

AGREEMENT OF THE INTERESTS OF TOURISM BUSINESS PARTICIPANTS IN SUSTAINABLE DEVELOPMENT

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Abstract

The effective management of the process of agreement of interests and coordination of efforts of government agencies and representatives of the tourism business as the main institutions of a market economy was found to ensure new trends in economic development and achievement of certain strategic and tactical objectives in sustainable development. The current situation in the field of co-agreement between the state and representatives of the tourism sector is characterized by the recognition of the relevance of stimulating cooperation, the emergence of successful regional models, and positive results of public-private partnership by government agencies and entrepreneurs.

The Chinese experience in the use of international institutions in the practical activities of ecotourism development in the country is analyzed and the possibilities of adopting the main elements of the structural functioning of tourism in general for Ukraine in terms of sustainable development are considered.

The article performs statistical analysis and forecasts of the main indicators of economic entities in the field of ecotourism. Pearson, Spearman, and Fechner correlation coefficients have been calculated to determine the correlation between revenues from tourism services and operating costs of tourism entities (tour operators and travel agents) in the region.

Agreed strategic directions for intensifying the development of ecotourism activities in any region of the country are identified, including the creation of proper institutional conditions and appropriate legal environment, which is to develop and adopt the Law of Ukraine “On Rural Green Tourism”, the regional program for ecotourism development, amendments and additions to the Development Strategy for the period up to 2027 and the Action Plan for its

implementation in 2021-2023; economic support for the development of ecotourism through public-private partnerships to attract private investment, crowdfunding, preferential lending to homeowners to modernize homes, training, and advertising; implementation of stimulating and encouraging mechanisms to ensure the functioning of ecotourism infrastructure facilities; formation of an effective system of quality assurance of ecotourism services to be based on the needs of the consumer, to guarantee basic standards, and to include criteria for environmental protection. A set of mutually agreed barriers that hinder the formation and development of regional ecotourism infrastructure in any territorial unit of the country are identified. A regional model of mutually agreed elements of ecotourism infrastructure is proposed, which implementation will increase the income of the rural population, increase local budget revenues, reduce unemployment through additional jobs, intensify the development of small businesses in rural areas, and public-private partnerships in sustainable development.

Keywords: tourism, ecotourism, eco-market, agreement, international agreement, participants of the tourist market, regional economy, statistical analysis, forecasting methods, correlation analysis, strategic directions, economic modernization

1. Introduction

Tourism is recognized as one of the dynamic areas of economic activity in the world. According to the World Tourism Organization (WTO), there were 1.5 billion international tourist trips in 2019. According to expert estimates by the World Tourism and Travel Council (WTTC) and Oxford Economics, the tourism and travel sector showed growth in 2019 by 3.5%, for the ninth year in a row ahead of the world economy (2.5%). Over the last five years, one in four new jobs has been created in this sector [1].

The share of the tourism sector in world gross domestic product (GDP) is 10.3% (\$ 8.9 trillion), growing by 3.5% annually. Tourism will create 330 million jobs or one in ten in the world. Tourist exports allow receiving more than 1.7 trillion US dollars. The volume of investments in the development of tourism and travel reaches 948 billion US dollars, i.e. 4.3% of total investment in the world. According to WTO experts, by 2030, profits from the development of international tourism are expected to increase up to 1.8 billion US dollars.

It is worth noting that because of the aggravation of the global environmental situation and the growing popularity of environmental ideas among tourists, there is a demand for so-called “green” travel. According to official WTO statistics, the share of these trips is 7-20% of total travel in the world. The growth rate of green tourism is 10-30% per year, and their share in the income of international tourism is 10-15%. The share of ecotourists is 12-15% of the total number of tourists in the world. Thus, green tourism is one of the five key strategic directions of the global tourism industry [1].

An analytical study of the United Nations Environment Program “Tourism in the Green Economy: An Information Report” [2] emphasized that traditional mass tourism has reached a stage of sustainable growth. Ecotourism, on the other hand, is expected to grow rapidly over the next two decades. Global spending on ecotourism is expected to grow faster than the industry-wide average.

Currently, ecotourism is most widespread in Hungary, the Czech Republic, Spain, Italy, Germany, and other European countries, which under the auspices of the Council of Europe have merged into the Central and Eastern European Federation for the Development of Ecotourism. According to the WTO, for example, in France only 7% of business travelers stay in hotels, the remaining 93% choose rural hotels and campsites [1].

In recent decades, it has become increasingly important for all countries on the planet to reconsider their impact on the environment and culture. It can be argued that no branch of human activity has such an impact on the economy, environment, and culture as the modern tourism industry. Most often, the balanced growth of tourism is associated with such a concept as “ecotourism”. It can be associated with any type of tourism that supports the principles of environmental protection, preservation of culture, and improvement of the economic performance of the industry. Models of sustainable tourism development are created and implemented taking into account the peculiarities of individual countries and regions. At the same time, studying the experience of national and international projects can be a depository of useful solutions in shaping Ukraine's tourism policy.

The sustainable development of tourism in China is determined by the active implementation of several projects catalyzed by leading international institutions. In recent years, China has become one of the main players in the world's tourism market, ranking third in terms of arrivals. The problem of sustainable development of tourism, preservation of its resource, material, and technical base, cultural identity, and further growth of the tourist flow is an urgent and rather acute issue for the country.

The Chinese experience shows active use of the benefits of cooperation with international organizations that contribute to the development of tourism. This practice could significantly strengthen Ukraine's tourism policy and involve international institutions in its effective implementation. These include UNESCO, the World Wildlife Fund, and the Nature Conservation Fund. They have played a key role in identifying China's protected areas and have worked actively with local people to help them build an efficient and modern tourism industry. Their influence contributed to the fact that local communities began to actively invest in the delimitation of protected areas, in particular the southwestern regions of the country. The relevance of balanced tourism is primarily felt in the southwestern regions of China, mainly in the provinces of Sichuan and Yunnan. Both administrative units of the republic felt the significant economic effect of tourism policy aimed at sustainable tourism development, as well as received significant support from governmental, non-profit, and local organizations responsible for the

development of tourism on the principles of balance and environmental friendliness. This is exactly the peculiarity of the Chinese experience.

