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## Greenways as a form of sustainable tourism development in Lviv region (on the example of Yavoriv district)

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**Abstract.** The article analyzes the concept of green routes and the peculiarities of their distribution and development in the countries of Western Europe. The activity of initiators of green ways in Ukraine is explored. The basic principles of the concept of sustainable development are set forth. The main components of the Green Way are described, in particular: the main axis “backbone trail” is marked, the network of various thematic trails

and local routes is marked, the tourism product is consistent with the principles of sustainable tourism, there is regional partnership and a route coordinator, local initiatives are aimed at protecting the natural and cultural heritage. The specified stages of the creation of the Green Way: Stage I: “Organization”, Stage II: “Visualization”, Stage III: Promotion and Distribution of the Tourist Product, Stage IV: “Support for Local Initiatives”, Stage V: “Creating Infrastructure on the Itinerary”. Three Greenways created in Ukraine are analyzed in detail. The first of them – “Valley of Two Years” was designed in 2016 in Kiev-Svyatoshynsky district of Kiev region. The peculiarity of this Green Way is primarily the activity of local residents. Thanks to their efforts, traditional activities now include fairs, artistic and other events, triathlon and horse riding competitions, cycling routes. The River Irpin, which, despite over-regulation, has preserved many features of the “wild” river, is now a venue for rafting. “Honey Circle” – the basis of the way is formed by the Horyn and Sluch basins, passes along or near the river valleys. That is why the honey circle is the key to hiking in the countryside – green, ecological, active, sports and other niche activities, as well as health and recreation. “Pradavnii Velet – the basis of the route is formed by the valley of the Dniester River (almost 300 km) and its left-hand tributaries the Koropets, Strypa, Dzhurin, Seret, Tupa, Nichlava and Zbruch. The main tourist resources of the region are concentrated in the river valleys. That is why green (including ecological) tourism is the basis of the concept of development of tourism in the Dniester area. A new green way project has been proposed on the territory of the Lviv region, namely in Yavoriv district. Travelling in Roztochya, tourists, besides many nature reserve objects, can explore many architectural and archaeological sites, sacred buildings, and visit their museums and galleries to see their history.

*Keywords:* “Greenway”, sustainable tourism, tourist resources, Lviv region, Yavoriv district.

## “Зелені шляхи” (Greenways) як форма розвитку сталого туризму у Львівській області (на прикладі Яворівського р-ну)

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**Анотація.** В статті проаналізовано концепцію зелених маршрутів та особливості їх поширення і розвитку в країнах Західної Європи. Досліджено діяльність ініціаторів зелених шляхів в Україні. Описані основні складові Зеленого шляху, зокрема: позначена головна вісь “backbone trail”, позначена мережа різноманітних тематичних стежок і локальних маршрутів, турпродукт, що відповідає принципам сталого туризму, партнерство в регіоні і координатор маршруту, місцеві ініціативи, метою яких є охорона природної і культурної спадщини. Зазначені етапи створення Зеленого шляху: I етап: “організація”, II етап: “візуалізація”, III етап: “просування і поширення туристичного продукту”, IV етап: “підтримка місцевих ініціатив”, V етап: “створення інфраструктури на маршруті”. Детально проаналізовані три Зелені шляхи, створені в Україні. Перший з них – “Долина двох рік” запроєктований у 2016 році в Києво-Святошинському районі Київської області. Особливістю цього Зеленого шляху є насамперед активність місцевих мешканців. Завдяки їх зусиллям, вже традиційними тут стали ярмарки, мистецькі та інші події, змагання з триатлону і кінного туризму, велосипедні прогулянки. Освоюється для сплавів річка Ірпінь яка, попри зарегульованість, зберегла багато рис “дикої” річки. Наступний, “Медове коло” – основу шляху формують басейни Горині і Случа, він проходить вздовж або поряд з річковими долинами. Саме тому ключовим для Медового Кола є туризм на природі – зелений, екологічний, активний, спортивний та інші нішеві види, а також оздоровлення та відпочинок.

“Прадавній велет” – основу шляху формує долина річки Дністер (майже 300 км) та його лівосторонні притоки Коропець, Стрипа, Джурин, Серет, Тупа, Нічлава та Збруч. Основні туристичні ресурси регіону найбільше концентруються в їх долинах. Саме тому зелений (в т.ч. екологічний) туризм є основою концепції розвитку туризму Придністер’я. Запропоновано проєкт нового зеленого шляху на території Львівської області, а саме в Яворівському районі. Мандруючи Розточчям, туристи також, окрім численних об’єктів природно-заповідного фонду, можуть оглянути багато архітектурних та археологічних пам’яток, сакральних споруд і, ознайомитись з їх історією, відвідати численні музеї та галереї.

*Ключові слова:* “Зелені шляхи”, сталий туризм, туристичні ресурси, Львівська області, Яворівський район.

**Introduction.** Greenways are multifunctional routes for traveling using engineless vehicles or hiking, which are arranged along natural corridors, historical trade routes, rivers and abandoned railways. These routes coordinate with local enterprises for realising the concept of sustainable tourism and promoting the benefits of a healthy lifestyle. Greenways are the basis for realizing the local initiatives of a social character and projects related to protection of nature, landscapes, cultural heritage, ecological tourism and related to transport which does not pollutes the environment. Greenways correspond to all needs of the local population and tourists, contributing to intensification of the local economy (information from <http://www.greenways.com.ua>).

The initiator of “the Green routes” movement is considered to be the United States of America: the notion “Greenways” appeared there for the first time in the 1950s in the context of recreation routes (hiking and cycling routes), which was a promotion of healthy lifestyle and engineless vehicles.

In Western European Countries, the idea of green routes began to be disseminated in the late XX century. Greenways in countries of the European Union are touristic recreation corridors created for traveling using engineless vehicles. They are independent routes unrelated to highways, along old historic roads, natural ecological corridors or forgotten, unused lines of communication (for example abandoned railways). The goal is promoting a healthy lifestyle, improving people’s health of and conditions of the environment, reduction of pollution, creating ecologically clean roads for daily operation.

The European Greenways Association, EGWA, was established in 1997 in Belgium. Its most active members are Belgium, Spain, Great Britain, France, Ireland, and the Czech Republic.

*The initiator of Greenways in Ukraine is the Ukrainian Association of Active and Ecological Tourism, a public organization involved in the systematic development and popularization of nature-friendly active forms of recreation and ecological tourism. One of the orientations of their activity is the support of sustainable tourism in natural and historic-cultural*

territories by close co-working with the sites and with local authorities and local communities (Greenways, <http://www.greenways.com.ua>).

