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## FEATURES OF THE TERRITORIAL PLANNING OF THE SEA COASTAL ZONE

The coastal zone in Ukraine is likely to undergo the most profound change in the near future. Already more than 65 percent of the Ukrainian Black Sea region population lives within 30 km of the coast. Consequently, unless territory planning and careful environmental management are instituted, sharp conflicts over coastal space and resource are likely, and the degradation of natural resources will stop future social-economic development. In order to maintain and restore coastal ecosystem it was implemented law about formation of the national ecological network of Ukraine. Later were developed General Scheme for Planning of the Territory of Ukraine and regional level planning scheme but there is no especial document regulating the use of land in the coastal zone. The study of geographical conditions, economic activity, and population resettlement shows separation within the regions of several echelons of economic development in relation to the coastline. Such separation may be based on differences in intensity and types of economic use within the territory and the water area, as well as the population density on the land. These features include the following economic stripes: seaside-facade, middle, peripheral – on land, and coastal, territorial waters, exclusive economic zone – in the direction of the sea. At the same time, each economic stripe has a complex internal structure. There are several basic principles of functional zoning of the territory highlighted in the article can help to rational plan the seaside regions.

**Keywords:** territorial planning, coastal zones, nature-economic separation of the territory, functional zoning.

### *Вікторія Яворська, Антоніна Шашеро, Катерина Коломієць, Олена Ніколаєва. ОСОБЛИВОСТІ ПЛАНУВАННЯ ТЕРИТОРІЇ БЕРЕГОВОЇ ЗОНИ МОРЯ*

Особливістю приморських регіонів є зосередження унікальних біосферних ресурсів, населення та господарства у вузькій прибережній зоні, що призводить до загострення екологічних проблем. В сучасних умовах, за надмірної експлуатації і деградації прибережних водних і суходільних систем, стійкий розвиток прибережної зони неможливий без чіткої стратегії управління та планування прибережних територій. Основним засобом забезпечення сталого розвитку приморських регіонів є проведення функціонального зонування території з врахуванням інтенсивності господарської діяльності та унікальності прибережних екосистем.

**Ключові слова:** планування території, берегові зони, природно-господарське ешелонування території, функціональне зонування.

### *Виктория Яворская, Антонина Шашеро, Екатерина Коломиец, Елена Николаева. ОСОБЕННОСТИ ПЛАНИРОВАНИЯ ТЕРРИТОРИИ БЕРЕГОВОЙ ЗОНЫ МОРЯ*

Особенностью приморских регионов является сосредоточение уникальных биосферных ресурсов, населения и хозяйства в узкой прибрежной зоне, что приводит к обострению экологических проблем. В современных условиях, при чрезмерной эксплуатации и деградации прибрежных водных и сухопутных систем, устойчивое развитие прибрежной зоны невозможно без четкой стратегии управления и планирования прибрежных территорий. Основным средством обеспечения устойчивого развития приморских регионов является проведение функционального зонирования территории с учетом интенсивности хозяйственной деятельности и уникальности прибрежных экосистем.

**Ключевые слова:** планирование территории, береговые зоны, природно-хозяйственное эшелонирование территории, функциональное зонирование.

**Introduction.** Seaside regions of Ukraine have a unique natural resource potential, consisting of high-value biosphere resources, covering protected natural systems, biocenoses and ecosystems of the lowlands of the Danube, Dniester, Dnipro, estuaries, coasts and sea shelf. At the same time, seaside coast and shelf shallow waters are ecologically the most vulnerable, since the general level of anthropogenic and man-made loads on the coastal zone of the region is much higher than the corresponding indicators of the deep continental territories.

In this context, the coastal regions of Ukraine have been repeatedly considered in large-scale international projects and remain among the main issues of environmental rehabilitation of the Azov and Black Sea basin. At the end of the last century, the World Bank implemented an international project on Integrated

Coastal Zone Management in the Black Sea Basin, during which teams of specialists from the Black Sea countries explored the environmental situation in coastal zones of their countries and developed principles and methods for integrated management of them. The main feature of this project was the search for regulations and standards of nature management in coastal zones at the level of international standards and internationally agreed principles of integrated coastal management.

Unfortunately, in Ukraine today, there is no especial document regulating the use of land in the coastal zone, as well as its legally border are not defined. On the one hand, in determining the boundaries of the coastal zone, it can not be forgotten geographical features, since the coastal zone covers both the sea and the terrestrial part of the shore, including salt-water objects and wetlands that are in contact with the sea. On the other hand, the question arises of the boundary of the coastal zone on the land - for administrative or statistical purposes, experts refer to the coastal zone administrative

areas that have direct access to the seas, but some administrative areas extend deep into the land of 30 km or more, where it is no longer traceable correlation between industries and nature management with the marine environment.

