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SUSTAINABLE LAND USE AND ITS ASSESSMENT: GLOBAL TRENDS

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Abstract.*Sustainable land use is a necessary element in ensuring sustainable agricultural development, improving environmental, economic and social opportunities for the benefit of present and future generations.*

The article investigates the historical development and state of land assessmentof sustainable land uses, which serves to increase the effectiveness of decision-making on land management.

The conceptual apparatus and tools for assessing sustainable land use in the process of land and the state of land valuation of at the national, subnational and local levels.

It provides an analysis of the main elements and sub-elements of any sustainable development programs, regardless of its reference point: country, region or community.

It is proposed to improve the concept of "sustainable land use" in the context of the researched world tendencies of the paradigm of sustainable development of territories adapted to the realities of Ukraine.

Keywords:*sustainable development, spatial formation of land use, sustainable use, assessment.*

Urgency of the problem. The growing and contradictory problems of rapid population growth, resource constraints, land degradation, biodiversity loss and climate change all require resource management to support and increase productivity and increase ecosystem sustainability. Land-use formation and land-use efficiency

assessment are tools that serve to achieve sustainable and efficient use of physical and socio-economic resources and serve as a tool to support and meet needs.

Sustainable land use is a systematic assessment of land potential, land use alternatives, economic and social conditions in order to select and adopt the best land use options. The purpose of the assessment is to select and put into practice those land uses that best meet people's needs while preserving resources for the future [1].

The main focus of agriculture is food production, so strengthening agricultural development at a sustainable level will be crucial to addressing these challenges. In the past, growing demand for food has been met by land expansion. Today, the availability of new land is limited. Moreover, more or less uncontrolled growth in agricultural production over the past few decades, both in industrial and developing countries, has pushed agricultural production to the brink of sustainability. This means that the traditional ways of increasing production are facing a new challenge: how to strike a balance between agricultural development and conservation of natural resources [2].

Goal of the paper -analysis of global trends and mechanisms of agricultural land use assessment in the process of spatial formation of land use.

Analysis of recent researches and publications. The problem of formation of sustainable land use in the process of spatial formation of land use in Ukraine is urgent for domestic scientists. Scientists such as P.P. Borschevsky, I.K. Bistryakov, B.M. Danylyshyn, S.I. Doroguntsov, D.S. Dobryak, V.M. Tregobchuk, A.M. Tretyak, M.A. Phesik made a significant contribution to the development of theoretical and methodological foundations of sustainable land use. At the same time, the issue is extremely urgent and needs further research to identify practical tools for the formation and evaluation of sustainable land use in Ukraine.

Main material of the paper. Since the approval of the World Soil Charter in 1981 by FAO members and the convening of the UN Conference on Environment and Development in 1992, land-use formation has been promoted as a "complement" - an important tool for sustainable use and management of land resources with forward-looking plans by 2030 [3].

A fundamental part of land use formation is the systematic assessment of land - a process of assessment that is widely used to determine the suitability of land for various uses (eg rain and irrigation; fisheries and aquaculture; forestry and agroforestry; non-agricultural use of land) decision-making on land use management is increasing.

In some western European countries, such land valuation was conducted to determine the value of the land to be exchanged for the formation of unique parcels in the process of land consolidation [4]. Land-use formation has proven valuable for developing and developed countries with large areas of unused land, which has served as a mechanism to guide the coordinated efforts of economic development plans.

In the process of forming sustainable land use, they not only determine the appropriate types of land use, but also formulate information indicators for managerial decisions that improve the productivity and sustainability of land use. The scarcity of land and water resources increases competition for them and forces users to activate high-intensity production to meet demand escalation. Existing landowners and land users need help identifying and implementing global land management experience. In the process of land use formation, the most appropriate and sustainable production systems need to be identified and promoted. Another issue is that the value of land is less important in the socio-environmental aspect than the quality of land. This is unfortunate because environmental considerations, climate change, and its variability are often underestimated or underestimated. This indicates that sustainable land-use formation requires reliable information on the economic, social and environmental nature, validity of land-use options, development of alternative scenarios to achieve the goals, and land-users' desire for stakeholder consensus through a decision-making mechanism.