Management of the touristic sphere in terms of sustainable tourism is based on two fundamental approaches: careful usage of natural resources and minimizing harm to the environment, provision of balanced social-economic development of touristic regions.

The fundamentals of the concept of sustainable tourism were announced for the first time in the programme document “Agenda XXI” approved in 1992 at the UN conference in Rio de Janeiro. On the basis of this document, in 1996, the World Tourism Organization, the World Travel & Tourism Council and the Earth Council developed their own “Agenda 21 for the Travel and Tourism Industry”. It for the first time determined the notion “sustainable tourism”, i.e. tourism based on sustainable development. The notion of tourist activity is “envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems.

Therefore, the *sustainable tourism* is a process which can fulfill the needs of visitors, tourists and the sites they are visiting, and at the same time, maintains and develops the opportunities for the future (WTO, 1996).

Criteria of sustainable tourism should be arranged in harmony with the criteria of sustainable development of society in general – provision of high quality of life. In this context, one can state that tourism and the opportunity to participate in the touristic movement are criteria of sustainable development of society (Pankiv N.E., Lushchik M. V., Roik O.R., 2018).

**Materials and methods.** For achieving the goal and solving the tasks, in this work we used various methods of scientific research: generalization, comparison, analogues, concretization, and analysis – for elaboration of the essence and the content of notions “sustainable development”, “ecological tourism”, study of conceptual bases of the impact of tourism on changes in social and economic spheres of activity nature conservation territory. We also used other methods of study such as:

questionnaire, factor analysis, analysis of structural elements of tourism infrastructure and development of touristic routes.

Main components of a greenway

1. Distinct main axis, backbonetrail. The main axis connects places attractive from the perspective of area study, natural, cultural and historic heritage. Along the route, a small infrastructure should be arranged – places for rest, information boards with displays of one standard, geographical maps and the logo of the route. Cycling routes should be arranged along roads with a solid surface and low-intensity of autotransport movement. According to West European standards, along such greenways, special cycling infrastructure should be established in parallel to the highways, and where traffic would be safe for cyclists.

2. Network of different thematic trails and local routes. Local routes and trails included in the main branch of the greenway are hiking trails, water routes, ski routes, horse-riding and britzka-riding routes, etc. They have an ecological-educational character and function for recreation, nature study and cultural heritage.

3. Touristic product which corresponds to the principles of sustainable tourism. On the greenway, it is suggested to provide a special touristic product for individuals and touristic groups. An important component of each proposition is printed production – maps and guides.

4. Partnership in the region and coordinator of the route. Each green route is realized by a group of partners composed of public organizations, local authorities and firms. The partners sign a declaration about participation in the project and choose a main coordinator of the route and local coordinators (if the green route is long).

5. Local initiatives aimed at protection of nature and cultural heritage. On a green route, local initiatives and public projects emerge, implemented by creative people devoted to their work: leaders of public organizations, artists, craftsmen, children and youth, teachers and entrepreneurs, etc (Greenways, <http://www.greenways.com.ua>).

*Stages of creating a Greenway*

I stage: “organization”

Determining the idea of the route (theme, leitmotif, geographic area)

Search of partners from three sectors: public, social, and economic

Issuance and signing of the co-working declaration on the development of the project

Selecting a coordinator of the route and local coordinators (for sections of the route in case it is long)

Choosing a name of the route and developing a logo

Preparing the conception of the route development

Processing of the touristic audit with consulting help of the partners (inventory checking of nature and cultural relics, objects of scenic and educational value, touristic base, products of folk handicraft and public initiatives).

II stage: “visualization”

Development of technical project of designating the route,

Involving local authorities in the partnership, including representatives of authorities in the towns located along the route, in particular: urban settlement Ivano-Frankove, town of Yavoriv, Prylbychi and Starychi villages and Stradach urban settlement.

Search of financial resources for designating the route

Designating the main axis of the route and thematic local routes (pointing the directions and also displaying the information with use of logo of the greenway).

III stage “progression and distribution of the product”

Assessing the idea of creating commercial propositions/touristic product on the route with division of the market into segments

Search for partners in the tourist sphere – creating and offering to the market the touristic product Preparation, publishing and distribution of informational-advertisement materials (maps, guides, informationmaterial, web-sites) – at the initial stage the main elements are the map of the route and the web-site.

IV stage “support of local initiatives”

Provision of financing of local projects orientated towards the protection of nature and cultural heritage.Greenroutes should be saturated with local initiatives implemented by local organizations (this is one of its main peculiarities). The most popular local initiatives on the greenways are: cultural and artistic festivals, galleries and stores, where folk handicraft works are sold, master-classes of craftsmen, ecomuseums, nature corners in schools, centers of ecological education, etc.

V stage: creating infrastructure along the route

Creating small infrastructure along the route – places for rest, information centers, boards, etc.

Involving owners of hotel and gastronomic facilities along the route in the initiatives.

Appeal to the representatives of the tourist sphere to receive green certificates and improving the quality of services.

Purposeful search for financial opportunities for stage-by-stage building of paths which form the main axis of the route, which should not intersect the main roads. First of all, one should take care of the branches of the routes which go through large cities (Greenways, <http://www.greenways.com.ua>).

**Results and discussion.** Currently in Ukraine, there are three greenways, the first of them – “Valley of Two Rivers” projected in 2016 in Kyiv-Sviatoshynsk district of Kyiv Oblast. Its main features are the valleys of the Irpin and Bobruksia rivers, and also the coniferous forests located near-by. On the basis of them, a National Nature Park “Pryirpinnia and Chernechy Forest” is planned to be created. The length of the main branch of the route is about 50 km. At the same time, several more dozens of kilometers of tourist routes are being planned in the territory. The peculiarity of this greenway is first of all, the activity of the locals. Due to their efforts, festivals, artistic and other events, competitions in triathlon and equestrian sport, and cycling promenades already have become traditional there. Rafting is to be organized in the Irpin river. Despite its regulation, it has maintained many features of “a wild” river. The territory of the “Valley of Two Rivers” greenway is an interesting place of recreation for inhabitants of Kyiv, because is located near the capital (Valley of Two Rivers, <http://rivervalley.org.ua>).

