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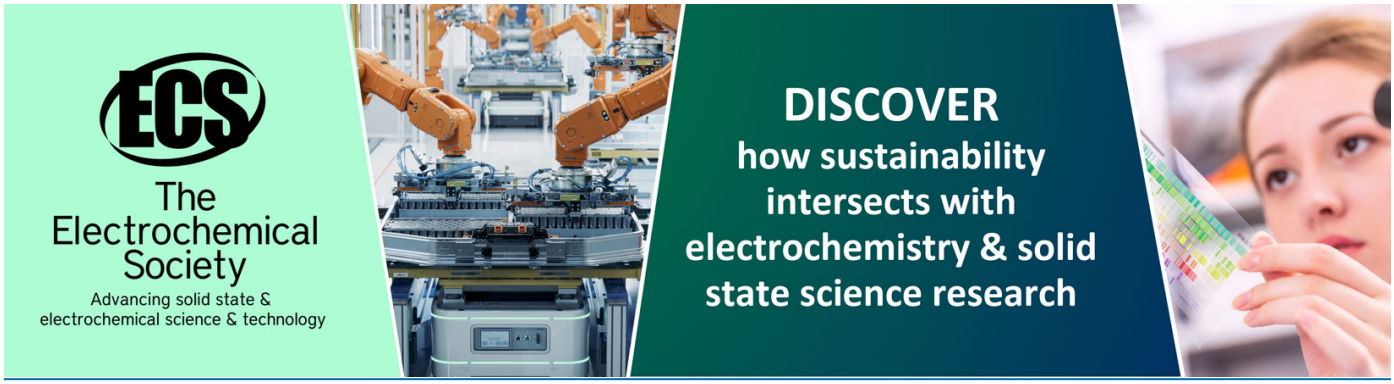

Theoretical and methodological foundations for formation of sustainable land management system

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Abstract. The article is devoted to the formation of a system of sustainable land management, economic reforms in Russia largely depend on the level of development of land relations and the use of land resources. This is due to the fact that the land, in addition to its traditional properties (means of production, territorial basis, natural body, etc.), has become the object of legal relations and real estate. That is why the particular relevance for today is the building of a certain system of land management, which has an impact on the development of the economy of the state as a whole. The article describes theoretical and methodological approaches to the formation of a management system.

1. Introduction

Economic transformations in Russia largely depend on the level of development of land relations and the use of land resources. This is due to the fact that the land, in addition to its traditional properties (means of production, territorial basis, natural body, etc.), has become the object of legal relations and real estate.

In recent years, the problems of land use in Russia are becoming more acute. Dynamics and structure of agricultural land in the Russian Federation for 1990-2016. shows that the area of agricultural land for the analyzed period decreased by 2.2 million hectares due to the actively developing processes of overgrowing by shrubs, small forests, water logging, pollution and other negative phenomena, largely due to irrational, uneconomic land use. As a result, compared to 1990, the cadastral value of agricultural land in the Russian Federation reduced by 30%.

In such conditions, one of the main tasks of state and municipal land management is to ensure the sustainability of land use, primarily economic instruments, helping to improve the sustainability of land use, experiencing problems with this and encouraging those coping on their own. To develop such management measures, clear and clear criteria are needed to determine the sustainability of a particular land use, i.e. a methodology for assessing sustainability is needed.[1]

At the moment, there are no scientific developments devoted to this subject, the term sustainability by domestic authors is treated exclusively from the environmental point of view, as the consistency of the ecological characteristics of the land. From our point of view, such an approach suffers from a certain one-sidedness, and the content of the concept of "land use sustainability" should be treated much broader.[2]

2. Approaches to sustainability

In general, the sustainability of land use can be defined as the ability of this system to preserve (or restore) its structure, properties and functions in given parameters under varying external influences.
The sustainability of the land-use system can be of various types: economic, spatial-territorial, legal and environmental, since this system covers all aspects of the life of the state, society, specific legal and physical persons.[3]

Under the **economic stability** of the land tenure system, we mean the ability of this system to maintain its structure (or modify it) while preserving (sustaining) the growth rates of the country's economic development indicators (regions, objects) under changing external influences.

Spatial-territorial stability of the land-use system-the formation of land, cadastral and other activities on the basis of legal and organizational-spatial norms of a network of economic and other activities that are rational in terms of area and specialization, with boundaries established on the terrain, the change of which should not exceed 15% of the total and the length of their boundaries.

