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*To the 60th anniversary of Olha Dorosh,
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Environmental Sciences of Ukraine*

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LAND RESOURCE MANAGEMENT - A FUNDAMENTAL ACADEMIC DISCIPLINE FOR LAND SURVEYORS

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Abstract. *The article examines the modern theoretical and methodological principles of land resources and land use management in Ukraine in the context of post-war reconstruction, land relations reform and transformation of the land management system. The evolution of scientific approaches to the interpretation of the concept of land resources management is analyzed, and domestic and international experience in the formation of multifunctional land management systems is summarized. The need to transition from the traditional management model, focused on a separate land plot, to a new concept based on a spatial approach and implemented according to the principle of “from general to partial” — from the national level to the level of a territorial community and individual land use — is substantiated. Key functions and management tools at different hierarchical levels are identified, as well as the role of land management as a basic mechanism for implementing state land policy. Special attention is paid to the integration of spatial planning tools, digital geoinformation technologies, cadastral systems and modern mechanisms for information support of management decisions, which ensure increased transparency and efficiency of land resources management. It is shown that the implementation of a comprehensive multifunctional system of land resources and land use management will contribute to increasing the efficiency of land use, ensuring their protection, developing territorial communities, strengthening environmental safety, improving state land management and creating conditions for sustainable socio-economic development of Ukraine.*

Keywords: *land resources and land use management, land management, new management concept.*

Problem statement.

Ukraine's land fund "is the basic national wealth placed under the special protection of the state" [2], and without an effective management system the rational use of land is therefore impossible. The importance of this system grows especially during periods of large-scale land transformations — the mass redistribution and privatization of land, and the reorganization of existing objects of land relations [7], including during Ukraine's post-war period. Since land, besides its traditional qualities (a means of production, a territorial basis, a natural body), is at the same time an object of legal relations, of real property, and a unique natural asset, the economic transformations under way in Ukraine determine the direction of development of land relations and of land resource management. During the post-war recovery of the economy, amid crisis-driven social, ecological and economic phenomena, the role of the state — the executive authorities, territorial communities, and civic associations — in this sphere is also changing.

Hence there arises the need not merely to improve, but essentially to bring about a paradigmatic change in the theoretical and methodological principles of land resource and land use management — one capable of easing the tension of social, ecological and economic problems, of broadening the tax base and increasing budget revenues, of attracting investment into the development of territorial communities and regions, and of building an effective system guaranteeing the rights of subjects of land relations.

According to Chapter 7, "Management in the Sphere of Land Use and Protection," of the Land Code of Ukraine, the principal components of land resource and land use management are: 1) establishing and changing the boundaries of administrative-territorial units; 2) land-use planning; 3) land management; 4) control over land use and protection; 5) land monitoring; 6) the state land cadastre; 7) economic incentives for rational use and protection; 8) compensation for losses of forestry production (unfortunately, agricultural production has been excluded) [2]. Also of great importance is the development of legal, administrative-regulatory, economic and

socio-psychological methods, which together form a system of rational and effective land use that takes into account the actual state and priorities of economic development.

Analysis of recent research and publications.

It should be noted that the issue of land resource management in Ukraine has been addressed by a considerable number of domestic scholars, including O. S. Dorosh. Thus, in the 2006 textbook “Land Resource Management,” A. M. Tretiak and O. S. Dorosh understood land resource management as the systematic, conscious, purposeful influence of the state and society on the rational use of land through market-based land relations, encompassing planning, regulation, organization and control over land use [13]. In 2019, H. I. Sharyi, V. V. Tymoshevskyi, R. A. Mishchenko and I. A. Yurko interpreted land resource management as an activity oriented toward achieving a set goal, whereas they regard land management merely as one of the instruments (processes) for achieving that goal [11]. In 2022, A. S. Popov notes that the concept of land resource management has not received sufficient formalization in Ukrainian legislation to allow a clear and unambiguous definition to be formulated [12]. He further interprets the management process as the organization of a social system whose task is to organize the use and protection of the land-resources ecosystem [12].

In that same year, 2022, in the collective work “Land Resource and Land Use Management,” Ukrainian scholars A. M. Tretiak, V. M. Tretiak, R. M. Kuryltsiv, T. M. Priadka, N. O. Kapinos and N. A. Tretiak define land resource management as the systematic, conscious, purposeful influence of the state and society on land relations and the land-use process [10]. Land resource and land use management, given the processes of the distribution (redistribution) of land and land plots as well as the organization of the use and protection of land and other natural resources, constitute a complex, multi-component system that is comprehensive in nature and touches upon the interests of a broad range of subjects of land relations.