*Medove Kolo* (Lit. Honey circle) - the basis of the route is formed by the basins of the Horyn and Sluchar rivers, it is arranged along or near to the river valleys. Therefore, essential for the Medove Kolo is outdoor tourism – green, ecological, active, sport and other niche types, and also health improvement and recreation. First of all, the most suitable types for the territory are considered – agrotourism, cycling tourism, water tourism, equestrian tourism and hiking, etc. The main route of the Medove Kolo is about 250 km and includes another several hundred kilometers of local routes. Supplementing tourist products of the territory are: honey hunting (despite the fact that this ancient activity is only partly characteristic of the destination, workers of the Rivne local museum are studying it), ecological education (use of opportunities of the Tsunamska Pushcha Kivertsivsk National Natural Park, the Nadsluchansky Regional Landscape Park, and also local forestries), archeological relics (first of

all, ancient Rus towns through development of experimental archeology on the basis of Pohorynnia hillfort, organization of historic reconstructions, master-classes, specialized thematic events), popularization of healthy eating (first of all honey products (MedoveKolo, <https://www.facebook.com/groups/medovekolo>).

*Pradavni Velet* (Lit. Ancient Giant) – the basis of the route is formed by the valley of the Dniester (almost 300 km) and its left-bank tributaries the Koropets, Dzhuryn, Seret, Tupa, Nichlava and Zbruch. The main tourist resources of the region are concentrated in the river valleys. Also, the Dniester, and its tributaries upstream, forming meanders, flow into canyon-like valleys. This forms characteristic and unique landscapes and a climate, rich in natural objects and territories. First of all, this is the Dnistrovsky Canyon National Natural Park and the Regional Landscape Park of the same name. The projected territory is literally “surrounded” by other significant territories such as the Halytsky National Nature Park, the Dnistrovsky Regional Landscape Park, the Khotyn National Nature Park, the Podilski Tovtry National Nature Park and Medobory Reserve. That is why green (including ecological) tourism is the fundamental conception of the development of tourism in Prydnisteria (Greenways, <http://www.greenways.com.ua>).

We suggest developing and implementation of a green way in the Ukrainian Roztocze in Lviv Oblast (Yavoriv district). The basis of the route should be formed by the valley of the Vereshchitsia River. The main tourist resources of the region are concentrated in its valleys.

The place has old traditions of active tourism, first of all, water tourism and hiking. The site is rich in protected territories (Roztocze Nature Reserve, Yavorivsky National Nature Park (NNP), etc); Domazhyr Bear Shelter; a variety of mineral waters with healing properties. The area is characterized by a high number of (around 70) relics of architecture (the Vereshchitsia (river), <https://uk.wikipedia.org/wiki/>), and also peculiar ethnographic features which also determine the touristic attractiveness of the proposed greenway. Also, Yavoriv district has a quite developed touristic infrastructure and is provided with stationary zones for rest. Particularly, the Vereshchitsia recreation base (11.6 km from the Ivano-Frankove urban settlement) is located in territory of the Yavoriv National Nature Park. The place is visited mostly for fishing in the lake, where carp, northern pike, crucian carp and European perch live. The services provide mangals (barbecues) for making shashlik or preparing caught fish, and gazebos, where one can

gather with friends or family. There is also a children's playground with sandbox and slides. Apart from fishing, the visitors can ride on catamarans or rent bicycles.

“Kryve Oзера” (Lit. Curved Lake) is a recreation complex with large territory on the shore of a picturesque lake. The services include a hotel with rooms of standard class, standard plus, ecostandard plus, semi-lux for two or four people. The complex has a restaurant of Ukrainian and European cuisine, sauna and banya on fire woods. There is possibility of recreation in summer houses, preparing shashlik in special gazebos and fishing in pleasant surroundings.

Yavoriv district, or, as it is often called according to physical-geographical zoning, Roztocze has for over 100 years been a center of recreation for the inhabitants of Lviv and visitors to of the city. The natural attractions of this upland have encouraged the development first of all of recreation centers, and also of winter tourism.

In general, Lviv oblast is characterized by a variety of natural conditions and richness of the natural environment, which allows development of practically all types of active tourism, particularly: hiking (both highland and lowland hiking are possible), skiing, some water sports, cycling, auto-tourism, equestrian, and air tourisms. The exception is only sailing due to the absence of access to sea in the territory, and the insufficient flow of the Oblast's rivers.

For fans of active recreation, 57 routes for active tourism have been developed in Lviv Oblast, a large part of which requires restoration and signage. Out of them, 21 are ecological trails, 19 – for hiking and 16 for cycling.

Also, as was mentioned in the Department of Tourism and Resorts of Lviv Oblast Administration, propositions were received for designating over 80 tourist routes. Therefore, together with the expert on active tourism, national and regional nature parks, district administrations and united territorial communities, in 2018 it was planned to create a network of routes of active tourism. Also, significant attention was paid to the aspect of popularizing the oblast as an area for active recreation using modern digital technologies (Pankiv N.E., Lushchik M. V., Roik O.R., 2018).

Lviv Oblast is incredibly rich in rivers, lakes and waterfalls, the most famous of which are the rivers Dnister, Stryi, West Buh, Opir and waterfalls Kamianka and Hurkalo (Where to search for adrenalin: a season of extreme river rafting starts in Lviv Oblast /dyvys.info, <https://dyvys.info/2018/03/15/de-shukaty->

[adrenalin-na-lvivshhyni-startuye-sezon-ekstremalnyh-richkovyh-splaviv-foto](#)).

River-rafting has recently become a popular sport, particularly for inhabitants of Lviv and other guests of the Skolivsky Rafting Centre, which offers rafting in the Carpathians both in Skolivsky district and in all West Ukraine. In Skolivsky district, rafting down the Opir and Stryi has been organized. Also rafting tours are organized in other rivers of the Carpathians, such as the Chorny Cheremosh and the Tysa. These rafting trips are more complicated (4<sup>th</sup> category). An example is a tour called Rafting Cheremosh, which is organized on the following route: turning at Dzembronia village – end of the Krasnyk village. On this route, interesting areas are rapids and complicated stretches of the river: rapids Berdy, Dzembronia, Bilakobyla, Malyi Huk and Velykyi Huk (the most difficult).

For fans of light rafting, multi-day rafting trips organized on the rivers (and their tributaries) Dnister, Stryi, Svicha, Mizunka, which begin in the towns of Skole and Rozvadiv, and ends in Halych or Khotyn.

