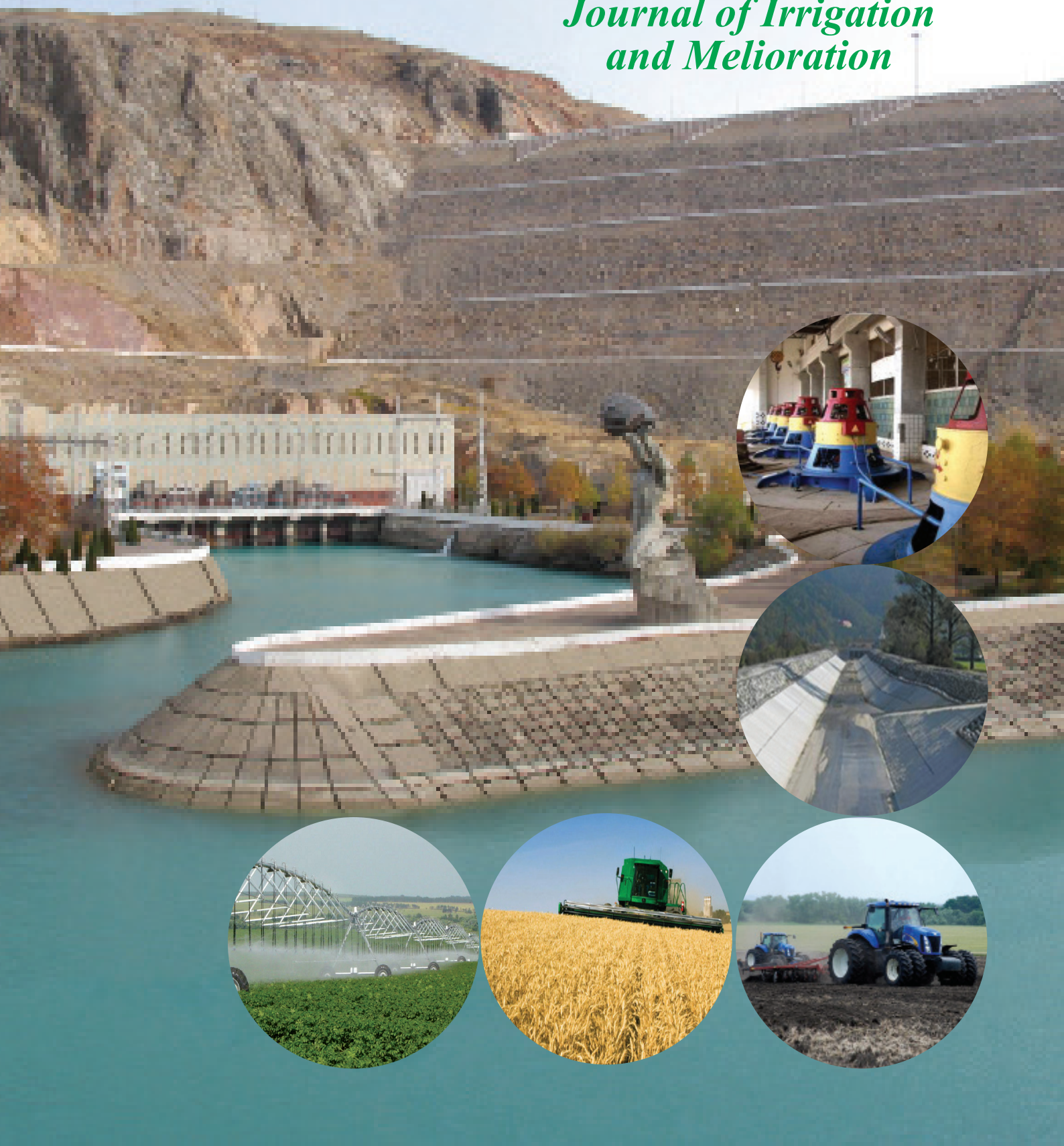


IRRIGATSIYA va MELIORATSIYA

№(1).2019

*Journal of Irrigation
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TASKS ON LAND USE MODERNIZATION IN UZBEKISTAN UP TO 2030