To overcome the current tendencies towards natural resources, it is necessary to move towards sustainable production of food and agriculture [2]. The global trends in sustainable land tenure are based on the concept of the United Nations Food and

Agriculture Organization (FAO), which has identified five interconnected principles for the transition to sustainable food and agriculture, as illustrated in Figure 1.

In the last few decades, a wide range of sustainable use tools and methods have been developed and applied that are involved in different contexts and scales of decision making. Successes have been achieved locally and nationally. However, in the recent past, despite the huge technological advances in geospatial tools, data management should note that developments in the industry do not keep up with new challenges and have only increased the demand for land resources.

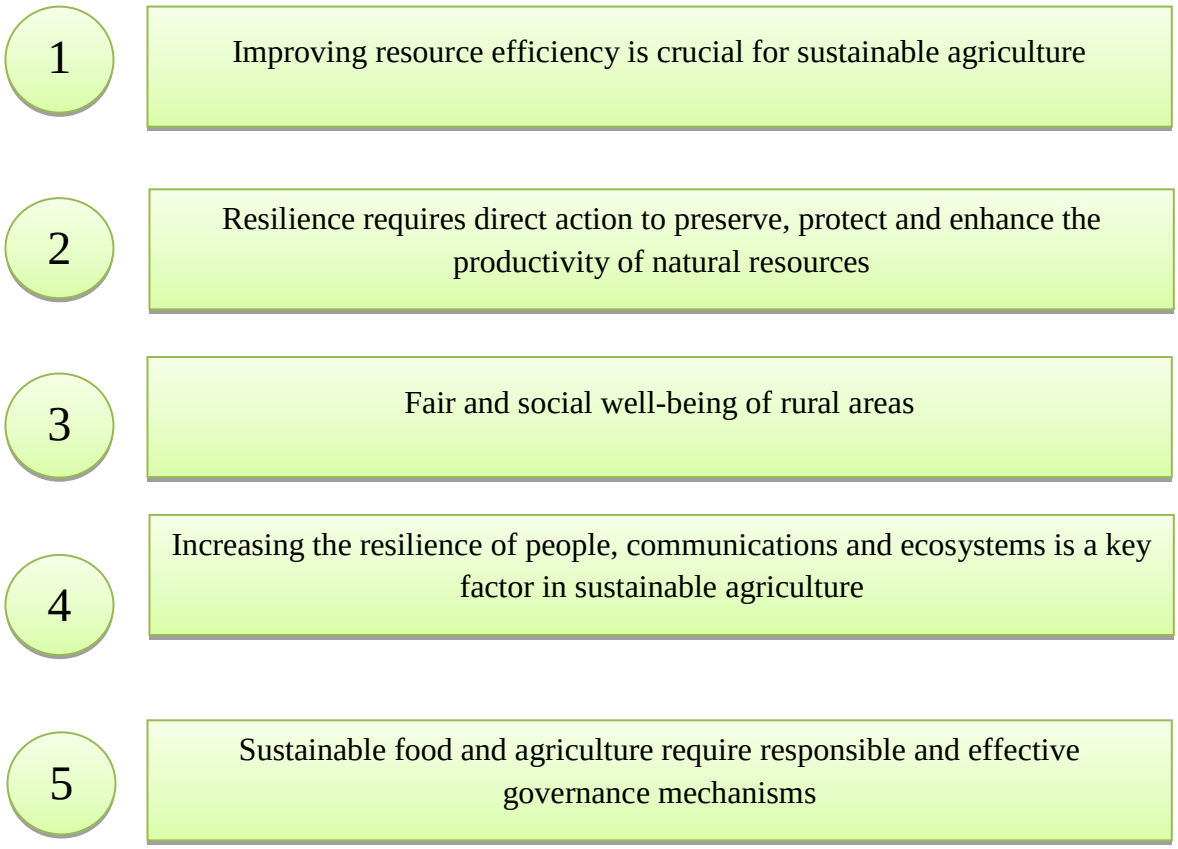

Figure 1Principles to ensure the transition to the sustainable food and agricultural sectors [5]

There are some doubts about the proper planning and analytical tools, knowledge and skills that would be effective in making decisions on various scales. However, tools such as knowledge and skills are crucial to foster effective support for sustainable use, which resolves conflicts, meets competing local, national and global land requirements and improves their governance.

