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## ECOLOGICAL NETWORKS AS A «GREEN» GROWTH FACTOR OF THE REGION'S ECONOMY

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*Харічков С.К., Нездойминов С.Г. Екологічні мережі як фактор «зеленого» зростання економіки регіону.*

Визначено передумови та інституційні чинники формування і розвитку регіональних екомереж, наукові підходи щодо розробки заходів екологізації сфери рекреації та туризму. Доведено, що одним з напрямів реалізації розбудови екологічної мережі в регіонах України є збереження ландшафтного і біологічного різноманіття, створення нових об'єктів природно-заповідного фонду. Обґрунтовано пропозиції щодо удосконалення управління розвитком регіональної екологічної мережі в умовах сталого розвитку. Запропоновано доповнити стратегію соціально-економічного розвитку Одеського регіону заходами щодо управління розвитком екомереж.

*Ключові слова:* екологічні мережі, природно-заповідний фонд, туризм та рекреація, сталий розвиток регіону

*Харичков С.К., Нездойминов С.Г. Экологические сети как фактор «зеленого» роста экономики региона.*

Определены предпосылки и институциональные факторы формирования и развития региональных экологических сетей, научные подходы к разработке мер оприятий по экологизации сферы рекреации и туризма. Установлено, что одним из направлений реализации развития экологической сети в регионах Украины является сохранение ландшафтного и биологического разнообразия, создание новых объектов природно-заповедного фонда. Обоснованы предложения по совершенствованию управления развитием региональной экологической сети. Предложено дополнить стратегию социально – экономического развития Одесского региона мерами по управлению развитием экологических сетей.

*Ключевые слова:* экологические сети, природно-заповедный фонд, туризм и рекреация, устойчивое развитие региона

*Harichkov S.K., Nezdoyminov S.G. Ecological networks as a «green» growth factor of the region's economy.*

The preconditions and institutional factors of the regional ecological networks' formation and development, scientific approaches to the development of measures for greening the recreation and tourism sphere were presented. It was proved that one of the ecological network development directions in Ukrainian regions is to preserve the landscape and biological diversity, to create new objects in the nature reserve fund. The suggestions to improve the development management of the regional ecological network were given. It was offered to complement socio-economic development strategy of Odessa region by the measures of ecological networks development management.

*Keywords:* ecological networks, nature reserve fund, tourism and recreation, sustainable development of the region

**E**cological requirements for balanced regional development and tools for their implementation are mostly associated with the policy, based on the total product life cycle in order to reduce the negative ecological impact on the environment and human health - from raw material extraction to waste utilization. This is the basis of regional sustainable development policy, focused on replacing the unsustainable production and consumption models for eco-friendly ones. Thus, announcing the decision about European integration, Ukraine must reconcile its national development strategy with the EU requirements and international commitments on sustainable development in general and ecological development in particular (about climate change, biodiversity conservation, fighting against desertification, changing unsustainable production and consumption models, ecological rehabilitation and reproduction of ecosystems, river basins, etc.). Strategic national decisions should be implemented in regional sustainable development strategies and national ecological policy.

### Analysis of recent researches and publications

Problems such as institutional and economic factors of ecological networks forming, implementation of regional environmental interests, socio-economic «green» growth in regions were studied by L.V. Gorbatova, Y.M. Grishchenko, M.S. Yakovyshyna, A.Y. Yakimchuk [1;2]. They are reflected in numerous publications of such authors as N.M. Andreyeva, B.V. Burkinsky, T.P. Galushkina, O.A. Vorobyova, M.A. Hvesyk and others [3;4]. As the researchers notice, the growth of the economy is a formation of socially-oriented market economy, providing opportunities, motivations and labor, life quality guarantees for citizens, rational resources consumption. But there is no Ukrainian publication to contain a comprehensive study of ecological networks formation mechanism, environmental policy integration measures in the economic reforms regional strategy, «green» tourism development in terms of self-contained economic space and socio-economic growth. At the same time the problem of the regional ecological networks formation to ensure the sustainable nature management remains poorly studied and requires further research, including a

study during the justification of recreation and tourism territorial organization's task.

*The purpose* of this article is to conduct a study of regional programs implementation's institutional factors, to create ecological networks and to suggest approaches for improving regional administration as a part of the regional «green» economic growth strategy.