The aim of the article is to determine the peculiarities of the planning organization of the territory of the coastal regions of Ukraine. The object of study is the coastal regions of Ukraine. The subject of the study is the problem of optimal organization of seaside regions' territory for planning and management purposes.

**Literature review.** In Ukraine, the problem of coastal zones was first developed in the early 1990's, when under the auspices of the Ministry of Environmental Protection a working group was set up to prepare a national report on the state and prospects of implementation of the integrated management of territories in the coastal strips of the country instead of the traditional sectoral [4]. During last decades it has been developed and discussed numerous issues of the coastal zone planning and management [3, 5, 7] and others.

**Main contents of research.** The key problem of the territory organization for the coastal regions of the country is the rational economic use of coastal zones, which some researchers also call the coastal stripes of the seas. In many countries coastal zones (CZ) are considered as a peculiar and valuable territorial-aquatic resource, which has an extremely high attraction for the settlement and the placement of many types of economic activity. As an example, almost three quarters of its human and economic potential are concentrated in the coastal zone of the Ukrainian Black Sea Region. In many countries, coastal zones have a special administrative status: they are managed by so-called coastal commissions, which include representatives of all levels of government - from territorial communities to regional and national authorities. Special laws have been developed that regulate nature use in coastal zones.

Coastal zones are associated with the most acute environmental problems of coastal regions and adjacent marine areas. On the one hand, in the coastal zone, the population, construction, infrastructure, and economic activity are concentrated, and this concentration tend to increase. On the other hand - for coastal areas there are intensive coastal processes of abrasion, silting, landslides. Adjacent marine areas, as a rule, are shallow shelves with a low self-cleaning capacity. In addition, the large and small rivers, which cover their huge catchment areas and collect anthropogenic and man-made pollution from their basins, direct their runoff to coastal zone. In international programs of environmental protection of the seas, the reduction of anthropogenic and technogenic pressure on coastal areas is considered as the main direction of the problem.

Seaside and coastal zones in general are attracting increased attention in projects for the formation of ecological networks (ecological networks) - international, national, regional. The project of the Pan-European Ecological Network sets the Azov-Black Sea natural corridor covering all seashores of Ukraine [9]. Currently, in Ukraine, the regulatory framework for the formation of the eco-network is based on a number of

laws, including such "On the nature reserve fund of Ukraine", "On the national program for the formation of the national ecological network of Ukraine for 2000-2015", "On the ecological network", "On the Basic Principles (Strategy) of the State Environmental Policy of Ukraine for the Period until 2020" and others. Creation of national and regional ecological networks will mean that natural frames of ecological safety of territories and water areas will be formed in Ukraine and its regions [3]. Creation of national ecosystems by all countries of the Azov-Black Sea basin will significantly strengthen the coordination of international efforts on ecological protection of the Black Sea, as the ecological networks of different countries need to be coordinated and interconnected, bearing in mind the future macro-regional ecological network of the Azov-Black Sea basin and neighboring countries.

The geodynamic processes in the coastal zone are a cross-cutting issue for all seaside regions. The Black Sea basin, by its type of interaction with the land of its northern shore, can be represented to the posttransgression. Destructive processes predominate in its coastal zone. The leading process is abrasion, which leads to the loss of coastal land of about 100 ha per year. The maximum speed of abrasion is developed on the clay banks, which are most noticeably responsive to the wave effect. The average annual rate of destruction of the coast for a long period is 3-4 m, and the maximum - 18 - 20 m [1].

Important properties of the Black Sea-Azov coast are estuaries complexes. A special place among them is represented by 14 firths between the Danube and Dnieper rivers. The exclusive value of coastal wetlands is that they are the basis for the reproduction of certain fish stocks. A number of valuable complexes are of international importance for the location of waterfowl. These valuable natural complexes make up more than 100 thousand hectares [2].

Regional peculiarity of nature management in coastal regions is the intensive use of irrigated lands within the placement of a significant amount of natural recreational resources, where according to the legislative acts (the Water Code of Ukraine, the Law of Ukraine "On Environmental Protection") it is strictly forbidden to use technologies of cultivation of agricultural crops with application chemical protection products and mineral fertilizers. Scientists are particularly concerned about the impact of rice sowing on the hydrological and ecological regime of the marine waters of the Black and Azov Seas [1]. For example, rice irrigation systems were built in Kherson oblast on an area of 17.8 thousand hectares and Odessa on an area of 13.0 thousand hectares, and although they were partially reconstructed, they partially do not function, nevertheless the problem of the combination of recreational, biosphere and nature protection and agriculture is very acute.