An analysis of global trends in sustainable land-use formation requires a more coherent and integrated land-use and decision-making policy at the national, subnational and local levels [2].

Adopting sustainable land use and land management practices is essential to achieving sustainability, which is based on three key elements: balanced economic growth, environmental protection and conservation, respect and improvement of social mechanisms.

This approach to development is called an integral or holistic approach. All three interconnected elements must be sustainable at the same time, as they can only form a fair, viable and sustainable world. Circle intersectionsof economic development, represent socio-economic, socio-ecological and ecological-economic elements. Figure 2 shows the main elements and sub-elements of any sustainable development program, regardless of its reference point (region, community or country). This concept is also often portrayed as three pillars (economic growth, environmental protection and social progress) that together and equally "sustain" sustainable development.

Based on these principles, concepts, projects that address a number of local problems, such as land degradation and global land conservation, are built. For example, the goal of the *Rio Checua Project in Columbia* is to stop rapidly progressive soil degradation. Solving this problem will provide a solution to such a long-term problem as ensuring the supply of drinking water to remote areas of the country. It is possible to find an appropriate mix of different measures in technical, economic and social plans through land use planning [4].

Argentina uses land-use planning as a method to control desertification. Based on strategic guidance from regionally-oriented planning programs, development of initiative solutions, integrated land-use planning aligns with resource-based goals and focuses on local economic interests.

A number of developing countries use developed tools and methods of sustainable use to solve problems of different scales and different contexts [4]Figure 3.

Sustainable development as a concept is thus closely linked to the desire to develop a harmonious society focused on economic prosperity, social cohesion and environmental protection.Sustainability measures are formed from a set of main sustainability factors that affect the environmental status of land resources and are characterized by natural and value indicators.

Land use ecological efficiency can be analyzed with the help of such indicators as: coefficient of ecological stability of territories, coefficient of ecological impact on land and surrounding land, indicator of the level of land use, structure of land use, degree of intensity of land use, etc. [8].