### **The main material**

The idea of creating a Pan-European ecological network (European Ecological Network or EECONET) as a system of interconnected, valuable from environmental point of view natural areas, was suggested by a group of Dutch researchers in 1993 at the International Conference "Natural heritage protection in Europe through creation of the European ecological network" (Maastricht, Netherlands). It organically integrates into the idea of sustainable development and is one of the most powerful tools for its implementation. A certain change of views on the nature conservation strategy and tactics, reassessment of reserved territories' values and functional role can be regarded as a prerequisite for the emergence of Pan-European ecological network idea. Nature protection experts in leading countries started to believe, that reserved objects and areas with different protection status and mode have, above all, not only the preserving and settlement function of rare and endangered, scientifically or aesthetically valuable biota species, important particular areas, ecosystems, landscapes or other separate natural objects, biodiversity centers (biotic aspects of the ecological network), but also a function of ensuring the biosphere processes regulation and environment balance, strengthening the biogeocenotic cover's ability to heal itself (eco-stabilizing aspect of the ecological network). According to most current views, the main aim of ecological network's creating is a general improvement of environmental and human life conditions, ensuring the biosphere existence sustainability by eliminating of biogeocenotic cover's anthropogenic fragmentation, which has developed during the historical development of society, creating its continuity and functional integrity and strengthening the ability to heal itself.

Pan-European Ecological Network forming issue was included in the Pan-European Biological and Landscape Diversity Strategy (PEBLDS), that was accepted at the 3rd Ministers of the Environmental Protection European Conference (Sofia, 23-25 October 1995). As it is known, ecosystems and landscapes do not recognize administrative and political boundaries. Therefore, if we consider the regional ecological network design problems, the ecosystem approach is the most scientifically reasonable. In this case one element of the ecological network (a key area or eco-corridor) may have boundaries in several administrative districts, regions or even countries. At the same time, when you move from a scientific ecological network's justification

questions and its design to management and monitoring, it is clear that the resolution of the latter is possible only in case of association with certain administrative units. Formation and ensuring of the ecological network's stable functioning also includes mutually agreed participation of all interested sides – managers, land users, land owners and land managers, scientists, entrepreneurs, local people etc. Thus, ecological network can provide a strong foundation for sustainable (balanced) development of countries and regions. Ukraine as a European country (participant of many international environmental conventions and agreements) also actively participates in the formation of the Pan-European ecological network, along with the wetlands of international importance definition (International Wetlands), under the Convention on Wetlands, which have an international importance especially as waterfowl habitat (Ramsar, 1971); determination of Special Conservation Interest areas in European Emerald Network, following the Convention on Wild Flora and Fauna and Natural Habitats Conservation in Europe (Bern, 1979); biosphere reserves of UNESCO World Biosphere Reserves Network in accordance with the Seville biosphere reserves development strategy (1995) etc. Ukraine like all other participants of the process has obligations to integrate the national ecological network to the Pan-European, including ecological network design, formation and management issues.

The main legal acts regulating the process of Ukrainian National Ecological Network formation are the Ukrainian Law «About Ukrainian Ecological Network» (№ 1864-IV from June 24, 2004) and the Ukrainian Law «About the National Program of national ecological network formation in Ukraine for 2000-2015» (№ 1989 from 21 September 2000). Ukrainian laws that are also closely related to the formation, management, maintenance and monitoring of the National Ecological Network include: «About the environmental protection»; «About the fundamentals of town building»; «About land Protection»; «About land management»; «About local governments in Ukraine»; Water, Forest and Land Codes of Ukraine and other Ukrainian normative legal acts. During the time that has passed since the Program's adoption, real measures to ensure its implementation in the planning and using specific areas were carried out in separate scattered directions. On the one hand, they certainly had a positive impact, and on the other hand they have not led to significant progress towards achieving the main goal – formation of the ecological network as an integrated system, whose feature is the greatest possible continuity and interconnectedness of its components. One of the main reasons for this was the lack of specific mechanisms and uncertainty of the ecological network design procedures, areas and objects of the ecological network list forming, their accounting and monitoring. Civil society institutions should play a significant role in the ecological network formation, which consists primarily of ensuring the qualitative

interaction between society and the executive branch. Methodical recommendations project about the regional ecological network development schemes was created in 2006 by the joint efforts of experts in Ukrainian Ministry of Environmental Protection, Institute of Botanic named after M.G. Kholodnyi of Ukrainian NAS, Institute of Zoology named after Schmalhausen of Ukrainian NAS and Ukrainian National Ecological Centre. Since 1997, NECU with support from the International Union for Conservation of Nature (IUCN) and the government of the Netherlands (MATRA) carried out a number of projects, which were devoted to the science and public support of the national ecological network creation, its integration into Pan-European ecological network, and also to designing and formation of regional ecological networks schemes in Mykolaiv and Chernivtsi regions.