Legal sustainability of the land use system is the creation of a complete regulatory and legal framework for the formation and functioning of a land use system that provides for state cadastral registration and state registration of rights to 100% of land use system objects.[4]

The ecological stability of anthropogenic landscape can be understood as its ability to preserve (or restore) its structure under changing external (natural and anthropogenic) impacts, while simultaneously meeting specified specific parameters of environmental and socio-economic functions. The most stable components of the landscape are its geological basis and relief, the least resistant are the vegetation cover and soils. In addition, when analyzing environmental sustainability, one must take into account the reliability of the landscape, which is understood as its ability to preserve the values of its main characteristics in certain intervals and modes of use during a particular period.[5]

Ecological balance should also be taken into account. balance of natural or human-modified environment-forming components and natural processes, leading to a long (conditionally infinite) existence of this ecosystem. This balance characterizes the dynamics of the arrival and outflow of energy, substances and information, supporting the ecosystem in a certain equilibrium state or leading to the replacement of one ecosystem by another.[6]

The current economic and social conditions for the development of a system of sustainable land use in Russia have put forward a number of new directions for expanding the term "sustainability of the land use system":

1) Land use as an integral element of the implementation of innovative projects;
2) USR as an element of the organizational and economic mechanism for managing the territory;
3) Land use as part of the resource support system for investment projects;
4) Land use as a factor for increasing the cadastral value of land plots;
5) Land use as a factor of increasing the economic security of investment projects;
6) Land use as a factor in the development of economic relations;
7) Land use as an object of legal relations;[7]
8) Land use as an element of increasing the value of fixed assets, incl. production purpose;
9) Land use as an element of the formation of fiscal policy;
10) Land use as a unit of state cadastral registration of real estate;[8]
11) Land use as a factor in increasing the efficiency of land resources use in the agro-industrial complex;
12) The impact of the land use system on the effectiveness of the formation of the real estate market and securities;[9]
13) Land use as a factor in the development of the banking sector and insurance;
14) Land use as a factor in the development of housing and communal services;
15) Land use is the main factor in increasing the efficiency of land use;
16) Land use is one of the main sources of information security of the territories;
17) Land use as a factor in ensuring the sustainability and efficiency of the use of territories;
18) Land use is one of the main factors in the formation of social policy;

19) Land use as an element of the mechanism of activity of regional and local administrations;
20) Land use and ecology;
21) Features of the land use system on the federal lands;
22) Features of the regional land use system;
23) Features of the municipal land use system;
24) Peculiarities of the system of land use in populated areas;
25) Peculiarities of the system of land use of certain categories of land fund (PAs, protected areas, etc.).[10]

This entailed the following changes (or additions) to the system of sustainable land use:

- Land use objects have appeared that have a conditional theoretical nature (ie when the boundaries are rigidly not coordinated, since they have a blurred character: forest-pasture, marshland, city-green zone, etc.);
- Legal problems and incidents appeared (an example with the replacement of categories of land fund in urban areas of a certain functional purpose, ie instead of strictly defined legal norms for the use of agricultural land - the diluted norms of land use and development (PPZ) rules of urban development;
- the definition of water protection zones (to meet the requests of gardeners and owners of cottages and castles);
- resist resistance to the requirements to introduce mandatory for owners of land plots of state registration of their lands;
- instability of the information base, etc.

These changes, in turn, entail problems in almost every category.[11]

The creation of a methodology for assessing the sustainability of land use should be based on such principles as unity of methodology, consideration of features, complexity, comparability and easy interpretability of results, the equivalence of environmental and economic components and reliability. In order to analyze the effectiveness of management of sustainable land use, it is necessary to collect detailed information on spatial, economic and environmental information at two levels: directly at the level of the subject of the Russian Federation, and also at the levels of municipal entities that are part of this entity. Average statistical data for the federal district are also required.[12]

3. Assessment of the effectiveness of sustainable land management

The creation of a methodology for assessing the sustainability of land use should be based on such principles as unity of methodology, consideration of features, complexity, comparability and easy interpretability of results, the equivalence of environmental and economic components and reliability. In order to analyze the effectiveness of management of sustainable land use, it is necessary to collect detailed information on spatial, economic and environmental information at two levels: directly at the level of the subject of the Russian Federation, and also at the levels of municipal entities that are part of this entity. Average statistical data for the federal district are also required. It is advisable to evaluate the effectiveness of sustainable land management by the following scheme:

1) formulation of the purpose and objectives of the effectiveness analysis;[13]
2) identification of types of efficiency;
3) determination of factors affecting economic efficiency;
4) choice of methods and techniques for determining effectiveness;
5) pilot testing of a specific research methodology;
6) identification of types of performance criteria;
7) choice of the system of indicators of analysis;
8) conducting a study on the evaluation of effectiveness in accordance with selected criteria on the example of specific subjects of land relations.[14]

The choice of the criterion of effectiveness at each territorial level should be justified by economic calculations. Two methods for determining the effectiveness criterion should be used: 1) conducting expert evaluations of specialists; 2) mathematical processing of information on the expenditure-

income part of land resources management with the help of a standard mathematical apparatus, as well as building mathematical models based on neural network analysis.

