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A. Baitursynov Kostanay State University
Ecology Department

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Land-use planning

Manual

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This Manual gives a course of 15 lectures in accordance with the program on "Land use planning" discipline

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Contents

Introduction

The "Land use planning" course is an elective basic course. This university course is intended for students majoring in "5B060800 - Ecology".

Currently there are two forms of land use in Kazakhstan: state and private. All branches of the national economy need land. But before you distribute or redistribute land between land-use forms, land categories and sectors of the national economy, localities, it is necessary to plan land use for specific needs. At the same time, parity in the use of land should be at the farm. It is inter-farm land management that does all this. Intra-farm land planning is carried out in agriculture. The Land Cadastre is involved in establishing the qualitative and quantitative composition of land, its quality and economic assessment.

Planning should be carried out to make more profit from land without polluting the environment and reducing soil fertility.

The "Land use planning" course gives some insight into all of this.

Prerequisites: Soil Science, Ecology and Sustainable Development

Post requisites: Environmental Mapping.

Course purpose: to raise students' awareness about natural, economic and production features of land, land use planning, its principles and content, land relations, natural, economic and social conditions taken into account when planning land use, zonal features of land use planning, with the essence of inter-farm and intra-farm land-use planning.

Course objectives:

- study the land fund of the Republic of Kazakhstan, the natural, economic and social conditions affecting and taken into account when planning land use;
- learn the principles of development, content and types of land use planning;
- acquire the preparatory activities required for land use planning.

By the end of the course, students will:

know:

- the place and role of land in social production;
- ideas about land relations and land system;
- composition and use of the land fund of the country; ways to solve problems of rational land use;
- principles of land use planning development;
- concept, objectives and content of land use planning;
- types and principles of land use planning, land properties;
- natural, economic and social conditions that are taken into account when planning land management;
- land management process;

- content of land use planning schemes and projects;

be able to:

- make necessary design calculations;
- use their knowledge of land law, soil science and other related disciplines in solving land management tasks;
- work with land management documentation;

acquire skills to:

- work independently in the decision and justification of land management;
- use legislative, regulatory and legal framework for land use planning;
- use materials on land use planning in various information systems;
- prepare land use planning documents;

be competent:

- in organizing rational land use and the territory in accordance with the existing land relations.

Module 1. Theoretical basis and environmental justification of land-use planning

Lecture 1. Introduction to discipline

1.1 The importance of modern land management planning.
1.2 The concept of land-use planning and its main goals
1.3 Land-use activities structure and sciences which study regularities of this process

1.1 The importance of modern land management planning.

The question of rational land-use in conditions of a variety of types of ownership and management on land includes a wide group of activities to further intensify land-use, environmental protection, soil fertility increase on a basis of large-scale deployment of achievements of science and best practices. First of all, organization of rational and efficient usage of land resources in every level of of national economy is very important. As well as land management with consideration of natural and economical specific, development perspective of agriculture and other industries of economy. This is a subject of the land-use planning.

1.2 The concept of land-use planning and its main goals

According of the Land Code of the Republic of Kazakhstan *The land-use planning* is a system of activities to ensure compliance with Land Code of the Republic of Kazakhstan, which regulates land property relations, rational usage arrangement and land safety.

The land-use planning applies to all categories of lands regardless what are their types of property and usage.

For subjects of land property relation the regulations of laws of Republic of Kazakhstan are binding and include: purpose of land which was determined as a result of land-use planning, way to use and to protect land, restrictions and encumbrances, boundaries of land plots, land quality a quantity data and other information properly reviewed and approved.

Land use planning tasks are shown in Figure 1

Land-use purposes:

1) develop republic, area and regional designs (projects) of land-use plans, land zones, usage, improvement and protection of land resources on basis of landscape-ecological approach;

2) develop designs of land-use planning between the land properties to create and organize existing lands, to define and establish land boundaries on the ground;

3) define and establish boundaries of settlements on the ground, develop designs of its land plot arrangement;

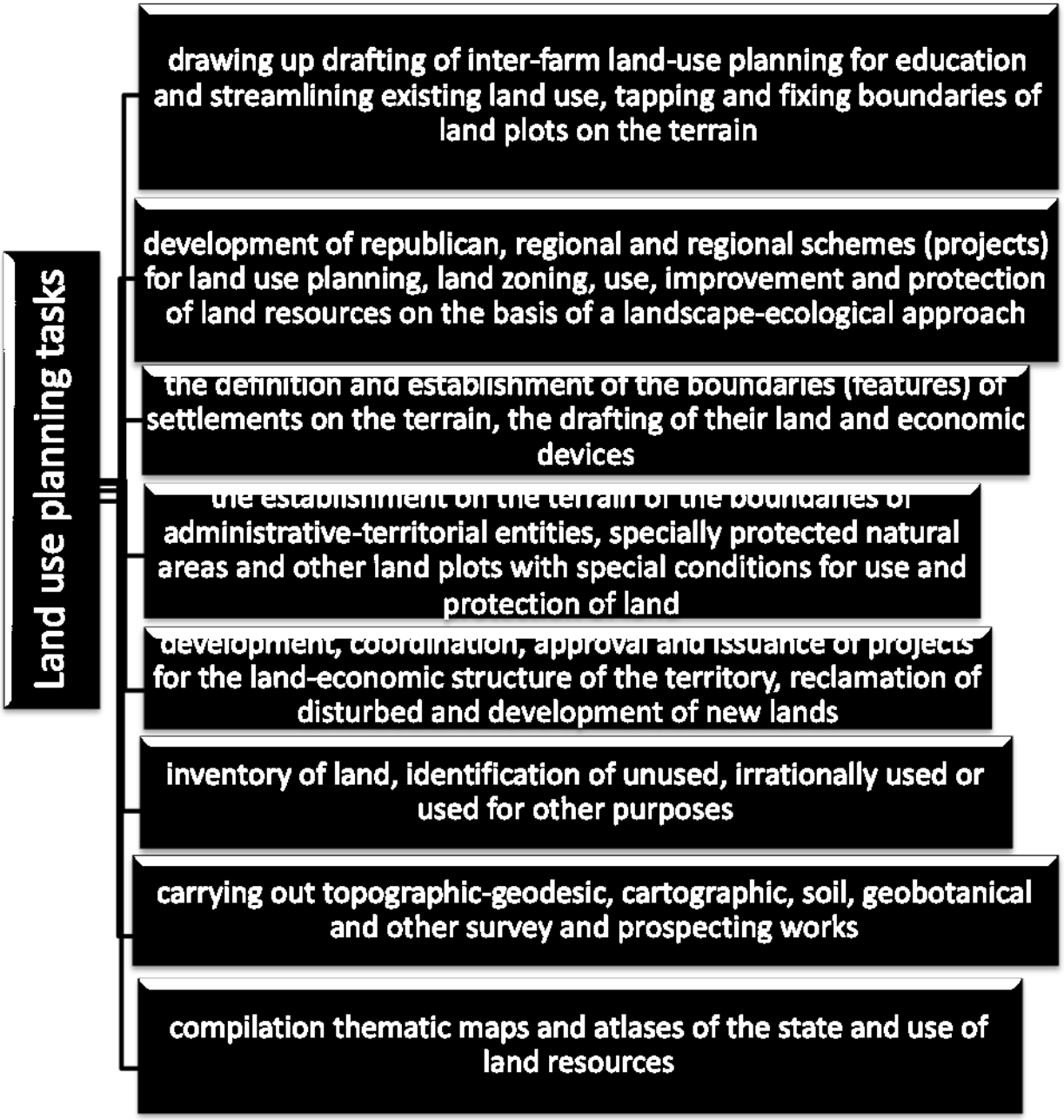


Figure 1- Land Use Planning Tasks

4) establish on the ground boundaries of administrative-territorial formations, specially protected natural territories and other land plot with special usage and protection conditions;

5) develop, agree and approve issue of land plot management design of the territory, remediation of corrupted and development of new lands and other projects related with usage and protection of lands;

6) carry out land inventory, detect lands which are not used or used unreasonably, or used not according its purpose;

7) conduct topographic and geodesic, cartographic, soil, geobotanical and other researches and surveys;

8) draft themed maps and atlases about condition and usage of land sources.

1.3 Land-use activities structure and sciences which study regularities of this process

The land-use planning is a science which studies properties of land and regularities of its functioning as means of production and a spatial basis in specific land regulatory relation system to organize rational and most effective usage and safety of land taking in account specific natural, economic, agrotechnical, meliorative, social and other conditions.

The land-use planning as a science includes study of the following scientific disciplines: the land property relation history, the scientific basis of land-use planning, the land management design, the land cadastre, the state land registration, the land law, the land-use and land management basics.

As a social and economic science, land-use planning studies objective laws of land functions and means of production related to land working, with the goal to increase effectiveness level of production through development of organizational, territory and economical conditions for rational land-use and location of facilities.

Land-use planning also studies a most complicated processes such as public relations in market economy conditions. In such conditions every specific fact is influenced by variety of factors which have some interconnections.

Social and economical actions which are developed in modern land-use planning system, are arranged as a territory organization which provide most beneficial organizational and economical conditions to locate and run production facilities, which are ensure efficient land, resources and technology and workforce use. So this helps to achieve cost effectiveness to produce and distribute agricultural products.

Test

1. What lands in the Republic of Kazakhstan is land use planning carried out on?
Choose one (or more) correct answer:
a. On agricultural lands
b. Only on arable land
c. On lands of all categories
d. Only on state lands

2. Land use planning tasks.
Choose one (or more) answer:
a. Drawing up projects of inter-farm land-use planning for education and streamlining of existing land-use, off-water and delimitation of land plots on the ground
b. Determination and establishment of boundaries (features) of settlements on the territory, drafting projects of their land and economic facilities
c. Drawing up thematic maps and atlases of the state and use of land resources
d. Drawing up of technological projects of industrial enterprises

3. Land use planning as a science includes the study of the following scientific disciplines

Choose one (or more) correct answer:

a. Ecological mapping
b. The scientific basis for land use planning
c. Crop production
d. Soil Science

Lecture 2. Main factors of land-use

2.1 Social and economic meaning of land-use and land ownership
2.2 Legal basis of land use

2.1 Social and economic meaning of land-use and land ownership

As an economical category land-use is defined by mode of production, specific social type of business which use land as means of production. The key moment to understand economic meaning of land use is a type of material production both as objective (productive) and subjective (personal consumption).

Functioning of land as means of production and as means to produce means of production related to land, during social production refer to economic meaning of land-use in its broad sense.

The economic definition of land-use of agricultural business contains following main attributes:

1) production usage (functioning) of land as production means and as production of means of production related to land, during production process;

2) social type of business which use land as production means.

After apply this definition to specific agricultural businesses, we can formulate a term of land-use as follows. Land-use economic meaning is land functioning as production means and as production of means of production related to land, during wide reproduction process of business itself.

Existing social system of agricultural business built on variety of types of land ownership, such as state, collective and private.

The distribution of land between forms of ownership in the Republic of Kazakhstan is given in Table 1

Table 1- Distribution of land in the Republic of Kazakhstan for agricultural purposes, depending on the legal form of ownership, as of November 1, 2015

	Number of land plots, thousands of units	Area	
		Thousand hectares	%
Total area of agricultural land	761	93388	100
of which In private ownership In the lease	 561 200	 930 92458	 1 99
of which in temporary lease in permanent lease	 198 1	 90950 1508	 97 2

The functions of ownership are shown in Figure 2.

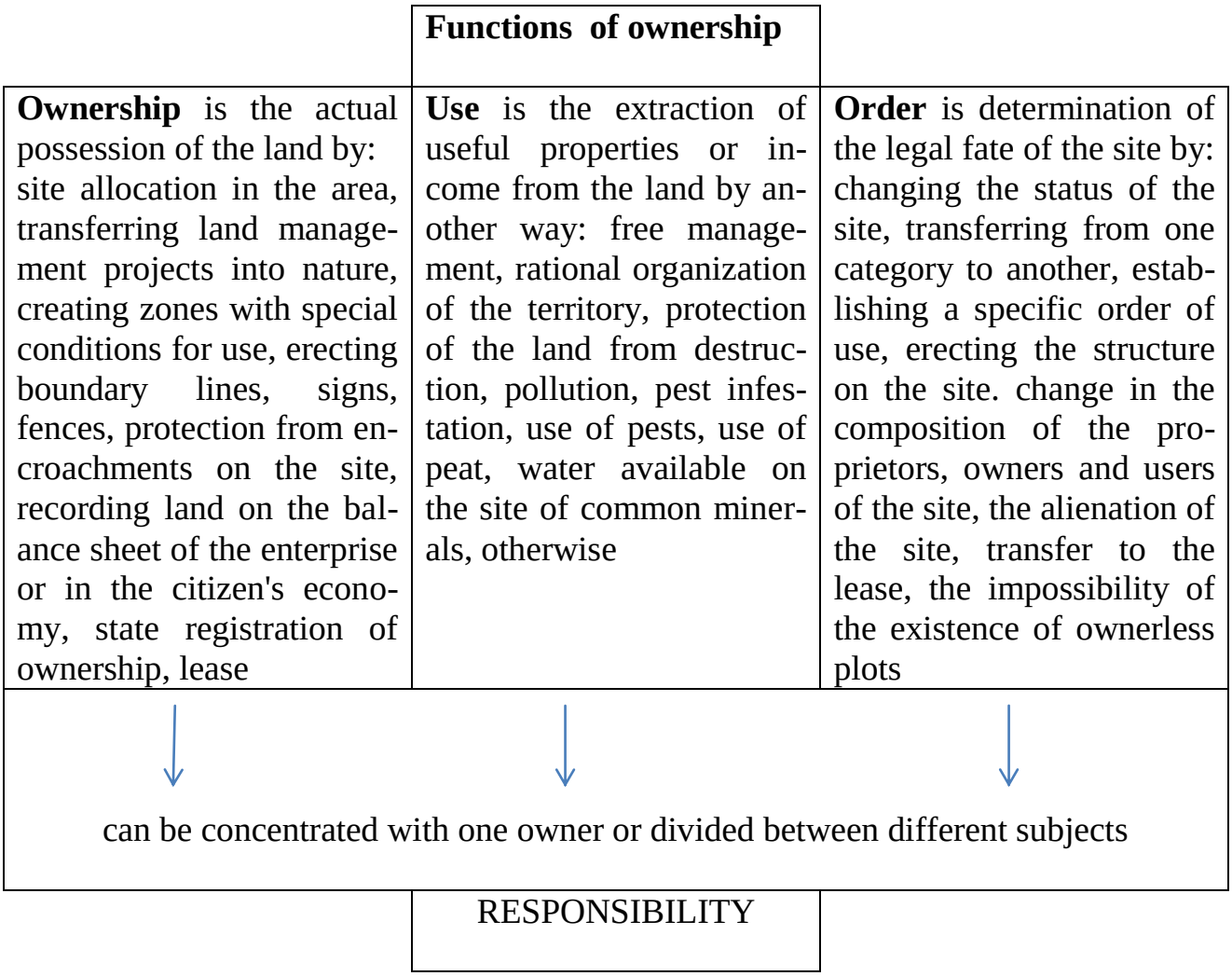


Figure 2

There are different types of agricultural businesses which socially differ from each other. This is a reason to establish during current step of land and agrarian reform such forms of business as: Limited liability partnership (LLP), Joint-stock companies (JSC), associations of farmers (farms), farms, agricultural cooperatives and personal supporting plots.

Therefore social meaning of land use defined of established production and land ownership relations, types of land ownership and agricultural businesses.

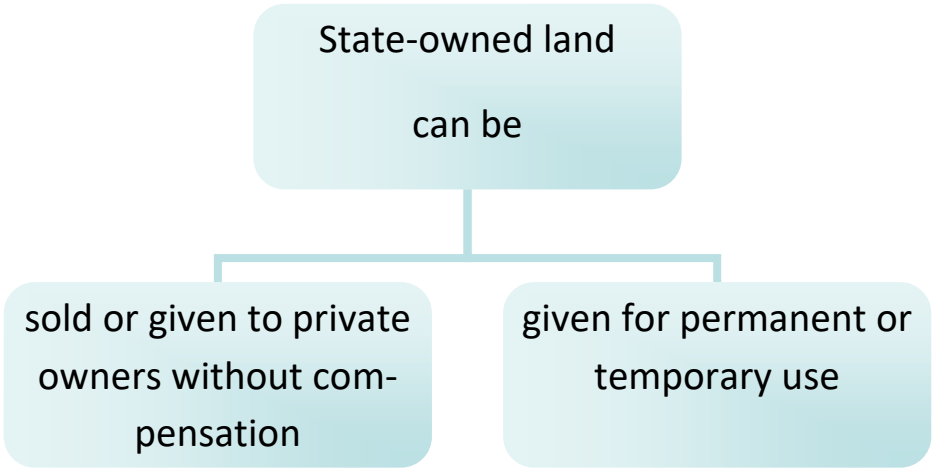
2.2 Legal basis of land use

Order, conditions and type of land usage are determined and depends of economic relations, which develop during production process. Legal land relations reflect economic conditions of social life and they determined by land economic relations.

Developed in society land economic relations are reflected in legal land relations and as a result in land regulations land-use conditions and orders are established.

A land-use which is land territory assigned to a specific land user, is defined as order of usage of land as an object of labor and production mean, but right of land-use is defined as scope of regulations which determine established corresponding rights and obligations of land user, conditions and order of usage and ownership.

Land users rights and obligations clearly defined by law and registered in Land Code of the Republic of Kazakhstan issued in 2016.



Lands in state ownership those which are granted to government bodies, organizations and institutions, which are used for defense and national security, which are under specially protected nature territories with heals, historical or cultural value, forest and water funds, common use on the lands of settlements, reserve, including special land fund, pasture and hayfields in settlements and rural settlements, as well as pasture lands and other land which are not transferred to private ownership.

