

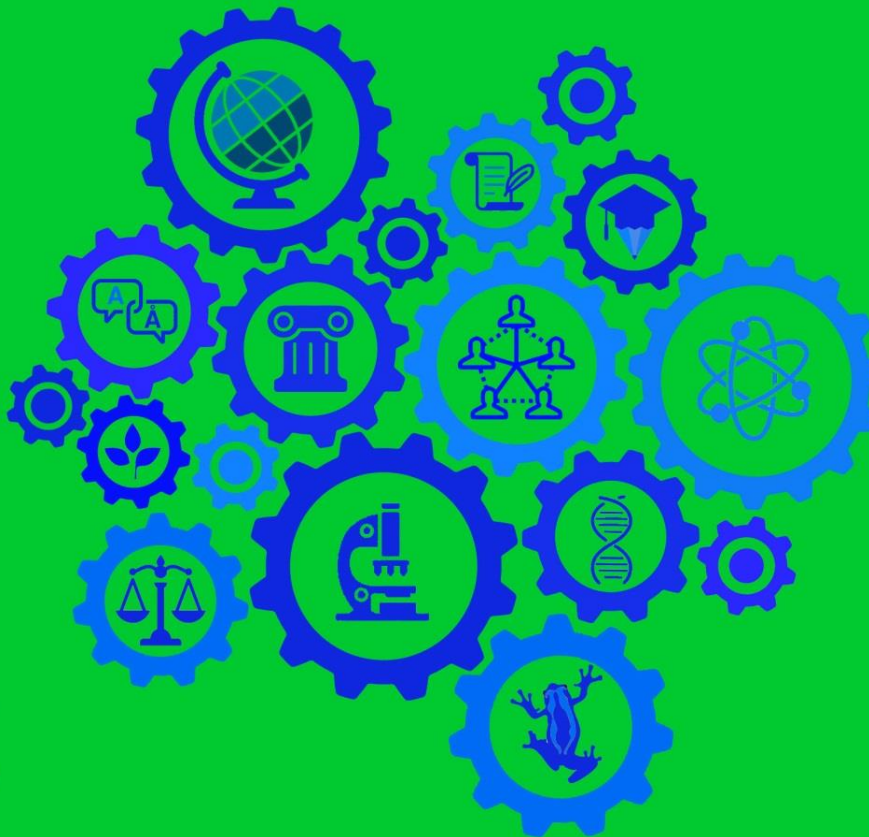
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## **Land Cadastre is a source of formation of land information system**

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**Abstract.** The economic essence of the rational reasons and protection of land is based on the effective maintenance of the state land cadastre, which is profound and important. Due to the need for information on the land fund, the maintenance of the land cadastre is objective. Land Cadastre is an important system for planning the industry's economic development, land reclamation in the territorial location and specialization of agricultural production, the implementation of agricultural activities related to the use of other resources, and information. When managing a land-use system, land cadastre information stems from the fact that it is necessary to perform all management functions. The information is necessary primarily for managing land relations and developing relevant laws and regulations, planning and forecasting land use, cross-sectoral allocation and redistribution of land resources, and assessing the country's land-use efficiency as a whole. This information requires land resources to be applied at the regional and local levels. Thus, land cadastre information is required in all aspects of land use. This puts the land cadastre in charge of providing information in the process. Land Cadastre requires information. This information should include reliable information about the land's natural, economic, and legal conditions. The development of the country's economy and the constant need for this information determine the development of the land cadastre as a single system. In the division of the land cadastre as a unit of two systems, for example, information management serves as a basis for

raising objective and legal issues in the organization of the implementation process of problems and goals. The article analyzes the continuous improvement, systematization, storage, and updating of land cadastre information development technology and provides users with reliable and cost-effective land cadastre information as one of the main tasks of the state land cadastre.