Of particular interest is rafting downstream the Dnister with continuation in the Vereshchytsia River, which flows across Lviv Oblast and is a left tributary of the Dnister. Earlier, the Vereshchytsia river was full-flowing and appropriate for sailing. The river has a slow flow. This river earlier provided the connection of the basins of the Dnister and Vislavia the Sian and Buh. The Vereshchytsia begins in the Roztocze, in the north-west from Vereshchytsia village. It flows towards the north east across the territory of Siansk-Dnister water-divide plain (only north of the Horodovka town, it flows 10 km from the east to west). It flows into the Dnister in the west from Poverhova village. Upstream, it flows across the territory of the Roztocze Nature Reserve and Yavorivsky National Nature Park.

The name of the river derives from the heather (Ukrainian – veres) which forms heather thickets (Ukrainian – vereshchatnyky). Its length is 92 km, the area of the basin equals 955 km<sup>2</sup>. Stream gradient is 0.9 m/km. The valley is of trapezoid shape, V-like in some places, its width is 2-4 km. The floodplain is wide (1-1.5 km), with lake-like enlargement, swamped in many places. The stream bed is moderately curved, canalized in some places. Its width is 3-4 m to 10-20 m, depth – 3-4 m. In the valley of the Vereshchytsia, there are many fisheries and ponds of different size and purpose. Their number is over a hundred, and the area reaches 1600 ha. Some of them are quite large, for example near Ivano-Frankove urban settlement (Yanivsky Pond), and the towns

Horodok, Velyky Liubin and Komarno, The Vereshchytsia river is used for commercial and practical purposes, irrigation and fishing (<https://uk.wikipedia.org/wiki>).

Apart from water tourism, hiking in the Carpathians is organized (Parashka, Pikui, Velyky Verh, Khomiak, Hoverla, Pip Ivan mountains, Chornohirskyrange, Horhany and Borzhava mountains, etc.), and also hiking in rocks and caves (Kliuch-Skole Cave, Mlynky-Chorkiv Cave, Optymistychna-KorolivkaCave, Dzhurynska-NahorianyCave, Kryshtaleva-KryvcheCave, Ozerna-StrilkiivtsiCave, Verteba-BilcheCave, and Stradchnska-Stradch Cave). Near the rocks and rivers, rope walks are set up. There is a pendulum, a tarzan rope on the bridge, hanging tree tents, and rock climbing. One can also rent kayaks (Aleutian kayaks, boats) (Skolivsky center, official website of Skolivsk Town Hall, <http://www.skole.com.ua/uk/karpaty-rest/62-skole-rest/227-splav.html>).

In Lviv Oblast, there are favorable social-economic preconditions for organizing and development of rural tourism on the basis of village yards and farms (a number of public organizations and homeowners contribute to the development of tourism, particularly, the public organization Association Skolivsky Resort Lviv Oblast Center for Contributing to the Development of Rural Green Tourism, Association of Contribution to the Development of Rural Green Tourism in Ukraine, the "Rovin" Association of Mountain Guides, and others.) Analysis of the recreational infrastructure allows one to make a high evaluation of the promise and economic practicability of the development of rural tourism and transforming Lviv Oblast into a tourist-recreation region of West European significance.

Yavoriv district in particular has material-technical resources of the Roztocze Nature Reserve and Yavoriv National Nature Park, which allow use of phytotherapeutic forms of heath improvement and treatment in the rural area. Richness in mineral waters with healing properties such as Naftusia, Myrhorodska (Anna), which are concentrated in the area of Shklo and Nemyriv villages and natural medical substances (peloids) contributed to creating there centers of green tourism in the district.

Lviv Oblast is characterized by a diversity of conditions and richness of ecological-recreational resources. Protected territories in Lviv Oblast have important recreational touristic significance, though their main purpose is preserving objects unique for this zone, and also preservation and recreation of valuable and unique

natural complexes or their important components (Pankiv N., 2016).

In particular, Yavorivsky district has:

*Yavoriv National Nature Park (NNP)* – established in 1998 on the basis of the Nature Landscape Park of the same name and adjacent territories of Starychivske and Maherivske military forestries. The purpose of creating the park was preservation, recreation and rational use of type and unique forest-steppe landscapes and other natural complexes within the Main European water-divide, which have nature protection, esthetic and recreational significance.

The Yavoriv NNP is located in the territory of Yavoriv district of Lviv Oblast and covers an area of 7078.6 ha. Its territory is a part of the Ukrainian Roztocze, a narrow upland chain 75 km long. These territories have the features of three geographic regions – the Carpathians, Polesie and Podillia.

The south-east part of the Yavoriv NNP crosses the Main European water-divide. The rivers which flow across this territory belong to the basins of the Black and Baltic Seas. These are, in particular, the rivers Stavchanka and Stara Rika (left tributaries of the Vereshchytsia), Derevianka and Svyntia (basin of the Western Buh); the Vereshchytsia flows across the area, flowing into the Dnister.

Six ecological routes have been organised in the territory of the park, the most popular of which are "Vereshchytsia", "Stezhka Ivana Franka" (Ivan Franko's trail), "Holuby" and "Lelehivka". In this part of the park, fishing for commercial purposes and hunting are prohibited. Four autobus-hiking routes are proposed for tourists: "Stradch-Chori Oзера", "From Yaniv to Krehov", "Confession of time" (family residence of Sheptytski), "Yavorivsky polygon – past and present". Also interesting are thematic excursions, for example, scientific-educational "World of orchids of the Yavoriv NNP", "Rare plants of the Roztocze", "Medical plants of the Roztocze", "To bees for heath" and others.

There are also located stationary zones of rest:

Lelehivka: Places for mass recreation are prepared, summer recreation awnings and bridges for fishing are constructed. The places of recreation have mangals. Children's playgrounds are constructed. Visitors have opportunity to explore the literary-nature route "Ivan Franko's trail".

Vereshchytsia has summer recreation awnings, mangals for making fires. There are two water bodies: one is suitable for swimming and the other has bridges – for amateur sport fishing.

A beach and mooring places are organized on the water body for swimming, with a rescue point and opportunity to rent a boat. Children have a separate place for swimming, and a children's playground. One can ride on britzka and explore other routes. A recreation house is located here.

SeredniiHorb: 15 km from Lviv. It is a town, where old farmsteads and forest lodges were located in the Poliana tract. The place has attractive buttes. A 2 ha lake was created, around which some centennial trees are preserved. The area is attractive for hiking, picnics, and utilitarian recreation (collecting berries and mushrooms).