One of the ecological network development directions in Ukraine, whose purpose is to preserve the landscape and biological diversity, is the creation of new nature reserve fund objects. Increasing the area of NRF, which will constitute 10,4% of the country's area in 2015 (now about 6%), according to the ecological network programs, should occur taking into account the ensuring of migration routes, plants and animals species distribution (so-called ecological corridors), this will facilitate the formation of natural connections between existing protected objects and ones that will be created, i.e. the formation of territorially integrated landscape system. Financing of actions complex performing, provided by National Ecological Network Creation Program, should be carried out at the expense of the Ukrainian State Budget, and can be carried out by enterprises of all forms of property and other legal entities. The main purpose of the Ukrainian Ecological Network Program for 2000-2015 is to increase the territory with natural landscapes to the level, required for the conservation of their diversity, close to their natural state, and the formation of their territorially unified system, constructed in accordance with the ensuring of natural migration routes and plants and animals species distribution, and which would ensure the preservation of natural ecosystems. The current space and territorial structure of Ukrainian lands, which are specially protected (territories and objects of NRF; resort and therapeutic, recreational, waterproof, shelterbelts and others), give reasons for their inclusion in the territorial system with certain characteristics of the ecological network. It should be noted that organizations', enterprises' and environmental, health, recreational, historical and cultural institutions' area of the land is 493,3 thousand hectares (0,8 % total country area). During 2006-2010, this indicator increased by 73,1 thousand hectares, mainly due to changes in the structure of land usage in Rivne (42,4 thousand hectares), Zaporizhzhya (10,6), Chernihiv (8,7) and Volyn (6,0) regions.

But the current state of natural landscapes in Ukraine only partially meets the criteria of Pan-

European Ecological Network. Strengthening the state work on optimizing the natural reserve network and its integration into the European network causes the need to review categories of Ukrainian NRF. Because categories turn out the functional significance of protected areas, their regime is determined, that causes the biological and landscape diversity protection. The current structure of NRF categories was set by the Ukrainian Law «About the Nature Reserve Fund of Ukraine» in 1992. Some categories (regional landscape park) were introduced for the first time, others (biosphere preserves) at that time only started to function. Nature monuments, wildlife sanctuaries and protected woodlands have the greatest share in the number of categories among all NRF territories and objects - about 90% of all existing protected areas number. However, the distribution of protected areas in Ukraine is another: about 80% of NRF falls on national parks (35%) and regional landscape parks and wildlife sanctuaries. At the current stage, much attention is paid to the creation of national parks, which, unlike the sanctuaries, have internal zoning, that takes into account not only the opportunities of natural objects, flora and fauna conservation, but also doing some kinds of economic and recreational activities, traditional for local people. National System of Protected Areas (PA) in Ukraine has over 8,000 protected areas. Today in Ukraine 47 national natural parks (NNP) have been created according to Presidential Decrees. The system of national natural parks began to form in 1980 - since the creation of the first Carpathian NNP. Then, the Shatsky (1983) and Synevyr (1989) NNPs were created. The second step of NNP creation was independent Ukraine period. The Azov-Sivashsky (1993), Vizhnitsky (1995), Podolski Tovtry (1996), Holy Mountain (1997), Uzhanskyi Desna-Starogutskiy (1999) NNPs were created in 1990s. The third step in the national natural parks formation in Ukraine was XXI century stage, when Huzulschyna (2002), Ichnyansky, Galician, Homilshanski forests (2004), Mezynskyy, Great Meadow (2006), Hetman, Bug Gard (2009), Tuzlovski limans, Khotyn, Azov, Oleshkivski Sands (2010) NNPs were created. Among the legislatively defined parks only 24 NNPs function [5].

Regional studies indicate, that the characteristics of Odessa region's geographic location gave it a unique and extremely rich diversity of natural complexes and systems, from forest, forest-steppe and steppe to wetlands and coastals. The southern part of region is estuaries of Ukrainian largest rivers - Danube and Dniester, and a network of Black Sea limans with their wetlands. The region has 21 wetlands, 8 of which have international status (133,4 thousand hectares), 4 have the national status (48,6 thousand hectares) and 9 have the regional status (46 thousand hectares). Due to the natural complexes' large value in wetlands of Danube and Dniester, Tiligul liman, Tuzlovsky limans group (Shahany, Alibei, Burnas), Sasyk reservoir and Danube lakes Kugurluy and Kartal, in 1995 they were granted the