China's experience of cooperating with the World Wildlife Fund is determined by the latter's mission – to protect the giant panda population in Sichuan Province. The local population felt a special influence in this case. First, a ban on logging was introduced, an activity that provided jobs for most of the province's labor potential. Tourism has become an alternative employment option for locals. The World Wildlife Fund has helped develop and implement a tourism management plan in the Jiuzhaigou Valley and the Wanglang and Baishui Nature Reserves. Thanks to the development plan, Wanglang Nature Reserve took first place among China's natural sites in terms of compliance with international standards of “Green Globe XXI” – a global certification program for sustainable tourism.

Besides, in China, the World Wildlife Fund facilitated a deal with Carrefour (a French retailer, the world's second-largest after Wal-Mart) to sell its organic products grown in northern Sichuan to its stores: walnuts, honey, pepper, and mushrooms. The program has allocated about 260,000 Yuan to more than 200 families living in the protected areas of the giant panda. Although it cannot be related to tourism directly, this program has become a notable achievement in the field of sustainable development and a positive result of the Chinese experience, which to some extent could be useful for Ukraine's tourism policy [40].

When formulating the tourism policy of Ukraine, it is equally important to take into account that tourism always has two consequences for the local population. On the one hand, increasing the tourists' flow means developing the local economy and raising living standards, and, on the other, interfering in the local ecosystem, which can negatively affect the number of flora and fauna, authentic local culture, and more. Local communities understand the importance of sustainable tourism development, the need to develop tourism by the principles of balance, but they often do not know how to implement it. Thus, the biggest problem for these communities is the lack of knowledge about ecotourism and the way of implementing its principles [39].

Participation in the global network would be a worthy priority of Ukraine's tourism policy in the context of sustainable tourism development. Besides, the Chinese experience and its positive results determine other priorities for sustainable development of ecotourism:

- active cooperation with international organizations dealing with sustainable development issues;
- training staff for the management of objects of environmental importance;
- development of projects of balanced exploitation of tourist resources and attraction of investments for their execution;
- education of a responsible attitude to nature among the population of the country, especially areas with unique natural and historical, and cultural resources.

In Ukraine, the issues of ecotourism development are becoming relevant, as it does not require significant investment and stimulates employment growth. Ecotourism should be considered as a resource for sustainable community

development, which rational use will contribute to economic growth and the creation of significant value-added. It is a generator of income, a motive for creating new jobs, attracting investment, as well as a factor in the capitalization of the local brand.

In Ukraine, ecotourism is considered and studied as one of the priority areas for integrated rural development, diversification of agricultural production, and increasing the capacity of regional food markets. In its operation, it focuses primarily on those regions of the country where there are appropriate recreational resources and social and economic needs in this type of management [41].

Ecotourism does not compete but complements traditional areas and forms of management that use spatial natural resources, as it allows tourists to touch natural resources that have not been affected by man-made development, on the one hand, and, on the other hand, to give locals an incentive to conserve the resource potential of regions and social development in “partnership” with nature.

The processes of social and economic transformations in the tourism sector of Ukraine determine the search for non-traditional forms of entrepreneurship aimed at ensuring economic growth and modernization of the regional economy. One of the strategic directions of the tourism sector is the intensification of the development of ecotourism in the regions of Ukraine, considering their specifics.

2. Literature Review

A. Bilgihan, M. Nejad [3]; V. Marakova, M. Medvedova [4]; S. Sardak, V. Dzhyndzhoian, A. Samoilenko [5] and others are engaged in the critical analysis and systematization of theoretical approaches to formation and realization of the model of development of tourist sphere.

Researchers and practitioners pay much attention to the conceptual provisions and practical recommendations for improving the management of innovative development in the field of tourism, namely:

- some aspects of innovation in the optimization of models of development of the tourism industry in the region [9] are considered;
- the approaches to the management of innovative development of tourist business of the territory under the conditions of the disproportion of the global and local markets of tourist services are formed [10];
- innovative approaches to the modernization of the management system of regional development of tourism are proposed [12].

A large number of scientific publications of leading scientists are devoted to the problems of ecological tourism development, among them: Hunt CA, Durham WH, Driscoll L, Honey M. [6], Buckley RC, Morrison C, Castley JG. [7], Bateman PW, Fleming PA. [8], Newsome D., Moore S.A., Dowling R.K. [11], Bansal S., Kumar J. [13], Buckley, R [14], Jacobson, S.K.; R. Robles [15], Saayman, Melville; Rossouw, Krugel [16].

The analysis and generalization of the scientific literature also show that economists pay considerable attention to:

- the research of modern problems of development of tourism activity and ways of their solution under the conditions of global changes (L. Bezuhla, I. Kinash, U. Andrusiv, O. Dovgal, [20], David L. [17])
- substantiation of conceptual provisions and development of mechanisms to ensure the development of ecological tourism in Ukraine and the regions [36, 38];
- several scientific, methodical, and theoretical approaches to the establishment of conceptual foundations for the development of ecotourism and managerial decision-making in the tourism industry, taking into account the factor of ecologization [37];
- development of proposals for the formation and development of the ecotourism infrastructure [34,35].

However, the multifaceted and controversial issues on the chosen topic necessitate further research. Moreover, especially the solution to this problem is actualized under current conditions of transformation of the management system by the development of ecological tourism in the context of modernization of the regional economy and global transformations. Despite such close attention of scientists to the outlined issue, it is relevant and necessary to conduct further research directed at working out an innovative model for the development of ecotourism infrastructure, taking into account the regional component. All this largely determined the choice of the topic of this study and its focus.

The purpose of this study is to identify mutually agreed barriers that hinder the effective formation and development of ecotourism infrastructure in the region, and to substantiate the need to develop a regional model of mutually agreed elements of ecotourism infrastructure (for example, Dnipropetrovsk region) by determining the correlation between the revenues from tourism services and operating costs of tourism entities (tour operators and travel agents); the revenues from provided services and costs in the field of ecotourism on the case study of Dnipropetrovsk region by calculating the correlation coefficients of Pearson, Spearman, and Fechner; identifying key trends in the agreement of basic norms for the development of ecotourism activities in the region using forecasting methods: determining strategic directions for intensifying the development of ecotourism, the case of Dnipropetrovsk region in sustainable development.

