

Shchepak Vira

PhD in Engineering, Associate Professor
Poltava National Technical Yuri Kondratyuk University, Ukraine

Shariy Grigoriy

Doctor of Economics Sciences, Associate Professor
Poltava National Technical Yuri Kondratyuk University, Ukraine

Senenko Inna

PhD in Economics, Associate Professor,
Kyiv National University of Trade and Economics, Ukraine

GEOINFORMATION TECHNOLOGIES IN LAND MANAGEMENT

Keywords: management, land resources, geoinformation technologies, bulk database.

In the conditions of the reformation of land relations and the integration of Ukraine into the world economic space, issues of land resources management acquire a specifically relevant. By nature, land resources are a special object of socio-economic and socio-political relations, so they need a fundamentally different management system.

An efficient and high-quality system of information provision of government bodies is an integral part of effective land management. The implementation and usage of modern information technologies in management activities enable to provide information and analytical support for making managerial decisions on the effective use and land protection.

Problems of land resources management were undertaken by such scholars as Tretiak A., Dorosh O., Boklab V., Poliakova I., Sichko S., Hohol T., Isachenko O., Tishchenko O., Shevchuk S. and others.

A famous researcher on land resources A. Tretiak notes the duality of "land resources", which belong simultaneously to several qualitatively different systems: natural and social (social), which affects the management of land resources [1, 11].

Boklab V. points out that "when deciding on the management of territories, there is no complex multidisciplinary information" [2, 22]. In his opinion, it is necessary to create a modern information system, which is one of the important tasks in the area of state and municipal management of territories. According to him, the management of the development of territories should be based on the system of information support, which is based on information on land resources [2, 23], which can be formed in the form of geographical information [3, 214].

In studies Poliakova I. noted that an important segment of scientific research is the definition of effective models of territorial management based on the ecological and economic approach [4]. Sichko S. is considering the opportunity of monitoring usage as a management tool that can provide system monitoring of the state of land in order to timely identify changes, their assessments, prevent negative processes and eliminate the consequences [5].

In the works of Hohol T., the focus is on the unity of territorial management and management of land resources [6, 176]. At the same time, the study of Isachenko A. showed that land management is not properly used in the management of territories [7, 34]. Therefore, organizational coherence between the adoption of administrative decisions on the development of territories and the use of land resources, which are a component of nature, means of production, territorial basis and the object of real estate [7, 176].

At the same time, there is an understanding of the need to implement existing geographic information systems (GIS) in the management of land resources [8, 186]. Shevchuk S. developed the structure of the information – analytical system using geoinformation systems for improving the management and preservation of ecological security of lands [9, 16].

The land information environment creation measures of the efficiency of land resources management improvement, usage and protection of land become

specifically relevant and cause the need to improve the system of information provision.

There is a need for a systematic approach to the automated spatial description of territories with their multifactor and significant amount of data. This led to automation of the processes of collecting, storing and processing data using modern computer technology – geographic information systems.

Under current conditions, GIS technologies can act as the basis for effective land management. They make it possible, using cartography, to make spatial descriptions of territories, land structures, characterize and analyze objects of the environment, reflect real events, etc.

The methodological basis of data formalization processes in GIS is the digital simulation of land placement, which combines the processes of collecting primary information, its modeling, processing and document creation.

GIS technologies make it possible to combine a model image (electronic map display) with tabular type information (statistics, lists, indicators, etc.). The range of maps is extremely wide: topographical, thematic, ecological, soil and other maps.

The description of spatial data in GIS consists of two parts: spatial coordinates and attributes. In GIS, spatial data is represented by vector and raster models.

Vector model contains information about points, lines, contours and surfaces. It is encoded and stored as a set of coordinates. Polygonal objects, such as land, have a cumulative closure of coordinates. Raster model is optimal for working with objects that have a continuous character change properties, such as types of soils.

So the geographic information systems store data on land resources in the corresponding set of thematic layers of maps combined by spatial arrangement. The main layer contains a geographically bound terrain map. Other layers carry information about objects which are located in this territory are superimposed on it: they may be land, soil, land use restrictions, etc. The database is formed in the form of maps with a set of layers of information.

Geographic information systems have the ability to integrate many sources of information, which, in turn, requires the cooperation and interaction of the territorial management of land resources. Geoinformation systems also help to establish relationships between different parameters. Through analytical operations, it is possible to process data and receive new information, which serves as the basis for making optimal managerial decisions. All analyzed information is stored in GIS databases.

So the development of land management is possible with the effective use of modern GIS technologies that enable the formation of a bulk database of spatial data and thus provide the need for information about the territory, objects, infrastructure, landscape, ecological and agrochemical characteristics of land plots and so on.

REFERENCES

1. Tretyak, A. M. & Dorosh, O. S. (2015), Land Management, *Vinnytsya: Nova Knyha*, 360 p.
2. Boklug, V. A. (2007), Improvement of the state information system for monitoring the quality of land, *Derzhava ta rehiony*, No. 4, pp. 22 – 27.
3. Boklug, V. A. (2009), Integrated Land Information Systems as a Mechanism for Improving Land Management, *Aktual'ni problemy derzhavnoho upravlinnya*, No. 1, pp. 213 – 220.
4. Polyakova I., (2012), *Kontseptual'ni osnovy ta orhanizatsiyno ekonomichnyy mekhanizm ekolohizatsiyi upravlinnya pryrodookhoronnymy terytoriyamy* [Conceptual bases and organizational and economic mechanism of environmental management of protected areas], *Efektyvna ekonomika*, No. 78. – Available at: <http://www.economy.nayka.com.ua/?op=1&z=1843>.
5. Sichko S., (2010), *Formuvannya metodolohiyi upravlinnya rekreatsinyh terytoriyamy*, [Formation of the methodology of management of recreational territories], *Efektyvna ekonomika*, No. 3. Available at: <http://www.economy.nayka.com.ua/?op=1&z=160>.
6. Gogol, T. V. (2011), Formation of the system of state regulation of land

relations and management of land use in rural areas, *Teoriya ta praktyka derzhavnoho upravlinnya*, Vol. 4, pp. 174 – 181.

7. Isachenko, O. P. (2013), Possibilities of land management for the management of territories located near water bodies, *Zemleustriy, kadastr i monitorynh zemel'*, No. 1 – 2, pp. 27 – 35.

8. Tishchenko, O. (2012), Geoinformation systems – the basis of evaluation of urban areas by local authorities, *Visnyk Natsional'noyi akademiyi derzhavnoho upravlinnya pry Prezydentovi Ukrayiny*, No. 2, pp. 186 – 190.

9. Shevchuk, S. A. (2008), Improvement of management of the reclaimed territories on the basis of the information-analytical system of ecological and land reclamation monitoring, Abstract, Kiev, Ukraine , 22 p.