Figures 3 and 4 show the rights and obligations of landowners and land users

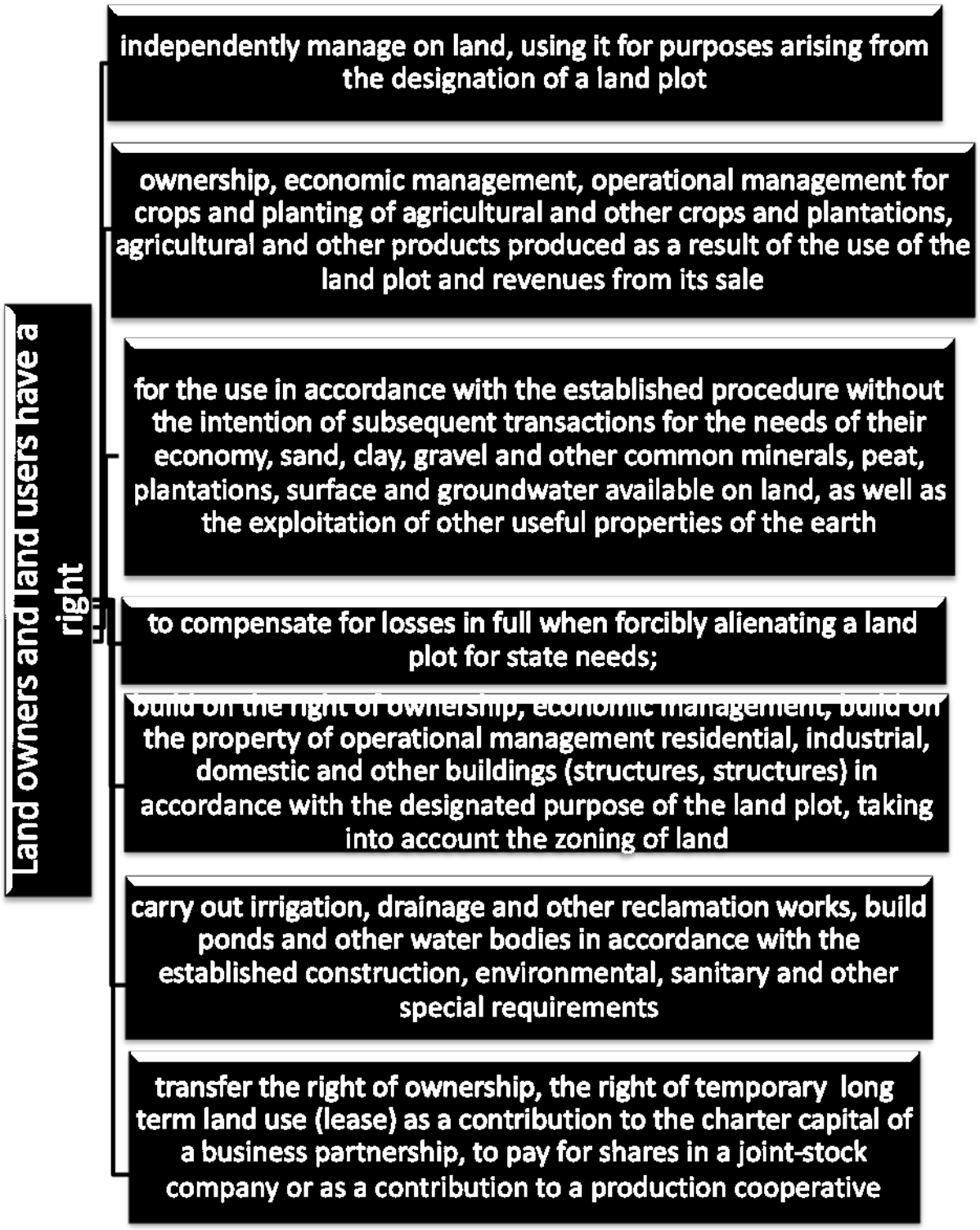


Figure 3- Land owners and land users' rights

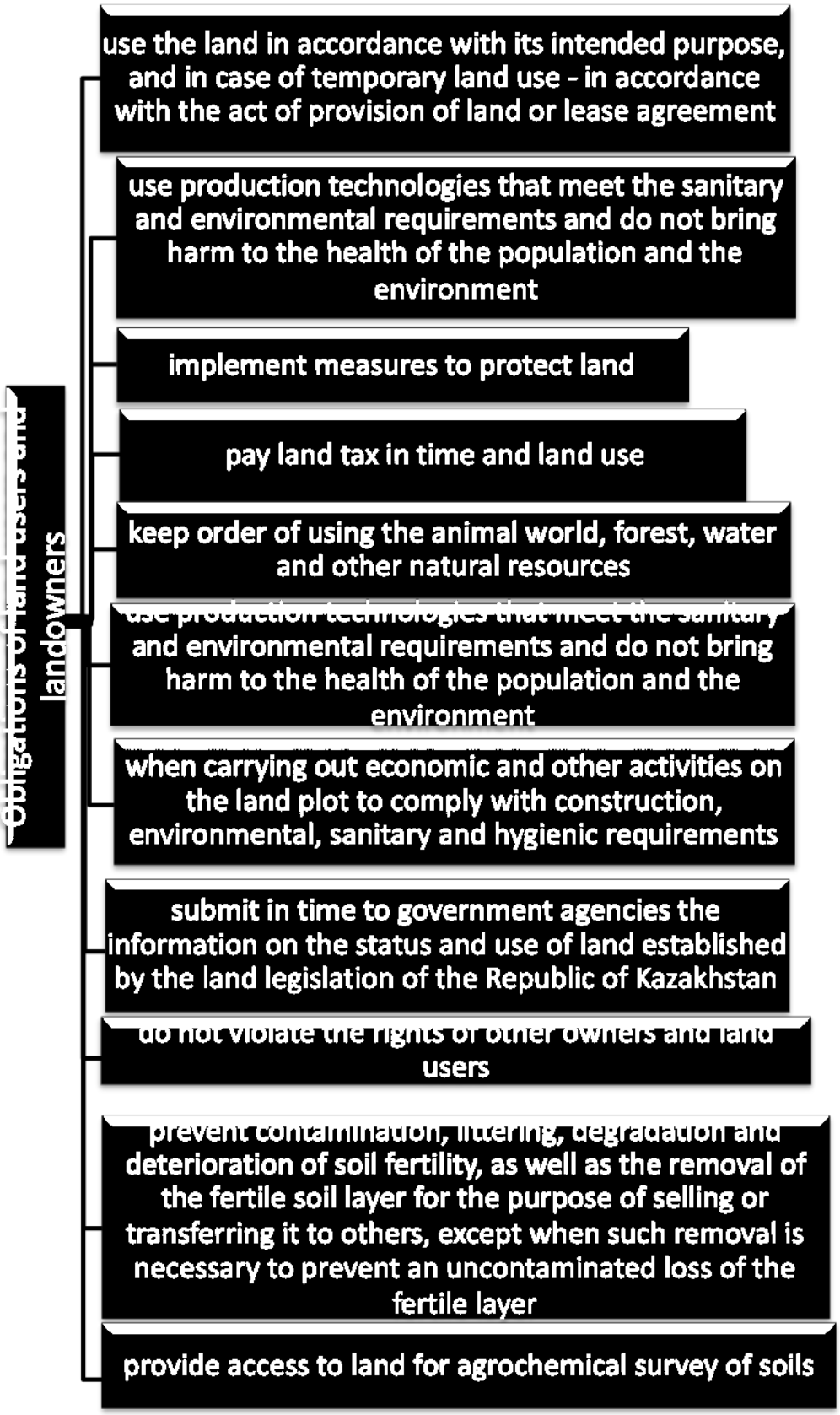


Figure 4- Obligations of land users and landowners

The following options are available for land plots of state ownership lands:
1) to be sold or transferred without compensation to private property;

2) can be granted to permanent or temporary land use;

Land owners and land users have a right:

1) carry out their own business on a land plot according purposes of this land plot;

2) own, carry out agricultural business, operational manage of crops and plantings of agriculture and other plants, own produced on this land plot agricultural and other products and revenues of its distribution;

3) use according to established order with no intention to execute transactions but for own business needs only the following resources: sand, clay, gravel and other common mineral resources, peat, plantings, surface and groundwater, as well as to exploit other useful properties of the land.

4) full losses compensation in case land plot was taken away for state needs;

5) build, own, use for economic needs and operation manage residential, industrial, utility and other buildings (structures) in accordance with the designated purpose of the land plot, taking into account the zoning of land;

6) carry out irrigation, drainage and other ameliorative works, build ponds and other reservoirs in accordance with the established construction, environmental, sanitary and other special requirements;

7) transfer property rights or right of temporary long-term paid land-use (lease) as a contribution to a charter capital of an economic partnership, payment for shares in a joint-stock company or as a contribution to a production cooperative.

Citizens of Republic of Kazakhstan have rights to get as a property, as a lifelong inherit ownership or as lease land plots for farming, Individual house construction and personal supporting farming, gardening, gardening and animal breeding.

Land owners and land users have obligations:

1) to use land according to its purpose, and if the usage it temporary, to follow an act of granting a land plot or a lease agreement (agreement of temporary land-use without compensation);

2) to apply production technologies that meet sanitary and environmental requirements, to prevent harm to health of population, environment and to the sanitary and epidemiological, radiation and ecological conditions as a result of their economic and other activities;

3) to carry out land protection;

4) timely pay land tax, payment for use of land plots and other payments according to legislation of the Republic of Kazakhstan and a contract;

5) to follow regulations of using fauna, forest, water and other natural resources, to protect objects of historical and cultural heritage and other objects located on the land plot, protected by the state, in accordance with the legislation of the Republic of Kazakhstan;

6) to follow construction, ecological, sanitary-hygienic and other special requirements (norms, rules, specifications) during economic and other activities on the land plot;

7) timely submit to government bodies information about state and use of land according to the land legislation of the Republic of Kazakhstan;

8) do not violate rights of other owners and land users;

9) to prevent pollution, littering, degradation and deterioration of soil fertility, also do not remove a fertile soil layer to sell or transfer it to others, except when such removal is necessary to prevent irrecoverable loss of the fertile layer;

10) to provide access to land for agrochemical survey of soils, carried out in accordance with the procedure established by central authorized body together with authorized government body for development agro-industrial complex.

Test

1. The definition of the economic nature of the land use of a farm enterprise is the following

Choose one (or more) correct answer:

a. Return on additional costs from fertilizer application
b. Determining losses from transfer of agricultural land to other categories
c. The cost of products obtained on land of different categories
d. Productive consumption (functioning) of land as a means of production and means of production, indissolubly connected with the land in the process of production

2. The total area of agricultural land in the Republic of Kazakhstan is a hectare

Choose one (or more) correct answer:

a. 93388
b. 203178
c. 45368
d. 147560

3. Land plots of land owned by the state may be

Choose one (or more) correct answer:

a. sold or transferred free of charge to private property
b. sold to foreign citizens
c. granted for permanent or temporary land use
d. transferred to any legal or natural persons

Lecture 3. Main land characteristics which are considered for planning and land-use structures

3.1 Natural properties of soil and natural conditions important for land management
3.2 The meaning and function of land in production
3.3 Difference of land as a means of production from other means of production
3.4 Features of land as a merchandise commodity

3.1 Natural properties of soil and natural conditions important for land management

Soil as a surface of the planet has properties which, together with the atmosphere, make natural environment of humanity. Some of these properties are not formed and changed by humanity during its activity. They exist regardless of human desire, they can be combined into the concept of "natural conditions". These include climate (temperature, precipitation, wind, pressure, solar insolation, etc.) and the lithosphere (the hard shell of the Earth). These are very important conditions for a human, which need to be studied and taken into account when carrying out land management.

Part of natural conditions related to the surface of the planet, its properties, are called soil. These conditions change as a result of geological processes and interaction with the atmosphere, and in the process of vital activity of living beings, and as a result of human actions in the last millennium. These are land properties that are taken into account or modified during land use planning and other activities. Such properties include: territory, relief, soil, flora and fauna, surface water bodies and groundwater. Territory and relief characterize the space in which human life activities are carried out. Territory is the surface of the earth. It is characterized by the following characteristics: the area (the size of individual plots of the territory) and the distance from one part of the territory to another. The area is measured in hectares, arches, square kilometers and meters.

The distance describes how far one place on the surface of the earth from the other. Its units are kilometers, meters, centimeters, millimeters.

The characteristic of territory are very important for organization of production activities and life of people. The area determines a space of life (production, recreation), its scale. Distance determines a time spent (for production and personal), as well as wearout, or depreciation, of vehicles, fuel and lubricants expenditures.

The relief reflects the position of individual points of the territory relative to the surface of the earth's geoid.

Soil is a product of the biological development of the natural complex, it is a connecting link from inanimate to living matter.

Plants are an essence of natural resources. According to natural features, they are subdivided into wood (forest) and grass.

Fauna is a special property of a land which is necessary for organizing the use of recreational, hunting and conservation activities.

Hydrography and hydrogeology are the properties of land reflecting the presence of surface water and groundwater. They are closely related with the relief. Water resources are necessary for human utility and physiological needs, industrial and recreational activities.

Water resources affect a type and volume of production, especially in an arid or humid climate, and costs of water supply or soil drainage.

The considered properties of land characterize specific areas simultaneously. Their different combination creates diversity in the natural complex, makes any part of the planet quite unique, which requires a detailed study of its properties and their recording in land management activities.

3.2 The meaning and function of land in production

Land has two values for social production: it is a production reserve and a means of production.

The importance of land as a production reserve historically precedes its function as a means of production.

Currently almost the whole territory of the country, excluding unused lands of state land reserves, uncultivated land, deposits and wastelands, is used in production (continuously or occasionally). However, to limit the scope of the production reserve to unused lands only is incorrect. Even the land plot which is used for some purposes due to various properties may be useful other industries, that means it is a production reserve for them. Therefore all used land plots are simultaneously a production reserve and a means of production. It is this dual economic importance of land that is the basis for intersectoral and inter economy redistribution, changes in land use, and its internal reorganization. The law of value establishes the boundary when society benefits from the transfer of land from the production reserve to a means of production, which is carried out on the basis of the development of the national economy and its industries, regions, individual enterprises with the help of land-use planning. This transition is socially beneficial as long as, first, if the development costs are compensated in terms acceptable to the society, and secondly, if the use of land as a means of production allows to ensure high production efficiency. Therefore, before changing the function of land, it is necessary to conduct an economic study of its properties.

The most common function of land is a universal means of production. This function of land is due to a main production property — the space that allows to provide both the sphere of production and the place of work. Land properties, taken into account when the land functions as a universal means of production, were called "territorial conditions". The functions of land in agrarian production are shown in Figure 5.

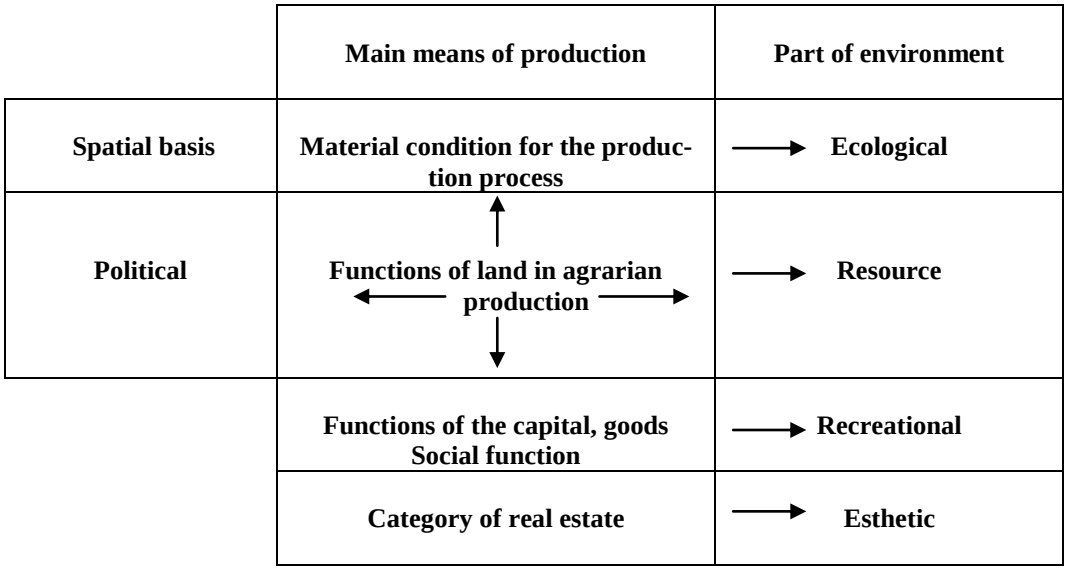


Figure 5- Land functions in agricultural production

The second important function of the land is an object of labor, when a person impact the land to adapt its individual properties to purposes of production.

Less often land is used as a working tool, when with the help of land people produce consumer goods. This became possible due to the fact that land has soil and plants. With soil, people produce cultivated plants, and with natural vegetation consumed by animals, the produce milk, meat and other products. The quality of land and the productivity of fodder land determine the productive properties of the land - fertility, productivity. Land fertility, based on the natural properties of the soil, is natural feature, and when it is changed as a result of the preliminary impact on the earth as an object of labor (organization, plowing, sowing, melioration, etc.) is economic feature. Therefore, economic land fertility is available on arable and hayfields, and natural land fertility is on pastures, which have not been previously exposed or after it.

In the conditions of market economy production and private property, land as a means of production became a type of property and acts as a kind of commodity.

3.3 Difference of land as a means of production from other means of production

Because land in the part of the system of social production, it acts as a means of production, which has a number of significant differences from other means of production:

1. Land is a product of the development of the natural complex, and it became a means of production under the influence of humanity, other means of production are just a product of the previous production process. Therefore, it functions as subject of both the laws of nature and the laws of society. Land as a means of production is inseparable from the natural complex, it can not be opposed to it.

2. The land as a means of production is indispensable, therefore it takes part in any production activity. As a combination of living and non-living matter, it creates green plants, provides animal feed, provides humanity with all the necessary substances and energy. Therefore, the public interest to the land is permanent, and as a result, it is not subject of moral depreciation.

3. Land as a means of production is completely limited in its properties. Territory is limited by the surface of the planet, the number of its useful properties is also limited. The reproducible properties of land are limited: soil, vegetation, fauna. Other means of production can be changed dramatically both in terms of their quantity and scale of application.

4. Use of land as a means of production is related to a permanent place. Unlike other means of production, land and its properties are used where the plot is located. To transfer these properties to another place is physically impossible, although some of the soil matter can move, but this no longer refers to its essence as a means of production. Therefore, land refers to immovable means of production.

3.4 Features of land as a merchandise commodity

In the market economy, as goods we use not only commodities, but also means of production, and land including, if private ownership of land exists. Land as a merchandise commodity has common and special properties. Like any other commodity, land has a consuming and exchange value. The consuming value as the ability to satisfy specific needs of society is related to the properties of the land. Land has the following consuming properties: space that is necessary for the placement of objects and activities; soil for the production of crop; vegetation, used as feed for animals, raw materials for processing industries; water resources. The presence, reserves, volume and depth of mineral deposits significantly influence on consuming value.

The value (exchange) contains the costs necessary for the use of land as a means of production and consumption. The land usually already was used in production (except for reserves), therefore, capital has already been invested in it in the form of engineering and social infrastructure, facilities, and land melioration facilities. Valuation is made in money.

Land as a market product has a supply and demand. Demand depends on the state of production.

Features of land (soil) as a means of production

1. It is a product of nature (which means it has no value, because there is no expenditure for its creation);
2. The period of natural restoration of soil cover is much higher than the period of artificial restoration of "ordinary" means.
3. It has inherent only one properties of reproduction. With scientifically based approaches, a significant increase in land fertility is possible.
4. Earth combines the functions of the subject and means of labor.
5. Today earth is an indispensable resource.

Test

1. The natural properties of the earth and natural conditions include
Choose one (or more) correct answer:
a. Climate
b. Plants
c. Animals
d. Relief

2. The distance has the following manifestations
Choose one (or more) correct answer:
a. The conditional distance, taking into account the conditions of movement along it, the quality of the roadway, and also the conditions of speed limit
b. The distance is real. It denotes the real path that a person can overcome, taking into account the actually laid route of movement

c. Geographical distance
d. Selective distance

3. Features of land (soil) as a means of production
Choose one (or more) correct answer:
a. The earth constantly loses its fertility
b. The land has no territorial limits
c. The earth combines the functions of the object and means of labor
d. Earth is only an instrument of labor

Lecture 4. Essence, types, forms and methods of land-use planning

4.1 Essence and types of land use planning
4.2 The scientific basis for land use planning
4.3 Forms and objects of land use planning
4.4 Land use planning actions

4.1 Essence and types of land use planning

At the current stage of the development of the national economy, the essence of land-use planning increasingly became more complex and should include the solution of the following issues.

1. Land use planning is considered as an economic measure, and from this point of view its processes are based on land use organization.

2. The legal nature of land use planning, a set of measures to organize conditions and to establish a certain order and legal regime for use of land in a particular limited area. On the basis of land use planning materials, landowners and land users receive documents for the ownership, possession and use of land.

4. The requirements for creating an ecological balance in the surrounding landscapes add to modern land use planning some ecological features, such us development of measures for the protection of lands and the environment.

Figure 6 shows examples of agro-landscapes.

5. Modern land use planning is increasingly supplied with development and use of new computer technologies to organize use of land areas, which provides this measures with high information value.

Land use planning, as a system of state measures, is divided into certain types, which include:

Figure 6 - Agro-landscapes

1. Because of introduction of various forms of land ownership, there is a need for land management work for bordering (or delimit) such lands with the establishment of borders on the terrain and the design of land management documents.

2. For each form of land property there is a need to distribute and redistribute of land by industries of the national economy and land categories. In this case, land use planning takes the form of category land use planning.

3. The presence within each industry or category of various economic entities, land estates and land use of citizens determines the formation of new ones, improvement of existing businesses, as well as land allocation for the needs of non-agricultural enterprises. These actions are carried out on the basis of organization of inter-organization territory. Planning of land use in this case takes the form of an inter-organization measures.

4. The composition and ratio of the land holdings of each agricultural enterprise, the implementation of measures to improve the use of land, determine the conduct of an inter-organization of territory of land ownership or land use, or inner land-use planning.

Examples of agro-landscapes are shown in Figure 6.

5. Measures to improve the land and improve the organization of their use are carried out on the basis of working and technical projects, and therefore land use planning in this case acts as a operational land planning design.

4.2 The scientific basis for land use planning

The functioning of land-use planning is carried out not only in the form of an economic measure, but also in the form of a science which studies the patterns in the process of organizing the use of land. The scientific definition of land use planning can be formulated as follows:

Land-use planning is the science of the laws of functioning and organization of the land use as a universal means of production and spatial location of agricultural and non-agricultural objects, while complying with the requirements for preserving and improving the natural environment on adjacent agricultural landscapes. Its schematic representation is shown in Figure 8.