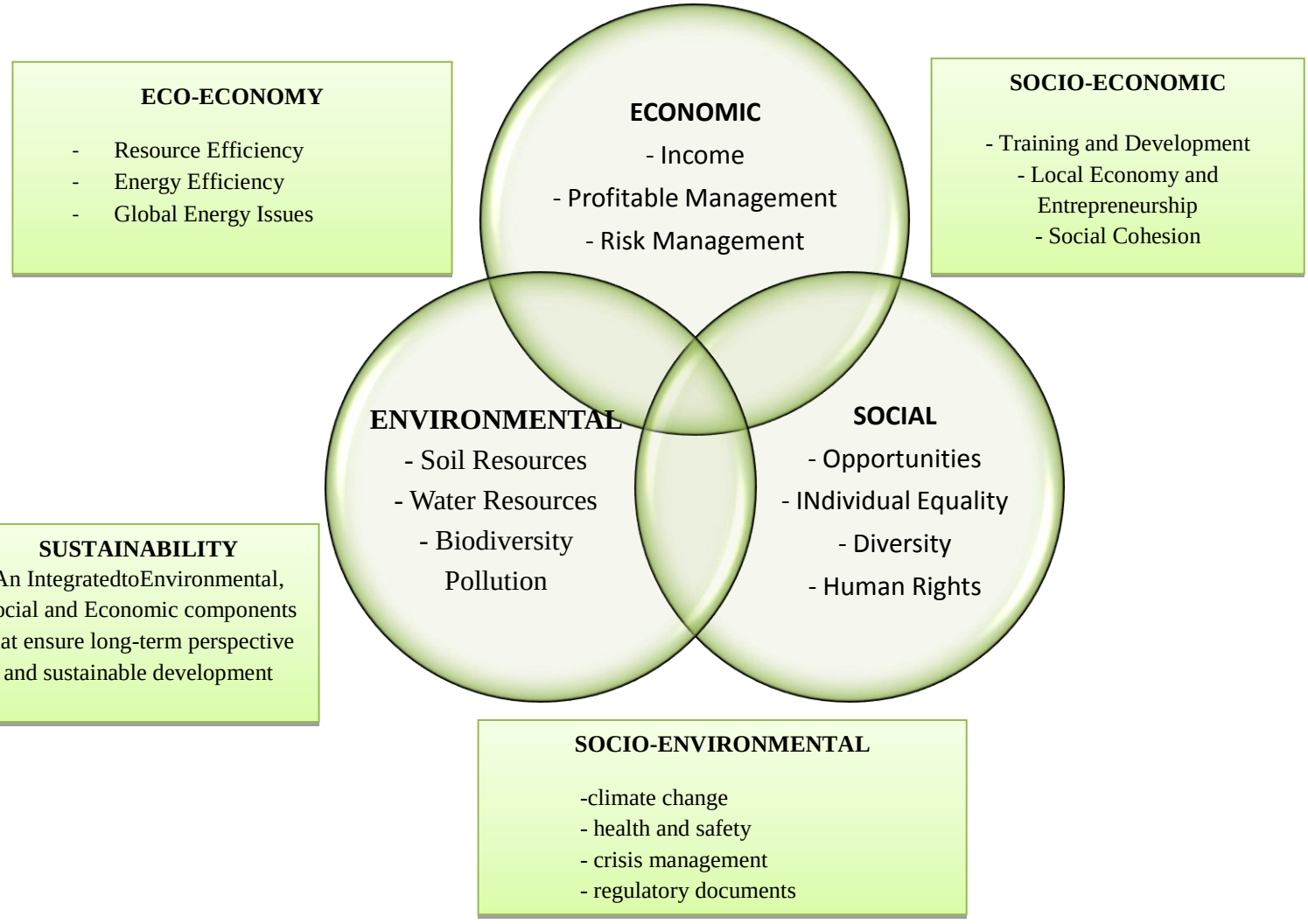

Figure 2 Three dimensions of stability

Indicators of cost-effectiveness of land use include such as land yields, patterns of economic activity and ownership, coefficient of economic stability of land use, as well as an indicator of agricultural sustainability, which, in the absence of accurate

measurement tools, does not interfere with certain conclusions about development trends, growth dynamics or growth dynamics. [8].

Land use analysis is carried out using the aforementioned indicators according to the methods proposed by international organizations that adapt to the realities of a particular country. National policies are directly or indirectly linked to the issues of agricultural sustainability, which have a significant impact on economic, environmental, social, demographic sustainability at the national and local levels [2]. This makes it possible to assess the sustainability of land use by the territorial community, the region and the country as a whole. In order to study the sustainable development of agriculture and rural areas, it is necessary to evaluate not only economic and economic indicators, but also indicators that characterize social factors that improve the quality of life [2].

The selection and aggregation of sustainability indicators takes different approaches, differing in structure, principles of construction and relying on a database of official statistics for the country and regions not only to assess the sustainability of the territory's development, but also to adjust the socio-economic development plans [2].

Sustainable use of resources includes, among other things, elements of good governance and analysis of trade-offs between uses to ensure effective development and implementation of land use plans that optimize resource use and minimize conflicts between competing parties, thus saving resources for future generations.

Land valuation can help reconcile existing biophysical and socio-economic contexts with the most sustainable options or land use systems and systems to support climate change systems. Improving land use formation - as part of an integrated approach - has been identified as one of the tools that can help countries to mitigate and adapt to climate change [5].