3. Material and Method

According to the State Statistics Service of Ukraine and the Main Department of Statistics in the Dnipropetrovsk region, the number of tourists served by tour operators and travel agents increased 3.1 times in 2000-2019, and their share did not change and amounted to 2.5% of the total number of tourists. However, the region has a negative trend of a sharp decrease in the number of incoming tourists since 2010. The number of domestic tourists decreased 2.3 times, and their share in 2019 was 3.5% of the total number of these tourists in Ukraine (in 2000 – 3.1%). During this period, the share of domestic tourists decreased by 71.3 percentage points, or from 83 to 11.7% of the total number of tourists served in the Dnipropetrovsk region (*Table 1*).

Table 1

Number of tourists served by tour operators and travel agents,
by types of tourism in the Dnepropetrovsk region

Years	Total number, <i>persons</i>	<i>Including</i>	
		incoming (foreign), <i>persons</i>	domestic, <i>persons</i>
2000	49869	1588	41372
2005	103320	17189	64799
2007	168431	15676	71635
2010	105413	1122	55503
2011	64470	16	18515
2012	68303	105	15215
2013	81249	28	12717
2014	56803	–	7263
2015	46121	–	7195
2016	57770	–	7776
2017	75526	1	7482
2018	116981	–	9229
2019	154215	2	17998

Compiled according to data: [21, c. 22; 22; 23].

The analysis of statistical and information materials showed that data on the development of tourism and ecotourism in the regions of Ukraine are given for the period 2011-2017. In this regard, using the autoregression method, forecasts for 2021-2022 were developed. This method of forecasting has some advantages, such as the validity and efficiency of calculations, less error of the obtained results, lack of subjective factor inherent to the method of expert assessments, etc. Thus, this method is effective for forecasting the performance of entities in the field of ecotourism, as there is higher reliability of the forecast values.

The method of autoregression is the construction of an autoregressive model, i.e. a dynamic regression model that reflects the time changes of the studied indicator compared to its previous values.

The autoregressive model is as follows:

$$Y_t = \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \dots + \alpha_n y_{t-n}, \quad (1)$$

where y_t is the forecast value of the indicator;

$y_{t-1}, y_{t-2}, \dots, y_{t-n}$ – preliminary values of the forecast indicator;

$\alpha_1, \alpha_2, \dots, \alpha_n$ – autoregression coefficients;

t – a serial number of previous values of the indicator.

According to the State Statistics Service of Ukraine, the number of tourists served in the Dnipropetrovsk region decreased by 32.9% in 2011-2019, including for leisure and recreation – by 27.3%. The share of tourists who were provided

with services for recreation and the environment increased by 7.5 percentage points, or from 90.5 to 98% of the total number of tourists served by tour operators and travel agents in the region (*Table 2*).

Table 2

Distribution of tourists served by tour operators and travel agents
in the Dnipropetrovsk region, for a trip

Years	The total number of tourists served, <i>persons</i>	<i>Including</i> for leisure and recreation, <i>persons</i>
2011	38087	34460
2012	38417	36042
2013	40445	37722
2014	26332	25273
2015	20851	19755
2016	24296	23037
2017	29440	28172
2018	27435	26572
2019	25567	25063

Compiled according to data: [21, c. 51; 24, c. 37; 25, c. 235; 26, c. 235; 27, c. 39; 28, c. 39; 29, c. 38].

It is estimated that the share of income from tourist services in the Dnipropetrovsk region is insignificant, declining every year and amounted to 0.06% of the total Ukrainian income in 2019 (in 2011 – 0.62%). The share of operating costs of tourism entities in the region in 2019 was only 0.05% of the total Ukrainian volume of these costs (in 2011 – 1.87%). However, the ratio between revenues and operating expenses of tourism entities in the Dnipropetrovsk region is increasing: if in 2011 revenues exceeded expenditures by 1.07 times, in 2019 – by 1.25 times. This means an increase during this period in the level of profitability of operating activities by 17.2 percentage points, or from 7.3 to 24.5% (*Table 3*).

Table 3

Dynamics of income from provided tourist services and operating costs
of tourism entities in the region

Years	Revenues from the provision of tourist services, <i>thousand UAH</i>		Operating expenses, <i>thousand UAH</i>	
	Ukraine	Dnipropetrovsk region	Ukraine	Dnipropetrovsk region
2011	4685427,1	28847,5	1436669,1	26879,4
2012	6360148,2	26652,2	2451280,1	23381,0
2013	6199809,2	24949,5	3928131,7	22510,5
2014	5432673,4	18565,9	5104476,7	17404,6
2015	4797731,6	19903,3	4513433,2	15564,6
2016	11522520,4	19509,8	9144060,3	15261,7
2017	18502975,3	23567,5	14900951,3	19918,5
2018	25700632,7	22334,9	22686698,4	18398,7
2019	35698178,8	21166,8	34540498,2	16994,9

Compiled according to data: [21, c. 30; 24, c. 16; 25, c. 214; 26, c. 214; 27, c. 18; 28, c. 18; 29, c. 17].

Calculations show that during the study period, revenues from the provision of tourist services exceed the operating costs of tour operators in the Dnipropetrovsk region. Thus, in 2011 the value of this indicator was 1.08 times, and in 2019 – 1.15 times. The level of profitability increased by 6.8 percentage points (*Table 4*).

Table 4

Dynamics of income from provided tourist services and operating costs of tour operators in the Dnipropetrovsk region

Years	Income, thousand UAH	Operating costs, thousand UAH	The ratio of income and expenses, times	The level of profitability of operating activities, %
2011	16805,4	15491,3	1,08	8,5
2012	12267,5	9648,2	1,27	27,1
2013	7866,4	7359,0	1,07	6,9
2014	6591,5	5281,7	1,25	24,8
2015	5298,0	4746,5	1,12	11,6
2016	4709,0	3241,4	1,45	45,3
2017	3540,5	3423,9	1,03	3,4
2018	2593,4	2375,2	1,09	9,2
2019	1899,7	1647,6	1,15	15,3

Compiled according to data: [21, c. 31; 24, c. 17; 25, c. 215; 26, c. 215; 27, c. 19; 28, c. 19; 29, c. 18;].

Similar calculations were made for travel agents in the region. Revenues from the provision of tourist services exceed operating expenses: in 2011, 1.06 times, in 2019, 1.26 times. The level of profitability of the operating activities of travel agents increased by 20.4 percentage points (*Table 5*).