Purpose of the study.

The purpose of the study is to examine the newest features of land resource and land use management in Ukraine, taking into account the conditions of economic reconstruction and the consequences of military actions, given that, under Article 14

of the Constitution of Ukraine, “land” is “the basic national wealth placed under the special protection of the state” [3], while we regard “land” as a unique natural asset — a space within which economic activity and natural processes take place and within which environmental and economic assets are concentrated [5] — together with the existing management crisis.

Research materials and methods.

In the course of the study, the authors used scientific publications related to the specific features of land resource and land use management in Ukraine.

Results of the study and their discussion.

Land resource and land use management is a complex, multi-component system studied by various sciences and implemented through many methods and means; it manifests itself in the following interrelated dimensions [14, 15, 16]:

- *in the political dimension, the state fulfils socio-political, economic and ecological tasks related to the rational use of land as the basic national wealth and a unique natural asset, ensuring its special protection;*
- *the administrative-managerial dimension concerns building the system of state bodies and territorial-community authorities, delineating their competences, and coordinating the functions they perform in the sphere of land resource and land use management;*
- *the legal dimension consists in the rational use and protection of land on the basis of norms enshrined in current legislative acts, state and sectoral standards, norms and rules;*
- *the scientific dimension involves developing substantiated recommendations for land resource and land use management, taking into account changes in social (land) relations and scientific and technological progress;*
- *the ecological-economic dimension defines the conditions under which the use and protection of land are simultaneously effective and ecologically safe;*
- *the implementation dimension covers the development and application of economic, ecological, social and other levers, incentives and measures aimed at the rational use and protection of land.*

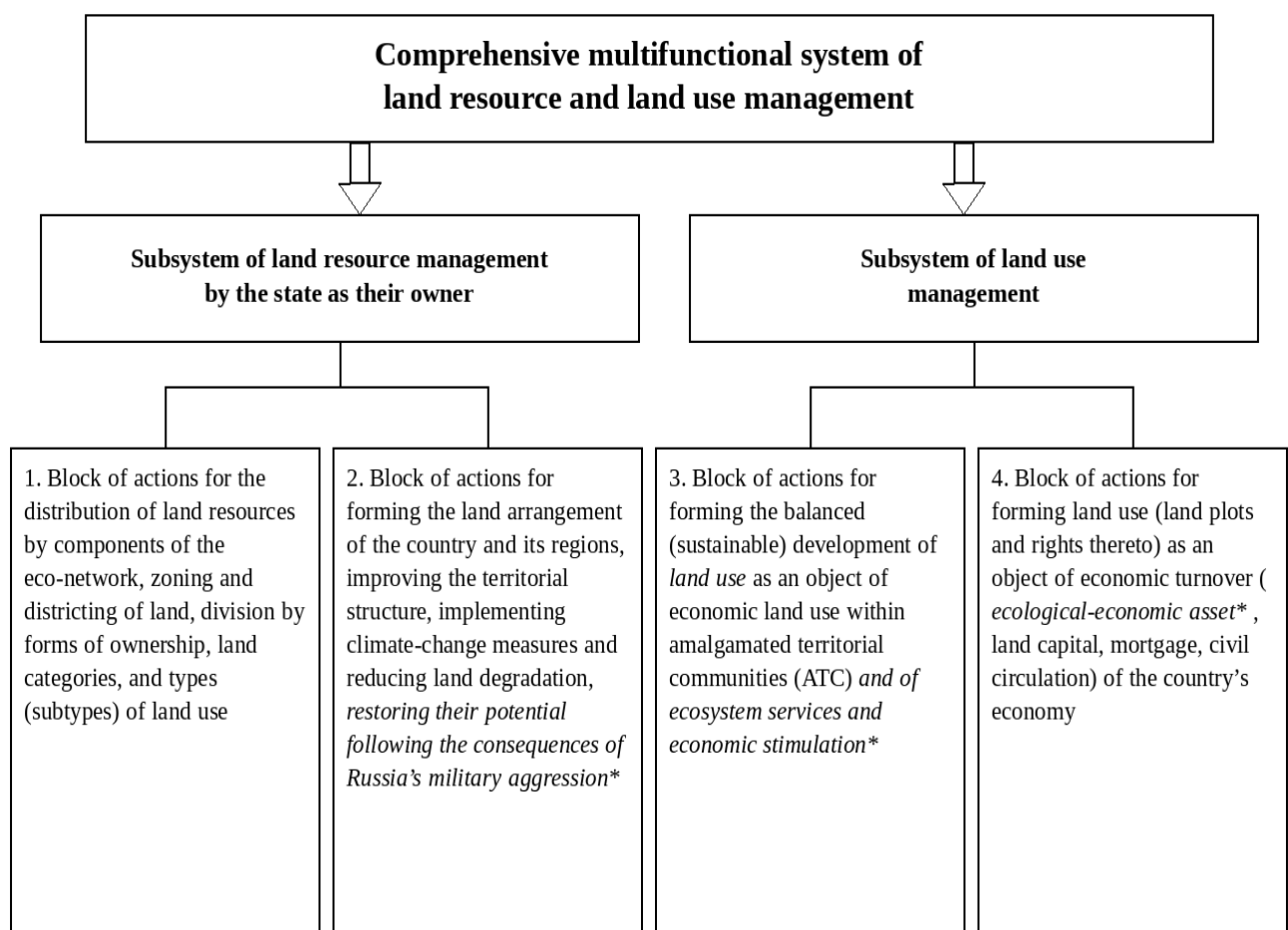
In this connection, it is important to define the term “land resource and land use management” and its essence at the current stage of development of Ukrainian society.