Like any other sciences, land use planning has a subject and research methods. The scientific meaning of land management science determines its subject, so the subject of science studies is the laws of functioning and organization of the land use as a universal means of production and spatial location of any enterprise.

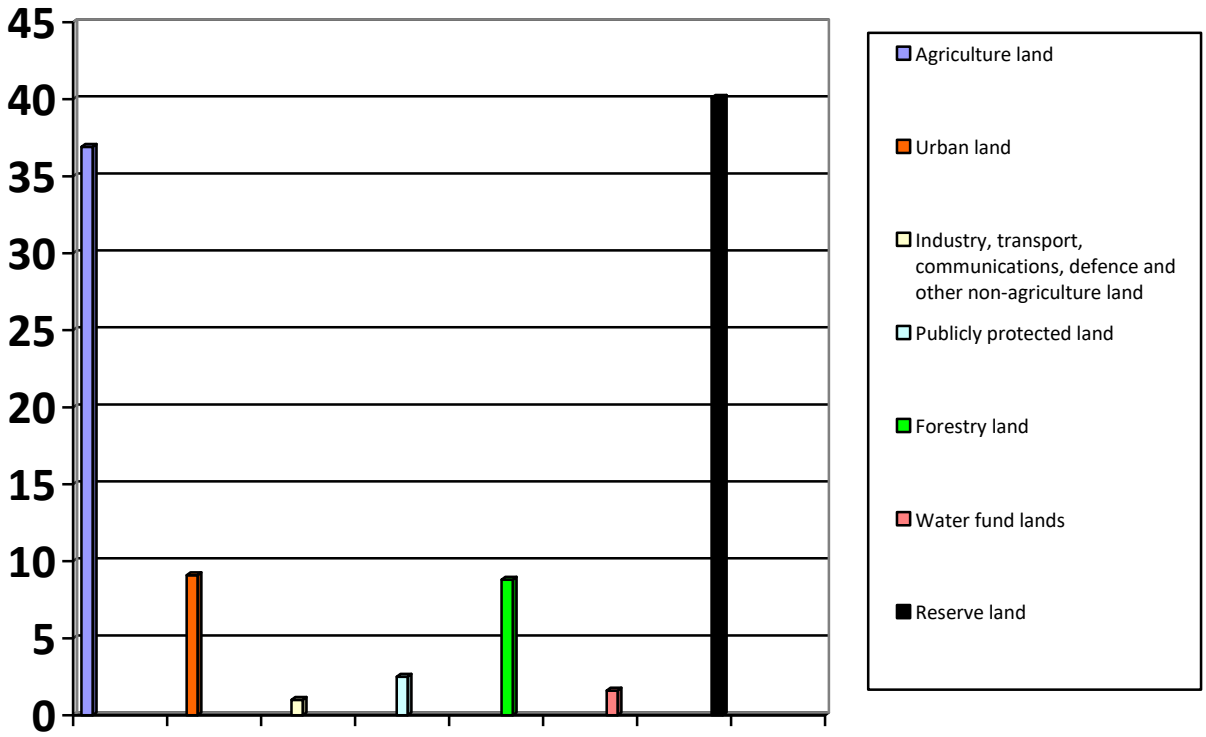


Figure 7- Land categories in the Republic of Kazakhstan in percentage (November 1, 2015)

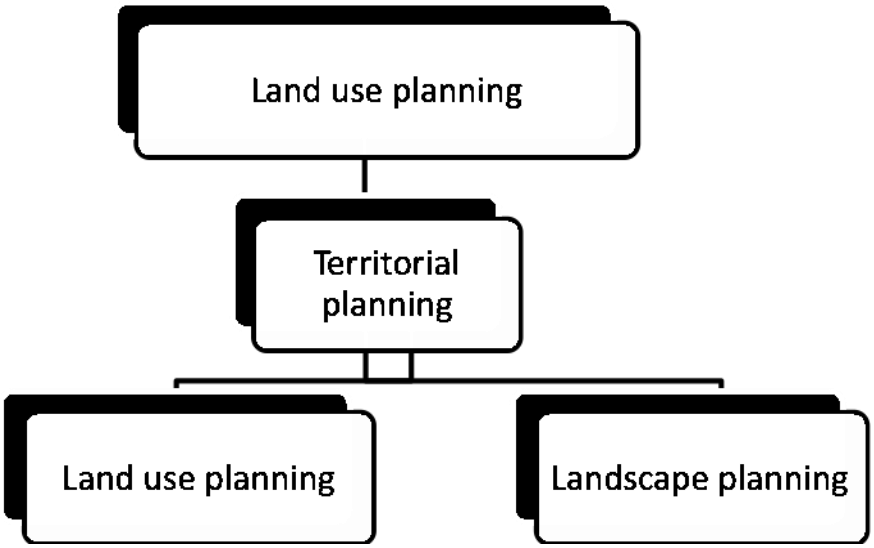


Figure 8 - Land Use Planning Scheme

4.3 Forms and objects of land use planning

Since the Land Code of the Republic of Kazakhstan establishes that regulation of land use planning is carried out by the state, land use planning itself has become a

state process. Therefore, as a result of a variety of forms of ownership and management on the ground, various forms of land use planning have emerged:

— state land use planning;

— territory land use planning;

— zone land use planning;

— municipal settlement land use planning;

— collective business land use planning;

Planning and organization of rational use of land and its protection in urban and rural settlements is conducted in accordance with the settlement planning documentation.

An example of a spatial planning scheme is shown in Figure 9.

Land use planning includes the following issues:

a) the formation of new and improvement of existing agricultural purpose land-use;

b) provision and withdrawal of land for the needs of non-agricultural enterprises.

Objects of land-use planning are territories of administrative-territorial settlements, territorial zones, land plots, parts of the territories, zones and plots, as well as land use and land ownership of enterprises, organizations and institutions.

Land use planning scheme of the Mary-El Republic

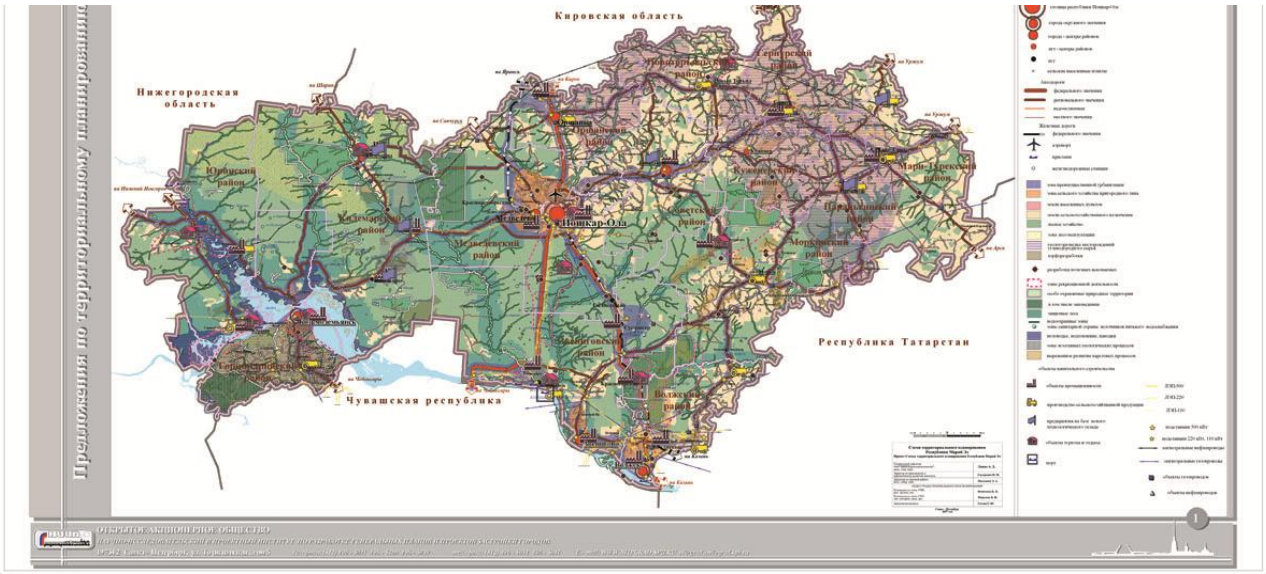


Figure 9 - Example of the zoning scheme of the territory

A sample of the zoning scheme in Figure 10
Specific land use of Buguruslan town

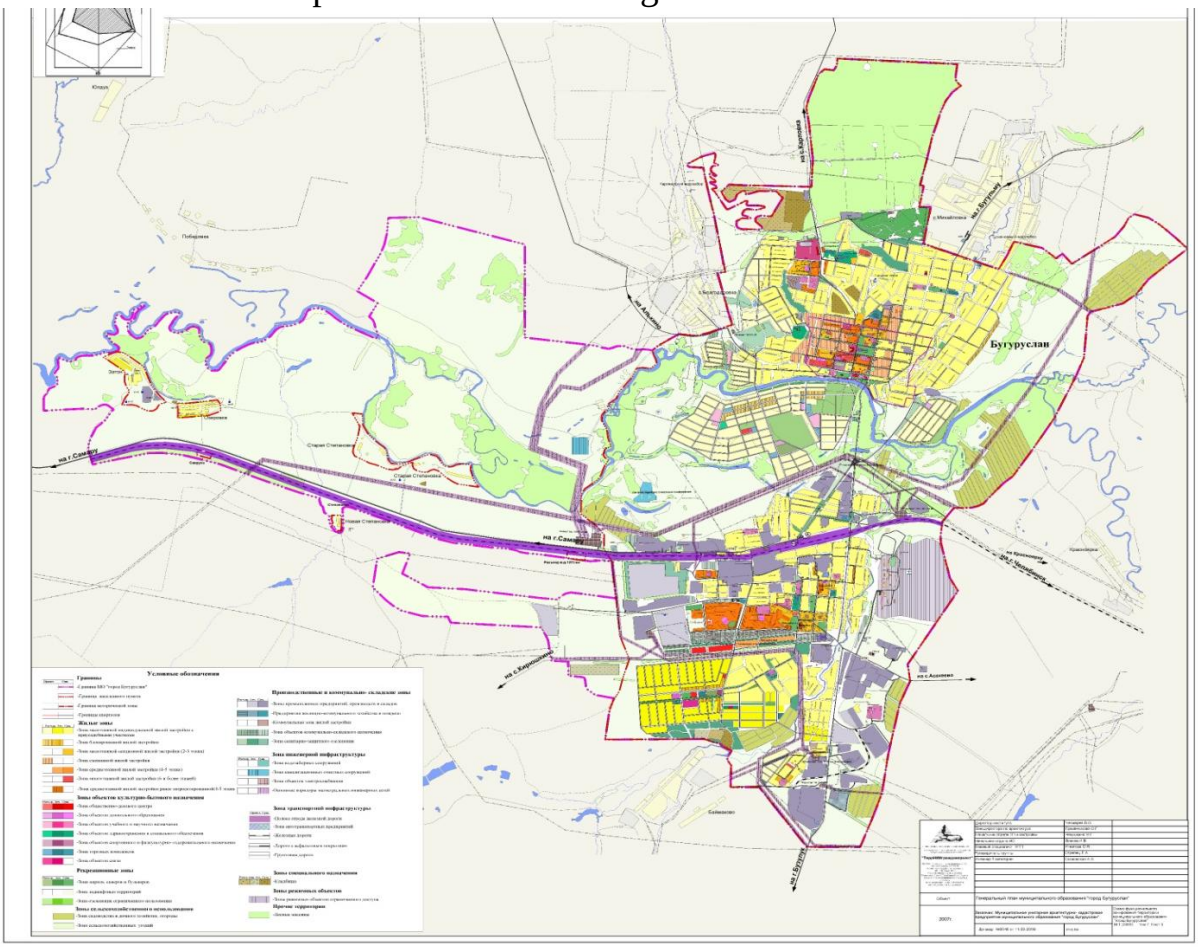


Figure 10 - Example of the zoning scheme of the territory

4.4 Land use planning actions

Land use planning includes a system of state measures to arrange land use, preserve maximum valuable lands in agriculture, as well as to efficiently use land and increase fertility. An important role in land use planning is given to improving the culture of farming and animal husbandry, and protecting land.

Land use planning includes:

1) development of forecasts, republican and regional programs, schemes for land resources use, their protection and planning;

2) establishment of the boundaries of administrative and territorial entities;

3) drafting new formations and streamlining existing land tenure and land use with elimination of inconveniences in the location of land, allotment of land in kind, preparation of documents certifying the right of ownership and use of land;

4) development of intra-farm land use planning projects and other projects related to land use and protection;

5) development of working projects for the recultivation of disturbed lands, protection of soil from erosion, mudflows, landslides, flooding and salinization, improvement of agricultural lands, development of new lands;
6) justification of the location and establishment of the boundaries of territories with special environmental, recreational and protected regimes;
7) establishment and change of the city boundaries, township features and features of rural settlements;
8) conducting topographic-geodetic, cartographic, soil, agrochemical, geobotanical and other survey and exploration work.
Land management activities are carried out in the implementation plan of the General scheme of land use.

Test

1. Land use planning, as a system of state activities, is divided into certain types, which include:
Choose one (or more) correct answer:
a. In connection with the introduction of various forms of land ownership, there is a need for land management work to delimit (or division) such lands establishing boundaries on the ground and making land management documents.
b. Measures to improve the land and improve the organization of their use are carried out on the basis of working and technical projects, and therefore land use planning in this case acts as a working land planning design.
c. Designing the construction of industrial enterprises with the aim of organizing the entire production cycle
d. Environmental expertise of mining enterprises

2. The agricultural land in the Republic of Kazakhstan is %
Choose one (or more) correct answer:
a. 86,4
b. 36,9
c. 26,5
d. 92,7
3. Forms of land use planning in the Republic of Kazakhstan
Choose one (or more) correct answer:
a. Private land use planning
b. Territorial land use planning
c. State land use planning
d. Zonal land use planning

Lecture 5. Environmental justification of land-use planning

5.1 The concept of zoning of the territory, natural and climatic zones, natural and territorial complexes.

5.2 Anthropogenic transformation of nature environment

5.3 The concept of natural and anthropogenically transformed landscapes (eco-systems)

5.1 The concept of zoning of the territory, natural and climatic zones, natural and territorial complexes

Zoning of a territory is the division of the territory into parts (areas), according to a single feature or to a combination of features. Forms of zoning of the territory are shown in Figure 11.

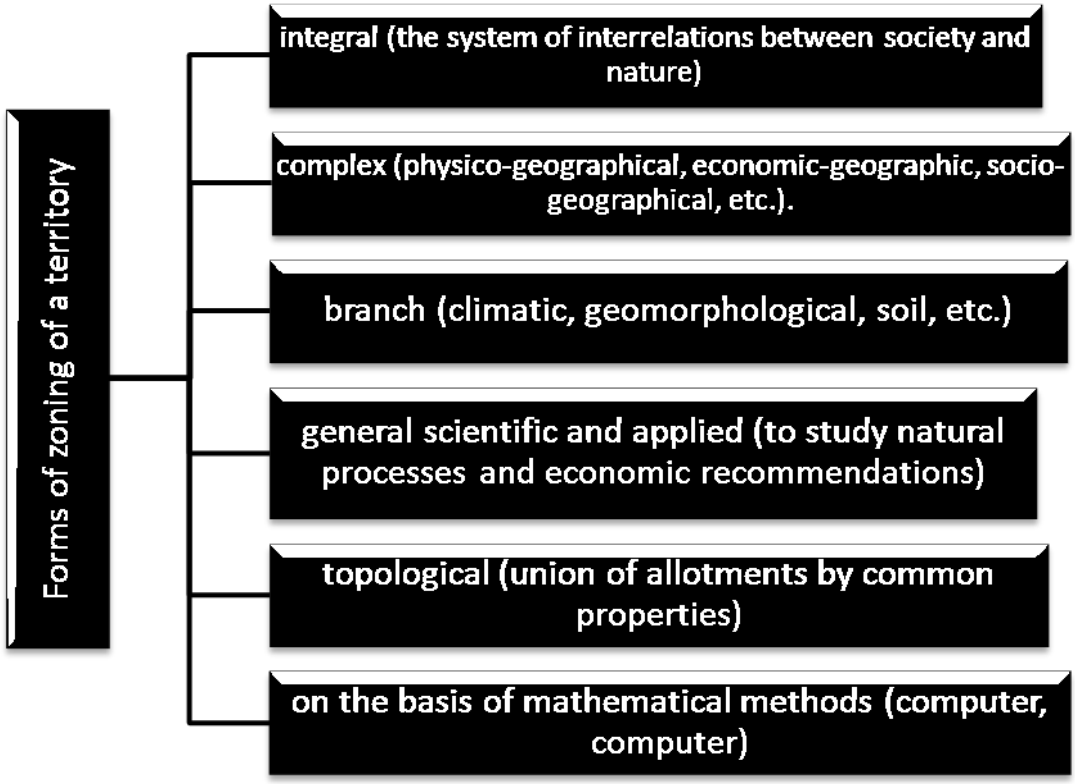


Figure 11- Forms of zoning of the territory

There are several types of zoning:

integral (the system of interrelations between society and nature);

complex (physical-geographical, economic-geographical, socio-geographical, etc.);

category (climatic, geomorphological, soil, etc.);

general scientific and applied (for studying natural processes and economic recommendations);

topological (combination of allotments by common features);

based on mathematical methods (computer, machine).

The zoning of the territory is carried out taking into account the hierarchy of natural systems, which are the ranks of subordination of functional natural systems, in which the smaller subsystems constitute large systems that themselves are subsystems of larger systems.

Natural and climatic zones are one of the categories of natural climatic zoning, which is a basis for zoning (natural-economic, soil-geographical) and they are subdivisions of natural and climatic zones.

Natural and climatic zones are allocated depending on the heat conditions of the territory (the sum of temperatures above 10^0C) and precipitation.

Zone (natural) is a significant area, a part of the physical and geographical bands with a special character of geomorphological processes, with special types of climate, vegetation, soils and fauna.

The term ***natural-territorial complex*** includes several concepts:

a combination of natural components that make up the hierarchical ladder of the planet's geographical shell;

a synonym for the geosystem;

a synonym for the landscape;

a natural part of the landscape (the other part is anthropogenic formations);

a synonym for the physico-geographical complex.

5.2 Anthropogenic transformation of nature environment

In the constant interaction of humanity with nature, the economic activity and social influence to nature shows certain regularities.

Generally the interaction of humanity and nature can be formed as follows:

- as a result of this interaction, humanity has become a leading party now;
- in the process of historical development, humanity passes from the simple use of elements of nature to transformation and management of its development for human interests;
- as a result of a complex impact on nature, humanity start a chain of its transformations, both positive and negative (often irreversible), which scales increase in each subsequent century, and there is no limits of this transformations;
- due to this interaction in the nature of the Earth, at present there are practically no elements of the "wild" nature;
- as a result of human activities nature fills up with completely new elements that did not exist before and transform the course of natural processes;
- during historical development, each social system has its own type of interaction between human and nature. Sometimes it transforms from driver of social development into obstruct factor if there is no concern for nature protection.

5.3 The concept of natural and anthropogenically transformed landscapes (ecosystems)

A natural landscape is a landscape that has not been transformed by human

activity, and therefore was developed naturally.

Self-development of the ecosystem is:

internal spontaneous transformation of the system, determined by its contradictions (philosophical concept);

genetic rearrangements associated with internal processes in the organism, leading to its change (biological concept);

transformations inside an ecosystem leading to its succession development (ecological concept).

The main factors of self-development of the ecosystem are self-organization and self-regulation.

Self-organization is a strict sequence of physicochemical and biological phenomena in natural systems, conditioned by external and internal constraints and leading to the emergence of a physiologically homogeneous and (or) functionally unified entity.

Self-regulation is the ability of a natural (ecological) system to restore internal properties and structures after any natural or anthropogenic impact that has changed these properties and structures.

Continuously expanding economic use of the territory leads to a radical restructuring of natural landscapes and the formation of man-made landscapes, which are artificially created or transformed by human. This process is advancing much faster than the natural self-development of landscapes.

Anthropogenic landscape is a geographical landscape, which was formed with significant impact of economic activity of humanity.

Components of anthropogenic landscape - anthropogenic relief, anthropogenic soils, anthropogenic vegetation.

Anthropogenic relief is a relief, transformed or created by human activity.