international status and were included in the list of wetlands, that are protected by the Ramsar Convention. Wetlands of the Danube River (where since 1998 Danube Biosphere Reserve exists) and Dniester (where in 2008 in the area of 21,3 hectares Nyzhnodnistrovskyy national park was created) are the largest. The remaining wetlands are also partly protected as a part of the nature reserve fund. They are «Tylyguls'kiy» regional landscape park, which includes upper and lower wetlands of the Tiligul liman, «Lung» sanctuary of local importance (in Izmail district), created on lake Kugurluy's wetlands. 42 bird species, included to the Red Book of Ukraine and the European Red List, are nesting in the Danube delta. 63% of birds, registered in Ukraine, are under the protection on the Danube Biosphere Reserve territory. At 01.01.2011 the NRF region had 120 territories and objects, 16 of them are of national importance and 104 - of local. In 1993 in Odessa region about 80,0 hectares of protected areas are reserved for conservation, this gives a strong potential to expand the region's NRF and to increase its share to the indicators, planned by the National Ecological Network Creation program in Odessa region for 2005-2015 [6]. At the same time, among the types of human activities, which negatively affect the structural elements of the ecological network, biological and landscape diversity, the most common actions in Odessa region are:

- unauthorized building on the sea coasts, estuaries, lakes and rivers;
- excessive plowing of the territory that extends to the slopes, soils and waterproof lands;
- nonscheduled cattle grazing on pastures of valley-terraced complexes, on slope lands and forest belts;
- extraction of construction materials and other mineral resources;
- progressing degradation of shelterbelts, due to their cutting out and lack of renewal;
- excessive recreational loading of sea coast and other recreational areas;
- intensive pollution of agricultural and other lands by chemicals, industrial and household waste.

According to a study, in 2012 1093 objects of tourism and recreational purpose were functioning in the region, including: 319 hotels and similar places of temporary accommodation and 774 health profile institutions, where over 114 thousand tourists and holidaymakers can be accommodated simultaneously. The largest number of tourist and recreational purpose objects is concentrated in Belgorod-Dniester, Tatarbunary, Kiliya and Ovidiopol'sky districts. More than 298,7 thousand people improved their health in sanatorium and resort centers, which is 9,13% (25,0 thousand) more than in 2011 year. In 2012, the state enterprise «Odessastandardmetrology» certified 279 hotels, sanatorium and resort, health improvement institutions in Odessa region. In 2012 tax revenues from the subjects of tourist activity in the region were 3447,0 thousand UAH, that is 33.1% more than in

2011 year [6]. This demonstrates the strong potential of recreational activities in the region. Therefore, the transition to the sustainable wildlife management is the leading vector of «green» growth's implementation in the recreation and tourism sphere.

The building of 6 regional importance sanctuaries started in Odessa region: «Kunduky» in Tatarbunary, «Novopavlivskyy» in Shyryayevskyy, «Selyvanskyy» in Anan'evskij, «Aliyaha» and «Vasilyevka» in Kyliysky and «Tarutinskij steppe» in Tarutino districts, there are ambitious plans to build first in the Ukrainian history National Wetlands Park «Vetlandpark» (total area is 9 thousand hectares and the amount of investments is 2 million UAH) near the Kuyalnik. Decree of the Ukrainian President № 1033/200 from 13 November 2008 «About Nyzhnodnistrovskyy National Park creation» on the territory of Belgorod-Dniester, Bilyaivka and Ovidiopol'skiy districts in Odessa region was adopted in order to preserve, reproduce and for sustainable use of typical and unique natural complexes of lower Dniester's reaches, that have important environmental, scientific, aesthetic, recreational and curative value, in accordance with article №53 of the Ukrainian Law «About the Nature Reserve Fund of Ukraine». The noted land area of Nyzhnodnistrovskyy National Park is 21311,1 hectares, including 3,700 hectares of lands, being withdrawn in the prescribed manner and given for permanent use, and 17611,1 hectares, that are included into its structure without removal from the land users. In our opinion, the implementation of such environmental investment projects in the region can attract foreign and local investors and «green» tourism entrepreneurs to form a territorial recreation and tourism clusters of ecological production, environmental infrastructure of tourists and sightseers reception.

Decree of the Ukrainian President from 01.01.2010 № 1/2010 created national park «Tuzlovski estuaries» in Tatarbunary district in order to preserve wetlands of international importance «The system of lakes Shagany-Albej-Burnas». According to the State Committee for Land Resources General Department in Odessa region in 2010 the boundaries of the Black Sea coastal zone were set; they were 57,89 hectares on the territory of Primorsky Village Council and 128,138 hectares on the territory of Lymanske Village Council in Tatarbunary District. Total costs on environmental protection in the Odessa region in 2011 amounted to 324442,9 thousand UAH, that is 16.4% less than in 2010, including capital investments – 82157,2 thousand UAH (48.2% more than in 2010), current costs – 242285,7 thousand UAH (27.2% less than in 2010.) [7]. The structure of capital investments by environmental activities directions in 2011, is presented in Table 1.