Table 5

Dynamics of income from provided tourist services and operating expenses of travel agents in the Dnipropetrovsk region

Years	Income, thousand UAH	Operating costs, thousand UAH	The ratio of income and expenses, times	The level of profitability of operating activities, %
2011	11873,1	11254,0	1,06	5,5
2012	14384,7	13732,8	1,05	4,7
2013	17083,1	15151,5	1,13	12,7
2014	11437,3	11639,3	0,98	-1,7
2015	14605,3	10818,1	1,35	35,0
2016	14800,8	12020,3	1,23	23,1
2017	20027,0	16494,6	1,21	21,4
2018	21503,0	17395,2	1,24	23,6
2019	23087,8	18345,0	1,26	25,9

Compiled according to data: [21, c. 31; 24, c. 18; 25, c. 216; 26, c. 216; 27, c. 20; 28, c. 20; 29, c. 19;].

The analysis of statistical data shows that the predominant share in the structure of expenditures of tourism entities for the services of third-party

organizations used in the production of tourism products is the cost of placement and accommodation (usually in hotels, not in the private sector). In the second place, it is the cost of transport services; the third – catering. The rest are the costs of excursion services without transport services. At the same time, the share of placement and accommodation costs decreased in 2011-2019 by 15 percentage points or from 73.1 to 58.1% of total costs; for meals – by 2.8 percentage points, or from 11.6 to 8.8%. The share of expenses for excursion services remained almost unchanged and in 2019, it was 3.8%. The share of expenditures on transport services, on the contrary, increased by 15.9 percentage points, or from 8.2 to 24.1% of the total expenditures of tourism entities for the services of third parties (Table 6).

Table 6

Expenses of tourism entities for the services of third-party organizations, used in the production of tourism products in the region, thousand UAH

Years	Total	Including for			
		placement and accommodation	catering	excursion service (without transport services)	transport service
2011	16861,2	12333,8	1952,2	599,3	1386,8
2012	8344,7	5120,3	1217,3	80,1	929,9
2013	5050,3	3573,2	448,7	143,3	808,8
2014	3957,5	2425,9	481,2	170,0	794,2
2015	9512,7	7890,2	61,0	314,0	1161,8
2016	8432,6	6488,0	643,0	248,8	995,1
2017	5942,3	4004,6	662,7	356,5	835,6
2018	3958,2	2477,6	391,9	188,3	728,9
2019	2636,5	1532,9	231,8	99,5	636,0

Compiled according to data: [21-c. 35, 36; 24, c. 20, 21; 25, c. 218, 219; 26, c. 218, 219; 27, c. 22, 23; 28, c. 22, 23; 29, c. 21, 22].

In 2013-2019, the number of people staying in the rural estate increased 13.7 times. The capacity utilization rate of the estate increased from 0.02 to 0.55, exceeding in 2019 the average level in Ukraine (0.20). The ratio of income from services provided and costs grew every year: if in 2014, the value of this indicator was 1.12 times, in 2019 – 5.41 times (Table 7).

Table 7

Dynamics of indicators of ecological tourism development in the Dnepropetrovsk region

Years	Total	Including for			
		placement and accommodation	catering	excursion service (without transport services)	transport service
2011	16861,2	12333,8	1952,2	599,3	1386,8
2012	8344,7	5120,3	1217,3	80,1	929,9
2013	5050,3	3573,2	448,7	143,3	808,8
2014	3957,5	2425,9	481,2	170,0	794,2
2015	9512,7	7890,2	61,0	314,0	1161,8

2016	8432,6	6488,0	643,0	248,8	995,1
2017	5942,3	4004,6	662,7	356,5	835,6
2018	3958,2	2477,6	391,9	188,3	728,9
2019	2636,5	1532,9	231,8	99,5	636,0

Compiled according to data: [25, c. 50; 26, c. 50; 30, c. 50; 31, c. 50; 32, c. 50; 33, c. 57, 58].

The analysis of the current legal framework showed that the Law of Ukraine “On Tourism” includes the development of rural and ecotourism as the main directions of state policy in the field of tourism, but the Law of Ukraine “On Personal Farm Economy” mentions rural green tourism only in the above-mentioned terminology without its interpretation. Besides, a draft law on ecotourism has not yet been adopted, which should contain a separate article on the features and principles of the formation and functioning of ecotourism infrastructure on an innovative basis.

Based on the generalization of regional programs, the case of the Dnipropetrovsk region, it is established that only the List of tasks and activities of the Tourism Development Program in the Dnipropetrovsk region for 2014-2022 includes the priority task of “The development of tourism infrastructure”, which is implemented by promoting the opening and arrangement of rural estates. The Development Strategy of the Dnipropetrovsk region for the period up to 2020 refers to the implementation of strategic goals of “The reduction of economic imbalances” (operational goal: “The development of foreign and domestic tourism”) and “Rural development” (operational goal: “The development of rural infrastructure”). It is worth noting that this strategic document does not contain measures for the establishment and operation of ecotourism infrastructure on mutually beneficial principles, encouraging further study, consideration, and development of a regional innovative model of ecotourism infrastructure.

Given the above, we note that the reasons for the decline mainly, in our opinion, lie in the neglect of international experience in the development of ecotourism; lack of a consistent state policy in the tourism industry; inefficiency of central executive bodies in the field of tourism; lack of proper conditions for the development of priority areas of foreign and domestic tourism, state tax incentives for the export of tourist services; unsatisfactory work on the formation and reinforcement of the tourist image of Ukraine; the global economic crisis in the tourism industry caused by the COVID-19 pandemic.

Consider in detail the dynamics of the number of domestic tourists in the Dnipropetrovsk region (*Table 8*).

Table 8

Dynamics of the number of domestic tourists in the Dnipropetrovsk region

Indicators	Years					
	2011	2014	2015	2016	2017	2018
The total number of tourists served by tour operators and travel agents, <i>including:</i>	64470	56803	46121	57770	75526	116981
incoming tourists	16	-	-	-	1	-
domestic tourists	18515	7263	7195	7776	7482	9229

Compiled based on information materials of the Main Department of Statistics in the Dnipropetrovsk region. (At the time of the statistical analysis, the data for 2019 are not available)

According to the Main Department of Statistics in the Dnipropetrovsk region, the number of domestic tourists decreased in 2011-2018 by 50.2%. Statistical analysis shows that since 2014, incoming (foreign) tourists do not visit the region. Given this situation, it is advisable to develop special ecotourism routes, expand and improve the regional infrastructure of the region, which will increase the number of domestic and foreign tourists.