As early as 2004, O. S. Dorosh noted that land resource management should be understood as the systematic, purposeful action of the state and society upon land relations and land use, which must be based on the cognition of objective regularities and information in order to ensure the effective functioning of the country’s land resources as a whole, as well as of regions and specific territories [1]. In her view, an effectively functioning management system can be built only on condition of a sufficiently high, effective impact on economic development from all the other components of state regulation — legal-regulatory, economic, social and so on [1]. In 2005, the European Economic Commission of the UN, in its work “Land Administration in Europe. Trends in Development and Main Principles,” defined land resource management (land administration) as the processes of determining, registering and disseminating information on land ownership, its value and use in the implementation of a policy for the rational use of land resources [9].

Proceeding from this, land resource and land use management appears as a set of actions of the state — the legislative and executive authorities, the authorities of territorial communities, and civic professional associations — aimed at organizing and implementing land-management processes (as understood in sources [4, 17]): determining, registering, recording and disseminating information on land ownership, assessing the ecosystem services and value of land use and land plots, organizing the use and protection of land, and optimizing land arrangement and land relations with due regard to the needs of societal development.

Accordingly, A. M. Tretiak and other researchers have identified the need to introduce in Ukraine a model of a comprehensive multifunctional system of land resource and land use management. This newest system of the third type makes it possible to resolve issues of the effective use of land resources and the development of land use according to the principle of “from the general to the particular” (from the national level to the local level) and “from the particular to the general” (from the land plot to the territory of the country) — that is, in their dialectical unity (Fig. 1) [10; 14].

Drawing on the logical-content model of the comprehensive multifunctional system of land resource and land use management in Ukraine, we present below (following source [14], in direct quotation) the main list of management-action functions and the documents involved in forming and optimizing management decisions, which belong among the knowledge required by land management specialists (Table). Analysis of the table data confirms that land resource and land use management in Ukraine must be carried out according to the model “from the general to the particular” (from the national level to the local level), rather than the model “from the particular to the general” (from the land plot to the territory of the country) that is characteristic of real-estate management.



* author's addition

Fig. 1. Logical-content model of the comprehensive multifunctional system of land resource and land use management in Ukraine (adapted from [10; 14])

“Table 1. Main list of management-action functions and documents for the formation and optimization of management decisions” (direct quotation from [14])