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Abstract

The goals and targets of the 2030 Agenda of the UN General Assembly Resolution in the field of sustainable development and the issues of implementation of national goals and targets in this area for this period are studied in the paper. An important aspect is to ensure the sustainable development of tasks related to the integrated economic, social and environmental development, the conservation and restoration of ecosystems and biodiversity, ensuring the efficiency of nature management and land use, resource-saving technologies in land and water use in agriculture. Particular attention is paid to article 15.3, which contains a call to the world community to combat desertification, restore degraded lands and soils, including lands affected by desertification, droughts and floods, and to prevent land degradation. On the basis of studies of the land use system problems in the republic, the main directions and tasks for the modernization of existing land use management have been established in order to move to a sustainable model. The implementation of the recommended targets and the ways to solve them provides a transition to a model of sustainable development of land use, to the balance and harmonization of socio-economic and environmental policies in the use of country's land resources, to prevent land degradation and desertification, to fulfill Uzbekistan's obligations stated in international documents in the field of sustainable development for the period up to 2030 year.

Key words: systems development, sustainable land use management, economics and ecology of land use, land use, degradation, desertification, modernization, the concept of development and environmental protection.



Introduction. The Resolution of the UN General Assembly - "Transforming our world: the 2030 Agenda for Sustainable Development" gives the formulation of the 17 goals in the field of sustainable development and 169 targets, which "... testify to the scope and ambitiousness of the new universal agenda" [1]. The Resolution section "Sustainable Development Goals and Targets", paragraph 55 states that "Sustainable development goals and targets are complex and indivisible, global in nature and universally applicable, while taking into account differences in national realities, opportunities and development levels and respect for national strategies and priorities".

The goals are formulated in the form of wishes of a global nature, with each government setting its own national targets, guided by those global wishes, but taking into account national conditions. Each government decides how to ensure that these global challenges given in the form of wishes are reflected in national planning processes, measures and strategies. It is important to state the connection between sustainable development and other relevant processes in economic, social and environmental fields" [1].

Goal 15 of the Agenda is dedicated to ensuring the rational, effective and sustainable use of land resources, which provides for the protection and restoration of soil ecosystems and their rational use, sustainable forest management, combating desertification, ending and reversing the process of land degradation and ending the loss of biological diversity.

The Republic of Uzbekistan signed this Resolution of the UN General Assembly, to organize systematic work on the consistent implementation of the Goals for Sustainable Development of the UN 2030 Global Agenda; the Cabinet of Ministers of the Republic of

Uzbekistan adopted a Resolution in which, among other issues, the Goals and Targets for National Sustainable Development for the period up to 2030 year are stated [2].

Statement of the problem. The issues of sustainable development of systems are investigated in the works of Hayek F.A. [3], Drucker P. [4, 5], Reimers N.F. [6], Abdeev R.F. [7], Rats M.V. [8] and many other scientists. The harmonization of economic and environmental aspects of natural resources use, the reduction of anthropogenic pressure on them, the introduction of resource-saving technologies, the conservation of ecosystems and the environment are considered in the studies by K. Papenov [9], I. Blokov [10], Golub A.A. and Strukova E.B. [11], Varlamov A.A. and Galchenko S.A. [12] and other scientists. The problems of land use in Uzbekistan are considered in the works of Uzbek researchers Khusanov R.Kh. [13], Trushin E.F. [14], Karamatov O.O. [15], Chertovitsky A.S. and Bazarov A.K. [16], Altiev A.S. [17], Narbaev Sh.K. [18, 19].

However, despite a significant number of publications on the above issues, the problem of sustainable development of land use from the point of view of a systematic and integrated approach has not yet been studied, including domestic scientists dealing with nature management and land use; all this determines the need for further research in this area. In this regard, the paper defines the need for research and the statement of tasks and main directions for the modernization of land use in the republic as a research objective in order to transfer to a sustainable model until 2030.

Methods. In the process of research, a method of systematic approach and analysis of land use was used as a complex system in structural, organizational-functional aspects. Nature management is an essential component

of a sustainable economy; the biological diversity of ecosystems and, above all, the land, is used in all areas of society - in economic, social and environmental ones. Land use, in turn, is the main component of nature management; in this regard, the stated goals and targets for the sustainable development of society, which includes three components of sustainable development - economic, social and environmental ones, fully relate to the rational and efficient use of land resources, and thus to land use development.