According to the WTO, "... the development of tourism has led to the growth of the hotel industry as a major component of the tourism industry. Moreover, under intensified competition in the international tourist market, the modern hotel industry of most countries of the world has formed an independent branch of the economy" [1].

During 2011-2018, the number of collective accommodation facilities in Ukraine decreased by 19.7%, hotels – by 12.2%, campsites – by 33.3%, also, agro-hotels were not created at all (*Table 9*).

Table 9

Dynamics of the number of collective accommodation facilities in Ukraine, units

Indicators	Years					
	2011	2014	2015	2016	2017	2018
Total number, units	5882	4572	4341	4256	4115	4719
<i>Including</i> hotels and similar accommodation facilities, namely:	3162	2644	2478	2534	2474	2777
- campsites	18	11	6	14	12	12
- agro-hotels	-	-	-	-	-	-

Compiled based on the information materials of the State Statistics Service of Ukraine.

According to the analysis of statistical data, the number of collective accommodation facilities in the Dnipropetrovsk region decreased in 2018 compared to 2011 by 66.2%, and their share in the total number in Ukraine – by 3.8 percentage points, or from 5.8 to 2%. The number of places in collective accommodation decreased by 54.8%. During the study period, there was a tendency to reduce the number of hotels and similar accommodation facilities by 63.1% and their share – by 2.6 percentage points, or from 4.5 to 1.9% of the number of hotels in the country. It is worth noting that there are no campsites or agro-hotels in the region.

Let explore the collective accommodation facilities in the Dnipropetrovsk region (*Table 10*).

Table 10

Collective accommodation facilities in the Dnipropetrovsk region

Indicators	Years					
	2011	2014	2015	2016	2017	2018
Number of collective accommodation facilities	275	265	253	254	228	93
<i>Including</i> the number of hotels and similar accommodation facilities	141	146	139	138	120	52
Number of places in collective accommodation facilities	26191	26148	25484	24156	22794	11826

Compiled based on information materials of the Main Department of Statistics in the Dnipropetrovsk region.

Considering the results of statistical data, we can state that the number of collective accommodation facilities decreases annually in 2011-2018, which in turn leads to a significant reduction in tourist turnover in the region.

The analysis of indicators of the development of ecotourism in Ukraine and the Dnipropetrovsk region proves that in general, across Ukraine, the number of estates grows, but the Dnipropetrovsk region remains unchanged in this direction in 2014-2017 (*Table 11*).

Table 11

Indicators of ecotourism development in Ukraine and the Dnipropetrovsk region

Years	Number of estates		Number of accommodated persons		Revenues from services rendered, thousand UAH	
	Ukraine	Dnipropetrovsk region	Ukraine	Dnipropetrovsk region	Ukraine	Dnipropetrovsk region
2014	233	1	39311	48	11219,9	17,2
2015	235	1	49253	84	18369,0	58,7
2016	375	1	79891	46	41879,5	52,7
2017	377	1	82570	265	53594,4	131,2

Compiled based on the information materials of the State Statistics Service of Ukraine.

(In 2011, the information on such indicators was not collected – data unavailable. Since 2018, the form of state statistical observation does not provide for the collection of information on these indicators)

In 2017, 377 estates were created in Ukraine, which is 61.8% more than in 2014. In the Dnipropetrovsk region, during the study period, only one estate continues to operate, but the number of people accommodated in the estate has increased significantly (5.5 times), which indicates the relevance of this vector of development of estates as an element of the regional infrastructure system. It should be noted that the share of the Dnipropetrovsk region in the all-Ukrainian income from the rendered services in the field of ecotourism was insignificant and amounted to 0.24% in 2017 (in 2014 – 0.15%).

4. Results and Discussions

To identify the relationship between ecotourism indicators in the region and development trends under uncertainty, correlation analysis was used. It is established that there is a high level of a direct correlation between revenues from

the rendering of tourist services and operating costs of tourism entities, as the value of the reliability of the approximation R is 0.9228, i.e. close to 1 (*Fig. 1*).

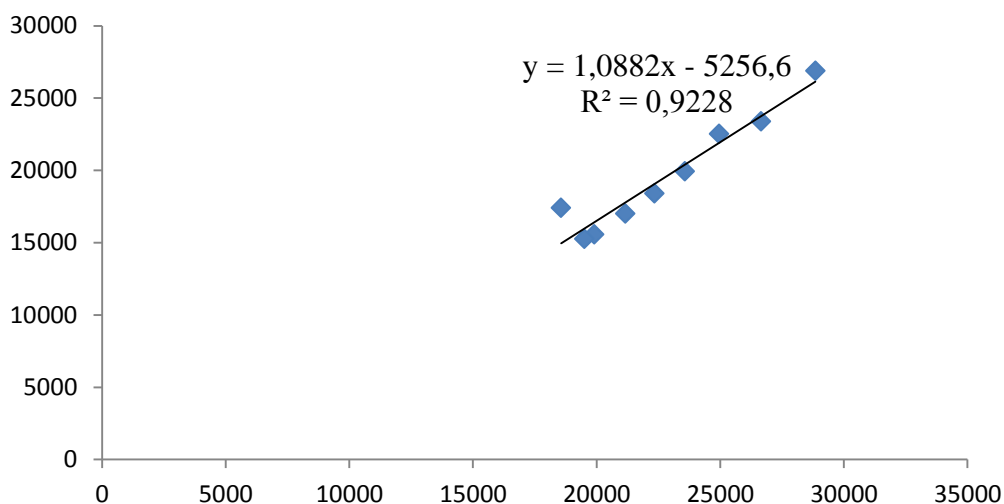


Fig. 1. The relationship between income and operating expenses of tourism entities in the Dnipropetrovsk region (*designed by the authors*)

Similar correlations have been established between revenues from the rendering of tourist services and operating costs of tour operators (*Fig. 2*) and travel agents in the region (*Fig. 3*).