Anthropogenic soils are soils which were formed as a result of human activity, consciously directed to their formation (soils of greenhouses), or spontaneously (on the dumps of mining developments, etc.).

Anthropogenic vegetation is a collection of phytocenoses created by human or transformed by his activity.

As a result of economic development of the territory, the following types of anthropogenic landscapes replace natural landscapes: cultural and disrupted.

The cultural landscape is a purposefully created anthropogenic landscape that provides socially appropriate structure and functional properties.

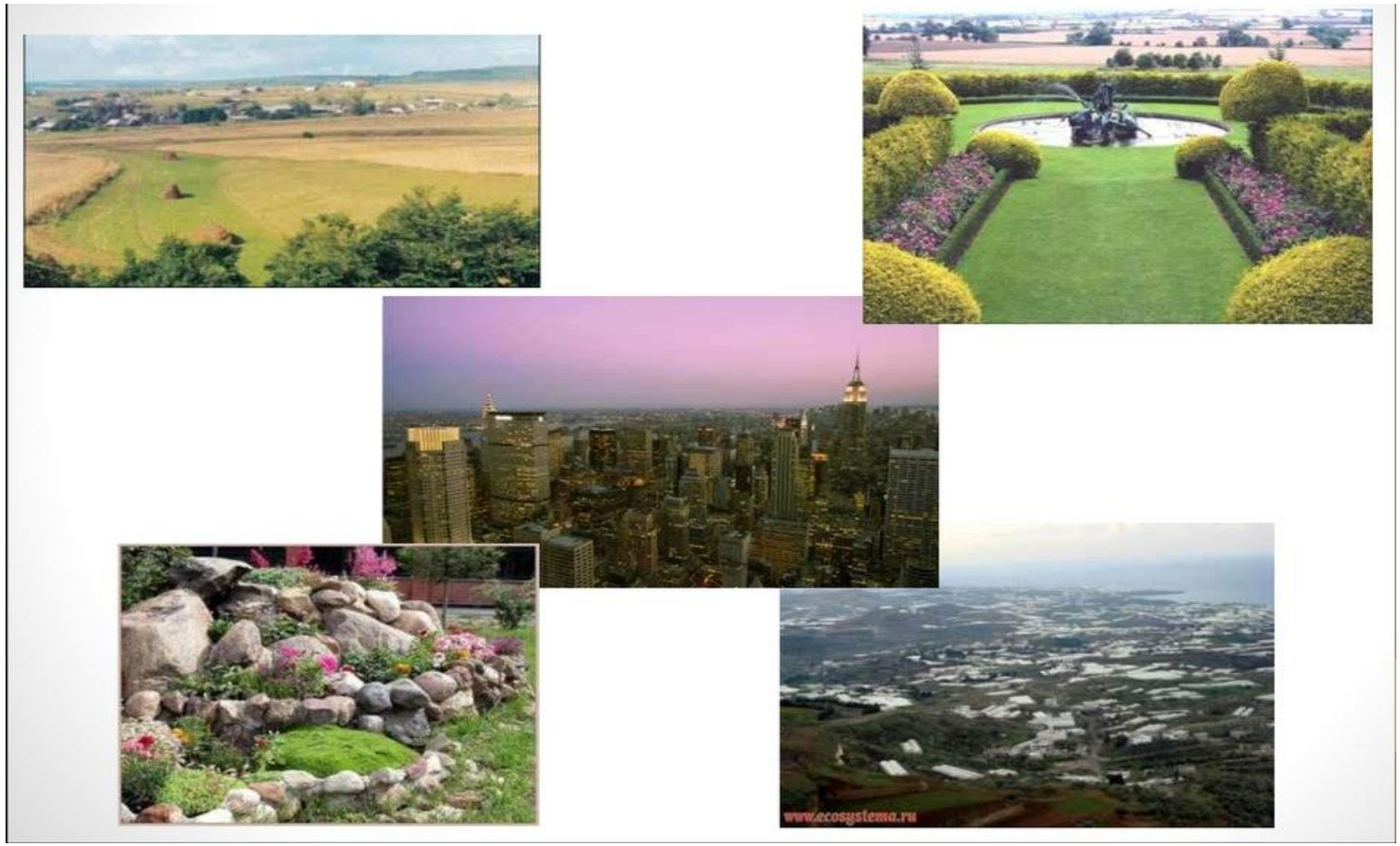
A disturbed landscape is a type of anthropogenic landscape that appears as a result of wrong use of natural resources.

Test

1. Forms of territory zoning

Choose one (or more) correct answer:

a. Agricultural
b. Sectoral (climatic, geomorphological, soil, etc.)
c. technological zoning of the territory
d. Based on mathematical methods (computer, machinery)



Anthropogenic landscape

3. In a general form the interaction of man and nature can be formed as follows
Choose one (or more) correct answer:
a. Man must be the master of nature and it must be subordinated to him
b. It is impossible to regulate any relationship between man and nature
c. Due to this interaction in the nature of the Earth, at present there are practically no elements of the "wild" nature
d. In the course of historical development, man from the simple use of elements of nature inevitably proceeds to change and manage its development in his own interests.

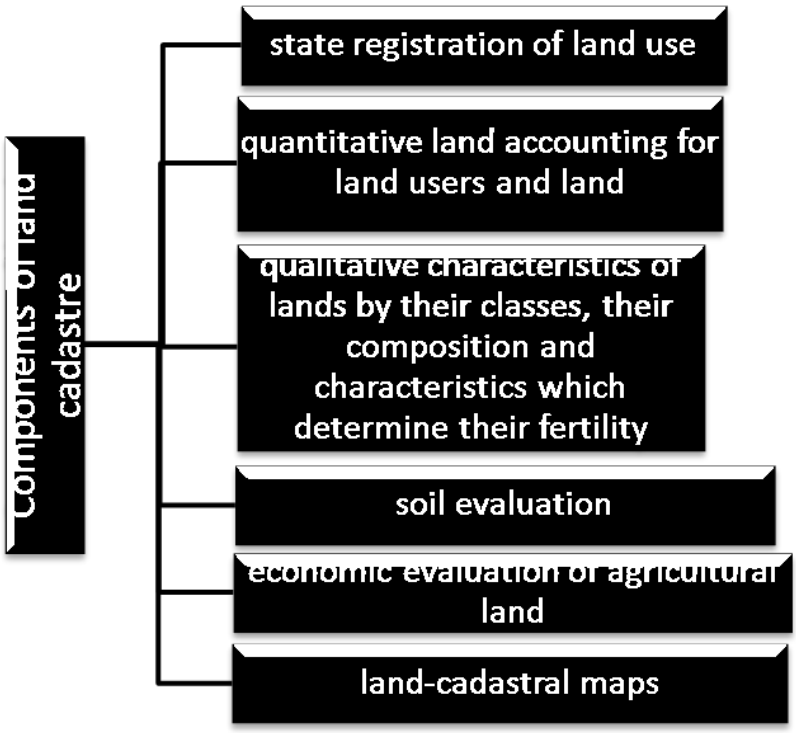
Module 2. Land evaluation and organization of its usage

Lecture 6. State land cadastre

6.1 The concept of land cadastre, its methodology and principles
6.2 Registration of land use and land ownership
6.3 Registration of land areas
6.4 Registration of quality of land

6.1 The concept of land cadastre, its methodology and principles

The land cadastre is a systematized set of required information about land as the main means of production in agriculture. It consist of processes of study, register, quantitative and qualitative assessment of land, assessment of its productive capacity on the basis of natural and economic soil fertility.



The land cadastre includes the following components:

- state registration of land use is registration of the right to use land by agricultural and non-agricultural land users, as well as citizens;
- quantitative estimation of land which belongs land users and refers to land resources;
- characteristics of land quality according to its types, mechanical composition of soils and the features that determine its fertility, as well as by cultural and technical condition of fodder land;
- soil classification;
- economic evaluation of agricultural land;
- land cadastral maps.

Assessment of agricultural land is the most important part of the cadastre, and its main document is the State Land Cadastral Book of a district or a city. It consists of four sections, corresponding to the constituent parts of the land cadastre, and reflects information on the quantitative and qualitative state of the earths annually on November 1st. The object of the land cadastre is a single state land fund.

The methodological basis of the land cadastre is the doctrine of differential rent, which is understood as surplus profit, or additional net income in kind or in cash, created by agricultural enterprises at the with means of the best fertility or more conveniently located land plots, and also through more productive use of land.

Certain principles should be followed for land cadastre conduction. First of all, the land cadastre is maintained according to a single system for the entire country. It contains objective information about the actual size and quality of land, and this information about its natural, legal and economic status is complete.

An important principle of the cadastre is its continuity. Changes in the natural, economic and legal status of land are constantly taken into account and register in the cadastral documentation. Centralized management of the land cadastre ensures a uniform order and comparability of data on land resources of individual regions and the country as a whole.

6.2 Registration of land use and land ownership

Registration is a state record, which legally formalizes right of land users to a specific land plot. The purposes of registration include the collection and storage of information on the economic and legal status of all land uses. All changes in the legal statuses are reflected in the registration records, where data is entered on each land use: the location, the name of the plot, the amount of land, the name of the land users and the grounds for which they were granted land plots.

The registration unit is land use, that is part of a single land fund, limited in kind. The basis for registration is the decision of the government body to provide land for certain purposes, a document on transferring the land management project in implementation and establishing the boundaries of the land plot on the terrain.

6.3 Registration of land areas

All lands located in the administrative boundaries of the district and also out-

side the administrative boundaries of the area, but provided to agricultural enterprises whose land use is registered in the area, are subject to state registration.

The quantity of lands is recorded in the second section of the State Land Cadastre Book of the district. It is based on the actual state and use of land.

First of all, for each land use the most valuable kind of arable lands is considered. In separate columns all perennial plantings, deposits, haymaking are recorded. In case of quantitative accounting of land, homestead land plots, land plots in the meliorative construction stage, areas covered with forest, field and garden protective plants are recorded. The subjects of registrations are shrubs, swamps, ponds and uncultivated land.

6.4 Registration of quality of land

It is contains four sections:

- quality characteristics by land classes;
- characteristics of land by the granulometric composition of soils and the characteristics that determine their fertility;
- characteristics of hayfields and pastures according to the cultural and technical state;
- agricultural characteristics of soils of arable land.

All this information is recorded in the third section of the State Land Cadastre Book.

Characteristics of the quality of land by class is given in accordance with the Unified Classification of Land, in which 37 classes are identified for the same type of natural and economic indicators that determine

In the classification system, land classes according to suitability are grouped into seven categories. The basis of the grouping is the possibility of preferential use of land in agricultural production for certain types of land (arable land, haymaking, pasture, etc.), predetermined by a range of natural conditions, regardless of the actual

use of land. Classes describes in which direction it is most rational to use soils, given their natural fertility.

Test

1. The constituent parts of the land cadastre are
Choose one (or more) correct answer:
a. Private land use registration
b. Quantitative and qualitative accounting only of agricultural lands
c. State registration of land use
d. Quantitative land accounting for land use and areas

2. The registration unit in the state land cadastre is
Choose one (or more) correct answer:
a. Land use
b. Land for agricultural use
c. Forest lands
d. Reserve lands

3. The account of the quality of land is carried out in the following areas:
Choose one (or more) correct answer:
a. Characteristics of quality by land classes
b. Characteristics of quality of land sections
c. Characteristics of the economic evaluation of lands
d. Production characteristics of lands

Lecture 7. Organizational and economic bases of rational land-use

7.1 The system of land management design
7.2. Main directions for improving of use of land resources
7.3 Contents of the general schemes for the use of land resources of the country, region
7.4. Purposes and content of land use planning schemes for administrative districts

7.1 The system of land management design

Depending on the complexity of the tasks, design solutions can be put forward at the stage of a scheme, a complex project, a one-stage or a technical design. Based on the existing experience of design and survey work on land use planning, the system of land-use planning has developed in a following sequence:

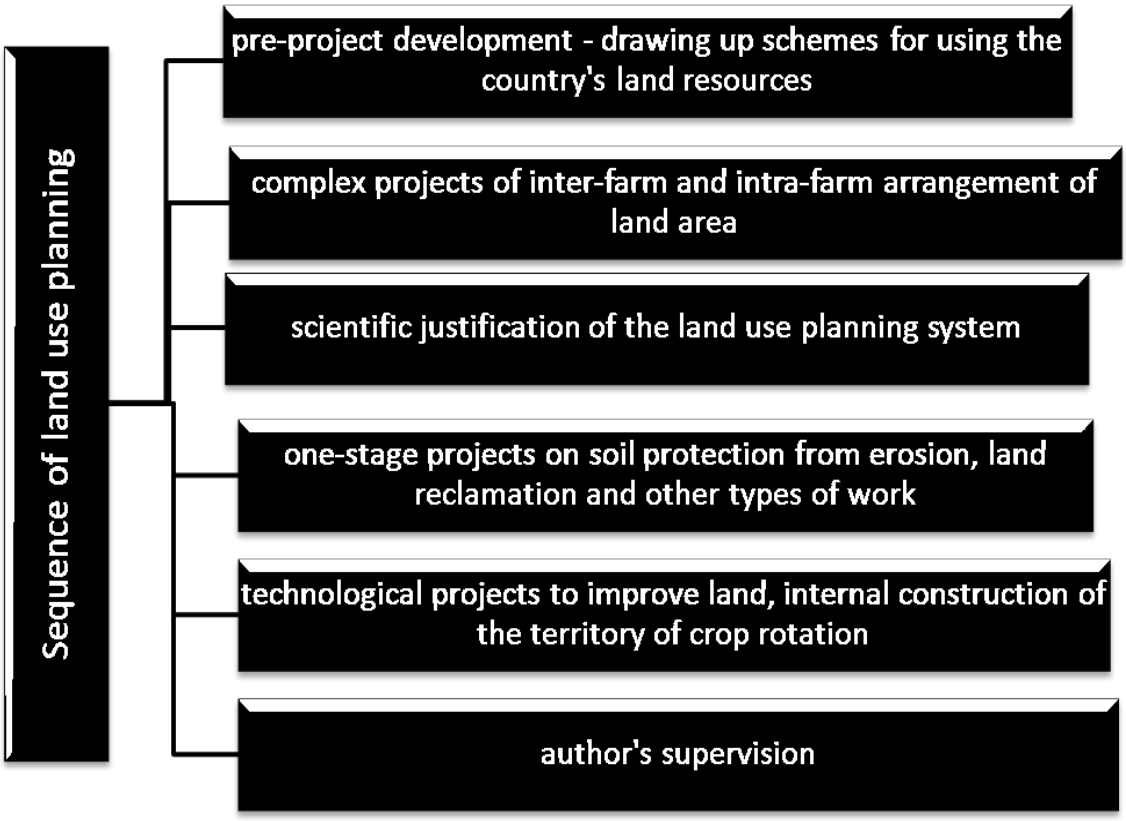


Figure 12- Sequence of land-use planning

The purposes of land use planning are: to organize the rational use of land in all sectors of the national economy, create conditions for maintaining sustainable landscapes and protecting land.

7.2. Main directions for improving of use of land resources

In recent years, a number of major measures have been implemented to improve the planning of the rational use of the country's land resources.

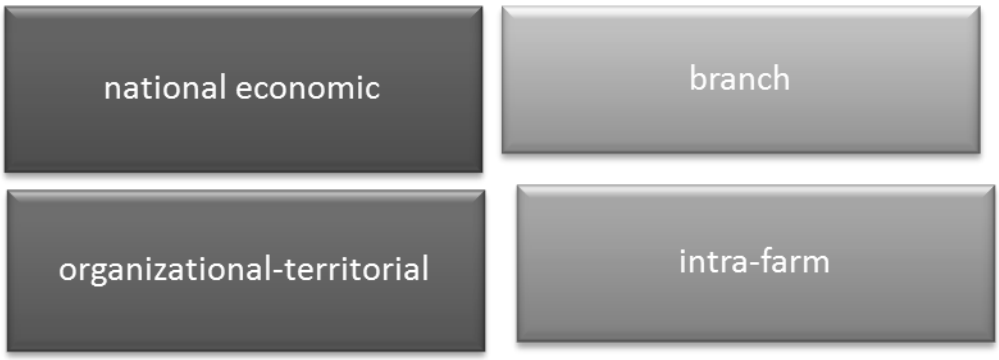
Accordingly, scientific and technical forecasts of the use of land resources for a long period are developed at various structural levels, which are used as a scientifically ground for the design of plans for the social and economic development of the country and specific regions.

All the variety of directions for organizing the improvement of land use can be conditionally combined into the following groups:

In this regard, to analyze the level of land resources use, it is important to establish the main directions for their improvement. All the variety of directions for organizing the improvement of land use can be conditionally combined into the following groups: organizational-economic, agrarian-technological, organizational-technical, meliorative, bio-ecological and socio-economic. At the same time, each group of directions includes a system of measures which should increase the rationality and efficiency of land use.

Rational and effective use of land, protection and reproduction of the natural environment are possible only if planning is applied with its scientific basis a proportional and interrelated development of individual branches of social production is established. Perspective planning of the use of land resources should cover the following areas: economic, industrial, organizational and territorial, within lands.

Perspective planning of the use of land resources should go in the following areas:



An important condition for the economic planning of the use of land is the comprehensive consideration of the features and regularities of land property relations in society.

7.3 Content of the general schemes for the use of land resources of the country, region

Land management measures are performed for implementing the General Scheme of Land Use in the country, which involves the identification of lands suitable for engaging in agricultural use through various measures (including capital melioration) throughout the territory, calculation the cost of these measures and their economic efficiency. The general scheme provides development of the following issues:

— efficient allocation of land for agricultural and non-agricultural needs in accordance with the long-term plans for the development of the national economy, taking into account the maximum conservation of fertile lands and the most expedient and interrelated accommodation.

The principle of development of General Schemes is “from general to specific”. This approach does not exclude the possibility of counterprocessing, i.e., regional

data should be the result of district studies, and the republican data should be a result of summary of data on the region. Taking into account these statements and existing studies, it is possible to formulate the main principles for forecasting and planning the most correct and full use of land, which primarily include: the scientifically based distribution of the land fund between industries of the economy and the categories of land users, taking into account the achievement of the highest social and economic efficiency from land use; priority of agricultural land use; protection and increase in the intensity of land use and soil fertility; preferential allocation for non-agricultural needs and various kinds of construction of optimally necessary areas due to land unsuitable for agricultural use or agricultural land of low quality; compliance with state, interbranch, regional, industrial, inter-organization, within land, personal interests for the most complete and proper use of land; preservation and augmentation of natural ecological systems of interaction of an living and inanimate nature; careful and comprehensive registration of the natural and economic characteristics of the specific region; interrelation and continuity of planned actions in the whole system of prospective and current plans for the development of the national economy connected with the use of land; organization of effective control over the implementation of measures to improve the efficiency of land use.

7.4. Purposes and content of land use planning schemes for administrative districts

The scheme of land management of the administrative district is also a preplanning and pre-project document, which, based on natural, economic and social conditions, develops a set of interrelated measures to improve land relations and rational use of land resources, development and territorial arrangement of the regional agro-industrial complex, corresponding to the needs of the development of the district.

The scheme of land management of the district includes the following text and graphic materials:

- assignment for the development of the land management scheme;
- explanatory note with technical and economic calculations;
- graphic materials;
- materials of coordination, examination and approval of the scheme;
- the main aspects of the scheme.