**Keywords.** Land Cadastre, informatization, land plot, cadastral number, servitude.

## **Introduction**

Extensive systematization, storage, updating, retrieval and rapid delivery of land cadastre information to interested users require automation of these processes, the creation of modern information systems based on computer technology. The main task of such systems is to create an industry-specific database, develop and use the necessary software and manage the operation of the system. The accuracy of the information is characterized by the degree to which it reflects the characteristics of the analysed plot of land. Reliability characterizes the technical capabilities of the means of information transmission and processing. For example, information may be reliably transmitted and processed, but it may not be accurate in advance. Information that does not change over time is called relatively constant information. Examples of information are constant data such as physical continuity tables, references, thematic maps, various tables. If the data changes over time, they are information with changing characteristics, such as rapid data during the production process, structural changes in the land fund.

## **MATERIALS AND METHODS**

The information required to effectively manage land cadastre work must meet many requirements. The main ones are the information should be purposeful, necessary and sufficient, reliable, true, timely, transparent, presented in a form that is easy to use in the future. The effectiveness of the transmission, assimilation and use of information was influenced by various factors, in particular, the language of information, geographical, historical, socio-political, departmental, economic, technical, terminological and other factors. Land management activities are based on the analysis and processing of data on changes in external and internal conditions, its impact on changes in external and internal conditions. Land Cadastre can be grouped according to sources of information as follows:

1. Current legislation. It includes resolutions of the Government of the Republic of Uzbekistan, decrees of the President of the Republic, orders, instructions, and directives of governing bodies of all levels. This information is especially important in the development of strategic, tactical plans and roadmaps for the development and operation of the region and society.
2. Information reflecting demographic and social trends in the development of society is of particular importance in planning the turnover of land plots and other real estate objects. They, in turn, depend significantly on the total population, composition, location, and purchasing power.
3. The development of administrative-territorial structures is assessed by the volume of production and investment[1].

The level of technical development in the sectors of the economy and its development trends depend to some extent on their ability to meet the needs of the land.

Such information can have a significant impact on the planning of new product production, the formation of technological processes.

It is recommended to implement the developments, the results of which were positively assessed by experts with the participation of experts in land cadastre and related fields, on the basis of scientific and methodological support in accordance with the requirements of the Law "On Land Cadastre" and by-laws[2].

The first steps in the implementation of this selection system in the field of land cadastre and the expected results are recommended in the example of the following developments:

1. Achieve the delivery of cadastral information to consumers in a reliable, transparent and efficient manner on the basis of the installation of sensory boundary markers on land plots owned by the land user.
2. Increasing the area of arable lands on the basis of public-private partnership development of unused agricultural lands on the territory of farms with unlimited material and technical base on the basis of targeted development of new land.
3. Transparent formation of land cadastre information on the land fund of the citizens assembly.
4. Development of a contract model for the introduction of land servitude[3].

The actual quantitative and qualitative status of the land fund is the basis for the formation of a database to predict changes in them. Land Cadastre information by level of cultivation can be grouped as follows:

Initial statistical information (initial accounting data) - accounting, economic, ecological and other data collected from the inspected objects (land plot, land user entity, territorial zone);

Statistical information grouped into selected, dynamic series developed for the future;

Information characterizing the current state of the land plot under inspection allows predicting the probability of development in its use. For example, on the basis of a list of land plots or land users those are objects of land relations.

If we recognize the need to form a land database on the components of the land cadastre, it will be necessary to improve the above definitions to keep them up to date. Considering the historical formation of the land cadastre, its current purpose and future tasks, we consider it necessary describing its improved components as follows. Here it is expedient to name the components of the land cadastre as follows:

- Registration of land rights and formation of cadastral numbers;
- The introduction of land servitude agreements;
- State land accounting;
- Land appraisal works (land valuation, normative appraisal of agricultural lands);
- Forming a database and communicating it to consumers.

The main requirements for information on the components of land cadastre are objectivity and objectivity, its timely formation and delivery to consumers, the exact consumption function of information, the optimal level of generalization. The set of information materials of social significance for the maintenance of land cadastre and used in public practice is its documentary structure. Formally, a separate set of documents, documents and resources in information systems can be the private property of citizens, public authorities, local governments, organizations and societies.

## **Discussion**

Land Cadastre information resources are the objects of relations of the physical legal entity, the state. They constitute the information resources of Uzbekistan and, among other resources, are protected by law. The legal regime for information resources is determined by the norms governing the conditions of protection of the right to private property, access to information,

as well as the use of information in certain documents in information systems[4].

