинацій та регулювання кількісних показників розвитку туризму з урахуванням розрахованих норм рекреаційного навантаження. Отримані результати доцільно використовувати як лімітуючі в процесі розроблення планів розвитку туристичної інфраструктури та туристичних потоків у Карпатському регіоні.

Ключові слова: екологічна безпека, регулюючі механізми, рекреаційне навантаження, туристична дестинація.

PROBLEM STATEMENT. Tourism as an economic sector is developing quite successfully in Ukraine inspite the general crisis in the economy. This development has significant positive economic and social impact on local communities: budget

replenishment, employment growth, development of tourism infrastructure, improvement of the service sector and others. However, the increase of tourist flow intensifies the impact of tourism on ecosystems of tourist destinations, especially popular ones. Thus 65%

of private rural estates in Ukraine are located in Ivano-Frankivsk region. 83% of these estates are located in Yaremche city council [1]. These tourist destinations are especially vulnerable to anthropogenic impacts and should be primary objects of ecological studies. Tourist activities should be planned according to ecological limits. Important tasks of ecological research within the areas of tourist destinations are calculation of norms of recreational load on ecosystems of tourist destinations and consideration of these parameters in the regional tourism planning.

According to article 50 of the Law of Ukraine "On Environmental Protection" ecological safety is such a condition of the environment, in which is ensured the prevention of the deterioration of the ecological situation and the emergence of danger for the health of people [2]. The scientific direction for ecological safety of natural and man-made natural systems at various levels was currently formed. Main scientific researches related to the issues of ecological concentrate on the ecological safety management in catastrophic situations under strong anthropogenic influence (within mining areas, urban areas, agricultural ecosystems, etc.), natural systems. Scientific and methodological approaches of ensuring ecological safety in natural and technogenic systems and applied aspects of ensuring ecological safety are studied in the works of H.A. Bilyavskiy, H.I. Rudko, O.M. Adamenko, V.M. Shmandii, S.V. Rudenko, L.Ie. Shkitsa, H.V. Lysychenko, B.M. Danylyshyn, A.H. Shapar, Ie.O. Iakovlev, V.M. Shestopalova, M.S. Maliovanyi and others. Less studied is the issue of ecological safety research and management in terms of technogenic load which is not critical, e.g. within the tourist destinations.

Recent scientific publications were concentrated on scientific substantiation of principles of sustainable tourism development and some aspects of sustainable tourism development of tourist regions. Elements of sustainable tourism development, main ecological problems that appeared as the result of tourism growth, features of ecological aspects of tourism development in mountainous tourist destination were outlined [3-6].

Sustainable tourism development is defined as such development of tourism which is oriented at the long time period at which the balance in the realization of economic, ecological, social and cultural development goals is reached, the interests of all stakeholders are taken into account and which is based on the rational use of recreational resources and a comprehensive partnership.

Due to the principles of ecological balance saving technologies should be implemented in the tourism industry, impacts of tourism infrastructure on the environment should be constantly reduced, conditions for regulation of the tourists flows to the recreational areas should be created according to the permissible recreational loads and resilience of natural systems to anthropogenic load, the system of ecological education should be organized among the general public in order to improve the culture of nature using, the unique natural complexes should be preserved and restored. We have classified the main mechanisms for ensuring ecological safety in tourist destinations. Main means of

ensuring ecological safety of tourism development can be classified into regulatory, economic, controlling, additional and voluntary.

Regulatory mechanisms allow to reduce the impacts on tourism destinations by regulating access control potential of the territory, setting limits and boundaries for companies providing services to tourists, conduction of EIA procedures, conduction of ecological expertise and monitoring of recreational environment [6].

O.A. Vorobiev, A.P. Holod, N.V. Korzh, V.S. Kutsenko, T.L. Myronova, V.V.Sharko did the analysis of directions of ensuring ecological safety in the development process of tourism industry [7-9]. Nowadays the issue of practical implementation of ensuring ecological safety within the territories of tourist destinations are relevant because most published works are theoretical.