Test

1. All the variety of directions for organizing the improvement of land use can be conditionally combined into the following groups

Choose one (or more) correct answer:

a. Transport
b. Organizational and economic
c. Biological and ecological
d. Geodetic

An example of the scheme of land administration of the administrative district is given in Figure 13

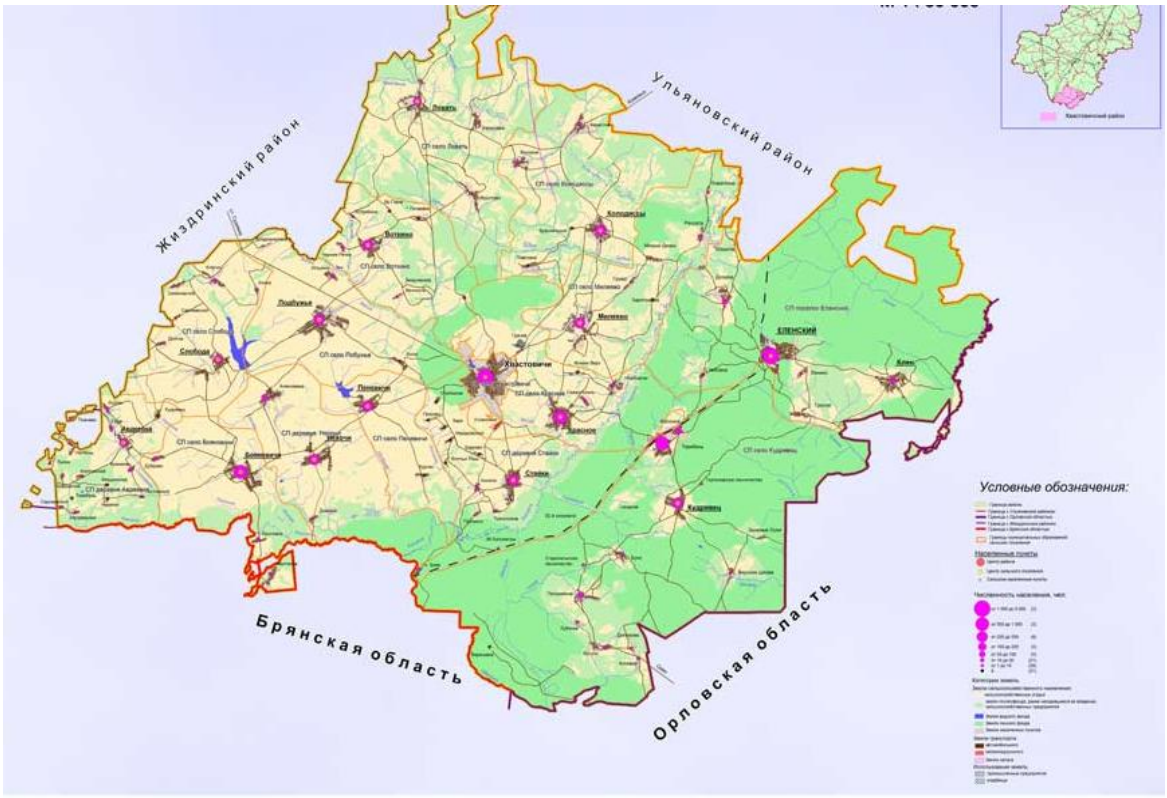


Figure 13 - Scheme of land management of the district

2. The scheme of land management of the district includes the following text and graphic materials:

Choose one (or more) correct answer:

a. Monitoring the implementation of the scheme of land management of the district
b. Materials of approval, examination and approval of the scheme
c. Task for the development of the scheme of land management
d. Graphic materials

3. The scheme for planning the land use of the administrative district is:

Choose one (or more) correct answer:

a. Pre-project document
b. Project document
c. Environmental document
d. Document for the implementation plan for the administrative district planning project

Module 3. Inter-organization territory organization

Lecture 8. Important ideas of territory inter-organization planning and its development

8.1 Concept, content and purposes of inter-organization land-use planning
8.2 Varieties, factors and principles of inter-organization land-use planning
8.3 Scheme of inter-organization land-use planning and its content
8.4 Preparatory work for inter-organization land-use planning
8.5 Drafting, review and approval of the draft inter-organization land-use planning and its performance

8.1 Concept, content and purposes of inter-organization and land-use planning

Land classification by ownership, land categories, formation and change of land ownership and land use, their placement on the territory, distribution and redistribution of land within industries and between individual land owners and land users are carried out through inter-organization land-use planning.

It includes land management activities for the use and protection of lands on the territory of several spatially interconnected enterprises, organizations, institutions and citizens not only of the agrarian and industrial complex, but also of all branches of the national economy, as well as the delimitation of land by forms of ownership. As a result of inter-organization land-use planning, the form of ownership, procedure, conditions, rights and obligations of landowners and land users in relation to certain land plots change.

In this connection, the concept of inter-organization land-use planning can be understood as follows:

inter-organization land-use planning is a system or range of economic, social, legal and technical measures for the distribution and redistribution of land between owners, branches of the national economy, enterprises, organizations, institutions and citizens within the sectors through legal and technical actions.

The purposes of inter-organization land use planning are:

1. Creation of the best conditions for the organization of rational use of land in all sectors of the national economy, as well as the creation of equal conditions for the development of all forms of businesses.
2. Creation of territorial conditions for the organization of production.
3. Development of proposals for establishing the regime and conditions for the use of land, encumbrances and easements on land plots granted to ownership, possession, use, lease.

The content of inter-organization land-use planning includes the solution of the following issues:

1. Delimitation or demarcation of lands by forms of ownership.

2. Distribution and redistribution of land by categories of land in the branches of the national economy.

3. Formation and change of land ownership, land use of agricultural enterprises, organizations, institutions and citizens.

4. Elimination of shortcomings in land ownership and land use.

5. Allocation and withdrawal of land in connection with a change in their purpose and use.

6. Ordering use of land transferred to rural administrations and other entities.

7. Identification and development of new lands.

8. Establishment of borders of cities and other settlements.

9. Provision of land for the construction of large enterprises, reservoirs, linear structures.

8.2 Varieties, factors and principles of inter-organization land-use planning

Types of inter-organization management are:

1. Delimitation land by ownership.
2. Organization and change of land use of agricultural enterprises.
3. Organization and change of land use of non-agricultural enterprises.

The division is based on differences in the forms of land ownership and in the purpose of the main categories of lands, as well as in the nature of land use in the agricultural and other sectors of the economy.

The tasks of inter-farm land-use planning are:

Figure 14 - Tasks of inter-farm land use planning

The content of inter-farm land-use planning is shown in Figure 15.

The main factor of inter-organization land-use planning in all non-agricultural sectors is the need for the organization of the enterprise, the application of various linear communications, which require land to function.

Objects of design in the inter-organization planning of land use are: a group of farms, an array of land for development, the association of land use, the administration of the district, and so on.

The basic principles of inter-farm land-use planning are shown in Figure 16.

The production process of inter-organization land-use planning consists of the following stages:

a) pre-design works;

b) preparatory work;

c) drafting the project;

d) consideration and approval of the project;

e) transferring the project to the site (to the terrain);

f) registration and issuance of land management documents and documents certifying the ownership and use of land.

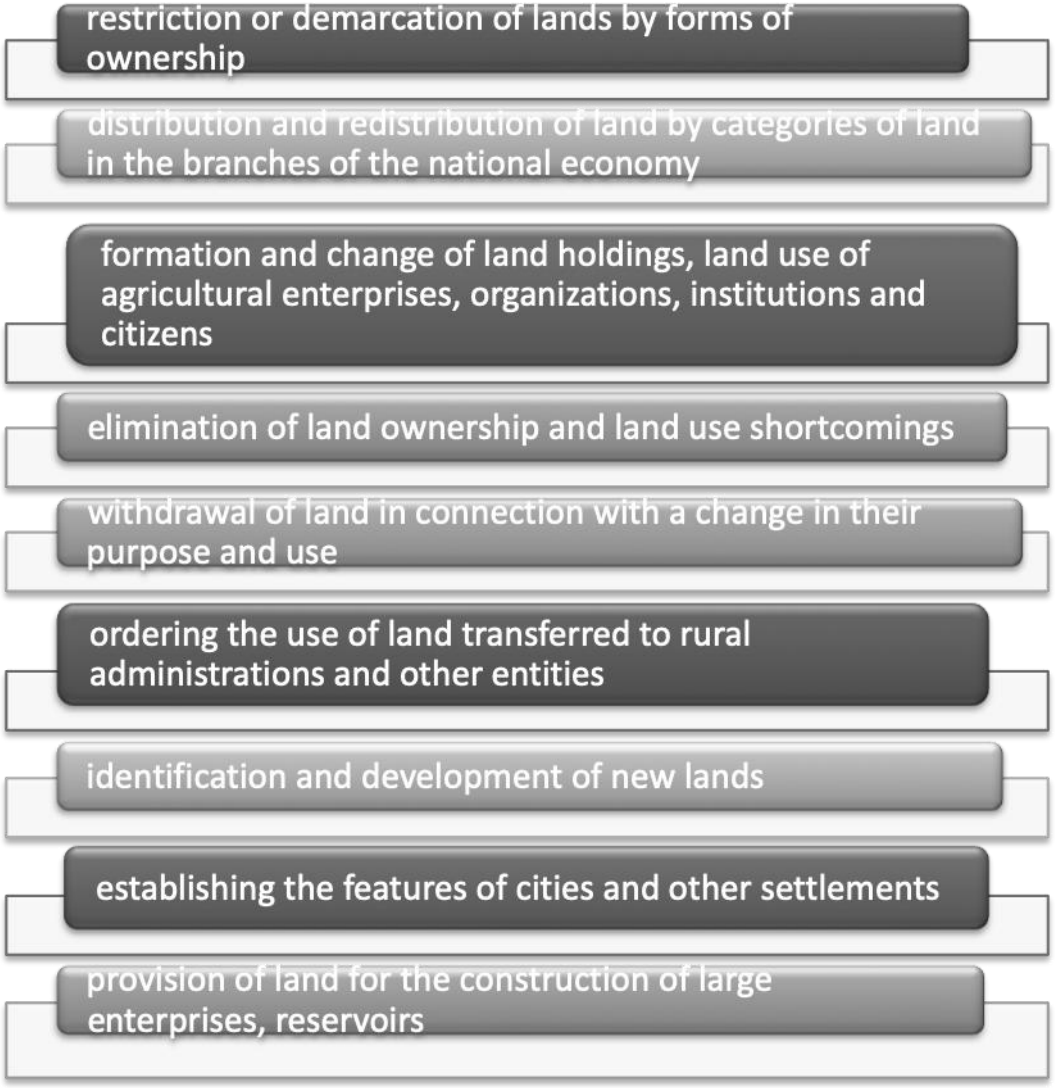


Figure 15- Content of inter-farm land-use planning

8.3 Scheme of inter-organization land-use planning and its content

The scheme is the basis for drawing up various kinds of projects and, first of all, projects of inter-organization land use planning (IOLUP). The IOLUP scheme as a pre-design document is developed as part of the district's land use planning scheme

or as an independent work if the land-use planning scheme has not been drawn up or is outdated. The following issues are addressed in the IOLUP scheme:

a) ordering and reorganization of landed ownership and land use;

b) a change in the structure of land;

c) a system of agricultural land use in crop rotations, pastures and haymaking;

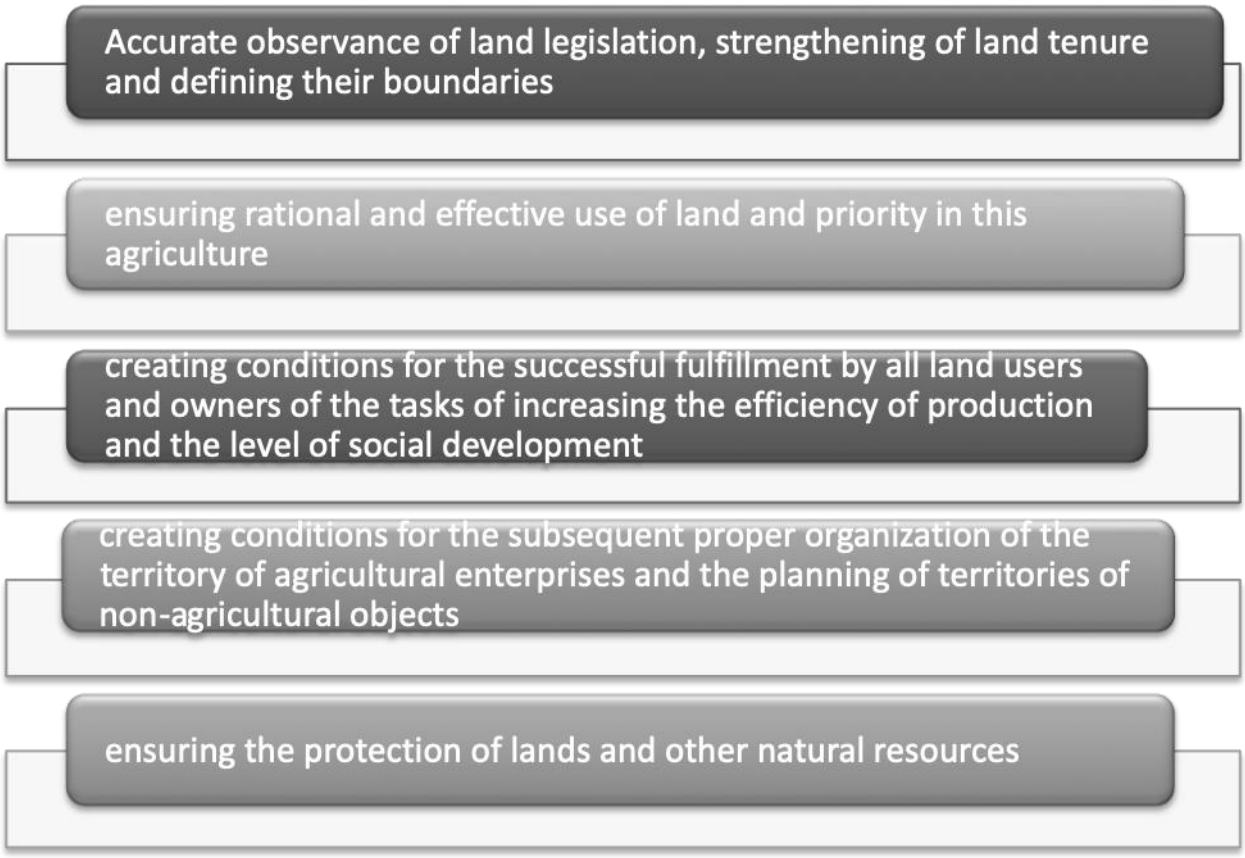


Figure 16 - Basic principles of inter-farm land-use planning

d) involvement of new lands in agricultural use;

e) increasing the productivity of land on the basis of meliorative, cultural and technical measures;

f) location of roads, protective forest stands, water management facilities, etc .;

g) placement of settlements and other economic centers, production complexes;

h) development of environmental measures;

i) economic justification for the activities of the IOLUP scheme;

k) plan for the phased implementation of the proposals according the scheme. The IOLUP scheme is designed for a period of up to 15 years.

8.4 Preparatory work for inter-organization land-use planning

Before preparation of the IOLUP project, preparatory works should be performed, during which the following issues should be solved:

1. To define the group of participants interested in conducting inter-organization land management.

2. Prepare all information about the legal, economic and social situation of land management objects.

3. To study the necessary planning-cartographic, land-cadastral, land-registration and various surveys and survey materials.

4. To study the necessity of conducting an inter-organization land-management and to establish the grounds for carrying out this work.

5. To study the state of the territories of each participant in the land-based organizations, the actions, the needs of production of land, lack in land use and the possibilities for their remediation, the proposed changes in existing land management facilities.

6. Identify and study the recommendations and proposals for land-use objects from landowners, land users, tenants, other involved enterprises, organizations and institutions, and develop agreed decisions and actions.

7. Prepare and approve the design task.

Preparatory work includes:

1. Cameral land management preparation.

2. Site land management survey.

8.5 Drafting, review and approval of the draft inter-organization land-use planning and its performance

On the basis of the assignment, a project is drawn up, the main statements of which, according to possible options, are usually outlined during preparatory work. Project documentation, which is being developed in the process of inter-organization land management, is prepared and consists of following:

1. Graphical part - the project of inter-organization land management, the drawing of the land survey and other drawings provided by the assignment.

2. Text section:

- Explanatory note, which provides explanations and justifications for all design decisions, as well as the characteristics of agroclimatic conditions and the current state and prospects for the development of agricultural production affected by land management;

- technical and economic calculations for substantiating project proposals in the process of inter-organization land use planning;

- legal documentation - materials for consideration, agreement and approval of the draft inter-organization land use planning;

- design assignment;

Project proposals should be justified and meet legal land regulations. After the drafting, a project will be considered and approved.

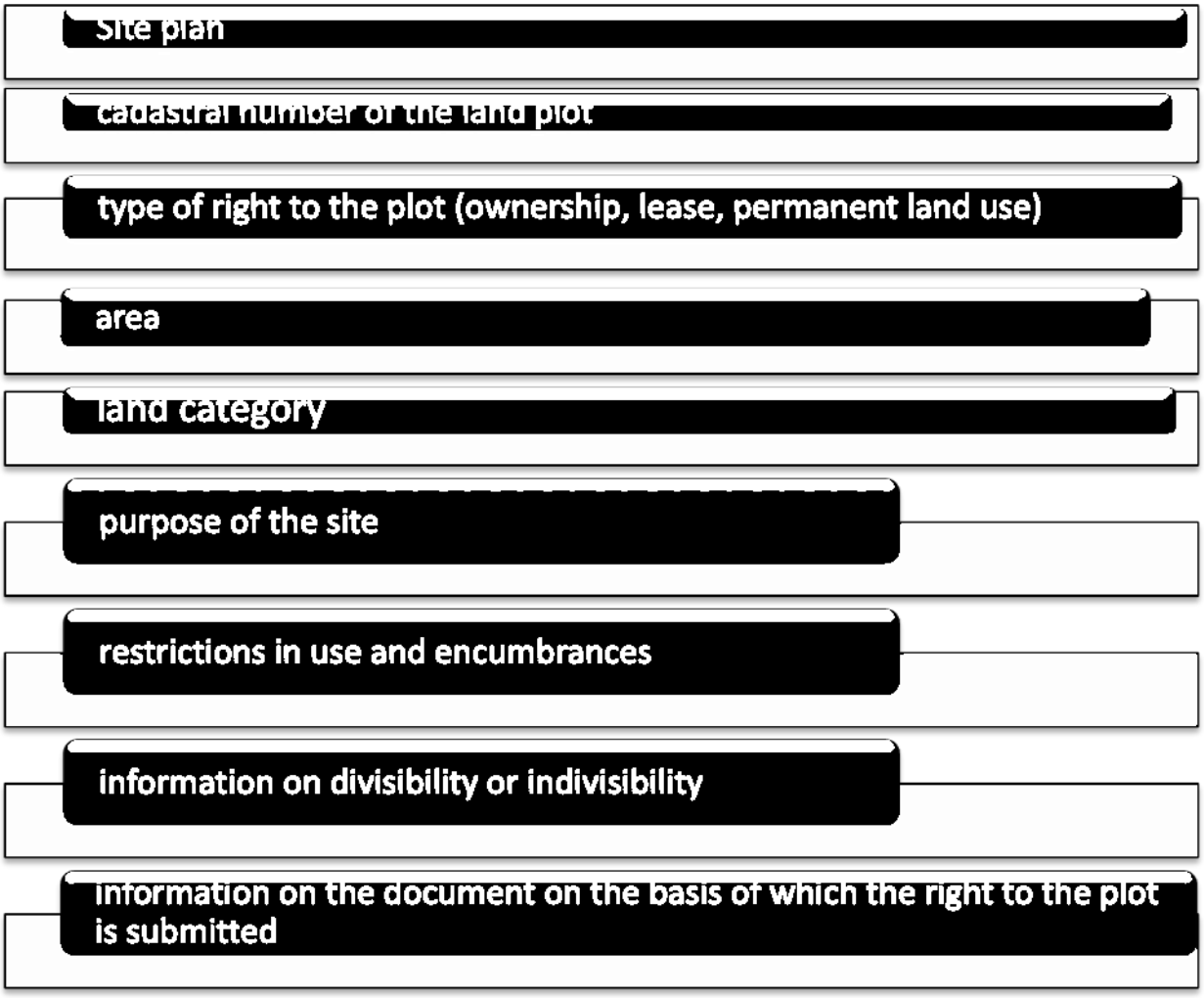
The approved project is transferred to a site.

The transfer of the project to a site consists of technically accurate arrangement on the ground of the design boundaries of land use of agricultural and other enterprises, organizations and institutions and flag them with landmark signs.

To transfer the project to a site, a working drawing is drawn up, which allows you to arrange new boundaries with the required accuracy and connect to the points of the state geodetic network.

Registration and issue of documents for right of ownership and use of land.

The document on the right of ownership and use of land in the Republic of Kazakhstan is the Act on the land plot.



Project implementation.

The project approved in accordance with the procedure established by law is transferred to a site, after which its implementation begins, the content and procedure of which includes:

1. Ensuring a timely transition to the established specialization, to the correct and full use of the granted land in accordance with its intended purpose.
2. Fulfillment in a certain time of all planned measures for land improvement, engineering equipment of the territory, etc.
3. Constant monitoring of the state of external borders and landmarks.