In this case, the documentation of information is a prerequisite for inclusion in information resources. Public authorities and organizations responsible for the formation and use of information resources provide the conditions for the full provision of documented information to the user in accordance with their responsibilities established by their charters. Information resources of the state land cadastre of the Republic of Uzbekistan are formed in accordance with the following areas of office work:

- Republican information resources (Geoportal system);
- Joint information resources under the jurisdiction of the republican and local authorities;
- Information resources of local governments.

According to the direct function, land cadastre information resources can be divided into state, special, public types. State information resources include information from various databases and cadastre. They are divided into administrative, social, statistical, financial and commercial, components. They are used to address government issues and strategic development of economic sectors. Research shows that special land cadastre information resources include economic, scientific and technical, production, environmental, marketing, auction information. They are designed for individual branches of the farm complex, specialists. Public land cadastre information resources are a set of legal, political, educational, informative, archival information, as well as attributive information about land and real estate.

It is recommended to form the land cadastre information resources on the basis of the following requirements:

- Accuracy, timeliness and prompt presentation;
- Ensuring completeness and user requests for information;
- Sections on the level of confidentiality;

- Access to public information;
- The ability to compare the information resources of different administrative-territorial organizations and institutions to spatially form a single information.

Types of land cadastre information are intended for the collection, storage and use of defined information related to the component (statistical data, materials, scientific and other reports, electronic maps and electronic records). The structure and organization of information depend on the efficiency of information systems (collection, processing, systematization, information retrieval and delivery to consumers). The formation of the content of information is determined by the specific problem that this or that system solves. Land Cadastre information is divided into the following components:

on a functional basis (a document or information reflecting the management activities in one form or another, structural descriptions are combined into separate parts);

By type of document or group of documents (registration, land account, land balance, land valuation);

On more complex characters, all the time is also associated with subject structuring.

An important requirement for component-related information is the ability to quickly and accurately retrieve useful information from that component. The ability to meet demand along with the completeness of the information determines the quality of the type of information. Land Cadastre information documents are collected and stored in the following form:

Paper, its main characteristics - the lack of compactness in storage, the inability to quickly search, copy and provide information to the consumer;

Microcopy - the compactness in the storage of information, the inconvenience of selective copying and informing the consumer that the microfish can be a special device for reading;



Electronic database and bank are effectively combined with maximum compactness, collection, storage, retrieval and distribution functions in information storage.

An information system in land cadastre management is the collection of primary data processing processes to obtain information suitable for decision making. To perform its function, the information system must have a full set of functional capabilities, including the ability to observe, describe, interpret, forecast, make decisions. Expanding the content and complicating the tasks of different types of information in management processes, increasing their importance requires strict accounting and protection of information. It is planned to include land cadastre information resources in the property of relevant organizations. The main task of information is to meet the information needs and rights of citizens, public authorities, local governments, organizations, public associations, to create the necessary infrastructure, without which the effective functioning of economic systems at any level, as well as their management is impossible. Three components have a known impact on the information process:

Computer and communication software and hardware;

Information technology;

Access systems.

For the first organizer is characterized by the formation of a technical-technological complex (computer, modems, servers, etc.). The second component includes computer programs, intelligent expert systems, database distribution, electronic archives, libraries, publishing systems, communications, and information security technologies. It is the most dynamically evolving organizer. For example, the volume of information technology in the world market is growing by 6%-8% annually. The third component is a set of electronic programs for the use of computer tools.

The development of the market of information products and services, which can meet the maximum needs of different information, has made it possible to involve information in commodity-money relations as an equal commodity. Under market conditions, the commercialization of land cadastre information has led to the intensive development of digital information resources, as well as means of their remote use. Land Cadastre information activity - the processes and actions conducted in the collection, processing, storage, retrieval and dissemination of information, as well as in the formation of information resources and the organization of permits (permits) for their use. Territorial bodies under the Unified System of State Cadastres, as well as the types of information collected and disseminated, topics, data collection technology, other organizational structures (centres, institutes, libraries, departments) specializing in the region served activities. The state land cadastre informatization activity as a whole is aimed at ensuring that citizens and organizations receive the necessary information, produce and disseminate information, and expand opportunities for government agencies, individuals and legal entities to participate in land resource management processes.