The land use system of the republic currently has a number of drawbacks of an organizational-economic, legal, technical, technological and institutional nature; these drawbacks determine its insufficient effectiveness in conditions of sustainable development. The irrigated and dry land zones of agriculture, as well as the pastures show a significant degree of degradation. The main fundamental shortcomings of the land use system of the republic are: the underdeveloped market for property rights and land leases, the lack of economic content of the right to lease agricultural land and mortgage loans secured by the land right, insufficient knowledge of the issues of territory development, land rent and mechanisms for its requisition, justification of the payments size for land use, non-closeness of the overall reproductive cycle of land use, resulted in its degradation - all these point to the lack of an integrated system of land management.

The disadvantages of the overall reproductive cycle of land use include three phases (stages): 1. Planning the land use; 2. Technological (direct) use; 3. Land productivity restoration.

The main disadvantages of the 1st phase of the reproductive cycle are the absence of:

- the market for land rights and the imperfection of land lease relations;
- the optimal intersectoral distribution of land;
- a sufficiently complete consideration of natural and climatic requirements when allocating crops;
- scientifically sound structure of lands and areas under crops;
- data for climate change forecast and its accounting in planning the use of agricultural lands;
- modern and reliable land cadastral information (state registration of land, soil and geo-botanical surveys, etc.);
- increase in soil quality points (SQP);
- overall consideration of environmental requirements and land use in the economic turnover with low SQP (less than 40);
- a sufficiently complete substantiation for financing land development measures to restore the land productivity (with the exception of water conservation and, more recently, agroforestry on irrigated lands);
- the farmers' right to permanent use of grazing lands.

The main disadvantages of the 2nd phase of the reproductive cycle are the following aspects:

- imperfect system of irrigated agriculture and extremely insufficient reproduction of soil fertility by biological methods;
- insufficient application of organic fertilizers;
- imperfection of the surface method of irrigation and the insufficient rate of alternative methods implementation;
- lack of conditions for creating a microclimate in

fields;

- the unfounded allocation of crops in dry zone of agriculture, taking into account the precipitation fluctuations;
 - the unfounded contract prices for the grain purchase by the state;
 - the lack of crop insurance in the dry zone of agriculture;
 - unregulated grazing in pasture lands;
 - the lack of an effective mechanism to mitigate the effects of droughts in pasture lands.
- The main disadvantages of the 3rd phase of the reproductive cycle are the following:
- the lack of expanded or simple reproduction of soil fertility;
 - the lack of reproduction of soil fertility by biological methods;
 - the lack of an integrated approach to soil development;
 - an insufficient funding for land development.

The set of shortcomings listed above and a number of other factors indicate the lack of a systematic approach to land use management, the need to improve it in order to achieve a transition to a sustainable land use model and integrated management. The following aspects of land use management are distinguished [16]: legal, economic, social, environmental, informational, technological, organizational-territorial, institutional, educational ones. Each aspect has its own land use management functions [16, 20], including:

- land legislation and regulation of land relations (legal aspect);
- information (land and cadastral) land use support (information aspect);
- forecasting and planning the use of land resources, development of territories (economic aspect);
- interindustry and inter-sectoral distribution of resources (economic aspect);
- land management, organization of the land plots territory (territorial aspect);
- technological use of land (technological aspect);
- monitoring and control of land use (organizational and economic aspect);
- reproduction of land fertility (environmental, economic aspects);
- land protection (environmental aspect);
- research work and studies in the field of land use, training of scientific personnel and specialists for the industry (educational aspect);
- promotion of sustainable land use (economic, environmental aspect).

Results. In accordance with the national goals and targets in the field of sustainable development for the period up to 2030, the tasks of the Goskomzemgeodezkastr on the transition to sustainable land use have been studied and stated. The tasks in creating a sustainable land use model are systematized according to the aspects and functions of land use management. Table 1 shows the tasks on sustainable use of land resources, aspects of land use management and ways to implement the tasks. Moreover, the tasks of improving land use are given in Table 1 in accordance with the adopted procedure for setting out national goals and targets to achieve sustainable development until 2030, given in Appendix

Table 1

Tasks for the transition to a sustainable land management model, the ways and means to fulfill them until 2030