At the same time, the implementation of measures of the inter-organization land management project can not always be completed immediately after the project

has been transferred to a site. In such cases it is advisable to draw up a plan for the implementation of the project, which, usually should include:

1. Terms of the implementation of activities or the transition to the use of the plot.
2. The scope of development, improvement and protection of lands with the development of calendar terms and order of work.
3. Compensation for losses in agricultural production and losses caused by land users and land owners.
4. Reclamation and landing of disrupted areas.
5. Follow the terms of land allocation.
6. Reorganization of existing forms of land use.
7. Planned transition to the permitted use of land.

In all cases, it is necessary to create the required conditions to follow the principle of continuity in the use of land, taking into account the production of agricultural products.

Test

1. Types of inter-farm land-use planning are
Choose one (or more) correct answer:
a. Shared land by ownership type
b. Organization and change of land use of non-agricultural enterprises
c. Organization and change of land use of agricultural enterprises
d. Planning crop rotations

2. Project documentation which is developed in the process of inter-farm land-use planning, is prepared in such a composition:
Choose one (or more) correct answer:
a. The mathematical part, which lists all the calculations for the project
b. The natural part, which describes all the natural conditions of the territory being built
c. Graphical part - the project of inter-farm land management, the drawing of the land survey and other drawings provided by the task.
d. Textual part: explanatory note which provides explanations and justifications for all project solutions

3. The tasks of inter-farm land-use planning are
Choose one (or more) correct answer:
a. Arranging the territory of crop rotations
b. Arranging the territory of perennial plantations
c. Creating territorial conditions for organizing production
d. Arranging arable land

Lecture 9. Agricultural land-use and land properties genesis methodological issues

9.1 General theses of land ownership and land use
of agricultural enterprises
9.2 Methodological approaches to the formation of land ownership and land use of agricultural enterprises and organizations

9.1 General aspects of land ownership and land use of agricultural enterprises

The direct use of land is performed by state and cooperative organizations, institutions, research institutes, farmers, farms and their associations, joint-stock companies and private limited companies, which own land, on the basis of use and lease in the form of land ownership and land use.

The concepts of "land use" and "land ownership" are not unique and have many aspects:

a) economic - the function of the land as a means of production, as well as means of production inextricably linked with the land, in the production process expresses the economic essence of both land use and land ownership;

b) material - the content of land use and land ownership are land, their quantitative and qualitative characteristics, the correct placement and internal arrangement;

c) legal - establishes the procedure, conditions, forms of use and transactions of land. Therefore, from a legal point of view, land use and land ownership is a delimited land area transferred for use or ownership on the territory of which the economic and legal regime of land use is regulated;

d) ecological - the content of land use and land ownership is expressed in ensuring the rational use of land, taking into account the maintenance of ecological balance in a particular area;

e) natural - specific natural conditions (climate, topography, soils, vegetation, etc.) of each specific land user and land ownership have a significant impact on the size and specialization of farms.

Therefore, land use or land ownership is the activity for the purposeful use of land in a delimited area with the established procedure for owning and using land and the principles of land management on the basis of the organization of the land management process, which consists of the following (Figure 17) :

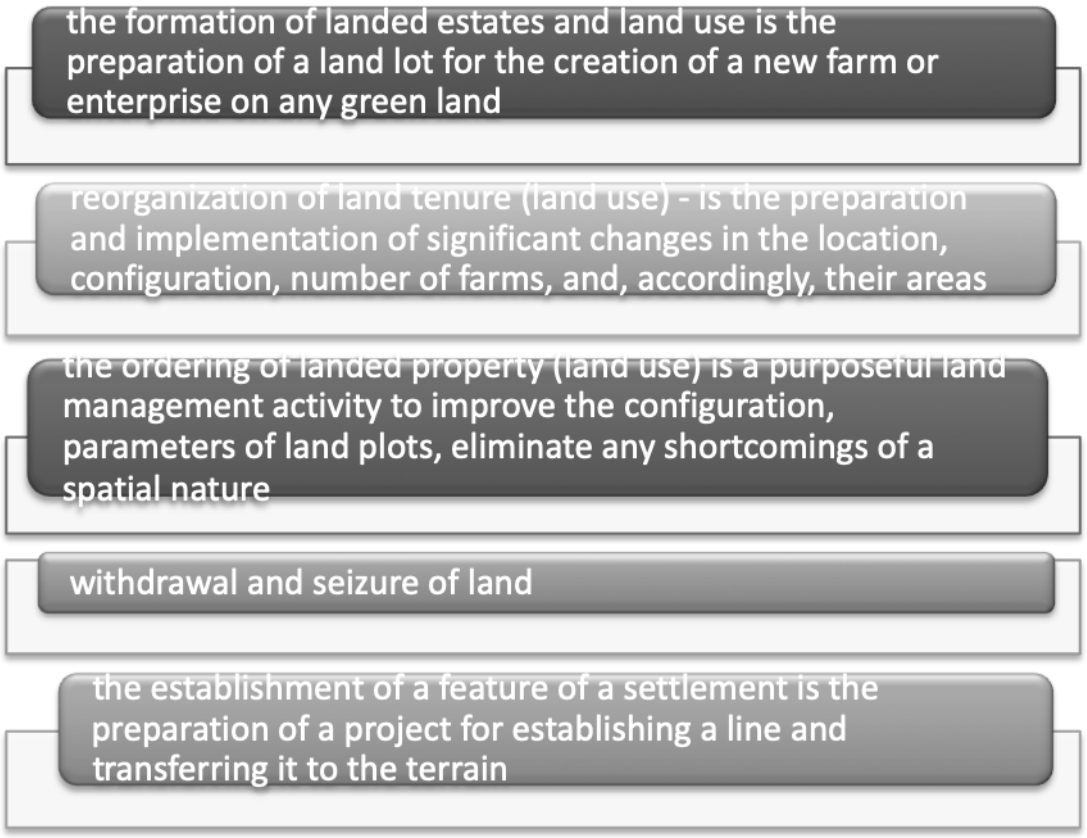


Figure 17

1. The formation of land ownership and land uses is the preparation of a land plot for the creation of a new farm or enterprise on any land.

2. The reorganization of land ownership (land use) is the preparation and implementation of significant changes in the location, configuration, number of farms and, accordingly, their areas.

3. The ordering of land ownership (land use) is targeted land management actions to improve the configuration, parameters of land plots, eliminate any flaws of a spatial nature.

4. Allocation and withdrawal of land.

5. The establishment of a boarder of populated areas is the preparation of a project for establishing a boarder and transferring it to the site.

Therefore, the formation of land holdings and land use of agricultural enterprises is a land management activity, including the drafting, approval of the project and its transfer to a site, as a result of which they create and formalize a new land area, limited on the ground, for agricultural production.

Land ownership and land use are located and formed as an integral part of the land use system of the district.

9.2 Methodological approaches to the formation of land ownership and land use of agricultural enterprises and organizations

Determination the area of new land holdings or land use

Areas are set simultaneously with the definition of production sizes. It is correct to consider as such area of land ownership or land use, where it is possible to locate the production of an agricultural enterprise in a manageable amount (without excessive costs of overcoming distances) while providing its industries with the necessary composition and area of land.

To determine the size of the organization the balance method, the design and construction method are used.

In addition to determine the size of an agricultural enterprise, the recommendations of scientific institutions, the method of analogues are used.

Placement and formation of land ownership and land use

To allocate an organization means to determine its location, taking into account the provision of this plot with a suitable configuration.

To allocate land ownership and land use it is necessary to fulfill the following requirements (Figure 18):

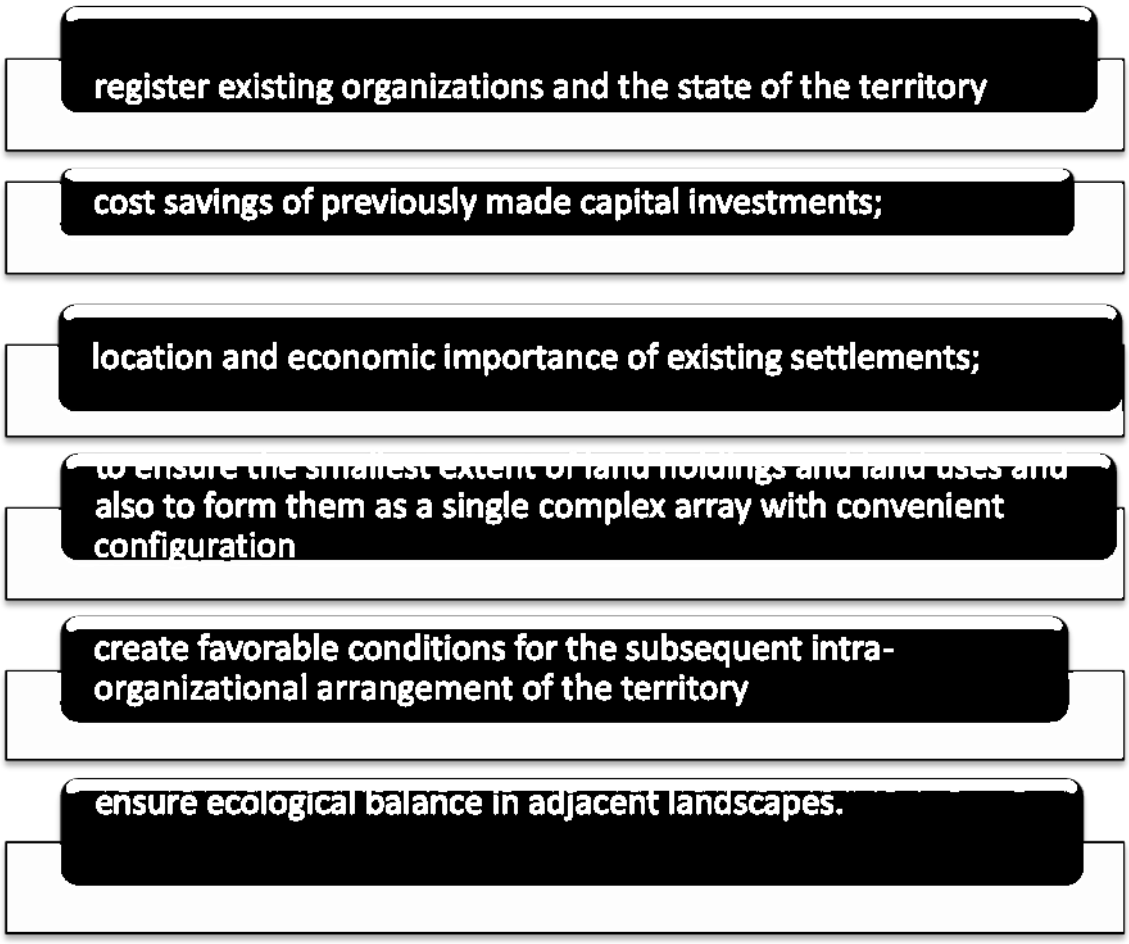


Figure 18- Requirements to be met when land tenure and land tenure are placed

Farm manor allocation

Allocation of the manor is usually happen when new agricultural enterprises are formed and the following requirements are met (Figure 19):

1) with the allocation of the manor it is advisable to conduct the formation of new land ownership or land use;

2) availability of reliable water supply;

3) to ensure, if possible, the placement of the manor in the existing settlement, which will save the capital investments for the creation of new settlements;

4) if possible, do not occupy arable land or thrifty consume such areas;

5) take in account of sanitary, fire-prevention and ecological measures at allocation of manor.

Establishment of species and areas of land in the structure of land ownership and land use

Land included in new landholdings and land uses, by area, type and quality should correspond the needs of the economy, its specialization.

Establishment of the project composition and the ratio of land is carried out on the basis of calculations of economic indicators of the justification for the project of inter-organization land management during the formation of a new organization. In addition, natural conditions must ensure the organization and development of all branches of the economy.

Figure 19 - Requirements for the location of estates

The land of certain specialized farms should not include land, rational and effective use of which in such farms is impossible.

Drawing up schemes for intra-organizational arrangement of the territory

Correctly formed and best placed land ownership or land use fully provides the best conditions forintra-organizational arrangementof the territory of the new business. The scheme solves such issues of intra-organizational arrangement of the territory: the location of production units and production centers, the placement of on-farm roads, agricultural lands and crop rotations, and others. All these activities are designed taking into account the existing resettlement, rational use of land and related production facilities. The elements outlined in the scheme are applied to the project plan.

Test

1. When determining the size of agricultural enterprises, the following methods are used

Choose one (or more) correct answer:

a. Geometric
b. Mathematical
c. Correlation
d. Balance

2. The accommodation of the estate takes place, as a rule, when new agricultural enterprises are formed and the following requirements are met

Choose one (or more) correct answer:

a. Taking into account sanitary, fire and environmental measures
b. Availability of reliable water supply
c. Remoteness from district centers
d. Placing on arable land

3. The boundaries of agricultural enterprises are designed and placed according to the following rules

Choose one (or more) correct answer:

a. Only straight lines
b. Not taking into account the terrain
c. Combining with natural boundaries (living tracts) - rivers, streams, ravines, beams, forest edges, etc.
d. In areas with irrigated agriculture, the boundaries are combined with irrigation and other channels

Lecture 10. Non-agricultural organization land-use genesis

10.1 The content and objectives of land use formation for non-agricultural enterprises

The formation of land use of non-agricultural enterprises has its own features in content and methods and is usually accompanied by a redistribution of land between their categories and branches of the national economy, and sometimes also use of productive land. The important feature of formation also lies in the fact that the land of agricultural enterprises occupies the predominant part of the territory, and the formation of new land uses usually takes place at their territory.

At the same time, the legislation of the Republic of Kazakhstan does not allow:

- withdrawal of especially valuable and productive lands;
- unreasonable withdrawal of land from agricultural circulation.

Lands suitable for agriculture need to be provided primarily for agricultural purposes.

Inter-organization land management in the formation of land use of non-agricultural enterprises has both inter-industry and inter-organization nature, since organizations of various categories and departments can participate in this process.

Non-agricultural objects are very diverse in terms of area, location, configuration and nature of the impact on the environment. The objects of inter-organization land management are (Figure 20):

- enterprises of intraeconomic importance;
- industrial enterprises;
- transport highways;
- communication lines, power supply, etc.
- mining enterprises;
- enterprises of environmental protection;
- construction and water management facilities.

According to the nature of land use, location and environmental impact, all non-agricultural objects can be divided into the following main types:

1. Area enterprises, which are subdivided into:

- small areas of land which do not disrupt the organization of the territory;
- large arrays on which large industrial enterprises are located and which can make significant changes both to the organization of the territory and to resettlement;
- significant land lots or areas occupied by mining enterprises, as well as reservoirs and structures of hydroelectric power plants and thermal power stations.

2. Linear constructions - extended land plots (railroads and highways, communication lines, power lines, forest belts, various pipelines, etc.).

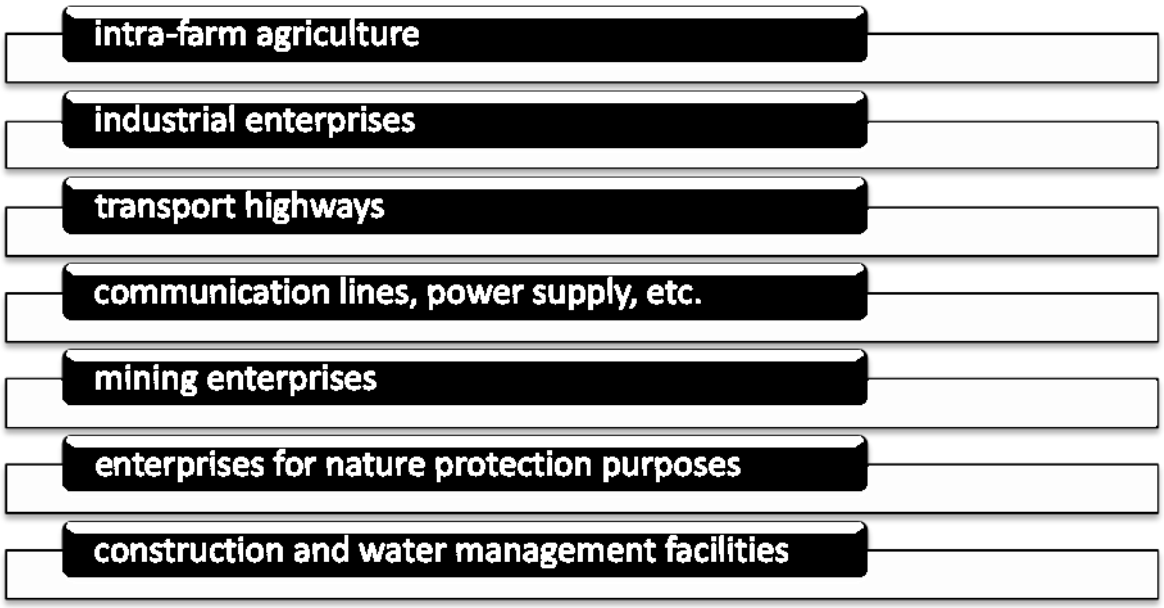


Figure 20 - Objects of inter-farm land use planning

The land use of non-agricultural enterprises goes through the following stages:

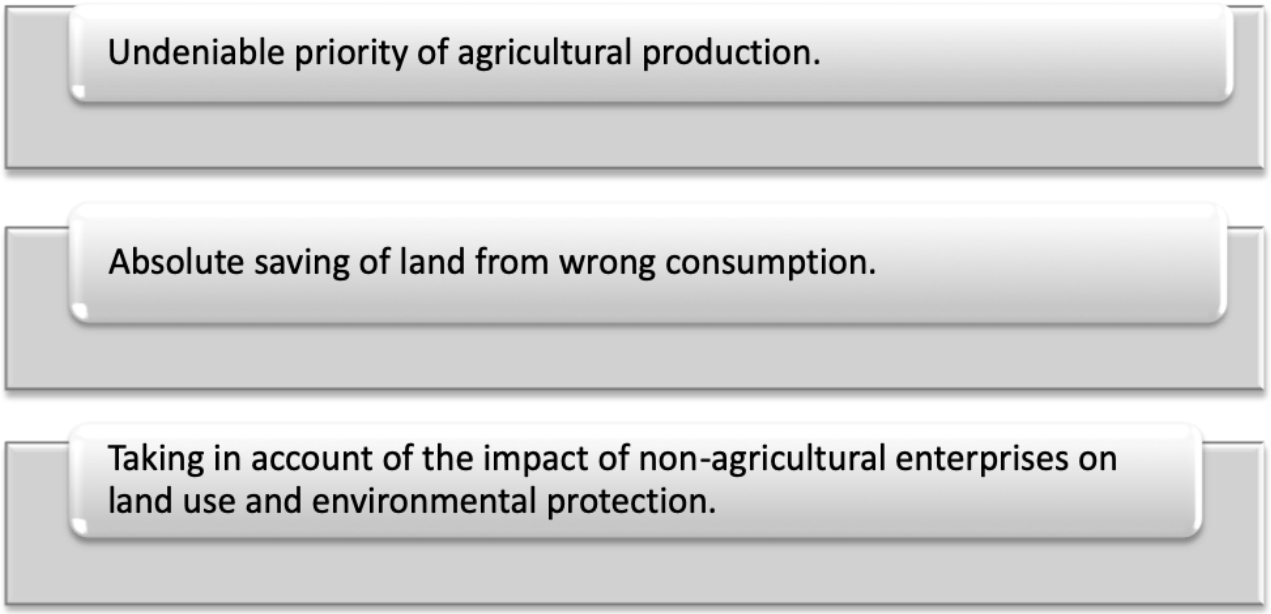
1. Preliminary agreement of the location of the object.
2. Provision of a land plot, subject to prior agreement and on the basis of an approved project of the enterprise.
3. Transferring the project to a site (land allocation).
4. Registration and issue of documents for right to use the land.

10.2 Basic requirements and principles for the design of a project non-agricultural land-use formations

When land use of non-agricultural enterprises is formed, the following requirements must be fulfilled:

1. Placement of the land plot should be made taking into account the interests of all sectors and categories of enterprises.
2. The location of the site must create territorial conditions for the normal operation of the enterprise.
3. Compliance of natural conditions, area and configuration to the requirements of the created enterprise.
4. Ensuring the rational use of remaining land and reducing the costs of improving land.
5. Ensuring the preservation of valuable agricultural land.
6. Disruptions of the intra-organizational arrangement of the territory, as well as compactness and integrity of land use should be the least.
7. Prevention of violations in the protection of the environment.