In 1994, the EU countries launched a program of environmental rehabilitation of the Baltic Sea on the basis of territory planning of the entire Baltic Basin. This project represents a fundamentally new approach, according to which the main direction of ecological protection of the sea basin is the economic regulation of the adjoining territories and river basins. Ukraine

borrowed such an approach in the late 1990s, and in 2002 the General Scheme for Planning of the Territory of Ukraine was already adopted [6]. At present, the development of territorial planning schemes extends to the regional level. As for the coastal regions, the following planning documents have been developed to date:

- Scheme of planning the coast of the Black and Azov seas for use in Donetsk, Zaporizhzhya, Kherson, Odesa, Mykolaiv regions and the ARC;
- Scheme of planning of the coast of the Black and Azov seas within the Kherson region;
- Scheme of planning the territory of the Kherson region;
- Scheme of planning of the territory of the Odessa region and Scheme of planning of the areas of health resort and recreational location of the Odessa region;
- Scheme of planning of the territory of the Donetsk region;
- Scheme of planning of the Zaporizhzhya region.

In the process of development, there is a scheme of planning of the Mykolaiv region. The current scheme for planning the territory of the Mykolaiv region was developed in 2003 and approved in 2008. Currently, due to political and economic changes in the country, this scheme is gradually losing its relevance and needs to be updated.

The territorial planning of the regions is a project, which was developed as thematic series of medium and large scale schemes representing the natural resource environment of the region, population settlements, and the location of the main types of economic activity. The regulation of the natural environment is aimed at strengthening the protection of nature and improving the socio-ecological situation in the region. Target guidance in this direction is the formation of natural frameworks of ecological safety of regions, in particular in the form of regional ecological networks. The project development of population resettlement of the region aims at creating a more favorable socio-ecological situation, especially for industrial areas and large cities, ensuring transport accessibility to workplaces and rest, and improving the quality of life of the population of the region. The promising placement of industry should ensure a reduction of technogenic pressure on the environment and increase the economic efficiency of the region's economy. The methodological core of the territorial planning is the combined spatial analysis of nature - population - economy of the region, aimed at substantiating their optimal combinations and complexes for each site, each settlement. The following review summarizes several key issues of environmental management and the organization of the territory of the coastal regions of Ukraine, aimed at their ecological improvement and reduction of anthropogenic pressures on sea basin in general. It is clear that optimizing the interaction of society with nature in coastal regions, in particular in coastal zones, remains an urgent, multifaceted and complex problem.

The General scheme of planning the territory of Ukraine represents the planning structure and types of preferential use of the territory, for the coastal regions of the country the schemes of their functional zoning and

modes of economic use are shown. Particular attention deserves the coastal areas, allocated high anthropogenic load. Seaside regions of Ukraine are systematized according to the types of predominant use of the territory.

I. Areas of urbanization - territories with intensive, mainly industrial urban residential and public buildings, within which there are 3 sub-zones of different intensity of industrial and urban development.

II Areas of agriculture, mainly agrarian industry and rural settlement, predominate in all coastal regions.

III Areas of natural landscapes which are subject to special protection and require strict regulation of nature use.

The combined study of natural-geographical conditions and peculiarities of the organization of economic activity suggests that for the coastal regions there is a pronounced natural and economic separation of the territory. The natural-economic separation within the regions, in particular, observe itself in the existence of several echelons of economic development in relation to the coastline and in the formation of different economic intensity and economic objects of functional zones both on land and in the sea-shelf water. The most clearly defined territorial separation is expressed within the Odesa region [7].

The territorial differentiation of economic activity, the distribution of economic functions and the change in the intensity of economic use in the region are observed in the following directions:

- conventionally perpendicular to the coastline;
- horizontally along the coast;
- according to the centers of greatest concentration and zones of their influence.

The main factors that determine the natural and economic separation of the regions, on the one hand, are their coastal location, and from other zonal differences of natural (in particular, agro-climatic) conditions within it. Zonal natural features are traced in the existence of different natural zones and sub-zones, differences in climatic, agro-climatic conditions, in the distribution of zonal types of soils, landscapes, etc. All this leads to the allocation within the region of several agricultural zones: forest-steppe, central-steppe, dry-steppe. The existence of centers of maximum concentration of population and economy - large cities leads to the formation of azonal suburban agricultural zones.