Hierarchical levels	Main functions of management actions	Documents for the formation and optimization of management decisions
<i>Subsystem of land resource management</i>		
National	1) actions to form and implement state land policy and the development of land arrangement based on the scientifically substantiated redistribution of land, the formation of a rational system of land tenure and land use, and the creation of ecologically sustainable landscapes and agro-systems	Strategy of land policy and the development of land arrangement
	2) actions for forecasting, planning and organizing the rational use and protection of land, and the development of land relations	National programme for land use and protection
	3) actions to form the national ecological network as the ecological framework of the land-use system	Consolidated scheme of the ecological network of Ukraine
	4) actions concerning the natural-agricultural zoning of land	National scheme of natural-agricultural land zoning
	5) actions to develop legal-regulatory acts and methodological recommendations for the information support of the legal, economic, ecological and urban-planning mechanism for regulating land relations	System of the state land cadastre (including land recording), land valuation and monitoring
Regional	1) actions to form and implement state land policy and the development of land arrangement based on the scientifically substantiated redistribution of land, the formation of a rational system of land tenure and land use, and the creation of ecologically sustainable landscapes and agro-systems	Regional strategy of land policy and the development of land arrangement
	2) actions for forecasting, planning and organizing the rational use and protection of land, and the development of land relations	Regional programme for land use and protection Land-management scheme
	3) actions to form the regional ecological network as the ecological framework of the land-use system	Regional scheme of the ecological network

Hierarchical levels	Main functions of management actions	Documents for the formation and optimization of management decisions
	4) actions concerning the natural-agricultural zoning of land	Regional scheme of natural-agricultural land zoning
	5) actions for forecasting, planning and organizing the rational use and protection of land, the development of land relations, and the elaboration of a system of measures for forming the land use of nature-conservation, recreational and health-resort areas and areas producing ecologically clean output, and for preserving and improving natural landscapes	Regional land-management scheme
	6) actions to form and establish, on the ground, the boundaries of administrative-territorial formations and of territories with a special nature-conservation, recreational or reserve regime	Land-management projects
	7) actions for the information support of the legal, economic, ecological and urban-planning mechanism for regulating land relations, and for the capitalization, greening and economic stimulation of land-use development	Regional system for maintaining the state land cadastre (including land recording), land valuation and monitoring
Territorial communities	1) actions to form and implement state land policy and the development of land arrangement based on the scientifically substantiated redistribution of land, the formation of a rational system of land tenure and land use, and the creation of ecologically sustainable landscapes and agro-systems	Strategy of land policy and the development of land arrangement as a component of the territorial community's development strategy
	2) actions for forecasting, planning and organizing the rational use and protection of land, the development of land relations, the elaboration of a system of measures for forming the land use of nature-conservation, recreational and health-resort areas and areas producing ecologically clean output, the preservation and improvement of natural landscapes, and the investment support and stimulation of investment in land-use development	Local programme for land use and protection Separate section of the comprehensive territorial development plan
	3) actions to form the local ecological network as the ecological framework of the land-use system	Land-management projects for forming the ecological network

Hierarchical levels	Main functions of management actions	Documents for the formation and optimization of management decisions
	4) actions to form and establish, on the ground, the boundaries of the territorial community and of rural starosta districts, villages, settlements, towns and city districts	Land-management projects
	5) actions for zoning land by types (subtypes) of land use, forming objects (land tracts) providing ecosystem services, and their valuation	Land-management projects
	6) actions for the consolidation of agricultural land in order to optimize the turnover of land plots belonging to holders of land shares and to form the land-use territories of agricultural enterprises and farming households	Land-management projects
	7) actions for the information support of the legal, economic, ecological and urban-planning mechanism for regulating land relations, for the capitalization, greening and economic stimulation of development and investment in land use, the turnover of land plots, and the resolution of land disputes	System for maintaining the land cadastre (including land recording), land valuation and monitoring
	8) actions for developing a system of measures to establish norms for the ratio and intensity of use of land plots, systems of crop rotation and hay-meadow/pasture rotation, for restoring and increasing soil fertility, for the reclamation of disturbed land and the top-soiling of low-productivity land, for protecting land from erosion, waterlogging, desiccation, landslides, secondary salinization and swamping, compaction, contamination by industrial waste and chemical substances, and other forms of degradation, for the conservation of degraded and low-productivity land, and for preventing other adverse phenomena	Land-management projects

Unfortunately, the State Geocadastre of Ukraine, citing the introduction of the land market, is implementing the model “from the land plot to the territory of the country.” The situation with the training of land-management personnel is even more negative, since it too is built on the model “from the particular to the general.”