Classification of the factors influencing the efficiency of land use management is presented in Figure 1.

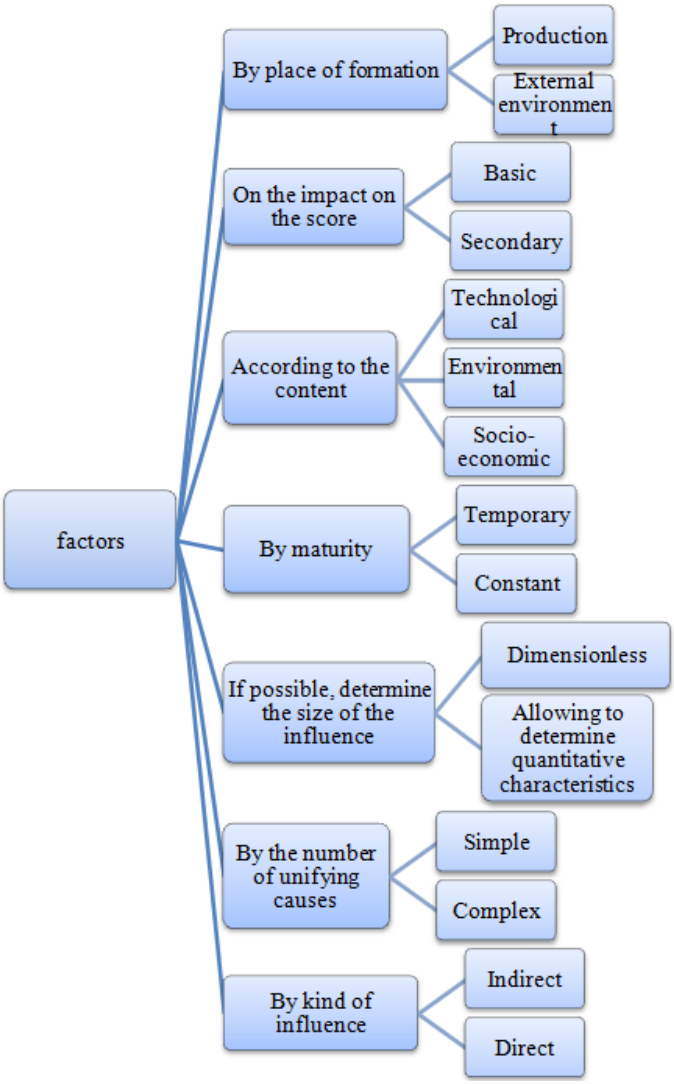

Figure 1. Classification of factors affecting land use efficiency.

Factors at the place of formation are classified into environmental and production factors. The first group includes factors that do not directly participate in the production cycle, but have a direct impact on it. These are the conditions in which agricultural enterprises are located: political economic, social and natural conditions. Political conditions - the existence of effective laws and other regulatory documents on the order of disposal of land and its use, agricultural production. Economic conditions are characterized by the general economic situation in the country and the object of research, the conditions of lending and financing.[15]

Social conditions are characterized by the ability of the main consumers of agricultural products to purchase it at a certain price. Natural conditions determine the conditions for performing field work and growing crops. Environmental factors can be divided into those formed outside the agricultural enterprise (emissions of harmful substances into the atmosphere, contamination of soil, water basin by industrial, transport and other enterprises) and internal (soil contamination with pesticides, etc.).

The second group includes material and labor resources, which represent the production potential. The indicators of the availability of resources include: staffing (number of employees, skill level of workers), the cost of fixed production assets, direct costs, which are the resources actually involved in production and used to produce a particular type of product. Indicators are: labor costs, materials, production costs in absolute terms or per unit of output. Technological factors are factors associated with the organization of production processes used by production technology. Optimal use of the factors of the second group is the main condition for a high payback of production costs and growth in the economic efficiency of agricultural production.

According to the term of operation, there are constant and temporary factors, in terms of the number of unifying causes - simple and complex, if possible determine the magnitude of the influence - quantitative and dimensionless, by the form of influence - direct and indirect.[16]

4. Sentence

The solution of all problems of land use can not be solved without land management and cadastral support. Let's dwell on the main ones.

1) The most important task of modern Russian land use is the establishment of the legal status of lands used by subjects of land relations and establishing proper order with shared land ownership.

A paradoxical situation has arisen in Russian agricultural land use: modern agricultural enterprises practically do not have their own land and are compelled to conduct commodity production on leased lands of various forms of ownership. Thus, the share of land owned by the main producers of agricultural products - production cooperatives, partnerships and societies currently does not exceed 1.4% of the total area of agricultural land and 0.6% of agricultural land. About 83% of the agricultural lands they use are land shares, 04% are leases from other legal entities and 16% are lands leased or permanent (unlimited) use from state and municipal property.