National goals and tasks in the field of sustainable development		In the field of land use sustainable development		
Goals	Tasks	Tasks	Management aspects and functions	Ways and means for their realization
1	2	3	4	5
Goal 1. General eradication of poverty among population with low-income level	Task 1.4. By 2030, ensure favorable economic- financial conditions for equal access of the entire population, including the poor and vulnerable to basic resources (land plots, bank loans, etc.), new technologies and financial services, including microfinance.	1.4.1. Provision for permanent use of pastures to household owners with livestock in their ownership.	Legal aspect. Function - land legislation. Organizational economic - land use planning (pastures)	1. Develop a new edition of the Land Code. 2. Develop and adopt the Law "On Pastures". 3. Introduce to the Land Code an article on the provision for permanent use of pastures to household owners with livestock in their ownership. 4. Introduce a form management for household owners with livestock in their ownership.
		1.4.2. Privatization of land occupied by non-agricultural objects and introduction of a property rights market for them	Legal. Function - land legislation. Economic. Function –Allocation of available lands in the country Function - Land Cadastre.	1. Decree of the President of the Republic of Uzbekistan on the privatization of land for non-agricultural purposes under real estate objects. 2. Valuation of land, privatization of land plots and the introduction of a secondary market for land ownership.
		1.4.3 Privatization of the right to lease agricultural lands.	Legal. Function - land legislation. Economic. Function - Land Cadastre.	1. Adopt a legislative act on the privatization of the right to lease agricultural lands. 2. Assess the value of land lease rights and privatization of agricultural land lease rights. 3. Introduce a market for land lease rights
Goal 2. Strengthen food security, improve food ration and promote agriculture sustainable development	Task 2.3. By 2030 significantly increase the average productivity of agricultural food production and the income of agricultural producers	Task 2.3. By 2030 significantly increase the average productivity of agricultural food production and the income of agricultural producers	Economic, Function - planning the use and reproduction of land fertility. Technological, Function - technological use of land (and cropland). Ecological, Function - reproduction of land (cropland) productivity.	1. Reproduction of soil fertility by biological methods with the introduction of crop rotation with legumes. 2. Improving the tillage technology and irrigation methods. 3. Ensuring a closed reproductive cycle of land use. 4. Regulation of livestock on pastures and rotation of grazing.
		Task 2.4. By 2030, ensure the creation of sustainable systems of food production and introduce the management methods that increase agricultural productivity.	2.4.1. - Improvement of the land use system, including land development.	Economic, Function - forecasting and planning the use of land resources, development of territories. Ecological, Function - reproduction of soil fertility.

Table 1. Continuation.

1	2	3	4	5
<p>Goal 4. Ensure overall education of equitable quality and promote lifelong learning opportunities.</p>	<p>Task 4.7. By 2030, ensure that all pupils and students acquire the knowledge and skills necessary to promote sustainable development.</p>	<p>4.7.1. Improve the training of specialists for a sustainable land management system.</p>	<p>Educational, Function – research studies and training.</p>	<p>1 Open new directions of study at the Land Use Department, in the future to found an independent university on land use. 2. Develop curricula for new directions, training programs, publish training manuals.</p>
	<p>Task 4c. By 2030, significantly increase the number of qualified teachers (lecturers), including international cooperation in training, retraining and advanced training of teachers and lecturers.</p>	<p>4c.1. Expanding cooperation with foreign universities in the field of nature development and land use, sustainable use of land resources.</p>	<p>Educational, Function - research studies and training.</p>	<p>1. Conclude agreements on cooperation in educational, scientific and methodological work with the Russian State University of Land Management (GUZ), the Royal Swedish Technical University (RSTU), etc.</p>
<p>Goal 6. Conservation and rational use of water resources to provide sustainable development, ensuring water availability and sanitation.</p>	<p>Task 6.4. By 2030, significantly increase the efficiency of water use in all sectors of economy.</p>	<p>6.4.1. Introduce market relations in the water management sector. Turn to innovative irrigation methods.</p>	<p>Economic, Function - Land use planning Technological, Function - technological use of land</p>	<p>1. Estimate the market value of irrigation water, introduce water charges. 2. Introduce primarily innovative irrigation methods (drip, sprinkling, subsoil irrigation, etc.) (compared to surface irrigation)</p>
	<p>Task 6.5. By 2030, ensure integrated water resources management at all levels, including transboundary cooperation.</p>	<p>6.5.1. Introduce market relations in the water sector management. 6.5.2. Clearly distinguish between the functions of the Ministry of Agriculture and the Ministry of Water Resources in managing the water use.</p>	<p>Organizational and economic Functions - land use planning, technological land use.</p>	<p>1. Assess the market value of irrigation water, introduce water charges. 1. Distinguish between functions for the supply and metering of irrigation water.</p>
<p>Goal 8. Promote sustainable and inclusive economic growth through increased productive employment of population and decent work for men and women.</p>	<p>Task 8.2. Achieve increased productivity in the economy through diversification, technical modernization and development of innovative activities, including by paying special attention to the sectors with high added value and labor-intensive industries.</p>	<p>8.2.1. Ensure the effectiveness of land use based on the diversification of agricultural production, its economic, technological and technical modernization and innovation.</p>	<p>Economic, Function - land use planning. Technological, Function - the technological use of land. Ecological, Function - reproduction of soil fertility. Technical support for land use - modernization of the material and technical base of land use.</p>	<p>1. Optimization of the structure of land and cropland areas, diversification of grown products. 2. Simple and expanded reproduction of soil fertility 3. Increased productivity based on soil fertility reproduction. 4. The introduction of innovative methods in technical support of land use (remote methods for studying soil and plant cover properties, the use of drones in land mapping and land monitoring, etc.)</p>
	<p>Task 8.4. By 2030, gradually increase the global resources use efficiency in consumption and production systems and strive to ensure that economic growth is not accompanied by environmental degradation, as stated in the Ten-Year Strategy for the transition to the use of rational models of consumption and production.</p>	<p>8.4.1. Turn to a model of sustainable land use, which will increase the economic efficiency of land use and prevent its degradation, preserve ecosystems and improve the quality of the environment.</p>	<p>Economic, Function - land use planning. Technological, Function - the technological use of land. Ecological, Function - reproduction of soil fertility, pasture lands. Territorial Function – land management (organization of the territory).</p>	<p>1. Ecologically friendly land use, taking environmental requirements into account when planning land use. 2. Regulated use of pastures, reproduction of land productivity. 3. Introduction of innovative technologies for fields processing and irrigation methods. 4. Simple and expanded reproduction of land productivity. 5. Restoration and protection of ecosystems during the development of rural territories based on landscape land management.</p>