Kozulka: weekend recreation base. It is a comfortable, mostly dry area with good microclimate. Two water bodies are located on the Kyslianka river. In this area, a number of historical relics are concentrated, the historical settlements of Krekhiv monastery. Yavorivsky NNP has two interesting establishments: Residences of Roztocze Museum of antiquities and private collection of the Historical Museum of Yaniv. There also master-classes of painting the Yavoriv toys or weaving bulrushes (Yavoriv NNP. Carpathians info, <http://www.karpaty.info/ua/uk/lv/jv/ivano.frankov/e/sights/yavorivsky.npp>).

Roztocze Nature Reserve was established by the decree N 403 of the Council of Ministers of Ukrainian SSR of October 5, 1984 on the basis of two objects of the nature-reserve fund: Stradchansky Forest State Reserve of Local Significance, Koroleva Hora Protected Tract and parts of the forest fund of the Stradchansky Educational-Industrial Lumber Mill. The reserve comprises two forestries (Vereshchyske and Stravchanske), the length of the territory from the north to the south is 8 km, from west to east – 12 km, and the area equals 2,084.5 ha.

The reserve was established with the purpose of preserving the territories with unique combination of natural complexes of West Ukraine forest-steppe physical-geographic province in natural condition and provision for their scientific study.

On the basis of the Roztocze reserve, an educational ecological center has been established. In its structure, the Nature Museum and Green School circle operate. For visitors, thematic excursions on educational routes are organized. Events such as “Let's help birds in winter”, “Alternative spruce”, “Save the primroses”, “Day of trees”, “Day of the environment” (Roztocze Nature Reserve. Carpathians, info <https://www.karpaty.info/ua/uk/lv/jv/ivano.frankove/sights/roztochchya>).

Ravske Roztocze Regional Landscape Park is an object of the nature-reserve fund of Lviv Oblast, located in its western part, on north-east slopes of the Roztocze uplands. The Landscape Park was created within two administrative districts – Zhovkva and Yavoriv, it stretches over 30 km from west to east, its maximum width – around 10 km.

In the west, the park is adjacent to the border with Poland, on the south it borders with the territory of the Yavoriv polygon, on the south-east – with the Yavoriv National Nature Park. The Ravske Roztocze Landscape park is also a part of the International Ukrainian-Polish Roztocze Biosphere Reserve established in 2011 by the Decree of UNESCO “On including the Ukrainian part of the International Biosphere Reserve “Roztocze” in the Global network of biosphere reserves”. The main purpose of the Roztocze Biosphere Reserve is preservation of biodiversity, conducting scientific studies, development of local communities, restoration of traditional crafts, folk artistic crafts, sustainable usage of nature reserves, support of growing ecologically clean agricultural production, preservation of historical-cultural heritage, conducting ecological-educational activity, development of green tourism (Ravske Roztocze Regional Landscape Park,

[https://uk.wikipedia.org/wiki/Регіональний\\_ландшафтний\\_парк\\_Равське\\_Розточчя](https://uk.wikipedia.org/wiki/Регіональний_ландшафтний_парк_Равське_Розточчя)”).

Another interesting object for tourists is the *Domazhyr Bear Shelter* located in Zhornytska village (Yavoriv district). It is a unique rehabilitation center, where brown bears live in conditions close to natural. By attending the center, all visitors can not only see the animals, but take part in educational events, excursions, master-classes, volunteer actions and other interesting events. Apart from standard excursions, a theatrical tour is organized, where the main hero is a kind wood goblin Chubaister. For the visitors, a corresponding infrastructure has been built, including a parking lot, café with open terraces, where one can taste aromatic coffee and medicinal tea (Domazhyr Bear Shelter. Carpathians info <https://www.karpaty.info/ua/uk/lv/jv/domazhyr/entertainment/rehabilitation>).

Also, in the Yavoriv district, there is an ornithological reserve Yaniv Herons; Nemyriv Reserve Tract; a number of botanical nature relics: “Centennial Oak”, “Centennial Maple”, “Centennial Plane Tree”, “Group of Centennial Lime Trees”, “Two Centennial Oaks”, “Red Beech”, “Yew” and others, and also a number of hydrological natural monuments: “Springs N 1-6

of the Nemyriv resort, the spring of drinking water Naftusia and the complex of natural monuments: “Complex of picturesque rocks among woodlands near the Lelehivka village”, “Stradchanska” and parks of garden design: Nemyriv Resort Park, Shklo Resort Park and two “Parks of the XIX century” (Nature reserve fund of Lviv Oblast,

[https://uk.wikipedia.org/wiki/Природно-заповідний\\_фонд\\_Львівської\\_області](https://uk.wikipedia.org/wiki/Природно-заповідний_фонд_Львівської_області))).

Traveling in Lviv Oblast and the Roztocze, in particular, tourists, apart from numerous objects of the nature-reserve fund, can also see many architectural and archeological relics, religious buildings, and after getting to know their history, visit numerous museums and galleries.

The largest centers of educational tourism of Yavoriv region, which would be practical to include in the route of Ukrainian Roztocze greenway, are the Ivano-Frankove urban settlement and Yavoriv district center.

Particularly, in Yavoriv, there is located a residence museum of Osy Makovii; such relics of architecture as: the wooden Church of the Dormition of the Mother of God (1568), wooden Church of the Nativity of Mary (1572), the monastic cells of the Vasyliansky Monastery (1621), Church of the Intercession of the Theotokos (1862), the Town Hall Building (XI century), Community House (1908), Ratusz (early XX century) and others.

Interesting objects for tourists are relics in Ivano-Frankovo: in 1614 the walls of the Trinity Church in Yaniv were erected with the Dominicans. In 1831, the Church of the Resurrection was built. Also, there were three synagogues: two wooden and one built of stone. The wooden ones burnt and the one of stone remains to this day. In the dungeons of the Trinity Church, the mortal remains of the mother of the last Polish King are kept – Princess Constance Poniatkowska from the house of Chartoryiskyi. In the center of modern day Yaniv is the Church of Saint Volodymyr, built in 1992. The Museum of Wood Art was transferred there; it was created on the basis of the artistic professional technical school (Bordun, 2012).