A necessary condition for the successful solution to these issues is the information policy in the maintenance of the state land cadastre. It is to encourage conscientious information activities; to fight monopoly; control over excessive accumulation of information private organizations; to develop and implement effective mechanisms for protecting intellectual property; formation and development of information infrastructure; should be focused on the development of the information culture of society.

Land Cadastre information support is the process of collecting and presenting properly processed information on land use difficulties to record documents on land plots and real estate

located on them, as well as the process of exchanging information between interested users according to their information needs. Therefore, it is necessary to define the tasks of effective management of land cadastre information. The tasks of informing and maintaining the land cadastre system are

Legal support of the land cadastre system;

Filling the database, updating, record keeping and documentation of information on land plots;

Providing the necessary information to interested bodies, legal entities and individuals;

Analysis of land cadastre system, land use efficiency;

Land market development forecast, information market, land use forecast;

Information protection.

It is clear from the content and basic descriptions of the above-mentioned information and informatization issues that it is necessary to rely on this knowledge in the development of theoretical and methodological bases of land cadastre information provision. Definitions, opinions, assumptions related to informatization serve to create the methodological basis of land cadastre information supply. They, in turn, are the basis for developing components and principles of a single system of state cadastral[5].

The process of land cadastre is a process of information production, which is changeable and in need of improvement. The object of land cadastre is the single land fund of the country, regardless of the purpose of use and economic purposes, land masses, land plots, land ownership, irrigation, collector and road networks, buildings, structures and others. The main unit of land cadastre is land use, which reflects the nature and characteristics of the land fund. They are taken as the object of land cadastre and the primary unit in the economic account. It is a complex concept that encompasses the legal, socio-economic, and economic

essence and significance. Quantitative, qualitative and value descriptions of land plots are the subject of land cadastre study. For this reason, the first subsystem of land cadastre has material significance.

The application of information in the process of land cadastre is aimed at achieving the development of land cadastre information. This set of processes consists not of an arbitrary mechanical sum of them, but of a rigid structure applied in series, forming a single integral process, i.e., a system of equal processes. Therefore, it is correct to look at the process of consolidated, integrated land cadastre as a system, and in a broad sense it can be considered a changing subsystem of land cadastre.

The purpose of the land cadastre process is to continuously and timely update the information in the first land cadastre system, assigning it as land cadastre systems, while developing reliable information. The task of the land cadastre process is to organize and process information in appropriate ways. Based on its content, purpose and objectives, we define the land cadastre process as follows: the land cadastre process is a system of state measures aimed at the development of reliable necessary land cadastre information. The land cadastre process is a complex system of activities for the development and regulation of information. Improving the efficiency of the process, improving the quality and practical significance of the information being developed requires a systematic approach to its organization. The issue of systematic organization of the land cadastre process is problematic. It includes a set of independent issues: about the structure of the system, its tasks, principles, methods and means of applying the process, process optimization[1], [3].

The functions of the land cadastre process are a mechanism for solving its problems and determine the content and order of implementation of joint processes. These include:

Development and improvement of normative and methodological documents on land cadastre;

Organization of production-technological land cadastre process;

Maintaining a land cadastre document.

Reliable and economical information can be developed only on the basis of complex implementation of all functions of the land cadastre process. The main and current types of land accounting are dialectically connected stages, an objective process in the conduct of land accounting because the qualitative condition of the land and nature of its use are variable. These two species are organically linked to each other; land is an integral part of the cadastral process and land accounting should be provided with reliable and complete information; the country should provide information on the size of the land fund, landowners, land users and land categories, descriptions and assessments of land quality. Land accounting differs in that the necessary surveying, research, descriptions and assessments, and large-scale work on the calculation of areas must be done; this is repeated periodically; land-accounting work is repeated every year to keep the land registration data at the level of modern requirements.

The system of development of land cadastral information is a set of cadastral indicators, which are interconnected, arranged in a regular pattern consisting of an organic whole phenomenon. In terms of structure, the subsystem structure, in turn, includes the types of information in the system of target and administrative-territorial signs, as well as cadastral indicators[6], [7].