As we can see, in the structure of capital investments by environmental activities directions in 2011 in Odessa region, biodiversity and habitats conservation costs were only 0,5% of the total capital investments. To meet the requirements of Ukrainian laws «About the State Program of the Ukrainian

National Ecological Network creation for 2000-2015» and «About Ukrainian Ecological Network» Odessa City Council decision from 18.11.2005, № 705-IV accepted the «Program of the National Ecological

Network creation in Odessa region for 2005-2015» (further - the Program).

Table 1. The structure of capital investments by environmental activities directions in 2011 in Odessa region

	Actually spent		Including expenses for major repair, thousand UAH
	Thousand UAH	As % of the total volume	
<b>Total</b>	<b>82157,2</b>	<b>100,0</b>	<b>26419,5</b>
Atmospheric air and climate Protection	16778,7	20,4	459,1
Return water purification	9554,3	11,7	6581,3
Waste management	8949,9	10,9	–
Protection and rehabilitation of soil, underground and surface water	24661,9	30,0	600,9
Reducing noise and vibration influence (excluding labor protection measures)	21791,6	26,5	18722,9
Biodiversity and habitats conservation	409,3	0,5	55,3
Radiation safety (excluding measures to prevent accidents and disasters)	–	–	–
Environmental scientific research works	11,5	0,0	–
Other directions	–	–	–

National Ecological Network in Odessa region includes some lands, where almost unchanged or partially changed natural landscapes remained. The created regional scheme project includes structural elements of the ecological network as part of the key, connecting, buffer and renewable areas with the natural corridors of regional, national and international importance definition. The inclusion of areas and objects to the list of regional ecological network does not prejudice the rights of those people, on whose territory they are located and does not lead to a change of ownership and land categories. The regional ecological network scheme in Odessa region includes elements of ecological networks at various levels – International (Pan-European ecological network), national (ecological network in Ukraine) and regional, and determines the main directions for further detalization at the local level (districts, village councils). Among the elements of the Pan-European Ecological Network Lower Danube and the Azov-Black Sea natural areas are crossing the region. Among the elements of the Ukrainian national ecological network the following corridors cross the Odessa region: Azov-Black Sea, Coastal - Dniester, South - Ukrainian, Galician – Slobozhansky, Coastal - Bug. Ecological corridors of the local importance are Kodymsky - Savransky, Kodymsky - Sloboda - Baytalivskyy, Sloboda - Yahorlytsky, Kuchurhansky, Big - Kuialnyk, Tylyguls'kiy, Lower - Danube, Yalpuzky, Katlabuzky, Kyrgyz - Kytaysky, Sasyk - Kohylnytsky, Hadzhydersky and Black Sea coastal - marine corridors.

Thus, the regional scheme in the future should dock with similar adjacent areas' schemes and become a part of the Ukrainian National Ecological

Network, National networks in Moldova and Romania, as well as the Pan-European Ecological Network. In order to create a regional database of Odessa Region Environmental Network and to enter key and reserved areas to an electronic map of Odessa region, a geo-database of nature reserve fund territories and objects was developed in Odessa Research and Project Institute of Land Management. Thus, the socio-economic conditions determine the development tendency, specificity and recreational nature management value on the NRF territories and protected areas for each region. Odessa region's NRF area on 01.01.2013 amounts to 4.57% of the total area of Ukrainian NRF (Fig. 1).

Let us pay attention, that during the Ukrainian legislation's development process, to preserve biological and landscape diversity, we should take into account the spatiotemporal organization of natural systems with different taxonomic rank, the necessity of natural diversity preserving at the species and system level taking into account the dynamic state and the level of landscapes' and other natural complexes' human modification, many other natural principles. The «nature reserve fund» concept was substantiated and asserted in Ukraine as a special object of protection and state management, which integrates different by meaning, but unified by target orientation of protected territories and objects. Also we take into account the fact, that to preserve different types of natural objects and to meet various needs (scientific, recreational, preservation of economically valuable plants and animal species etc.) it is necessary to introduce a differentiated protection regime. In these circumstances, there is an opportunity not to prohibit any activity within protected areas, but the

only one that does not allow to preserve certain natural objects properly, so you can avoid unnecessary conflicts between environmental and economic interests in society. Proceeding from these and some other reasons, in Ukraine it is necessary not only to create and save separate protected territories, but also there is a need to create a multifunctional

territorial representative system of such objects, that at a minimum, but sufficient limit of traditional economic activity, in conjunction with other territories, that are under special protection, would form a comprehensive state territorial ecological network.

