

## THE NEED FOR A MODERN CADASTRAL SYSTEM

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### ANNOTATION

The cadastral system for recording and registering rights to real estate is complex and multicomponent, focused on performing several important functions for the state: taxation, protection of private property rights, control over the use and condition of land. Practical examples show the need for a gradual reorientation of the priorities in the development of the cadastral system from the direction of accounting and registration actions towards the organization of a system of rational land use. As a research problem, the issues of developing effective mechanisms for organizing a system for the rational use of land resources and, as a result, ensuring the ecological well-being of the territory of the state are considered. The article proposes parameters whose values affect the efficiency of the cadastral system. Criteria for the optimality of the efficiency parameters of the cadastral system have been developed. The schemes of mutual influence of indicators of the effectiveness of the cadastre system and topographic and geodetic support for carrying out cadastral work, as well as the relationship of indicators of the effectiveness of the cadastre system in the implementation of a unified model of the state accounting and registration system are given.

**Keywords:** efficiency, performance indicators, cadastral system, real estate objects, Unified State Register of Real Estate, rational land use, land resources, geotechnologies, cadastral registration of real estate, registration of rights to real estate.

Modern research in the field of search for methods of real estate management shows that there is a close relationship between the systems of registration of the right to real estate and the system of registration of this real estate. In essence, these are not independent various systems, but a single system. Therefore, it seems appropriate to provide an analysis of world experience in the creation of real estate accounting systems. Until the middle of the last century, the concept of cadastre was used mainly in connection with the taxation of real estate and meant, first of all, a system of information about it. The development of capitalist relations, which caused intensive processes of real estate turnover, investments in real estate, obtaining loans secured by real estate, brought to the fore the problem of strengthening rights, from which the reliability of transactions followed, and the reduction of investment risks. This required a corresponding modernization of rights registration and cadastral systems real estate accounting.

Given the high level of information support of all processes associated with the functioning of the cadastral system, one of the main elements that can improve its efficiency are geographic information systems and their subclass - land information systems. At the same time, as the experience of world practices in the implementation and development of rational land use shows, the use of management decision support systems, systems that use artificial intelligence methods when working with geoinformation, is a necessary condition for achieving high results. At the same time, in Russia, according to statistics, the level of implementation of geotechnologies in the management of land resources and real estate is quite heterogeneous and is at a low level in most regions. The work notes “an insufficient level of training of participants in the field of spatial data, ERSD and GT, poor

communication, low quality and availability of basic spatial data, limitations of hardware and software solutions, administrative barriers, as well as dependence on imported equipment and software” (RSDZ - Earth remote sensing data; GT - geodetic technologies. - Author's note). Methods and object of study

When performing research, both general methods were used (system analysis, synthesis, observation, comparison, measurement, generalization), and special methods (monitoring the state of land and the natural environment, theoretical research on the development and improvement of methodological and technological solutions for assessing the state of land resources, organizing a system of rational environmental management, geoinformation analysis and geomodeling) .

The second element of the modern cadastre system is the accounting of all real estate objects - the value of N. As noted above, expanding the list of real estate objects ensures their individualization, the possibility of a complete, detailed accounting of real estate and the creation of an information basis for conducting a fair state cadastral valuation of real estate. For real estate objects, as a result of cadastral work and entering information into the Unified State Register of Real Estate, a number of unique characteristics are determined and documented, such as cadastral number, area spade, owner, etc. In addition, if there are encumbrances, this information is also indicated in the relevant documents and databases. The number of all registered real estate objects depends on the efficiency of the cadastral system and is a function of the total number of real estate objects in the territory of the state M:

$$N = f(M).$$

The third element of the cadastre system is the creation and implementation of the one-stop-shop principle, when all accounting and registration functions will be performed by the state at one request of a citizen. To implement this principle, a number of documents have been developed [17]. The one window principle can be represented by the following boolean expression:

$$(L^{\wedge}l)(U^{\wedge}max),$$

where L is the number of requests from one applicant regarding the provision of public services related to one real estate object; U is the number of operations performed by the state.

The fourth element of the cadastre system is the requirement for regulatory accuracy in determining the boundaries of real estate objects - the coordinates of characteristic points. This requirement is strictly regulated by the instructions for conducting cadastral works. Without the establishment of boundaries, information about the property cannot be entered into the cadastre. This element of the cadastral system guarantees an unambiguous determination of the position of a property in space, excludes its mutual overlap with another property, as well as all kinds of border crossings. The normative accuracy A will depend on the category of the land plot or on the type of functional zone in which the property is located:

$$A = f(K),$$

where K - categories of land or type of functional area.

The fifth element of the cadastre system is a single digital cartographic basis for cadastre (geoinformation)

real estate objects) [18]. At the same time, a unified coordinate system, unified legal and technical and economic norms are used both for performing cadastral work and for creating information support for land protection measures and their rational use. The main task in this case is to eliminate duplication of not only information in databases, but also the processes of its collection and processing.

Such a parameter as the category of land is a global regulator of the economic and legal state of the cadastral system as a whole, primarily due to the fact that:

- the subdivision of the land fund into categories limits the direction of economic activity on lands of various categories, which is ultimately expressed in the amount of land tax and property tax;

- permitted activities on land plots within each category of land allow the owner or land user to receive a certain level of income from their activities. Based on cost-benefit analysis

land, the state can make a forecast about the levels of tax revenues to the budget. At the same time, the state can independently regulate the profitability of land by redistributing it from reserve lands or, if necessary, transferring land plots from one category to another. These activities are possible only if the norms of related branches of law are observed: water, forestry, environmental and other legislation;

- the sale of land by the state or provision for use is also a tool for obtaining significant profit, which is divided into two components: a one-time profit from the sale

land and periodic (long-term) profit in the form of property tax and land tax.

The implementation of an efficient land cadastral system is aimed at obtaining the maximum performance in terms of collection of property tax and land tax. At the same time, it should be taken into account that an effective taxation system should be aimed at stimulating landowners and land users to receive the maximum level of profit from the exploitation of land, so the level of tax payments should be optimal so that, on the one hand, not to ruin the payer, on the other hand, to allow the state to carry out "financing of measures for land management, cadastre, monitoring, protection of land and increasing their fertility, development of new lands, to compensate for the land user's own costs for these purposes and repayment of loans issued for these activities, and interest for their use".

## CONCLUSION

It is an indisputable fact today that land resources have ceased to be an areal interpretation of the spatial basis for the development of production and population habitation. The properties of land resources are manifested in their market value, ecological state, level of development rationality. In the works of a number of authors, it is proposed to evaluate the effectiveness of land management in terms of environmental, social and economic indicators. The overall effectiveness of the cadastral system, of course, depends on the effectiveness of the measures used in the state to organize land use and land management systems. Thus, the indicators developed to assess the effectiveness of the cadastral system take into account these properties, as well as the reliability and sufficiency of the mechanisms used in the state to regulate land and property relations.

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