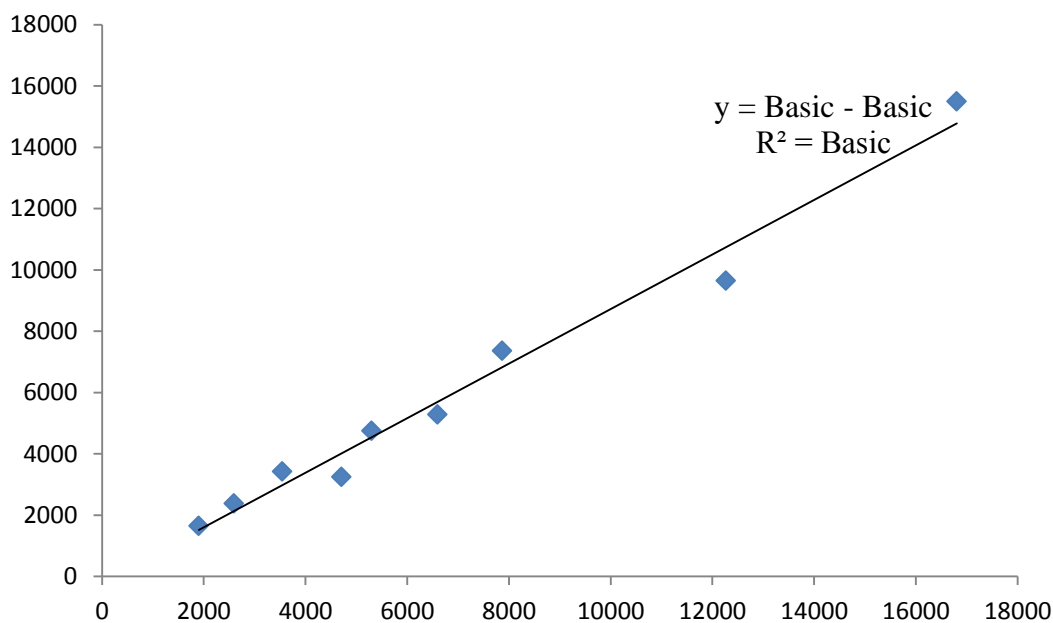


Fig. 2. The relationship between income and operating expenses of tour operators (*designed by the authors*)

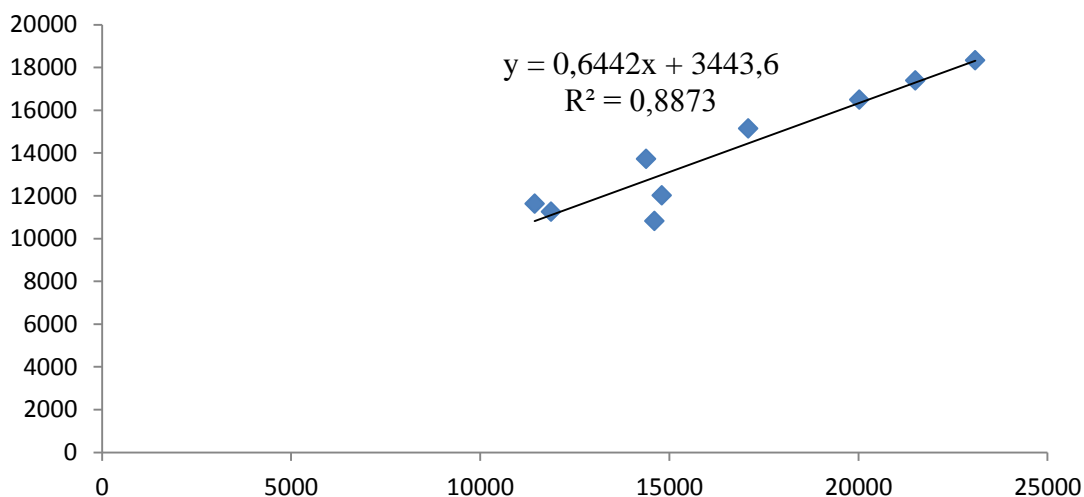


Fig. 3. The relationship between income and operating expenses of travel agents (*designed by the authors*)

As can be seen from Fig. 2 and 3, there is a high direct correlation (the value of the reliability of the approximation R is, respectively, 0.98 and 0.8873) between the revenues from the rendered tourist services and the operating costs of tour operators and travel agents.

This is confirmed by the results of calculating the correlation coefficients of Pearson, Spearman, and Fechner, which determined the closeness and direction of the correlation between revenues from tourism services and operating costs of tourism entities, including tour operators and travel agents in the Dnipropetrovsk region.

In statistics, the Pearson correlation coefficient (r^{xy}) is an indicator of the relationship between two variables and, which takes values from -1 to +1 inclusive. Using the data in *Table 3* and the following formulas

average values of indicators \bar{x} , \bar{y}

$$\bar{x} = \frac{\sum x_i}{n}, \quad (2)$$

$$\bar{y} = \frac{\sum y_i}{n}, \quad (3)$$

$$\overline{xy} = \frac{\sum x_i \cdot y_i}{n}, \quad (4)$$

dispersions

$$S^2(x) = \frac{\sum (x_i - \bar{x})^2}{n}, \quad (5)$$

$$S^2(y) = \frac{\sum (y_i - \bar{y})^2}{n}, \quad (6)$$

standard deviation

$$S(x) = \sqrt{S^2(x)}, \quad (7)$$

$$S(y) = \sqrt{S^2(y)} \quad (8)$$

the linear Pearson correlation coefficient is calculated

$$r_{xy} = \frac{\overline{xy} - \bar{x} \cdot \bar{y}}{S(x) \cdot S(y)}, \quad (9)$$

Thus, there is a high level of linear correlation between the income and operating expenses of tourism entities, as the value of the linear correlation coefficient is 0.961. The calculations one more time confirmed the relationship between costs and income, i.e. the number of costs affects the amount of income.

Based on the calculation of Spearman's rank correlation coefficient, the closeness (strength) and the direction of the correlation between revenues from travel services and operating costs of tour operators are determined. Spearman's rank correlation coefficient is a nonparametric measure of the statistical relationship between two variables. It evaluates the satisfaction of the relationship between two variables using a monotone function.

This coefficient is calculated by the formula

$$r = 1 - \frac{6 \sum d^2}{n \cdot (n^2 - 1)}, \quad (10)$$

where d^2 is the sum of the squares of the rank difference;
 n - the number of observations.

Using the data in *Table 4* according to the formula (10) we have $r = 0.98$. Thus, there is a significantly close relationship between the volumes of income and operating costs of tour operators (the value of the Spearman's correlation coefficient almost reaches 1). The sign "+" means that there is a direct correlation between the indicators, i.e. the greater the value of income is the greater the value of operating costs is.