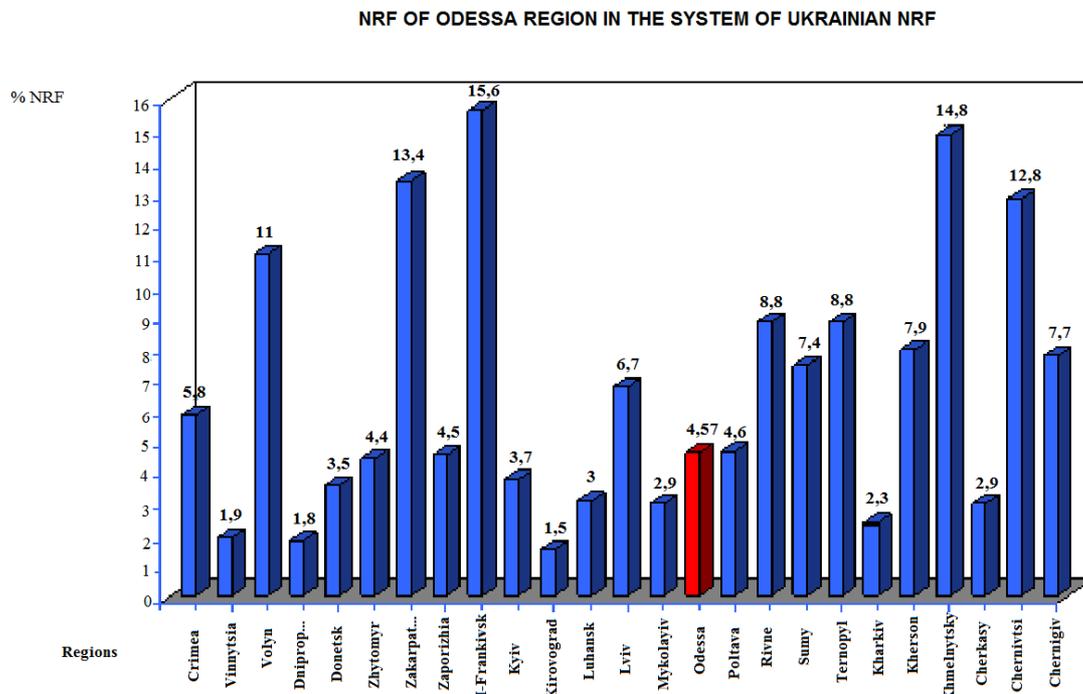


Fig. 1. The share of Odessa region's NRF in total Ukrainian NRF (2012), % [8].

To determine this task, the term «ecological corridor» is widely used, but obviously we should talk about the system of such «corridors» with various sizes and levels. An important mechanism, that is aimed at meeting the challenges of reserve management at sufficiently difficult economic conditions in the country, as shown by practice, is a reservation of valuable territories, provided by this law. Such a reservation is made in order to prevent destruction or damage of valuable natural territories and objects as an economic activity result, before adoption of decisions to declare these territories and objects as a components of this country's natural reserve fund and allocating of the necessary funds. Meaning of the Ukrainian Law «About the Nature Reserve Fund of Ukraine» consists in the fact, that it provided the unity of approaches to all natural reserve territories and objects in the country, and there is no matter whose property they are (state or non-state agencies or business entities).

Considering the present demands about the necessity of sustainable society development, not emaciated forest use and biodiversity conservation, on March 28, 2011 at a the Cabinet of Ukrainian Ministers meeting deputies approved Plans for act projects' preparation and implementation of other measures, necessary for Decrees' of the President of

Ukraine implementation about announcing 29 new and expansion of existing nature reserve fund territories and objects. Deficit of recreational territories is a major cause of not balanced NRF's recreational resources use. As you know, nature reserves (natural and biospheric), national natural parks have national status, but regional landscape parks and reserve tracts have only local importance. To ensure the regime of nature reserves, national, zoological and dendrological parks, parks with landscape art, botanical gardens, sanctuaries (excluding hunting), reserve tracts, nature monuments, protected zones with prohibited activity are set, because it harmfully affects or may affect the protection regime of nature protection purpose lands (Land Code of Ukraine, article 72). Their total actual area is 2004,6 thousand hectares or 58% of actual NRF's area or 3.3% of Ukraine's area, and the total number is 641 NRF objcts. At the same time in Ukraine there are almost no marine protected water areas, no adequate legal and regulatory framework for their establishment. The importance of bilateral agreements should be noted, primarily with neighboring countries. Ukraine has intergovernmental and interdepartmental cooperation agreements about the environment conservation with all its neighbors, one of the elements in most of them is biological and