The reason for such a prolonged process of forming land use of agricultural enterprises is that mass privatization of the lands of collective farms and state farms, the formation of new organizational and legal forms of management, and the distribution of agricultural land to land shares occurred, as a rule, without registration of the right to land, without the development of project land management documentation and allocation on the terrain of land in the account of land shares.[17]

In this regard, there is a need to conduct land management work on the establishment (clarification) of the legal status of lands that are actually used by agricultural enterprises and citizens who own land shares, to determine the location and area of land used in various laws, establish or clarify the size of the share property, taking into account the changes in the composition and areas of agricultural land, as well as in the development of project proposals for the formation of land plots allocated to the land share or land shares, for the consolidation of land for the formation of a sustainable land use system. The specified works should be spent on the basis of inventory of the grounds of the former collective farm or state farm from which structure the land shares were allocated. At the same time, the planning and cartographic basis should reflect the current composition and condition of the land.

2) The second urgent task of land use is the introduction of an elementary order in the organization of the territory of agricultural enterprises, organizations and peasant (farm) farms, any specialization, i.e. carrying out of intraeconomic land management, providing a system of organization of rational use and protection of each land plot, a system of crop rotations taking into account the qualitative state of the land.

The presence of the project of intraeconomic land management is becoming increasingly necessary due to the fact that adaptive landscape systems of agriculture have been developed and are to be introduced by agrarian science, which requires a transition to an ecological and landscape organization of the territory in the land management.[18]

The introduction of methods for organizing the territory on an ecological and landscape basis creates the conditions for mobilizing the natural resources of the territory and the adaptive potential of crops, economically efficient and environmentally safe agricultural production, stabilizing the use of

natural resources and land use by creating environmentally sustainable agrolandscape systems, and removing the impact of land degradation and pollution.

Given the current insecurity of rural commodity producers, this measure can have high economic, environmental and social efficiency.

3) The third task is land management and cadastral support of important state documents that determine the perspective directions of the country's socio-economic development.

The main ones are:

- the concept of long-term social and economic development of the Russian Federation for the period until 2020 (2003);
- the national security strategy of the Russian Federation until 2020 (2009);
- the doctrine of food security of the Russian Federation until 2020 (2010);
- the concept of sustainable development of rural areas of the Russian Federation until 2020 (2010);
- federal target program "Conservation and restoration of soil fertility of agricultural land and agrolandscapes as a national asset of Russia for 2006-2010 and for the period until 2012".[19]

The goals and objectives set in these documents to rationalize the use of natural resources, the main of which are land resources, preserve the natural environment, increase the efficiency of use and protection of land resources and their reproduction on the basis of increasing soil and fertility, the implementation of a complex of organizational, agrotechnical, cultural, forest-meliorative and meliorative measures, conservation and rational use of agricultural land and agrolandscapes, increase crop area agricultural crops from unused arable land, the development of plans for the development of rural areas, etc. can not be solved without the development of appropriate land management documentation.

Currently, 40 million hectares of arable land are not sown, half of them are overgrown with forest and shrubbery to varying degrees, large areas are degraded and are subject to various negative impacts. In order to proceed to the solution of this deputy, it is necessary not only to send tractors to the field, but first of all it is necessary:

- to carry out an inventory of these lands, establish their legal status, quality status, the appropriateness of development or use as fodder land, withdrawal from circulation for conservation and rehabilitation;
- determine the availability of labor resources in a given area, the material and technical base of land use objects, the purpose of development and costs;
- to develop project financing of interested commodity producers, in accordance with this, to establish the volumes of development, to approve the land management documentation for the implementation of measures for the development of these lands and the organization of the territory, etc.

It is advisable to combine the preparation of land use documentation for increasing the area of agricultural crops with the development of rural development plans envisaged by the Concept for the Development of Rural Areas on the basis of drawing up schemes for the land management of municipal districts, which will ensure a comprehensive solution of the interrelated tasks of rational use and protection of land, development of the agro-industrial complex and rural areas in high level and with lower costs.

4) The fourth task is land management and cadastral support for solving social, economic and environmental problems in the implementation of the Federal Target Program "Economic and Social Development of Indigenous Minorities of the North to 2011".[20]

The main objectives of land management in the implementation of the Program are:

- formation of territories of traditional nature management of indigenous small peoples;
- land management of reindeer herding, hunting, clan (communal) farms;
- formation of industrial and social infrastructure;

- the formation of a system of protected areas, taking into account the ecological value of specific ecosystems and landscapes;
- optimization of the resource base and land use dimensions, etc.

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