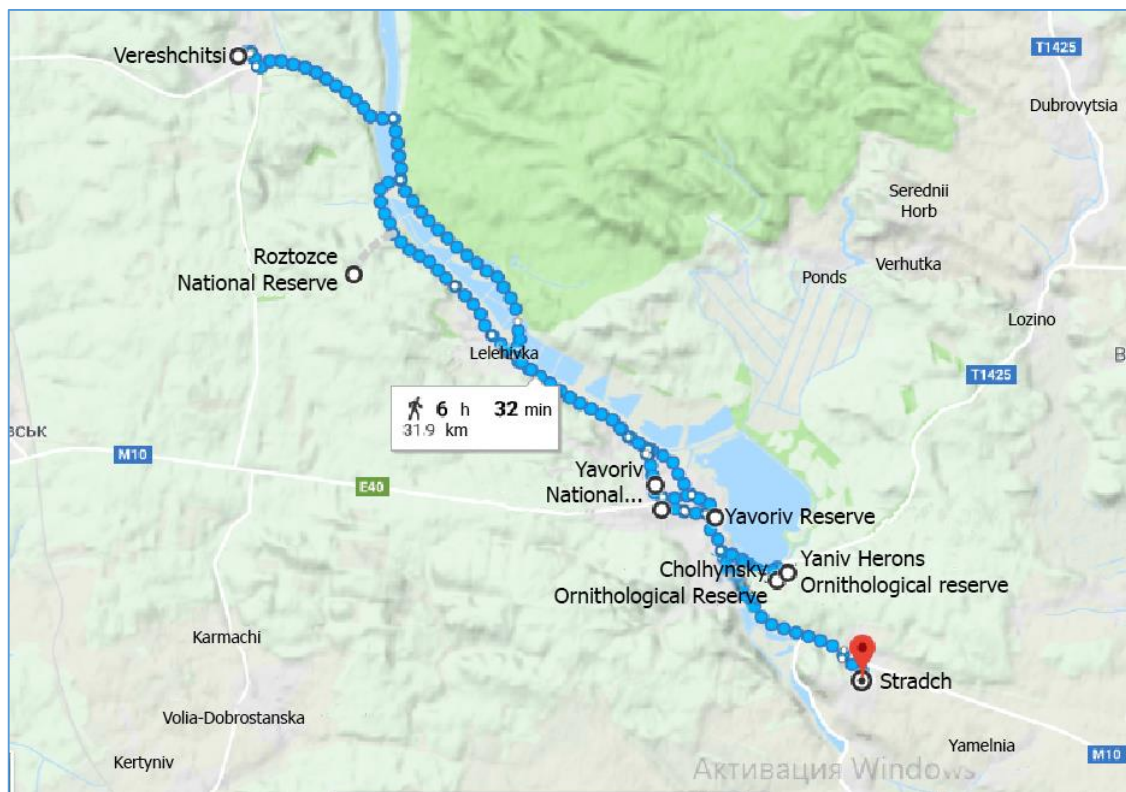
In view of the diversity and saturation of the region with tourist resources, it is practical to create a Ukrainian Roztocze greenway, the basis of which can be formed by left tributaries of the Dnister, particularly the Vereshchytsiariver. The main tourist resources of the region are concentrated in its valleys, therefore the key greenway is tourism in the natural environment –

green, ecological, active, sport and other types of tourism, and also health improvement and recreation. First of all, this concerns the most suitable types for the territory – water, rural, cycling, equestrian and hiking types of tourism.

The length of the “Ukrainian Roztocze” Greenway would equal 20 to 50 km depending on the number of days (on the wish of the tourists, the route can be a short-duration (2-3 days) – variant 1; average duration (3-5 days) – variant 2 and long (5-7 days) – variant 3 and, can include another several hundreds of kilometers of local routes: particularly, Roztocze reserve and Yavoriv National Nature Park. The protected trails lead also to the dendrological park – Stradch Arboretum, Cholhunsky, Yanivski Herons, Zavadvivsky reserves, Nemyriv Preserved Tract, the natural monuments Stradetska Cave, monuments of garden design (Fig. 1). Yavoriv region is blessed by the healing springs of the Shklo and Nemyriv sanatoriums. Evidence of the Shklo’s healing water dates back to 1456. In the XV century, thermal baths were built, and treatment and recreation was organized. The modern resort has medical buildings and buildings for accommodation, the Naftusia drinking waterculvert, a picturesque urban forest of 125 ha with a scenic lake, lime trees and birch alleys. Nemyriv sanatorium is one of the Ukraine’s oldest resorts and the only specialized sanatorium for treating skin diseases. Located in the old forest park with access to the springs of hydrogen sulfide mineral water known since XVI century, the resort was officially established in 1814. Today, “Bronislava”, “Anna”, “Maria” hydrogen sulfide mineral water and peloids are used for treatment. The surrounding countryside also offers opportunities for improvement of health – mixed forest dominated by pine, a large picturesque lake with a flow of water, and clean air with a high content of phytoncides.

Preservation of historical-cultural heritage and development of tourism and recreation is also contributed by the development of ecotourism which develops on the basis of a rational regime of natural territories and objects, and also historical and cultural heritage. It more and more often becomes a significant component of village budgets and an important source of income for the local population. If it is necessary to adapt to new conditions, non-exhaustive forms of nature use, ecological and green tourism can be one of the main economic encouragements and important components of sustainable development of the local community (Horban I. et al., 2016).





**Fig. 1.** Branch of the Ukrainian Roztozce Greenway

Therefore, Yavoriv district can be an example for creation of greenways in Lviv Oblast. Accordingly, the following peculiarities of ecotourism could be designated for establishing greenways in Lviv Oblast, formulated as a set of principles (Bochkariova T. V., Samartsev S. Y., Hlystova Y. H., 2002):

Stimulation and fulfillment of willingness to communicate with nature;

Trips outdoors, and the main content of such trips is encountering the wildlife, and also local customs and culture.

Preventing negative impact on nature and culture;

Minimizing negative effects of an ecological and social-cultural character, maintaining ecological stability of the environment;

Assisting the protection of nature and the local socio-cultural environment;

Assisting the protection of nature and natural resources;

Ecological education;

Participation of the locals who can draw an income from the touristic activity, which creates economic stimuli for them to promote nature protection;

Economic efficiency and provision of social-economic development of the territories;

Assisting the sustainable development of the areas visited.

Thus, the types of tourism which have the highest total positive effect from the perspective of ecology, economic and social development are more stable (Table 1). Current understanding of ecotourism determines the purpose of creating greenways in Lviv Oblast, and also orientation towards achieving sustainability as a final result to a large extent make us reconsider the traditional ideas about which types of trips constitute ecological tourism. However, the traditional criteria - the motivation of tourists and extent of flow of tourists – are certainly important, but have no essential role themselves. The main question which the organizers of ecotrips should ask themselves is what impact on the natural and cultural environment is caused by these trips, and what are their consequences.