At the same time, a group of Ukrainian researchers led by Professor A. M. Tretiak has proposed a new concept of the newest land management, envisaging a transition from the existing methodology of land-management design (land plot — its use regime — land use as an aggregate of land plots — territory) to a new one (space — territory — land-use system — land-use regime — land plot) [8]. Since the land-

management system is the foundational mechanism of land resource and land use management in Ukraine, the management system must be built and function on this newest concept, namely on the model “from the general to the particular” (from the national level to the local level).

In particular, the newest land management, which rests on the constitutional requirement of the special protection of land and on the principle of sustainable (balanced) land use, is revealed through the category of the reproduction of land and other natural goods, which, in the broad sense, should be interpreted as a triune process comprising:

- 1) the restoration (protection) of the ecological systems of land use;
- 2) the use (exploitation) of land and other natural resources;
- 3) rational (sensible) land husbandry.

Accordingly, the group of Ukrainian scholars regards the land-management system as a set of nationwide measures (management actions) that comprehensively ensure the regulation of land relations and the rational use and protection of the country's land resources as the basis of human life and activity, the most important natural resource, the general territorial basis, and a means of production in agriculture, forestry and other spheres [4]. The modern development of the land-management system, shown in Fig. 2, determines not only the newest development of the land-management system itself but also of the land-surveying profession, which we associate with land-management administrative actions (both procedural and operational) [6].

Our judgments are consistent with the conclusions of the European Economic Commission of the UN, which, in its work “Land Administration in Europe,” defined land management as an activity related to managing land as a resource simultaneously from an ecological and an economic point of view [9].