landscape diversity conservation. In our opinion, the further improvement of the legal principles of biological and landscape diversity conservation in Ukraine can be done by finalization and approval of the basic national policy principles in this sphere by the Parliament, further harmonization of national legislation with international, particularly with European Union's acts, international cooperation enhancing with countries of the region, leading research centers, improving the system of international commitments' implementation, analysis of the national legislation's implementation, increased attention to the formation of the international exchange and trade legal principles, regulation of biosafety issues, prevention of negative impacts on the environment. These problems solving requires a closer combination of governmental agencies', scientific and public organizations', leading scientists' and specialists', media's and educators', tourism and recreation enterprises' efforts, more active development of international cooperation in this sphere.

According to the State Land Cadastre of Ukraine on January 1, 2012, amount of lands used for recreation was 745,4 thousand hectares, or 1.2% of the total area of Ukraine. During the period of 2006-2011 years it has increased by 6.2 thousand hectares. At the same time, the potential area of recreational territories in Ukraine is 12.8% of its total area. These areas are concentrated mainly in Black Sea, Carpathian, Podolsky and Polissya regions. Sea beaches cover about 1160 km of shoreline on Azov-Black Sea coast. This natural potential needs to be protected, reserved and rationally used and it is the basis for sustainable development of resorts, recreational zones and tourism. Carpathian and Crimean regions are characterized by the largest concentration of health improvement and recreational resources, but here the level of their usage is the lowest. The lowest amount of these resources is concentrated in highly urbanized regions of Ukraine – Donetsk and Prydniprovsky, which, however, have a high level of their usage. Lands, requiring the creation of a special protection regime and ensuring the proper functional use, include: resort (health improvement) lands (territories that have over 400 curative mineral waters sources and 104 curative mud sources; sea beaches territories; 732 health centers and sanatoriums for 160 thousand people); recreational lands (2227 establishments for organized recreation and tourism for 275 thousand people; territories of a short rest in suburban green areas; land plots of cottage settlements and horticultural societies); lands of nature reserve fund, which are used for eco-tourism and recreation (47 national parks, 58 regional landscape parks, 4 biosphere reserves, etc.); lands of historical and cultural heritage objects (130 thousand monuments of history, archeology, architecture, ethnography, etc.) [5].

At the same time, major functional elements of the state environmental management system are the following components of the economic wildlife management and nature protection mechanism:

mechanisms of fees for environmental pollution and for the special use of natural resources; compensation of losses, caused as a result of environmental law violations; system of environmental activities' state budget financing through the main section in budgets «Environmental Protection» (state, republican in Crimea and local environmental protection funds).

One of the environmental management's economic mechanism tools is the introduction of fees for environmental pollution and for natural resources use, as well as creation of special funds to form and use money from resource payments. However, the Ukrainian Accounting Chamber's control measures in 2012 showed, that system for evaluating the effectiveness of budget funds use, aimed at the implementation of the state policy in the environmental protection sphere, management, reproduction, protection of natural resources and state oversight, was imperfect. State administration and regulation in this sector was reduced to providing proper permits, limiting and rationing of environmental pollution. At the same time existing leverages aimed at compensation of caused state losses for the violations of environmental laws were ineffective. Thus, in Kharkiv region during 2010 and 9 months of 2011 total amount of refunded ecological losses was only 0,5 % of the total assessed losses or 1,2 million UAH, in Sumy region – 6,3%, or 0,9 million UAH. In Odessa, Mykolayiv and Kherson regions total amount of estimated losses for environmental legislation breaches was 668,64 million UAH. At the same time, for carrying out the non-permit activities in 2011 and in the first half of 2012 only from 0,6 to 0,8% of the damage was refunded. As a result, environmental conditions were not improved, and the problem of natural resources' over-exploitation was not been resolved [9].