Based on the calculation of the Fechner coefficient, the availability and direction of the correlation between revenues from travel services and operating costs of travel agents are determined.

Using the data in *Table 5* according to the formula

$$k = \frac{\sum a - \sum b}{\sum a + \sum b} \quad (11)$$

we get $k = 1$. It means that there is a high direct correlation between these indicators.

Thus, the research and the analysis of statistical data established that the Dnipropetrovsk region has significant potential for the development of ecotourism. Ecotourism is a type of economic activity that does not require significant investment, contributes to solving social and economic problems of rural areas,

increasing the level of employment of the rural population, stimulating the development of services (transport, trade, etc.).

The analysis of scientific sources revealed a set of mutually agreed barriers that hinder the formation and development of regional ecotourism infrastructure in the Dnipropetrovsk region in sustainable development, namely:

- the imperfection of the legal framework for the regulation of the tourism industry and the allocation of land for infrastructure;
- a lack of special support programs for the rural population;
- to organize business activities in the field of ecotourism;
- a reduction of tourist flow due to the deterioration of political, social, economic, and epidemiological (Covid-19) situation in the region and the country;
- a lack of brand of rural areas of the region;
- insufficiently effective use of marketing tools and imperfect system of promotion of tourist products on the domestic market;
- a lack of a systematic approach to advertising ecotourism products;
- an insufficient development of the transport system and road infrastructure;
- an insufficient development of existing accommodation facilities for green tourists;
- non-compliance of institutions with the needs of tourists and European standards;
- a low level of quality of tourist service in the countryside;
- seasonal nature of ecotourism development;
- an insignificant amount of investment resources;
- a lack of methodological, organizational, informational, and financial support for small business development in the field of ecotourism;
- an insufficient level of training for the tourism sector, including digital competencies.

To eliminate the above-mentioned barriers, in our opinion, it is necessary to create a mutually agreed regional model of the ecotourism infrastructure development, which components we consider appropriate to accomplish with: personnel, logistics, information, financial, marketing, transport, and innovation, where the main elements will be state bodies in the interdependence with the private and / or public sectors to increase the socio-economic effect of the development of the region (Fig. 5).

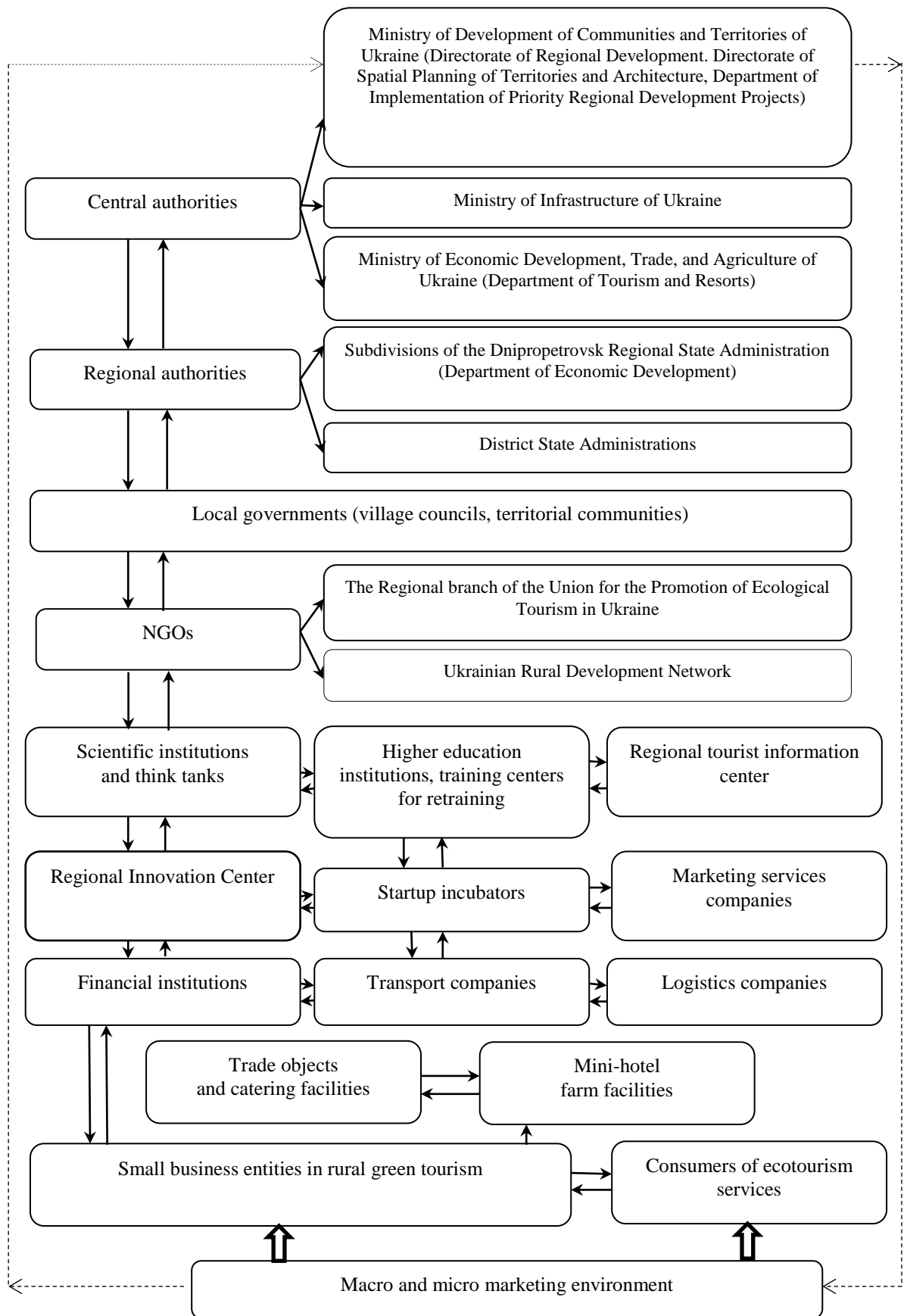


Fig. 5. A regional model of agreement of the elements of the functioning of ecotourism infrastructure (case of the Dnipropetrovsk region) in sustainable development

Source: *proposed by the authors.*

One of the key principles of the proposed model should be the partnership and cooperation of all institutions and organizations that perform their tasks to achieve a common goal – the effective formation and development of regional ecotourism infrastructure.