The objective of research is the study and reasoning of the regulatory mechanisms for ensuring ecological safety of tourist destinations and calculation of the norms of recreational load.

EXPERIMENTAL PART AND RESULTS OBTAINED. Tourist destination is a specific natural and technogenic system of geographically interconnected tourism resources and elements of tourism infrastructure. We consider ecological safety of tourist destinations in the context of measures for ensuring safe conditions for the functioning of all components of tourism industry, people and the environment.

Regulatory mechanisms for ensuring ecological safety help to reduce the impacts on tourism destinations by regulating access potential of the territory, setting limits and boundaries for companies that providing services for tourists, as well as obligatory evaluation of environmental impacts of tourism, ecological examination of objects of tourist infrastructure and monitoring of the state of recreational environment in tourist destinations.

One of the ways of ensuring ecological safety within ecosystems and natural and technogenic systems is the determination of the ecological limits of tourism activities, e.g. setting and maintaining limits and boundaries. According to the international ecological organizations it is necessary to define and set ecological limits of tourism growth until irreparable damage is done, e.g. loss of some species and habitats. Legislative ecological norms are defined as a set of authorized maximum allowable indicators of possible impact on the environment and its individual sites. Such norms as sanitary ones (TLV), industrial and commercial ones (ELV), norms of natural resources use (limiting) also refer to objects of tourism infrastructure. We believe that due to the special recreational role of ecologically clean environment the implementation of these norms for tourist activities may be controversial and requires a comprehensive discussion in the scientific community.

An important aspect of ensuring ecological safety in tourist destinations is the maintenance of recreational load norms. Type of recreational landscape and type of recreational activity are taken into account in the process of calculation of the tourism carrying capacity or maximum recreational load on ecosystems of destinations. It is also necessary to calculate this load for anthropogenically

modified landscapes such as beach or resort towns where local people always feel uncomfortable due to the excessive number of tourists.

There is quite a large number of publications concerning the definition of recreational load and the methods of determination of recreational load norms and recreational capacity in Ukrainian scientific literature. O.O. Beidyk, V.I. Stafiichuk, S.P. Kuzyk and others have studied these issues. There are a variety of techniques of recreational load and capacity determination, but methodological and scientific publications of V.S. Kravtsov, L.S. Hryniv, M.V. Kopach, S.P. Kuzyk include successful attempts of evaluation of recreational load and recreational capacity of territories [11]. Recreational load is a permissible number of tourists per square meter that may be at the same time on the territory after its adjustment to recreational needs which does not cause adverse effects in the environment. Recreational load depends on the characteristics of landscape structure and functional orientation of the recreational use of the area.

Norms of recreational load mainly depend on natural landscapes and season. Coastal natural systems have the greatest resistance to the effects of recreational load and lowland ones have the smallest resistance. Recreational load is bigger in summer than in winter due to the specificity of recreational activity in different seasons.

Norms of recreational load for different Ukrainian natural systems are presented in Table 1 [11].

Table 1 – Norms of recreation load on natural systems

Natural complex	Norms of recreational load (people per km ²)					
	Summer			Winter		
	min.	max.	avg.	min.	max.	avg.
Coastal	300	500	400	60	100	80
Lake	80	150	115	16	45	30
River	50	80	65	16	24	20
Lowland	80	120	100	30	50	40
Highland	100	150	125	40	60	50
Mountainous	110	200	155	60	160	110

These norms give a general idea of norms of recreational load on various natural systems. Local indicators of recreational load for each individual territory should be defined on site under specific environmental conditions.

Carpathian region includes Zakarpattia, Ivano-Frankivsk, Lviv and Chernivtsi regions. Its area is 56.6 thousands km² and its population is about 6.5 million people. Carpathian region has great tourism potential. One of the strategic directions of the region is the development of its recreational potential and tourism development. There are the following reasons for such direction [12]:

- natural resource base;
- strong potential for the development of different tourism types;
- advantageous geographical position;
- factor of territorial provision of social needs in recreational services;
- ecological phenomenon of the territory.