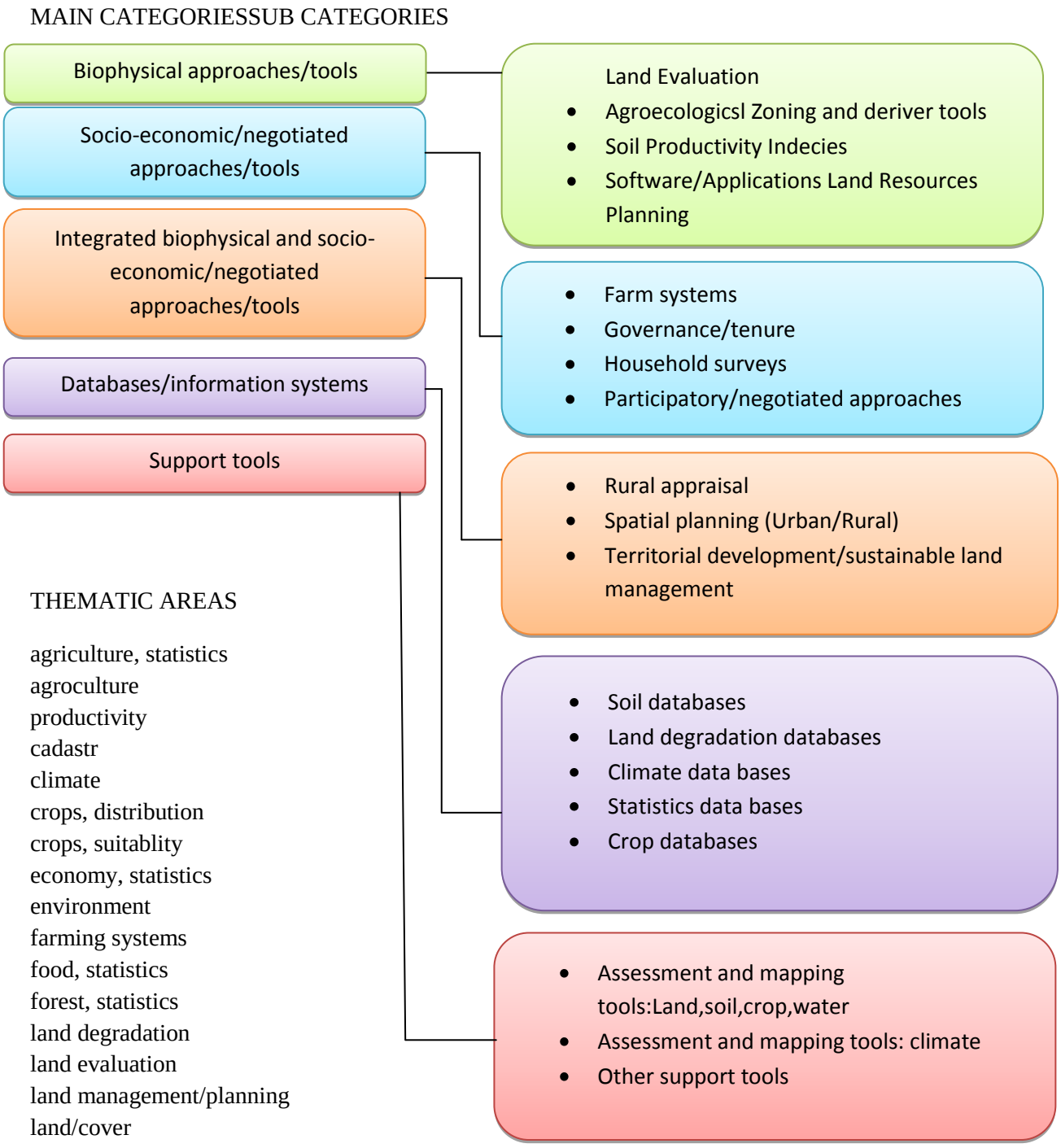

Figure 3 Search criterial and options for the Land Resources Planning Toolbox[4]

The impact of land degradation on their productivity is an obstacle to achieving food security and reducing hunger. Agroecosystem degradation has a direct impact on food security, income of the poor, further degradation, etc. Therefore, direct action is needed at all scales to preserve, protect and enhance productive resource management and combat land degradation.