On this basis, we can formulate the following principles of the design:



10.3 Characteristic of the formation and location of land use of specific types of non-agricultural enterprises

For land use of large industrial enterprises, nuclear power plants, thermal power plants, state district power plants an effective way to save land is to create large industrial units or agglomerations with the placement in them of common facilities auxiliary production.

Features of locating large industrial enterprises are:

1. When granting lands to the industrial enterprise, also allocating land for purpose of creating a settlement.

2. The provision of large areas to large industrial enterprises and the withdrawal of these lands from agricultural turnover leads to the reorganization of existing farms, a change in their specialization and improvement of the settlement system.

3. The location of large industrial enterprises should fully ensure the protection of the environment (land, water and air from pollution and contamination), which will require additional capital investments for environmental activities.

One of the complex tasks of inter-organization land management is the formation of large reservoirs and their zones. For this purpose, the reservoir areas are divided into the following zones:

1. Zone of flooding.
2. Zone of partial flooding.
3. Coastal reformation zone.
4. Shallow water zone.
5. Zone of deterioration of organizational and territorial conditions for use of individual land plots.

The formation of mining enterprises is very unique. Granting of the land plot is necessary for the organization of mining works, is carried out in the order of so-called "mining allotment".

The features of inter-organization land management in the arrangement of linear structures (Figure 21) are following:

1. Produce allotment of land for permanent use.
2. Provide land for temporary use for construction period.
3. To create favorable conditions for their territorial location, which have a positive impact on the efficiency of production and use of land.
4. The plots granted for temporary use are subject to return after restoration of their initial fertility.

One of the specific types of land use are reserves, the main purpose of which is to preserve in a natural, untouched form a certain part of the natural environment. Land for them is transferred to perpetual use in the order of inter-organization land management.

Location, the area, the configuration, the boundaries, the structure of the land mostly depend on nature of a reserve and purposes of its creation.

Territory of the reserve should have minimal contact with the surrounding areas.

Test

1. In the formation of land use of non-agricultural enterprises it is necessary to follow these requirements:
Choose one (or more) correct answer:
a. The location of the land plot should be made taking into account the interests of only the landed enterprise
b. Placement of the land plot should be made taking into account the interests of all sectors and categories of enterprises
c. Ensuring conservation of valuable agricultural land
d. Prevention of violation of technological activities of the enterprise

2. In the formation of land use of non-agricultural enterprises by the legislation of the Republic of Kazakhstan is not allowed
Choose one (or more) correct answer:
a. Unjustified land withdrawal from agricultural turnover
b. Seizure of land from private traders
c. Withdrawal of forest lands
d. Seizure of industrial lands

3. Principles for the drafting of a land use for non-agricultural purposes
Choose one (or more) correct answer:
a. Indisputable priority of industrial enterprises
b. Undeniable priority of agricultural production
c. Absolute land saving from irrational use
d. Ecological priority of non-agricultural land use formation

Lecture 11. Land-use planning of administrative district

11.1 General theses of land use planning for the administrative district

The competence of district administrations includes almost all issues affecting the interests of land users and the entire population.

- ownership, use and transactions of land and other natural resources in municipal ownership, as well as control over the use of land within the boundaries of the district;

- complex socio-economic development of the region;

- regulation of planning and development issues, maintenance of road and water construction;

- participation in environmental protection.

In addition to the jurisdiction of the district administration the following land management activities were transferred:

- management of the district's land;

- withdrawal and provision of land plots to enterprises, organizations, institutions and citizens;

- implementation of land management measures;

- land cadastre and land monitoring;

- charging for land.

The main goal of the district land use planning scheme is the creation of rational and effective land use and land ownership, the implementation of territorial organization and the location of production and environmental activities.

Planning of the land use area is a set of organizational, economic, administrative, social, legal and environmental measures aimed at the rational redistribution, use and protection of lands, the preservation of the environment and the development of the national economy of the region

Figure 21- Linear constructions

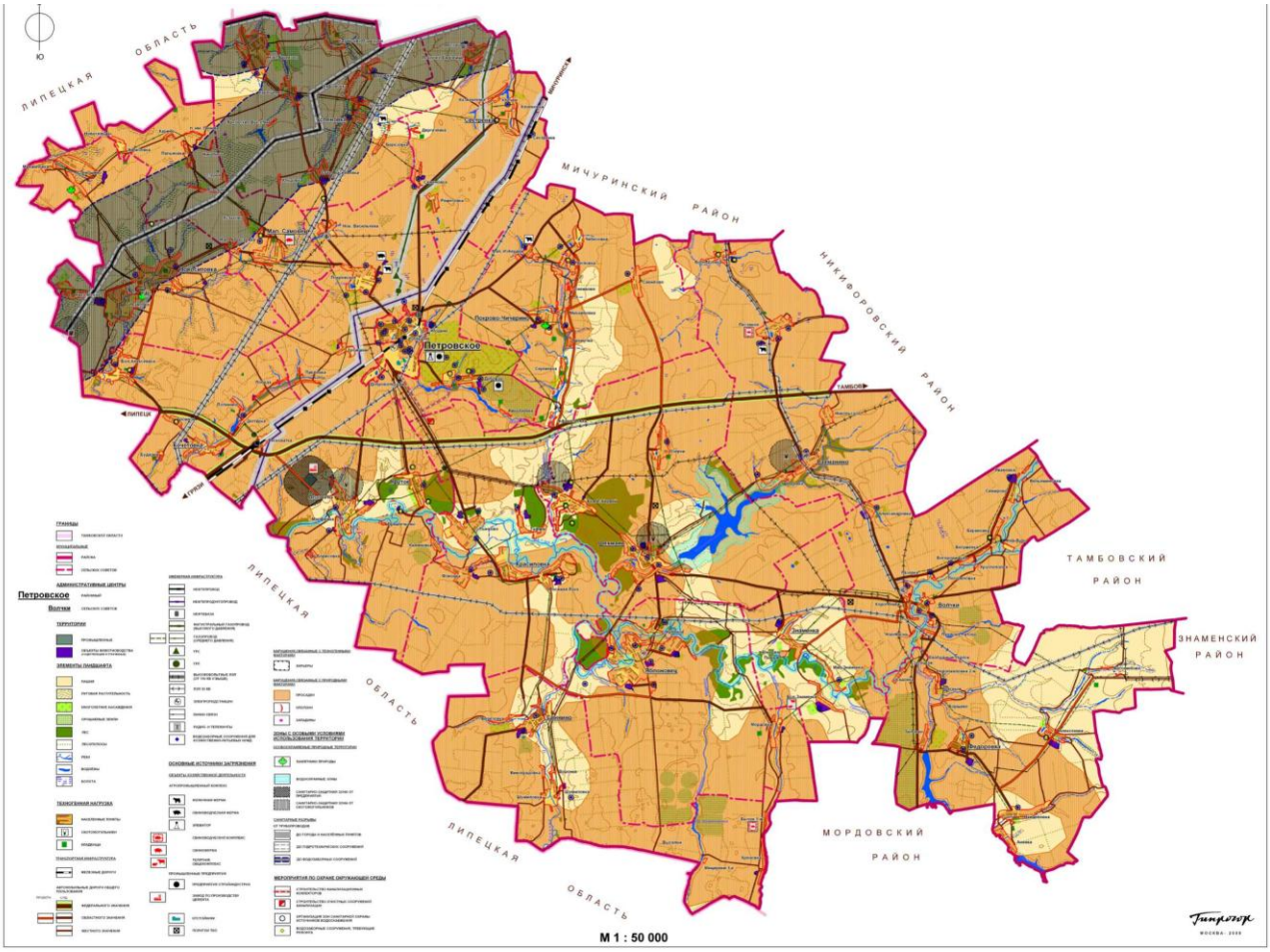


Figure 22- Example of land use planning of the district

11.2 Drawing up a land use planning scheme of administrative district

To develop land use planning schemes for the administrative district, the following requirements should be met:

1) ensure the most complete use of land in accordance with their purpose, location and quality characteristics;

2) compliance with the priority of agricultural production in the distribution and redistribution of land;

3) provision of economical use of valuable land for non-agricultural needs and strict regime of land use by non-agricultural industries;

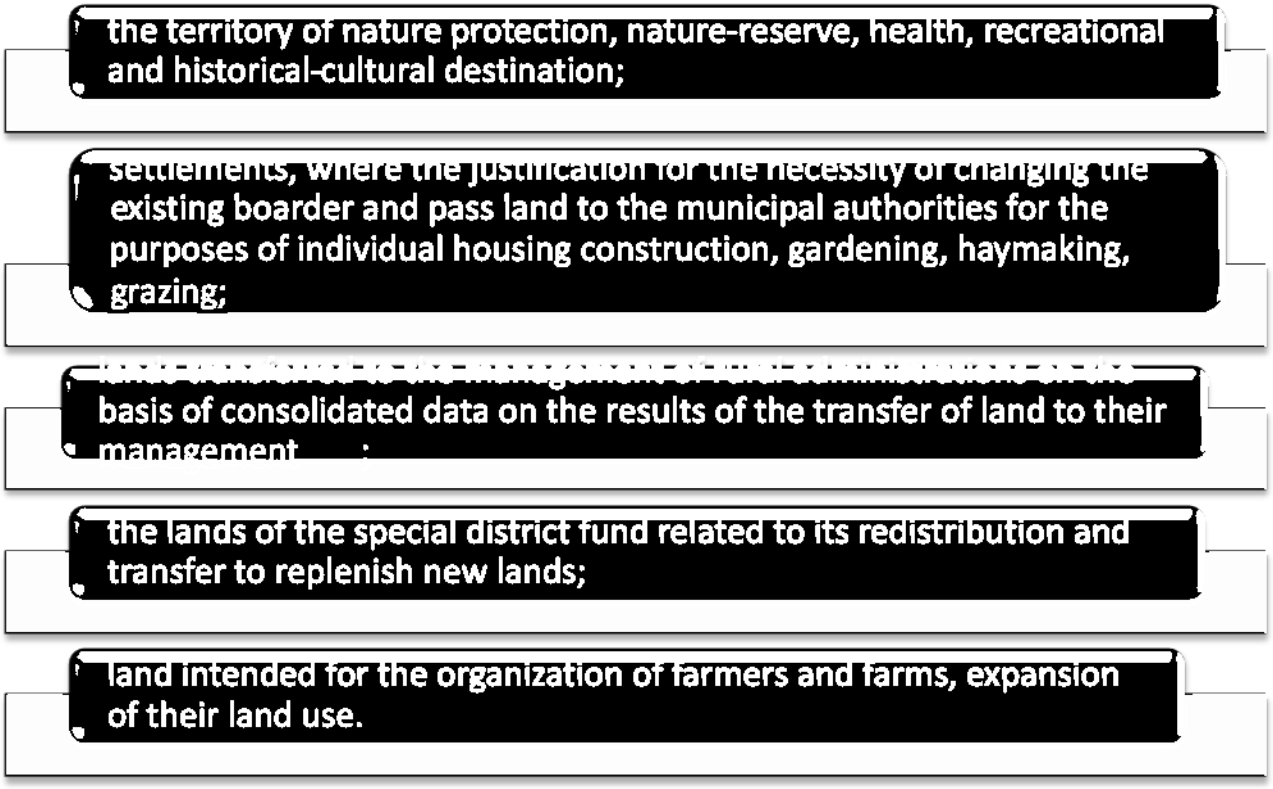
4) creation of conditions for the development of integration connections between economic entities of all forms of ownership;

5) creation of organizational and territorial conditions for the integrated development of rural areas on the basis of developed infrastructure;

6) ensuring the creation of an effective system of processing agricultural raw materials of enterprises in the interconnection of production and consumption in the conditions of a market economy.

11.3 Elaboration of the boundaries on the site of administrative-territorial settlements

As the administrative district remains the main territorial unit of economic development and nature management, the role of land use planning in ensuring sustainable and balanced development of its territory is significantly increased. A special place in the schemes of land use planning is taken by measures to clarify the boundaries:



The scheme of land management of the district is made out in the form of text and graphic materials. The order of coordination and approval of the land use planning scheme is determined by the regional government.

The scheme for planning the land use of the administrative district is implemented in stages. The implementation of measures is carried out by including them in targeted integrated programs, business plans for entrepreneurial activity, land use planning projects for enterprises, planning and development of settlements, agro-industrial complex systems, agriculture and other documents.

Test

1. The competence of district administrations includes the following issues
Choose one (or more) correct answer:

a. Provision of land for defense purposes
b. Participation in environmental protection
c. Complex socio-economic development of the region
d. Decision-making on creating state natural reservations

2. The scheme of land management of the district should contain the following text and graphic materials

Choose one (or more) correct answer:

a. Geographical materials
b. Materials of approval, examination and approval of the scheme
c. Experimental materials
d. Text part

3. A special place in the schemes of planning the land use of the district is taken by measures to clarify the boundaries:

Choose one (or more) correct answer:

a. Land within the region
b. Lands of the special district fund in connection with its redistribution and transfer to replenish new lands
c. Lands intended for the organization of peasant (farmer) farms, extension of their land use
d. The national economy

Lecture 12. Land-use planning of urbanized territories

12.1 General ideas

12.2 Characteristics of land use planning in conditions of high urbanization of the territory

12.3 Works on land use planning in cities and settlements

12.1 General ideas

Land management in urbanized areas is carried out simultaneously with the implementation of urban development measures. At the same time, land survey and town planning documentation of the appropriate level should complement each other.

To plan use and protection of lands in the land use planning scheme of the territory of the subject of the Republic of Kazakhstan, the reserves of land necessary for the development of settlements, individual housing and cottage construction, gardening and farming, the organization of recreation places for the population, determine the areas of land necessary for placing objects outside the city limits Industry and other special purposes, as well as the development of engineering, transport and social infrastructure of the regional and inter-settlement value.

Special attention when determining the need for land for city development and rural settlements should be given to the use of suburban areas between settlements that make up a common socio-economic and ecological agglomeration with the urban settlement and acquire external characteristic of the city.

There are greatest anthropogenic load on the landscape, soil cover, hydrosphere, lithosphere, fauna and flora in the process of economic activity in suburban areas.

An example of the agglomeration of Almaty is shown in Figure 23

12.2 Characteristics of land use planning in conditions of high urbanization of the territory

They are caused by the following factors:

- a deficit within the existing boarders of urban settlements of free from development areas and high capital intensity of their reconstruction for the construction of urban infrastructure;
- the need to relocate a part of city residents to the territory occupied by agricultural land and other categories, beyond the boundaries of the settlements when they expand;
- the limited reserves of land beyond the boundaries of urban settlements due to the high anthropogenic impact on the territory of existing urbanized formations, especially along radial transport routes;
- the necessity of placing objects of industry, energy of other special purpose, engineering, transport, utility and other infrastructures of regional and intersettlement significance carried out beyond the boundaries of urban settlements;
- the underdevelopment of the economy processes and the legislative framework for regulating urban development processes in the context of the emergence of ownership of land and real estate, and the transfer to the municipal level of the managerial and financial functions of the development of their territories.

The basis for the development of proposals for determining land reserves for the development of urban settlements in land use schemes for highly urbanized areas should be the following basic requirements:

- Intensification of use of territories of urban settlements within the existing boarder due to the development of free lands and reconstruction of built-up areas;
- implementation of integrated development of built-upareas and use of free area of low-rise construction zones for permanent residence of the population;
- improvement of the settlement system on the basis of scientifically grounded redistribution of land for various purposes by categories, forms of ownership, functional areas, etc .;
- improvement of the real estate taxation system, as well as legislative support and control over land plots transactions;
- specify the potential number of urban residents who, in time, will or will be forced to change their place of residence to a suburban area;

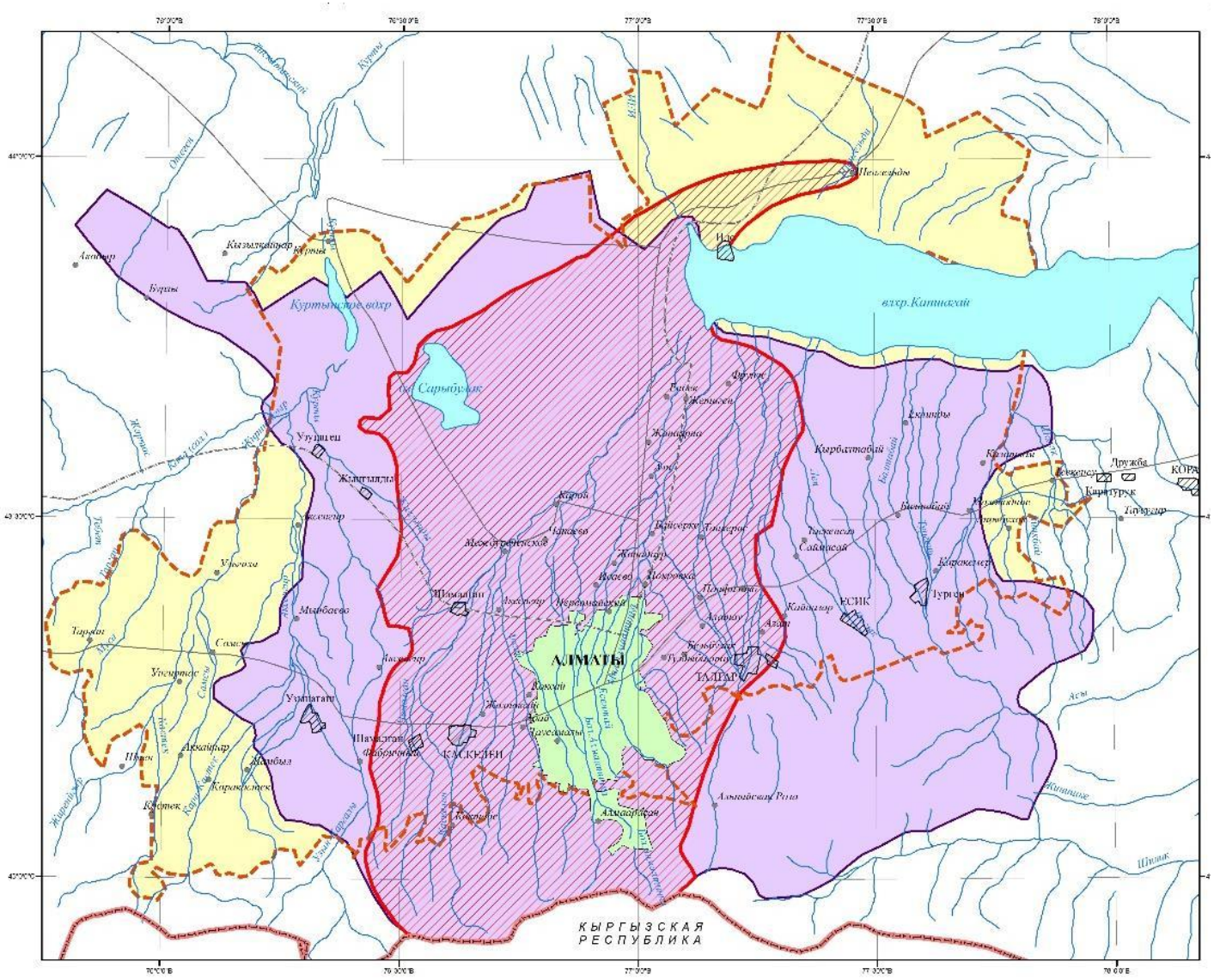
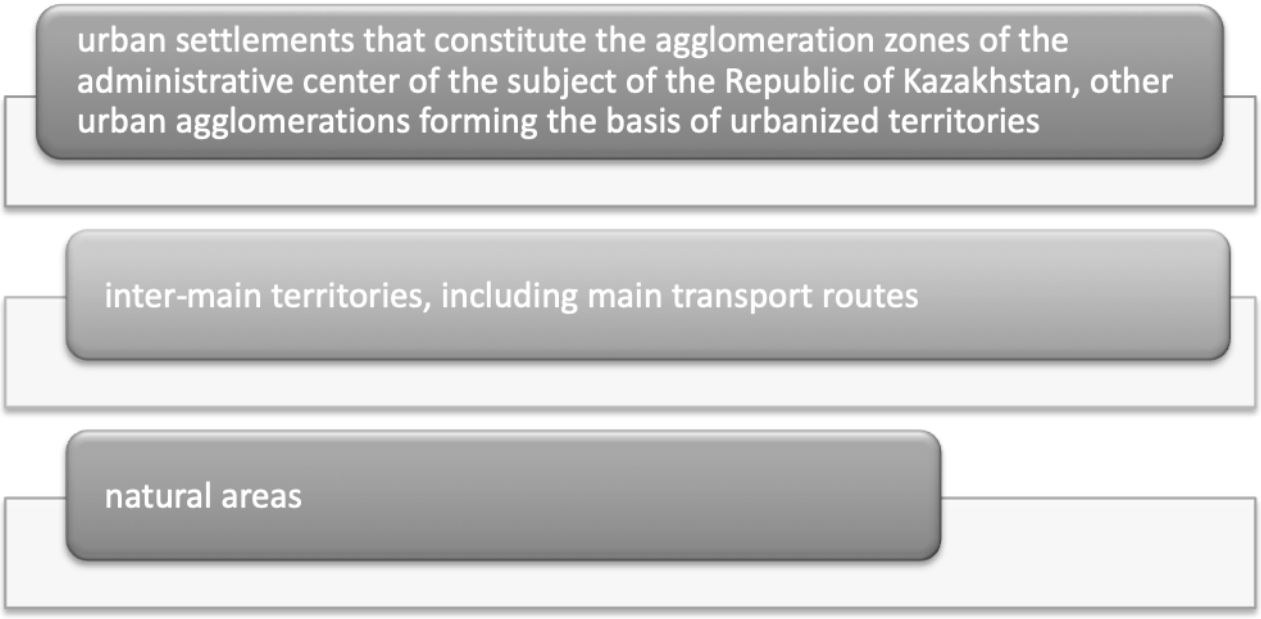


Figure 23 - Agglomeration of the year in Almaty

- streamlining urban and rural settlements.