The most attractive for the development of recreation and tourism industry are mountainous and foothill parts of the region. Tourism is developing rapidly in the region. Tourism industry has become a priority in the region's economy. However, it is also very important to determine the norms of the recreational load on tourist destinations. It will give the possibility to determine the optimal number of tourists for a specific season and to predict the development of tourism infrastructure according to ecological regulations.

Calculations showed that the recreational load norm in Carpathian region in summer is 119 people per km² and in winter 61 respectively (Fig. 1). We determined the norms of recreational load for the administrative districts of the regions, which are the parts of the Carpathian region (Fig. 2-5). Our calculations were based on the standard average norms of recreational load on natural systems and landscape features of the territories.

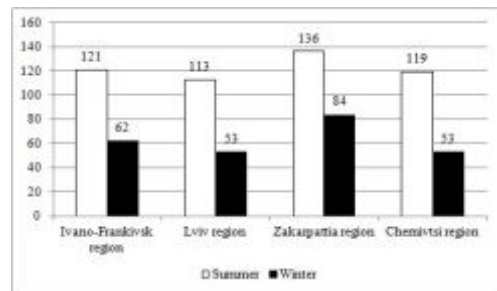


Figure 1 – Norms of recreational load in the Carpathian region, people per km²

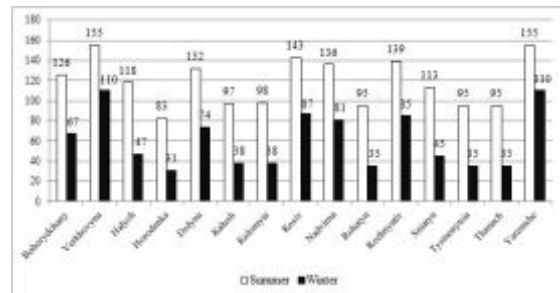


Figure 2 – Norms of recreational load in administrative districts of Ivano-Frankivsk region, people per km²

Norm of recreational load in Ivano-Frankivsk region in summer is 121 people per km², and in winter 62 respectively. The highest norms of recreational load are in the mountainous districts, such as Verkhovyna district and Yaremche city council.

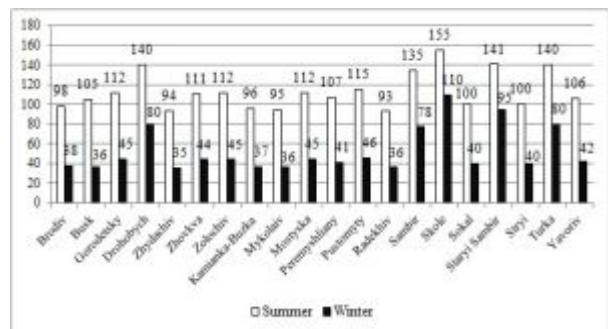


Figure 3 – Norms of recreational load in administrative districts of Lviv region, people per km²

Natural landscapes of this area are very diverse, that's why norms of recreational load vary. Norm of recreational load in Lviv region in summer is 113 people per km², and in winter 53 respectively.

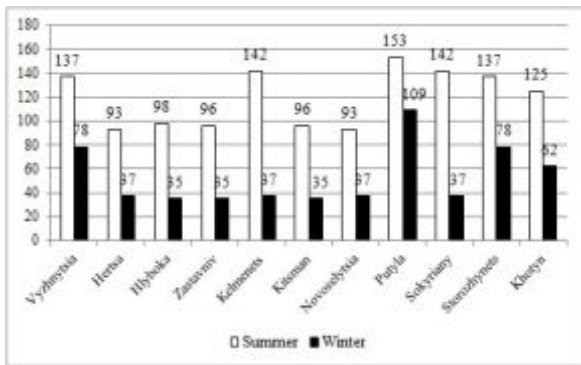


Figure 4 – Norms of recreational load in administrative districts of Chernivtsi region, people per km²

Norm of recreational load in Chernivtsi region in summer is 119 people/km², and in winter 53 respectively [10]. The most attractive for the development of recreation and tourism industry from an economic point of view are mountainous and foothill parts of Chernivtsi region where the recreational load norms are higher.