Seaside location has affected, first of all, the formation of a peculiar type of territorial organization of the economy - seaside-facade. So in the regions main economic centers are ports and industrial centers, as well as recreation centers and largest cities, located along the coast of the sea and the lower lands of the rivers of the Danube, Southern Bug, and the Dnieper. Such organization of the territory is the result of the general pattern of development of coastal regions with strong port-industrial functions, according to which the overwhelming majority of the population, the economy is concentrated directly along the coast, or in the maximum approximation to the contact front of land and sea.

The theoretical model of the natural and economic separation of coastal regions can be presented

schematically in the form of a horizontal change in economic lanes relative to the coastline of the sea on land and in the water area. Consequently, the territory and coastal marine waters are separated in relation to the coastline - divided into different economic intensity of economic development on economic stripes. Such separation may be based on differences in intensity and types of economic use within the territory and the water area, as well as the population density on the land. These features include the following economic stripes: seaside (facade), middle (transitional), peripheral (outskirts) - on land, and coastal, territorial waters, exclusive economic zone - in the direction of the sea.

Separation of the marine water has the following form: along the coast is stand the coastal stripe, where the highest intensity of economic activity is observed. Further there is a stripe of territorial waters to the state sea border, where the relatively lower intensity of economic use. Consequently, the considered scheme of natural and economic separation of the coastal regions indicates the presence of significant contrast and unevenness in the level of economic development between economic stripes, which must be taken into account when working out programs of socio-economic development of the region and the concept of management of natural resources in the coastal zone.

The natural-economic separation reflects the general laws of the functional organization of the territory of regions, the hierarchy of integral economic functions. At the same time, each economic stripe has a complex internal structure, which is explained by the differentiation of economic functions within each stripe, the formation of core of their maximum concentration. In connection with this, the strategic direction of improving the territorial organization of the economy, optimizing the use of territory and resources is to carry out functional zoning of the territory of each economic stripe.

The most complex functional and territorial organization has a coastal stripe, where the largest number of economic functions is represented and where their greatest competition is observed. For the coastal stripe, a clear functional zoning is the main way of reconciling interests, preserving resources and achieving the ecological optimum, ensuring normal living conditions of people.

Functional zoning on the one hand is the result of the objective development of the territory, the formation of territorial specialization, on the other hand is a subjective method that can contribute to the rational territorial organization of the economy of the region. The basic principles of functional zoning of the territory of the region are:

- the principle of functional organization of space in relation to the coastline;
- the principle of reducing the intensity of economic use with the distance from the coast, which is the basis of the structuring of each economic stripe corresponding to the coastline;
- the principle of integrated consideration of the natural and geographical features that give rise to its

separation and focal concentration;

- the principle of formation as a result of focal concentration of functional core, represented by port-industrial complexes;
- the principle of heterogeneity of the basic parameters of demographic, economic load, features of the resource potential and economic and geographical position along the coast, which determines the formation of functional areas and separate sectors within the economic stripes;
- the principle of determining the priority functions and their rational combinations for specific areas of the territory;
- the principle of the need for a territorial demarcation of incompatible economic functions, the creation of buffer zones.

**Conclusion:** Consequently, functional zoning will reduce the conflict of nature use, provide for the possibility of applying differentiated approaches to the organization of nature use within individual functional zones. In accordance with the above principles, functional zoning involves the allocation of such functional elements:

1. On the basis of the natural and economic separation are allocated functional strips, drawn along the coast: seaside, transitional, peripheral; coastal, peripheral (marine coastal);
2. Functional core of the first, second, third order, which are the centers of maximum concentration and conflict of economic functions and are represented by different rank by the port and industrial centers.
3. Functional regions, which are allocated on the basis of analysis of all economic functions and the definition of a combination of several leading functions. For land, the following main functional areas can be identified: industrial-transport, transport-industrial, agrarian, agro-industrial, recreational-agrarian, nature conservation. For the marine water, functional areas can be determined on the basis of a combination of several basic functions: transport and recreation, transport and fishing, fishing and recreation, nature conservation, recreation.
4. Definition of buffer zones between different functional areas, the size and configuration of which depends on the level of conflict of functions and specific conditions on the locality.

The reduction of the territorial conflict of economic functions should be ensured through the implementation of such steps: their territorial delineation with the creation of buffer zones at different levels of organization of the territory; search of possibilities of joint development on the basis of mutually beneficial addition with new functions, determination of priorities and limitation of development of some economic functions depending on the specifics of functional stripes and functional areas. Thus, the main means of ensuring the sustainable development of the coastal regions is the analysis of the existing nature use in the region and the functional zoning of the territory, taking into account the laws of natural and economic separation, national and regional priorities of the economy development.

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