Table 1. Continuation.

1	2	3	4	5
Goal 9. Development of resilient infrastructure, promotion of inclusive and sustainable industrialization and innovations	Task 9.5. Intensify scientific research aimed at increasing the technological potential of economic sectors, by creating favorable conditions for innovation and a significant increase in the number of employees in the field of research and development (R&D), increasing public and private contributions to R&D	9.5.1. Intensification of scientific and pedagogical staff training, creation of an independent university in land use problems.	Educational, Function – Research studies and training specialists for land use management	<ol style="list-style-type: none"> 1. Creation of a research institute for land use management, training of scientific staff for the Goskomzemgeodezkadastr system 2. Training of scientific and pedagogical staff for the department and university. 3. Foundation of a specialized scientific council for the defense of dissertations in the specialty "Economics of land use management"
Goal 12. Ensure the transition to rational models of consumption and production.	Task 12.1. Implement the Ten-Year Strategy for the transition to the use of rational consumption and production models (Rio + 20 Conference 2012)	12.1.1. According to the Ten-Year Strategy, turn to a model of sustainable land use.	Economic, Function - land use planning. Technological, Function - Technological Land Use Ecological, Function - reproduction of soil fertility.	<ol style="list-style-type: none"> 1. Development and transition to a sustainable land management model. 2. Ecologically friendly land use. 3. Transition to a model of regulated pasture land use. 4. The introduction of innovative methods in land tillage and irrigation technology. 5. Ensuring simple and expanded reproduction of soil fertility.
Goal 13. Take urgent measures to adapt to climate change.	Task 13.2. Include adaptation measures to climate change in the policy, development strategy at the national level, paying particular attention to measures implemented in the Aral Sea zone.	13.2.1. Forecast climate change for land use planning	Organizational and Economic, Function- land use planning.	<ol style="list-style-type: none"> 1. Implement, apply forecast results for climatic zoning in agriculture. 2. Implement, apply forecast results for crop planning. 3. Introduce, apply forecast results to mitigate the effects of droughts, paying particular attention to dry arid agriculture and pastures, and the Aral Sea zone.
Goal 15. Protect and restore land ecosystems and promote their rational use, sustainable forest management, combating desertification, ending and restoring the loss of biological diversity	Task 15.1. Ensure the conservation, restoration and rational use of surface and ground freshwater ecosystems, including forests, wetlands, mountains and dry lands, in accordance with obligations proceeding from international agreements.	15.1.1. Realize the transition to a model of efficient and sustainable land use, including arid areas (dry farming, pasture land use, land use in forestry).	Economic, Function - forecasting and planning the use of land resources. Technological, Function – tillage innovative technologies. Ecological, Function - reproduction of land productivity.	<ol style="list-style-type: none"> 1. Development and transition to a sustainable land management model. 2. Introduction of soil-protective, water-saving crop rotation in dry agriculture. 3. Transition to regulated grazing on pastures. 4. Introduction of innovative methods in land cultivation and irrigation technology. 6. Provision for simple and expanded reproduction of soil fertility.