The Ministry of Development of Communities and Territories of Ukraine ensures the implementation of state regional policy and state policy in the field of local self-government; forms an optimal system of institutional support for regional development; develops and implements measures aimed at building infrastructure. The Ministry of Infrastructure is entrusted with the functions of forming and implementing state policy on the development of transport infrastructure in the region. The Department of Tourism and Resorts of the Ministry of Economic Development, Trade and Agriculture of Ukraine will ensure the formation and implementation of the state policy in the field of tourism, development, and implementation of tourism development programs; will promote the coordination of the functioning of business entities and their associations in the field of ecotourism. The main task of the Department of Economic Development of the Dnipropetrovsk Regional State Administration, in our opinion, will be to ensure the implementation of the state regional policy, the state policy on business development and tourism as an essential component.

The regional branch of the Union of Rural Green Tourism of Ukraine, as an essential component of the regional innovative model of ecotourism infrastructure, is a voluntary association of individual entrepreneurs to meet public economic, social, and environmental interests by promoting ecotourism and local communities in the region. Besides, the regional branch of the Ukrainian Rural Development Network will promote ecotourism programs and projects to increase employment, income levels, and improvement of the quality of life.

The creation of a regional innovative model of ecotourism infrastructure is impossible without the proper scientific and methodological support, where an important place is given to scientific institutions and higher education establishments. Scientific institutions together with higher education establishments carry out current research and development on ecotourism. Moreover, higher education establishments are entrusted with an equally important mission – advanced training of personnel in the tourism sector.

The Regional Tourist Information Center will support the development of ecotourism in the Dnipropetrovsk region and should take an active part in the program of categorization of rural estates engaged in ecotourism. The regional innovation center should create conditions for the development and implementation of innovative technologies by business entities in the field of ecotourism. This organization will help increase the number of successful startup projects.

Startup incubators should support small businesses at all stages of their development: from the development of the idea to its commercialization (in this case, it is the support for innovative projects to create ecotourism infrastructure in the region). To provide marketing, logistics, information, and financial support for the formation and development of the ecotourism infrastructure, it is necessary to

involve logistics, transport, marketing services companies, banking, and financial institutions. Entrepreneurs in the field of ecotourism (objects of mini-hotel economy, trade, and food), first, should meet the needs of consumers by providing quality and affordable ecotourism services.

The implementation of this model should include:

- partnerships between all participants: central authorities, regional authorities, local governments (village councils, local communities), NGOs, research institutions, higher education establishments, regional innovation centers, startup incubators, small businesses in the field of ecotourism, and consumers of ecotourism services;
- the coordination of efforts of central authorities, regional authorities with local governments;
- scientific and organizational support of long-term ecotourism development programs;
- the development and implementation of the marketing concept;
- the implementation of innovative programs and infrastructure projects for the development of ecotourism activities;
- the creation of a modern information support system;
- the development of a financial support mechanism, which will consist of the use of various financing instruments:
 - public-private partnership;
 - preferential lending;
 - crowdfunding;
 - venture investment;
 - grant programs;
 - international technical assistance;
 - international funds, etc.

One of the development vectors of the infrastructure of the market of ecotourism services market is the active use of the information component of the formation of the innovative potential of ecotourism development in the region, the use of informatization technologies. Information resources, acting as a basis for the adoption of the subjects of regulation of regional development of ecotourism management decisions of an innovative nature, form the information component of the innovative potential of such development.

5. Conclusions

Research indicates the need to coordinate the implementation of the ecotourism development strategy for any territorial unit of the country, finding new sources of funding for this sector, which include not only public and foreign investment but also the advancement of resources through social investment, in particular, in ecotourism, venture financing, crowdfunding, funds of international organizations, grants, etc. As its development will not only contribute to the implementation of alternative sources of self-sufficiency of agribusiness in a period of limited financial resources but also expand the market for tourism services in terms of the global space. This, in turn, will ensure the sustainable

development of the agricultural and tourism sectors and the regional economy in sustainable development.

It is worth noting that the transformation processes in the agribusiness and ecotourism sectors are related to the social, economic, and environmental aspects of business development. Given the above, ecotourism should be considered as an innovative tool for the diversification of agricultural and tourism business, which contributes to increasing competitiveness and sustainable development of the region through the agreement with government agencies, intensification of investment processes, improving the quality of life of the rural population, and more.

The strategic directions of development of ecotourism activities in the region include the following:

- the creation of appropriate agreed institutional conditions and appropriate legal environment, namely: the development and adoption of the Law of Ukraine “On Rural Green Tourism”, a regional program for the development of ecological tourism, amendments to the Development Strategy up to 2027, and the Action Plan for its implementation in 2021-2023;

- mutually agreed economic support for the development of ecotourism by intensifying public-private partnerships to attract private investment, crowdfunding, preferential lending to homeowners to modernize homes, training, and advertising;

- the implementation of stimulating and encouraging mechanisms to ensure the functioning of ecotourism infrastructure facilities;

- the formation of an effective coordinated system of quality assurance of ecotourism services, which will be based on the needs of the consumer, will guarantee basic standards, will include criteria for environmental protection, etc.

Prospects for further research are comparative analysis and forecasting of indicators of ecotourism development in the regions of Ukraine and the development of an organizational and economic mechanism for managing ecotourism activities in the regions.

In modern realities, a single definition of ecotourism infrastructure has not yet been formed. Having conducted the analysis, we believe that the regional model of agreement of the elements of ecotourism infrastructure is a combination and interconnection of elements of a single system for creating, developing new tourism projects, routes, which implementation will increase employment and income, will increase revenues of local budgets, will increase the cultural component of the population. The formed and coordinated system of regional development of ecotourism infrastructure will be the final stage of the cycle of production of tourist and recreational services, which will significantly affect the result (supply and provision of services). Besides, the protection of the rights and interests of consumers and ensuring their safety will accompany the rendering of services in the field of environmental management. Implementation of the regional model of agreement of the elements of the functioning of ecotourism infrastructure will allow increasing incomes of the rural population and the volume of receipts to local budgets, reducing unemployment by creating additional jobs, intensifying the

development of small business in the villages of the region, strengthening public-private partnership based on attracting private investment in sustainable development.

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