Relying on conceptual provisions of systematic approach to the sustainable development issues solving and on necessity of «green» economy implementation, it can be argued, one of the main «green» growth dominants for Ukrainian regions is ecological networks forming. Let us pay attention, that according to the WWF's publication «Living Planet Report 2012» – Ukraine's ecological footprint is 3,19 hectares per person (this indicator increased from 2,9 hectares per person in 2010), that exceeds world average indicator (2,7 hectares). Ukraine's bioproductivity is 2,23 hectares per person (in 2010 it was 1,8 hectares), that is little higher of world average indicator (1,78 hectares). If all the inhabitants in the world consume as Ukrainian people, we will need a little more than 1,4 Planets. Nonetheless, according to the Global Living Planet Index, biodiversity decline since 1970 has been the fastest in low-income countries. It shows, how the poorest and most vulnerable countries subsidize the lifestyle of rich countries. Decrease in bioproductivity (ability of the region to recover resources) will force the country to import key resources from foreign ecosystems, that will potentially cause long-term losses for them. «Growing dependence on external resources exposes significant risk on the country. The ecological crisis is

becoming a driver for increasing economic losses», - says Mathis Wackernagel, the president of World Ecological Footprint Network. «Using an increasing number of natural resources at the time when we have less than we need is a dangerous strategy, but most countries continue to follow this path. Until countries begin to track the bioproductivity deficit and to control it, they are not only risking our Planet, but themselves too», he stresses [10].

World and national practice shows, that the tourism industry is closely related to protected areas. The tourist routes in Ukraine pass NRF territories: it is the highest mountain in Ukraine Hoverla, Narcissus Valley, Lake «Synevyr» in the Carpathian region, well-known Grand Canyon, Nikitsky Botanical Garden in Crimea, Dniester Canyon, Bakotska Bay in Podillya, Shatsky Lakes in Polissya, Holy Mountains, Askaniya-Nova, Buzkyi Gard in the steppe part of Ukraine. Using these pearls of nature people create tourism products, which both Ukrainian inhabitants and foreign tourists want to try. On the territory of biosphere reserves, national natural and regional landscape parks hundreds of environmental trails stretching for thousands of kilometers, ecological and information centers, museums of nature, specially equipped places for recreation were created. The combination of tourism and nature protection activities contributes to regional development, provides creation of new job places, directs economic activity in new positive, eco-weighted mainstream, bringing together local communities thanks to taking care of nature and native land. Ukraine's integration into the international community, introduction of private enterprises and recreation agencies management market methods, requires knowledge and compliance with modern unified norms and rules in the sphere of environmental and nature protection activity. So today, much attention is paid to the adaptation of Ukrainian environmental legislation to the European Union law. This work is really very important and urgent. It is carried out mainly with European Directives, dealing with specific environmental parameters of environmental protection. However, for the stable implementation of environmental requirements it is not sufficiently to pay attention only at the technical aspects of ecological activity. In achieving this goal it is greatly necessary, that works in the sphere of ecological networks formation should be conducted by qualified professionals, who studied according to international requirements and have been certified by independent accredited personnel certification institutions. This thesis fully meets the direction «Ensuring accessibility, improving quality and competitiveness of education» of National Action Plan for 2013 to implement the program of economic reforms in 2010 – 2014 «Wealthy society, competitive economy, effective country», that was approved by the Decree

of the President of Ukraine from March 12, 2013 № 128/2013. Additional emphases on the introduction of European standards in vocational and technical education were made also in the national project «Enterprise 2020», where the Ministry of Ecology and Natural Resources of Ukraine acts as co-executor. Appropriate personnel qualification is required by international standards for management systems, in particular, ISO 9001 and ISO 14001.

### Conclusions

Institutional and functional modernization of natural reserve sphere's public administration system on the basis of ecologization requires a significant reorientation of the management paradigm in spatial structures economic through the prism of improvements in the institutional, technical, technological and socio-economic structure of regional economic systems, which is manifested in bringing new elements and characteristics to it. This approach will ensure not only transparency and efficiency in management decisions, but also the dynamics of further innovative progress. In assessing the dynamics of modern transformational progress insufficient attention is paid to resource and environmental potential of ecological networks system, that is definitely displayed on management decision's effectiveness. At the same time, it can be argued, that in recent years in Odessa region there were certain preconditions of new ecological networks' formation and development. The current state of natural landscapes in Ukraine only partially meets the criteria for referring them to the Pan-European Ecological Network. Strengthening of work on optimizing nature reserve network and its integration into Pan-European network necessitates the revision of categories in Ukrainian NRF. At the present stage considerable attention should be given to the creation of national natural parks, which, unlike nature reserves, have internal zoning, that takes into account the possibilities of reservation of valuable natural objects, flora and fauna, doing certain types of economic and recreational activities, traditional for local people. Constant improvement of environmental management systems is a requirement of international and European environmental management standardization system. For state environmental management system this means its functional extension, systematic and methodological deepening. Establishing and providing of regional ecological network's stable functioning also includes mutually agreed participation of all interested parties – managers, land users, land owners and land managers, scientists, entrepreneurs, local people etc. Thus, formation and development of ecological networks can provide a strong foundation for the «green» growth of socio-economic sphere in the country and regions.

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