Land resourceplanning is a systematic assessment of land potential and analternative to optimizing the use of land, improving economic and social conditions by participating in multi-sectoral processes, dependent on many stakeholders and their consolidation. Land use formation is part of sustainable land use and is reflected in land management, including land assessment, identification of needs and challenges, selection and implementation of sustainable land use options and decision support systems, as well as monitoring and assessment of the effects of economic activities to inform parties. Based on and implementation of optimal options for sustainable development of the territory.

Land suitability assessment is a tool for obtaining objective in the process of land planning[11] (Fig.4), this tool gives information about sustainable land use development options, productive potential and socio-economic conditions. These options help to make the best decision on land use and maintenance.

Land-use formation provides land-use tools in the most efficient way and promotes land management practices to support productive landscapes.

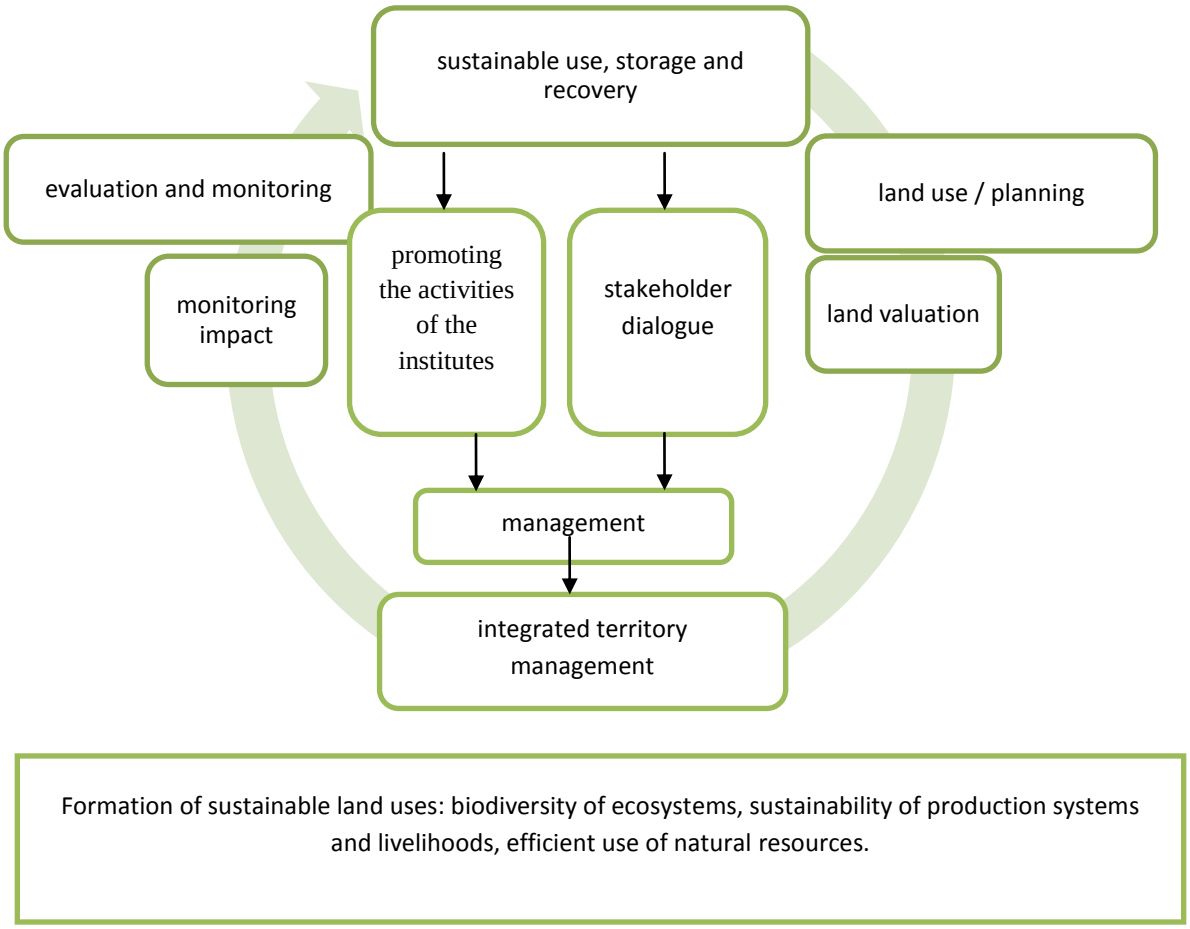

Figure 4 Formation of land resources as part of an integrated optimization process

Conclusions. The concept of *sustainable development* has the right to be widely used, since it implies, on the one hand, a balance between its socio-economic and natural components, and on the other, the long duration and continuity of the process of development of society, where the struggle for environmental production should not impede economic and social development.

In the last few decades, a wide range of sustainable use tools and methods have been developed and applied that are involved in different contexts and scales of decision making.

Adopting sustainable land use and land management practices is essential to achieving sustainability, which is based on three key elements: balanced economic

growth, environmental protection and conservation, respect and improvement of social mechanisms.

Global trends and patterns indicate that Ukraine's current land use does not meet the principles of sustainable development, so the following principles should be followed for an effective decision-making process: the regulatory role of the state; social orientation of rational, scientifically grounded land management and land use; environmental friendliness of scientific and technological progress; unity of indicators of economic and environmental assessment of land use; environmental management of land use; motivation for sustainable development of land use.