Therefore, to determine the efficiency of creating “Greenways” in Lviv Oblast according to the principles of ecotourism, we developed a questionnaire for expert assessment (Table 1). The main instrument of social questioning (in which the staff of the Department of Tourism of the V. Chornovol Institute of Sustainable Development of the Lviv Polytechnic National University) was the questionnaire we developed, which contained 32 criteria of ecological tours which related to the principles of sustainable development of tourism in protected objects of nature.

The study we conducted was orientated towards the analysis of the process of the formation, development and further approval of

project of establishing 'Greenways' in Lviv Oblast according to the principles of sustainable tourism, and also performing a comparative assessment of the correspondence of these principles in current conditions of tourism in the area and in conditions of establishing 'the Ukrainian Roztozce Greenway'. The questioning was based on such blocks of questions as:

Minimizing negative impacts of ecological and social-cultural character, maintaining the ecological stability of the environment;

Contributing to the protection of nature and local socio-cultural environment;

Ecological education;

Participation of the locals and their ability to draw income from the touristic activity, which creates economic stimuli for them to promote nature protection

Economic efficiency and contribution to the sustainable development of the regions visited.

The results of the questioning are the comparative assessment of the principles of sustainable tourism in the conditions of current tourism in the area in the conditions of establishing "the Ukrainian Roztozce Greenway" with etalon assessment. Etalon comparison is an actual object which has the best indicators and covers all principles of sustainable development, mentioned in Table 1.

Because the study consisted of a comparative analysis of the correspondence of the principles of sustainable tourism in current conditions of tourism in the area and in conditions of establishing 'the Ukrainian Roztozce' greenway with etalon assessment, we used the coefficient of ratio ( $I_{cpsd}$ ):

$$I_{cpsd} = \frac{I_i}{I_e} \quad (1)$$

where  $I_{cpsd}$  – index of correspondence to the principles of sustainable development of the studied territory;

$I_i$  – number of points obtained as a result of expert questioning on the corresponding to the principles of sustainable development of the studied territory;

$I_e$  – corresponding to the principles of sustainable development of the studied territory in the etalon system (i.e. correspondence to all principles of sustainable development of the studied territory, mentioned in Table 1). The closer the value of the routes' index is to one, the more they correspond to the principles of ecotourism (Table 1). According to the expert questioning, the value of the correspondence of

the touristic routes at current conditions of ecotourism in the area equals 0.43, which indicates presence of many problems, and also no clear decisions for their solution, particularly:

Economic crisis and political instability negatively affect the image of Ukraine in the global tourist market;

Imperfection of the legislation in tax, cadastre and other bases cause problems to investment in the development of ecological tourism;

Absence of strategies and plans of development of ecological tourism in the territory of protected nature fund;

Absence of mechanisms of regulating the number of tourists in the territory of nature reserve fund;

Absence or discomfort of the infrastructure (accommodation, transport, touristic routes, etc) in the territory of the nature reserve fund;

No possibility of providing tourists with sufficient information on paid services and production;

Absence or inappropriateness of the existing ecological routes to the interest or level of preparation of tourists;

The ecoroutes do not correspond to the existing international standards;

Insufficient level of education of personnel necessary for successful organization of ecological tourism;

Absence of high-quality advertisement-informational materials on the ecological tourism in the territory of nature reserve fund;

Absence of mechanism of co-working with the local population.

This research proves the effectiveness of implementation of "the Ukrainian Roztozce" Greenway (value of correspondence of which to the principles and criteria of sustainable tourism equals 0.87) and provides a positive general balance of ecological, socio-cultural and economic impacts of ecotourism, and also should meet the criteria of social, cultural, ecological and economic compatibility (Table 1). The main purposes of implementation of "the Ukrainian Roztozce" Greenway project in the territory of the National Nature Parks are as follows:

-preservation of flora and fauna, and also natural resources, for obtaining economic profit from their rational use;

- use of the advantages from implementation of ecological tourism for development of infrastructure and improvement of the level of life of the local population;

**Table 1.** Questionnaire on the efficiency of implementation of the project “Ukrainian Roztozce” greenway

Principles of ecotourism	Criteria of sustainability of the touristic routes	Number of points	
		Current conditions of implementations of ecotourism in the territory	Ukrainian Roztozce Green way
Minimizing the negative impacts of ecological and social-cultural character, maintaining ecological stability of the environment	<ul style="list-style-type: none"> <li>- Do not exceed the threshold limit recreational loads</li> <li>-Development of tourism is thoroughly planned, controlled and managed</li> <li>-Following the rules of conduct, developed for the corresponding nature territories</li> <li>- Ecological transport used by tourists</li> <li>- Garbage is not disposed into container or dump, but is collected in a specific way, and further removed from the territory and sent forecotechnical recycling</li> <li>- Camps, bivouacs, and fires are organized only in specially adapted places</li> <li>- Buying souvenirs made of objects of wildlife is unaccepted</li> <li>- Mushrooms, berries, flowers, medical plants, any natural souvenirs are collected only at allowed time and places</li> <li>-Hotels, campsites borders, houses, where tourists stay, are located in such way that do not damage the normal, ecologically sustainable development of the surrounding landscape and spoil its scenery</li> <li>- These hotels and campsites are built with ecologically safe materials, their inhabitants do not overuse the energy and water, at the same time the drains and discharges are cleaned, other wastes are utilized</li> </ul>	- + + - - + + - - + - -	+ + + - + + + + + +
Contribution to the protection of nature and local socio-cultural environment	<ul style="list-style-type: none"> <li>- Tourism provides additional source of finances for protected nature territories or nature-protection measures</li> <li>- Participants of the tours take part in nature-protection (volunteers, ecocamps for children, etc)</li> <li>- Tourists respect the local cultural traditions, customs, way of life, and are willing to study and understand them</li> <li>- Development of tourism contributes to development of cooperation with local authorities</li> </ul>	- + + +	+ + + +
Ecological education	<ul style="list-style-type: none"> <li>- Tourists in advance, before the trip, receive information about nature and the rules of conduct at the place of the tour</li> <li>- Tourists clearly understand their responsibility for maintaining nature, and follow the rules of conduct</li> <li>- Tours and excursions necessarily contain an educational component</li> <li>- Tours are guided by qualified guides-ecologists</li> <li>- Objects of attendance are interesting and ecologically favourable natural and cultural landscapes</li> <li>- The programme includes visiting educational ecological trails, museums of nature and museums of local history, etc</li> <li>- Tourists become familiar with the local ecological problems and ways of solving them, implementation of nature-protection projects</li> <li>- Tourists participate in solving the local ecological problems by available means</li> </ul>	+ - - + + + + +	+ + + + + + +
Participation of the locals and their profit from the touristic activity, which creates economic stimuli for them to promote nature protection	<ul style="list-style-type: none"> <li>- Mostly the local products and labour is used</li> <li>- The locals participate in the tourist business and receive an opportunity to develop their traditional forms of management</li> <li>- The income from the tourism is received by different social layers and groups (principle of extending the impact), at the same time, the maintenance of the natural environment becomes ecologically profitable for the local population</li> </ul>	+ - -	+ + +
Economic efficiency and contribution to the sustainable development of regions visited	<ul style="list-style-type: none"> <li>- Complex approach to the development of tourism</li> <li>- Detailed planning, monitoring and management</li> <li>- Integration of ecotourism into local plans of regional development</li> <li>- Close co-working with organizations of different profile</li> <li>- Profits from tourism are not completely taken out of the local budget, but contribute to its renewal, and support of the local economy</li> </ul>	+ - - - -	+ + + + +
Assessment of the correspondence of the touristic routes to the principles and criteria of sustainable tourism		0.43	0.87