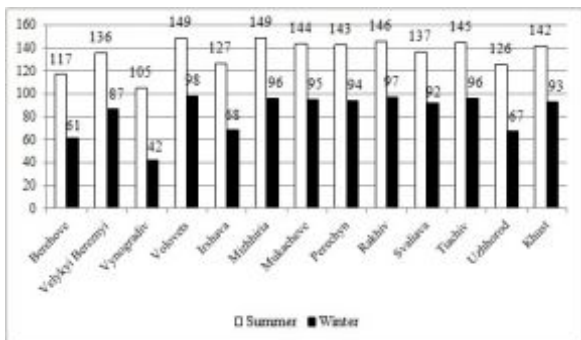


Figure 5 – Norms of recreational load in administrative districts of Zakarpattia region, people per km²

Norm of recreational load in Zakarpattia region in summer is 136 people per km², and in winter 84 respectively. The Carpathian Mountains occupy nearly two-thirds of the region, that's why norms of recreational load here are quite high.

Despite the large number of scientific approaches to determination of norms of recreational load, it is obvious that this issue remains controversial and requires legal approval for their practical implementation. These aspects are important in the process of developing long-term plans of tourism and recreational areas development.

CONCLUSIONS. Nowadays tourism as a sector of economy may be a successful economic and ecological alternative to sustainable development of mountainous areas. Ecological aspects of tourism development should be considered in the context of expanding of tourism industry in the areas where this industry is developing rapidly, for example, in the Carpathians. Consideration of

ecological aspects of tourism development is of particular relevance because the tourism industry is a strategic and priority sector of economic activity in many Ukrainian regions. Its planning should be based on the implementation of regulatory mechanisms for ensuring ecological safety, in particular compliance with the norms of recreational load on tourist destinations. The results on the norms of recreation load for tourist destinations of administrative districts of the Carpathian region should be considered in the process of planning of the development of tourism and tourism infrastructure.

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РЕГУЛИРУЮЩИЕ МЕХАНИЗМЫ ОБЕСПЕЧЕНИЯ ЭКОЛОГИЧЕСКОЙ БЕЗОПАСНОСТИ НА ТЕРРИТОРИЯХ ТУРИСТИЧЕСКИХ ДЕСТИНАЦИЙ

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Обосновано актуальность экологических исследований территорий туристических дестинаций. Проведен анализ публикаций последних лет по вопросам сбалансированного развития туризма и экологических аспектов туристической деятельности. Обосновано актуальность нового направления исследований экологической безопасности – экологической безопасности территорий туристических дестинаций. Рассматриваются регулирующие механизмы обеспечения экологической безопасности в пределах туристических дестинаций, а именно определение экологических границ туристической деятельности. Определено целесообразность применения традиционных лимитирующих показателей туристической деятельности, а также внедрение нормативов рекреационной загрузки как лимитирующего показателя обеспечения экологической безопасности. Рассчитано нормативы рекреационной нагрузки на экосистемы туристических дестинаций административных районов Карпатского региона. Предлагается внедрение в практику комплекса экологических исследований определения нормативов рекреационной нагрузки на экосистемы туристических дестинаций и регулирования количественных показателей развития туризма с учетом рассчитанных норм рекреационной нагрузки. Полученные результаты целесообразно использовать как лимитирующие при разработке планов развития туристической инфраструктуры и туристических потоков в Карпатском регионе.

Ключевые слова: экологическая безопасность, регулирующие механизмы, рекреационная нагрузка, туристическая дестинация.