The core of the land cadastre system is accounting information, which represents the material basis for determining the relevance and qualitative description of land plots. It represents the economic aspects of land use. Simultaneously, it provides a comprehensive and complete description of the status and use of a single land fund of a society as a whole, organically

interconnected, consisting of recorded, accountable and species evaluated. Each user collectively uses all types of information, regardless of the issues to be addressed. The task of the land cadastre information development system is to provide interested land cadastre information consumers with the necessary reliable information on the natural, legal and economic conditions of the land timely. The function of the system is to collect, store, retrieve and present information to consumers and to update it continuously. The operation of the subsystem is performed in accordance with its principles.

## **Conclusions**

In conclusion, land cadastre information systems are defined as follows: land cadastre information systems - a regulated set of reliable data on land registration, accounting for the quantity and quality of land, land valuation. The system of land cadastre information development is a special information system, all types of information are in an organic, logical connection, and as a whole are specific to socio-economic systems. Includes quantitative and qualitative systems identified in the process of understanding the structure of the information system and the use of land resources.

A distinct feature of the Land Cadastre Information System (LCIS) is the uniformity of the methodology for obtaining and storing information in the regions of the country. However, the system also reflects the regional characteristics of natural and economic land use. Due to the need for a continuous process of land use, their distribution and redistribution, the need to reflect the dynamics of the use of a single state land fund, the constant updating of data is a characteristic feature of this system. The need for information in the sectors of the economy requires the

connection of the system with the external environment, which determines its essence, function and purpose.

Information can be developed only on the basis of the application of data obtained from all stages of the process. The main and current types of land accounting are dialectically connected stages, and as an objective process is also a process that determines the qualitative condition of the land and nature of its use. These two types are an integral part of the interconnected land cadastre process and can be reliably and fully provided with land identification information. Land inventory information includes information on the size of the country's land fund, landowners, land users and land categories, land quality descriptions and assessments. The basic calculation of land differs from that of field research sources in those descriptions and assessments require a great deal of work to be done in calculating areas; this process is repeated periodically; the land registration data are repeated annually as the current land account to keep up to date.

This system has several features. These features are the complexity of cadastral indicators; presentation of information in various forms; manifests itself in the need to digitize the system. A necessary condition for the functioning of the system is the structural connection of land cadastre processes. The interconnection between the systems requires the need for land cadastre information and its development. The development of information requires its delivery to the consumer. Therefore, one system cannot be preferred to another. They form a single integrated system of land cadastre.

A systematic approach to this process is required in land cadastre information. In this regard, it is recommended to follow the proposed system in improving the components of the land cadastre and the corresponding processes and information supply. According to the author's recommendation, special

attention should be paid to the timely provision of land cadastre information to consumers on the basis of systematization, analysis and registration in the prescribed manner.

## References

- [1] Volkov S.N., *Ekonomika zemleustroystva [Economics of land management]*. Moscow: M. Kolos, 1996.
- [2] Law of the Republic of Uzbekistan, *Land Code of the Republic of Uzbekistan*. Tashkent, 1998.
- [3] Chertovitskiy A.S.Svaynov A.A., *Land information system*. Tashkent, 2016.
- [4] K. Rakhmonov and M. Abdurakhimova, “Improvement of cadastral information provisioning system in an administrative region,” in *E3S Web of Conferences*, Jan. 2021, vol. 227, doi: 10.1051/e3sconf/202122705002.
- [5] Rakhmonov Sherzod, Umurzakov Uktam, Rakhmonov Kosimdjon, Bozarov Iqbol, and Karamatov Ozodbek, “Land Use and Land Cover Change in Khorezm, Uzbekistan,” *E3S Web Conf.*, vol. 227, p. 1002, 2021, doi: 10.1051/e3sconf/202122701002.
- [6] Rakhmonov Kosim and Abdurakhimova Mokhigul, “The need to create a land cadastre information system for agricultural entities,” *Irrig. Melior.*, pp. 77–80, 2020.
- [7] S. Narbaev, A. Chertovitskiy, K. Rakhmanov, and V. Akhmadaliev, “World tendencies of land use development,” *J. Adv. Res. Dyn. Control Syst.*, vol. 11, no. 7, 2019.