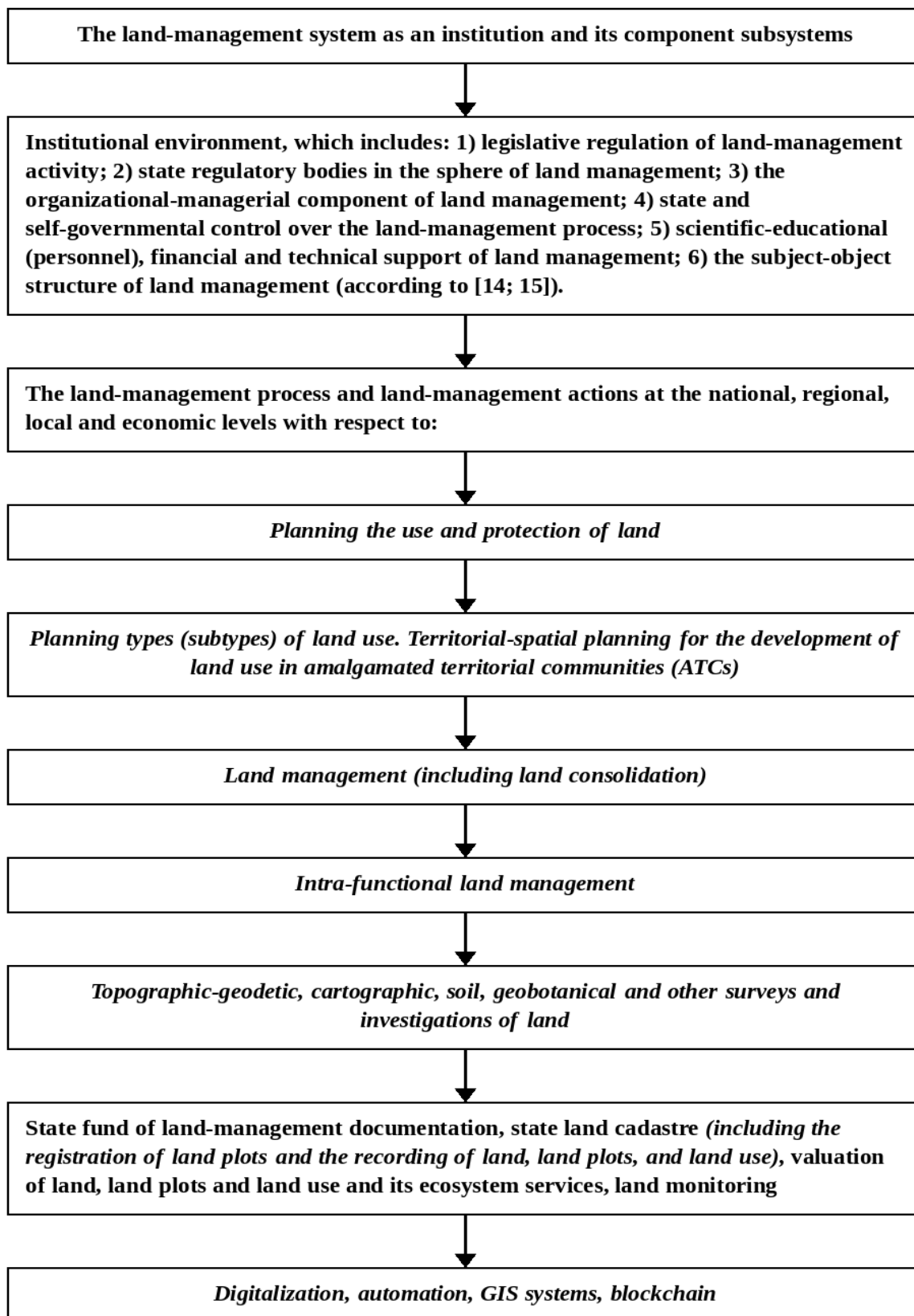


Fig. 2. Logical-content model of the fundamental understanding of the newest land-management system in Ukraine

It should also be noted that any theoretical vision of land resource and land use management can be realized only if it is conveyed to prospective land management

specialists in the course of their professional training. In this connection, we would like to highlight the role of Olha Stepanivna Dorosh, Doctor of Economic Sciences and Professor, on the eve of her 60th birthday — Head of the Department of Land Resources Management at the National University of Life and Environmental Sciences of Ukraine (in 2008 and throughout 2015–2025), Dean of the Faculty of Land Management (2009–2013), and Director of the Educational and Scientific Institute of Land Resources and Law (2014). She has been engaged with the problems of land resource management since the 2000s, having defended, in 2005, a candidate's dissertation in specialty 08.08.01, Economics of Nature Use and Environmental Protection, on the topic “Improving Land Resource Management at the Regional Level.”

Conclusion. Summarizing the foregoing, land resource and land use management appears as an integral action of the state — its legislative and executive authorities, the authorities of territorial communities, and civic professional associations — oriented toward the ordering of information on land ownership (its determination, registration, recording and dissemination), the assessment of ecosystem services and of the value of land use and land plots, the organization of the use and protection of land, as well as the optimization of land arrangement and land relations with due regard for the needs of societal development. The newest system of land resource and land use management in Ukraine must be built and function on the basis of the concept of space — territory — land-use system — land-use regime — land plot, that is, according to the model “from the general to the particular” (from the national level to the local level).

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А. М. Третяк, В. М. Третяк, І. П. Купріянич, Є. В. Бутенко, В. В. Литвин
УПРАВЛІННЯ ЗЕМЕЛЬНИМИ РЕСУРСАМИ - ФУНДАМЕНТАЛЬНА
НАВЧАЛЬНА ДИСЦИПЛІНА ЗЕМЛЕВПОРЯДНИКІВ

***Анотація.** У статті досліджено сучасні теоретичні та методичні засади управління земельними ресурсами та землекористуванням в Україні в умовах післявоєнного відновлення, реформування земельних відносин і трансформації системи землепорядкування. Проаналізовано еволюцію наукових підходів до трактування поняття управління земельними ресурсами, узагальнено вітчизняний і міжнародний досвід формування багатофункціональних систем управління землею. Обґрунтовано необхідність переходу від традиційної моделі управління, орієнтованої на окрему земельну ділянку, до новітньої концепції, що базується на просторовому підході та реалізується за принципом «від загального до часткового» — від національного рівня до рівня територіальної громади й окремого землекористування. Визначено ключові функції та управлінські інструменти на різних ієрархічних рівнях, а також роль землепорядкування як базового механізму реалізації державної земельної політики. Особливу увагу приділено інтеграції інструментів просторового планування, цифрових геоінформаційних технологій, кадастрових систем і сучасних механізмів інформаційного забезпечення управлінських рішень, що забезпечують підвищення прозорості та ефективності управління земельними ресурсами. Показано, що впровадження комплексної багатофункціональної системи управління земельними ресурсами та землекористуванням сприятиме підвищенню ефективності використання земель, забезпеченню їх охорони, розвитку територіальних громад, зміцненню екологічної безпеки, удосконаленню державного управління земельною сферою та створенню умов для сталого соціально-економічного розвитку України.*

Ключові слова: управління земельними ресурсами та землекористуванням, землепорядкування, новітня концепція управління.