Note: developed by the author on the basis of (Panov I. M., 1998), (Bochkariova T. V., Samartsev S. Y., Hlystova Y. H., 2002).

- increase in the level of ecological education and general culture of the local population;
- educating the local population about the importance of preserving natural resources, and also about the basics of touristic business for active participation in
  - realization of touristic services of ecological tourism;
  - improvement of social and economic conditions in local communities, including by creating employment;
  - creating additional sources of financial support of the territories of the nature reserve fund;
  - development of international partnership between the Ukrainian and international nature reserve systems, and also integration into the system of international ecological tourism.

For efficient organization and work of the relations between the administration of nature reserve fund and the local population, the following economic measures should be used:

- theoretically substantiate the organization and development of the nature reserve fund on the basis of the principles and criteria of sustainable tourism, provided in Table 1;
- implement economic assessment of the territories of the nature reserve fund regarding the development of ecological tourism;
- conducting ecological auditing;
- provide the enterprises which underwent the certification of ecological services with additional and other benefits.

Implementation of "the Ukrainian Roztozce" Greenway project allows the administrations of the National Nature parks to significantly correlate their strategic purposes, tasks regarding financial needs. Moreover, there is a guarantee that natural resources are orientated towards their optimum ecological, social and economic benefits. Also, it would allow creating an optimum system of assessment of the correspondence of the enterprises to the ecological legislation of Ukraine, and also to the principles of sustainable tourism.

Implementation of this project in the long-term, i.e. in the projection on the present and future generations, can be adjusted to particular ethnic and cultural peculiarities, this meeting the requirements of social justice, is ecologically compatible, and also practical and beneficial in economic aspect. If these tasks of improvement and development of the existing situation in the sector of tourism in the studied territory are implemented, the results should manifest themselves in several aspects, in particular, social, economic and ecological spheres.

Successful implementation of the propositions would lead to an increase in quantitative and qualitative indicators of fulfilling

the needs of the population in tourist-recreational services, partial solving of unemployment by employing workers in institutions of touristic-recreational spheres, as well as in the related services; improvement of the quality of touristic-recreational services, enlarging the range of services, increase in the annual flow of domestic and foreign tourists and investments.

Great attention should be paid to the ecological situation, i.e. improvement of the conditions of natural environment, rational use of natural tourist-recreation potential, which would allow full use and maintenance of the existing treasures of the Roztozce Nature Reserve. Promising development of the touristic sphere in the region depends on the number of objective and subjective factors which affect the actual policy in the sphere. Therefore, it is necessary to decentralize the duties which at this stage are concentrated in the central institution of executive power in sphere of tourism. Progress in this field will depend also on the economic situation in the country and in the world.

**Conclusions.** Adoption of the Greenways project in Lviv Oblast in accordance with the principles of sustainable tourism can fulfill not only the needs of tourists and social-economic interests of the region, but provide preservation and renewal of the ecological condition of the environment, cultural and national identity of the region's population. Stable development of tourism in the region is determined by the factors of external (ecological policy, tendency of functioning of the market of recreational-touristic services, state policy of social-economic development, investment and financial policy) and internal impact (strategy of development of tourism in the region, natural-resource potential, sectoral and territorial structures of the economic complex of the territory) which should be taken into account during development of the conception of stable development of tourism in the region.

Despite the richness in the resources in Lviv Oblast, and Yavoriv region in particular, local ecotourism is not developing at full capacity. Among the factors which prevent its development, the main are economic and organizational. The economic factors include: absence of required initial capital for financing works of creating scientific nature centers, formation of orientated programmes of ecological tourism; insignificant investments in the touristic infrastructure and, particularly, to the implementation of ecological programmes, which affects the condition of hotel, transport services, level of services; absence of instruments of management and marketing of ecotourism for involving potential tourists in visiting at least

territories with a certain infrastructure for reception, accommodation and provision of services to visitors; absence of goal-orientated scientific studies and preparation of the required staff.

The obstructing organizational factors are: limited extent of the touristic routes in places of ecological tourism and their unsatisfactory establishment; absence of specialized touristic organizations in the sphere of ecotourism; bureaucratic prohibitions and limitations on access to places attractive in natural aspect to ecotourists mostly due to the lack of development of the mechanism of interaction of the administration of nature-economic and nature protection organizations with the organizers of ecotouristic trips and excursions; limited set of touristic-recreational services for tourists; absence of socially orientated informational management and PR for ecotourism, of fashion for ecotourism; lack of specialists both in the sphere of ecotourism and corresponding state institutions, ministries and departments; absence of necessary legislative base.

Ecological benefits of ecoroutes consist of preservation of the environment by concentration of tourists on the route and use of the didactic properties of the trail in education, and economic profits consist of cash proceeds for a special fund of national nature parks. Therefore, the establishment of ecoroutes should be combined with their economic efficiency. The development of methods and regular monitoring and operative-statistical reporting in the sphere of analysis of the market of touristic and recreational services at the regional and state levels is promising. A detailed system of assessment of economic indicators in the sphere of tourism is needed for determining its efficiency.

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