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СТАЛЕ ЗЕМЛЕКОРИТСУВАННЯ ТА ЙОГО ОЦІНКА: СВІТОВІ ТЕНДЕНЦІЇ

Анотація. *Стале землекористування є необхідним елементом забезпечення сталого розвитку сільського господарства, поліпшення екологічних, економічних та соціальних можливостей на благо теперішніх та майбутніх поколінь.*

В статті досліджено історичний розвиток, стан проведення оцінки земель сталих землекористувань, що слугує підвищенню ефективності прийняття рішень щодо управління землекористування.

Проаналізовано понятійний апарат та інструменти оцінки сталого землекористування в процесі управління земельними ресурсами та ландшафтами на національному, субнаціональному та місцевому рівнях.

Надано аналіз основних елементів та піделементів будь-якої програми сталого розвитку, незалежно від її точки відліку: країни, регіону чи громади.

Запропоновано вдосконалити поняття «стале землекористування» в контексті досліджених світових тенденцій парадигми сталого розвитку територій адаптованих до реалій України.

Ключові слова: *сталий розвиток, просторове формування землекористування, стале використання, оцінка.*

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УСТОЙЧИВОЕ ЗЕМЛЕПОЛЬЗОВАНИЯ И ЕГО ОЦЕНКА: МИРОВЫЕ ТЕНДЕНЦИИ

Аннотация. *Устойчивое землепользование является необходимым элементом обеспечения устойчивого развития сельского хозяйства, улучшение экологических, экономических и социальных возможностей на благо нынешних и будущих поколений.*

В статье исследовано историческое развитие, состояние проведения оценки земель устойчивого землепользования, что служит повышению эффективности принятия решений по управлению землепользования.

Проанализированы понятийный аппарат и инструменты оценки устойчивого землепользования в процессе управления земельными ресурсами и ландшафтами на национальном, субнациональном и местном уровнях.

Дан анализ основных элементов и подэлементов любой программы устойчивого развития, независимо от ее точки отсчета: страны, региона или общины.

Предложено усовершенствовать понятие «устойчивое землепользование» в контексте исследованных мировых тенденций парадигмы устойчивого развития территорий адаптированных к реалиям Украины.

Ключевые слова: *устойчивое развитие, пространственное формирование землепользования, устойчивое использование, оценка.*