Table 1. Continuation.

1	2	3	4	5
Goal 15. Protect and restore land ecosystems and promote their rational use, sustainable forest management, combating desertification, ending and restoring the loss of biological diversity.	Task 15. 3. By 2030, carry out activities to combat desertification, restore degraded lands and soils, including lands affected by desertification, droughts and floods, and achieve a neutral balance of land degradation.	15.3.1. 1. Develop a Strategy for the long-term of land use development in the irrigated arid regions of the country 1. Improve dry arable land use. 2. Improve pasture lands use. 3. Improve land use in forestry.	Economic, Function - forecasting and planning the use of land resources; Environmental, Function - reproduction of land productivity.	1. Develop a Strategy for the long-term development of land use in the non-irrigated arid regions of the country: 1) dry agriculture; 2) grazing land use; 3) land use in forestry, ensuring the prevention of land degradation.
	Task 15.9. Ensure consideration of the value of ecosystems and biological diversity in the development of national strategies and programs for the development of industries and economy sectors.	15.9.1. Provide land valuation as a major component of ecosystems.	Economic, Function - Land Cadaster	1. Develop a methodology for assessing the value of land as the main component of ecosystems.
		15.9.2. Ensure consideration of land values of ecosystems when developing a national strategy and program for land use development.	Organizational and Economic – Function - land use planning.	1. Develop a mechanism to consider the value of ecosystem lands in the development of a national Strategy and program for the development of sustainable land use.

No. 1 to the Resolution of the Cabinet of Ministers [2].

From the Table 1 it follows that out of 17 national goals and 169 targets in the field of sustainable development, 9 national goals were studied: No. 1,2,4,6,8,9,12 (the goal of the Ten-year framework program in the field of sustainable consumption and production), 13 and 15, and 19 targets related to the areas of nature management and land use, the transition to a model of sustainable land use, agricultural land use and production, preventing land degradation and desertification, preserving ecosystems and improving the quality of the environment. In order to implement the targets in the field of land use development, 55 events of various types were identified, substantiated and recommended in terms of their content and complexity of implementation.

Out the 19 established targets for the development of sustainable land use, the following measures have the highest frequency of repetition: "Improving the land use system and transition to a sustainable development model" - 6, "Improving the staff training system for land use management" - 3, "Privatizing land and introducing a legal market ownership and lease of land"- 2, "Assessment of land value in ecosystems"- 2. This fact indicates the relevance of these targets and the ways to solve them. All tasks and ways to solve them in order to turn to sustainable development of land use of the republic by 2030 relate to the relevant aspects and functions of land use management. This allows us to plan and conduct innovative developments and, as a

result, modernize the entire land use system for specific aspects and functions of its management.

Conclusions. The implementation of the recommended tasks in the field of sustainable land use and ways to solve them provides for:

- coverage of all functioning aspects of the land use system and their connection to national goals and targets in the field of sustainable development for the period up to 2030;
- systematic approach to the modernization of land use, their systematization according to the aspects and functions of its management;
- modernization of land use based on the introduction of innovations, a significant financial accountability of investments in the use of land resources, especially in development of real estate market and agriculture;
- transition to a model of sustainable development of land use, balance and harmonization of socio-economic and environmental aspects of the use of land resources of the country, prevention of land degradation and desertification;
- employment of the local population, growth of incomes and the level of well-being, restoration and conservation of landscape ecosystems and improvement of the quality of the environment;
- fulfillment of obligations on behalf of Uzbekistan on international documents and, in particular, on the Resolution of the UN General Assembly 2030 Agenda on the implementation of goals and targets for sustainable development.

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