To establish the location of urbanized areas on the basis of existing land management and town planning documentation, the boundaries are defined:

- urban settlements that make up the agglomeration areas of the administrative center of the subject of the Republic of Kazakhstan, other urban agglomerations forming the basis of urbanized territories;
- territories between highways, including the main transport directions;
- suburban areas.



Areas of territories between highways are the areas between the main radial and other transport highways that approach the administrative center of the subject of the Republic of Kazakhstan, along which the main systems of urban settlements were formed. These territories are also used for living of rural residents, agriculture and forestry, they have recreational, historical, cultural, water protection and nature protection significance.

Natural zones are the territories adjoining the border of the administrative center of the subject of the Republic of Kazakhstan or other cities, having stable production, economic, labor, social and infrastructure links and being a reserve for the territorial development of cities and a green zone intended for recreation of the population.

12.3 Works on land use planning in cities and settlements

Works include:

- legal zoning of urban land;
- inventory of land;
- identification and creation of reserve land funds;

- development of plans for the land-economic system in the territories which are not subject to construction and temporarily not built up;

- development of land surveying projects;

- Establishment and consolidation to a site (on the ground) boundaries of settlements;

- the formation of land as real estate objects in the allotment (sale), withdrawal (redemption) and the conclusion of transactions with them;

- the establishment of restrictions and encumbrances (easements) in use of land;

- creation of special thematic maps of the state and use of land.

Plans for the land-economic organization of cities and legal zoning of urban land should, as a rule, be made simultaneously with the general plans of cities.

Land surveying projects are developed as part of territorial planning projects, are the basis for establishing boundaries of land plots on the terrain and issuing settlement plans for land plots and maps (plans) of land management objects.

Test

1. Urban areas are

Choose one (or more) correct answer:

a. Areas of industrial enterprises
b. Forest areas
c. Areas of cities and urban settlements in administrative boundaries
d. Areas of villages in administrative boundaries

2. When establishing the location of urbanized areas on the basis of existing land management and town planning documentation, the boundaries are defined

Choose one (or more) correct answer:

a. Industrial areas
b. Urban settlements
c. Residential quarters
d. Green areas

3. Works on land-use planning in cities and settlements include:

Choose one (or more) correct answer:

a. Conducting land inventory
b. Breakdown of the territory of industrial enterprises
c. Environmental justification for the location of objects
d. Establishment and consolidation in nature (on the ground) of the features of settlements

Module 4. Territory organization inside the land plot and zonal characteristics of land-use planning

Lecture 13. Territory organization inside the land plot

13.1 The concept and content of intraeconomic land use planning
13.2 The stages of drafting the project for intra-organizational land use planning
13.3 Drawing up the project

13.1 The concept and content of intra-economic land use planning

Any enterprise, organization, institution has its own internal structure or internal organizational structure. Depending on how this or that enterprise is arranged, the success of its development is largely determined. Agricultural enterprises are not an exception. The internal structure of such enterprises has characteristic features that distinct them from all other enterprises and organizations.

This situation is due to the fact that (Figure 24):

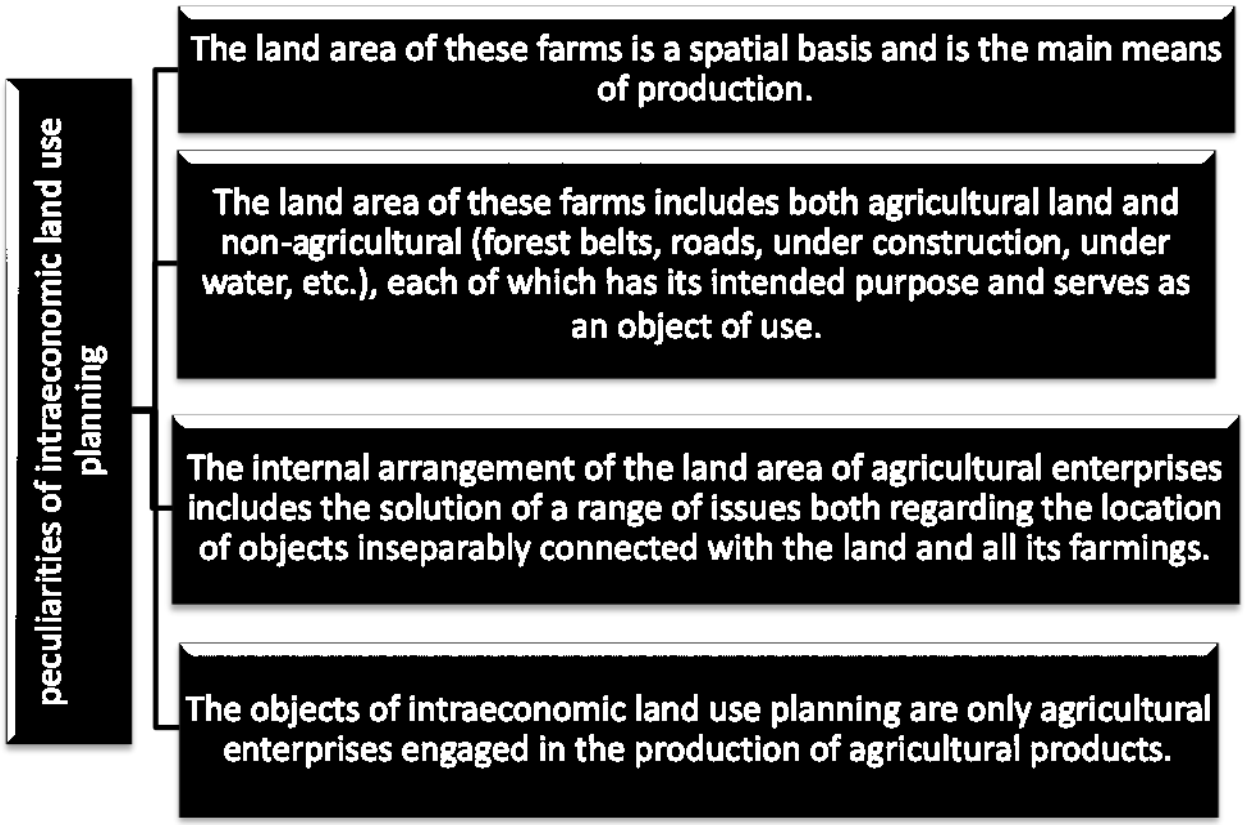


Figure 24- Features of intrafarm land use planning

With on-farm planning of land use, the most important production task is solved - to ensure mutual correspondence of the three main links:

With intra-organizational planning for land use, the most important production task is solved: to ensure the mutual cooperation of three main components: the organization of production, the organization of the territory and the organization of the labor resources of the population residing in the given territory. Therefore, it is oriented not only to the maximum profitability of the enterprise, but also to the rational use and protection of land, the overall employment of the population, and following national economic and social interests.

Thus, the main purpose of intra-organizational land-use planning is to organize the rational use of land and related production facilities, which ensures maximum economic efficiency of agricultural production, its social and nature protection orientation.

The following problems are solved.

1. Identify the purpose, nature and mode of use of each land plot and boundaries of land in accordance with its inherent properties: location, fertility, vegetation, humidification, size, configuration, etc.

2. Identify measures to improve the productive properties and environmental conditions of land on the basis of reclamation, cultural, or agrotechnical measures.

3. Ensure a rational balance and balance of the basic elements and conditions of production:

4. To create organizational and territorial conditions for the application of modern technologies, the productive use of machinery, the enhancement of the culture of farming

5. Develop a system of conservation and soil protection measures that ensure the ecological balance of the natural environment and the environmental safety of agricultural production.

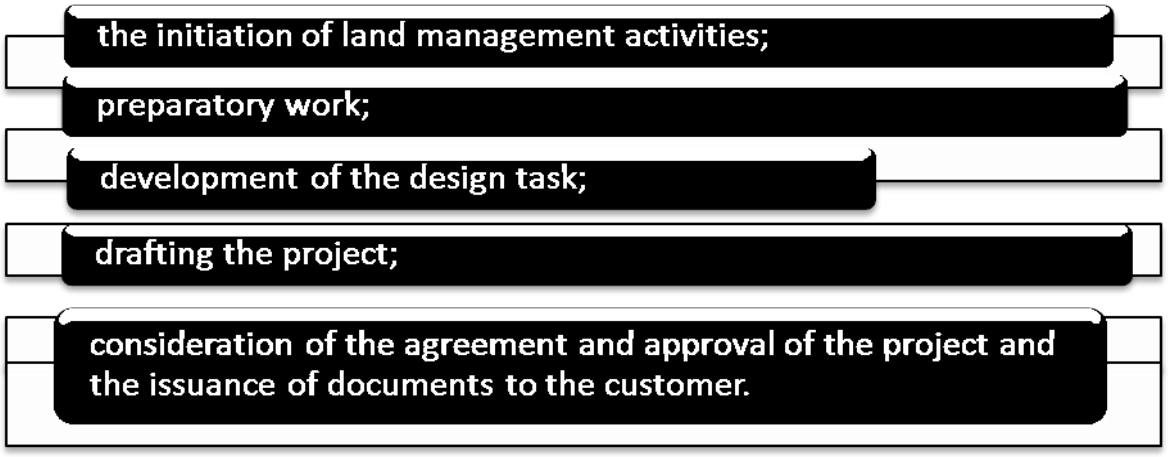
As a result, intraeconomic land use planning can be defined as follows: it is a socio-economic process and a set of measures for the territorial organization of production, improving the use and protection of land, ensuring high efficiency of agricultural enterprises.

With intra-economic planning of land use, three main areas are being developed:

13.2 The stages of drafting the project for intra-organizational land use planning

The basis of intra-organizational land use planning is a scientifically substantial project - a set of documents (calculations, explanations, drawings) for the creation of new forms of land arrangement, their economic, technical and legal justification, ensuring the organization of rational and efficient use of land in agricultural production.

Drafting of the project of intra-organizational land management includes the following stages:



Based on the project of intra-organizational land use planning for its individual parts and elements or arrays for the orders of agricultural enterprises, land management organizations make operational projects:

- cultivating and improving the use of arable land;
- deep and surface improvement of fodder land;

- amelioration and development of saline soils;
- laying and reconstruction of gardens, berry gardens, vineyards and other high-intensive plantations;
- construction of intra-organizational roads, other engineering communications;
- anti-erosion, nature protection, agroforestry and hydrotechnical measures;
- land reclamation;
- the arrangement and reconstruction of the irrigation network, melioration of pastures, etc.

13.3 Drawing up the project (Figure 25)

Drafting is the main stage of the entire process of intra-organizational land management. The project consists of graphic materials and a text part.

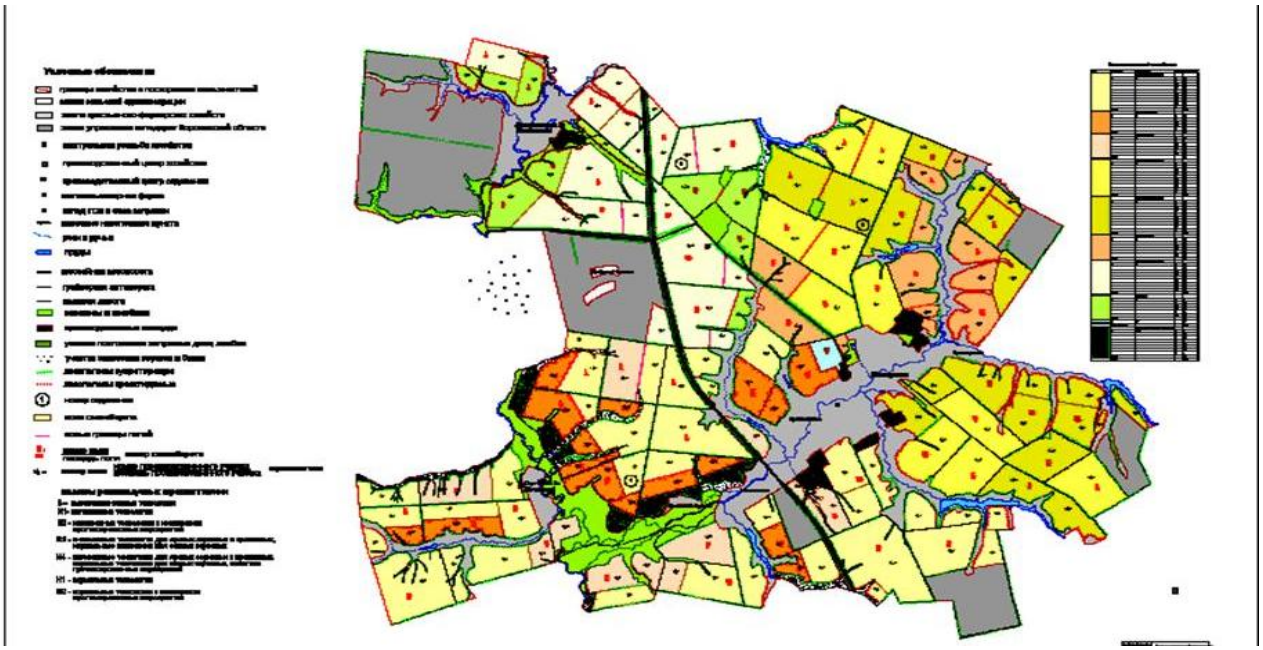


Figure 25 - In-Farm Land Management Project

Graphic materials reflect design decisions in space. The textual part is represented by economic calculations and an explanatory note, which contains justification for the design decisions.

Generally, the project is divided into the following components:

1) the location of production units and economic centers;

2) placement of intra-organizational roads, water management and other engineering structures;

3) the organization of lands;

4) arrangement of the territory of crop rotation;

5) arrangement of the territory of fodder land;

6) arrangement of the territory of gardens, berry, vineyards.

Test

1. The features of intra-economic land use planning are
Choose one (or more) correct answer:
a. The objects of intra-economic land use planning are only agricultural enterprises engaged in the production of agricultural products
b. Objects of intra-economic land use planning are any enterprise, regardless of the national economy
c. the land area of these farms acts as a spatial basis and in the role of the main means of production
d. The intra-economic arrangement of the land area includes the issues of eliminating wedges and stripes.

2. The most important production task is solved in intra-economic planning of land use - to ensure the mutual correspondence of the three main links
Choose one (or more) correct answer:
a. Organization of the use of financial means
b. Organization of the territory
c. Organization of labor resources of the population residing on this territory
d. Organization of production

3. The three main areas are being developed in intra-economic planning of land use,
Choose one (or more) correct answer:
a. Organization of the territory in accordance with the goals, objectives and structure of agricultural production
b. Area-based land use planning activities
c. Only soil erosion control measures
d. Organization of land reservation use

Lecture 14. The land management in areas with negative (harmful) effects of economic activity

14.1 Agroecological assessment of lands in areas of negative effects of human economic activity

14.2 Land-use planning in areas with presence of negative processes in the state of land

14.3. Environmental aspects of application of agricultural facilities in land use planning

14.1 Agroecological assessment of lands in areas of negative effects of human economic activity

In the areas of negative impacts of economic activity, the processes of water

and wind erosion of the soil are actively spreading, water logging, desiccation, secondary salinization, soil hardening, contamination with radioactive substances, oil and oil products, heavy metals and other toxic chemical and biological substances and microorganisms

The deterioration of the quality of agricultural land in Kazakhstan is presented in Table 2.

Table 2 - The deterioration of the quality of agricultural land (thousand ha) 2007

Country	salted	waterlogged	stony	Deflationary dangerous	Affected by water erosion
Kazakhstan	33844,3	965,5	48687,2	24148,8	194,5

In this regard, the basis for the development of land management projects should be agroecological assessment of land, determining their suitability for agricultural production, forestry, construction and other purposes.

In the process of land management based on environmental requirements, parity between economy and ecology should be ensured, which will allow to effectively develop production and save land resources.

14.2 Land-use planning in areas with presence of negative processes in the state of land

In areas with negative for land quality processes, the following land use planning should be carried out:

- special soil, geobotanical, agrochemical, radiological and other land surveys to study and evaluate negative processes, determine the quality of land and the causes that lead to their degradation;
- assessment of agro-ecological and ecological-economic properties of lands and ecological stability of the territories;
- determine of a mode and conditions of land use on territories with influence of negative processes;
- development of schemes for protecting land from degradation and other negative phenomena, including a system of measures for the conservation and improvement of natural landscapes, restoration and improvement of soil fertility, protection of lands from erosion, landslides, mudflows, flooding, secondary settling and water logging, desertification, pollution with waste products,
- Intra-organizational planning of land use of agricultural organizations and farmers and farm households on an ecological and landscape basis with the introduction of soil protection, nature protection and meliorative complexes;
- drawing up of working projects on improvement and protection of lands against various negative impacts.

14.3. Environmental aspects of application of agricultural facilities in land use planning

Ecological problems of mechanization (Figure 26)

In the development of environmentally friendly technologies for the cultivation of agricultural crops, technical means are very important. The large-scale use of machinery in agriculture contributes to the growth of productivity and labor efficiency, but it also has negative consequences, the exclusion and minimization of which is one of the most urgent tasks of "greening" the agricultural sector.

At present an approximate list of production processes associated with the use of mechanization tools and possible negative consequences in connection with this has been developed.

1 The use of mobile energy (vehicles, tractors, self-propelled agricultural machinery): chemical, mechanical and acoustic pollution of the atmosphere; pollution of the environment by liquid petroleum products; hardening and destructive effect on the soil as a result of pressure, dynamic impact and vibration.

2 Soil cultivation; spread of water, wind and technical erosion; formation of the plow sole and related consequences; increased traction as a result of soil hardening and reduced yield of cultivated crops.

3 Operations of the machine and tractor fleet. Pollution of the environment and destructive impact on its components as a result: the use of energy-saturated machines with a large mass, and high speed of movement; faults and deficiencies in the organization of the use of the machine and tractor fleet; maintenance and care with the absence of appropriate equipment and special sites; flaws in the organization of the oil industry (poor condition of reservoirs, handouts, etc.); absence of warm heated rooms for diesel cars and tractors; pollution of the environment by metals due to corrosion during storage of agricultural machinery and untimely delivery of depleted equipment.

The given list allows to form a set of necessary environmental measures in advance and sufficiently purposefully for each allocated block.

Agroecological requirements for technical means

The environmental costs listed above for the use of tractors and agricultural machinery should not exceed certain standards.

The first priority in this regard in the planning of land use is the optimization of the structure and use of the machine and tractor fleet in relation to the influence ofchassis systems on the soil. The acute urgency of this problem is dictated by the threatening dimensions of soil degradation as a result of hardening under the influence of an increasing technogenic load.

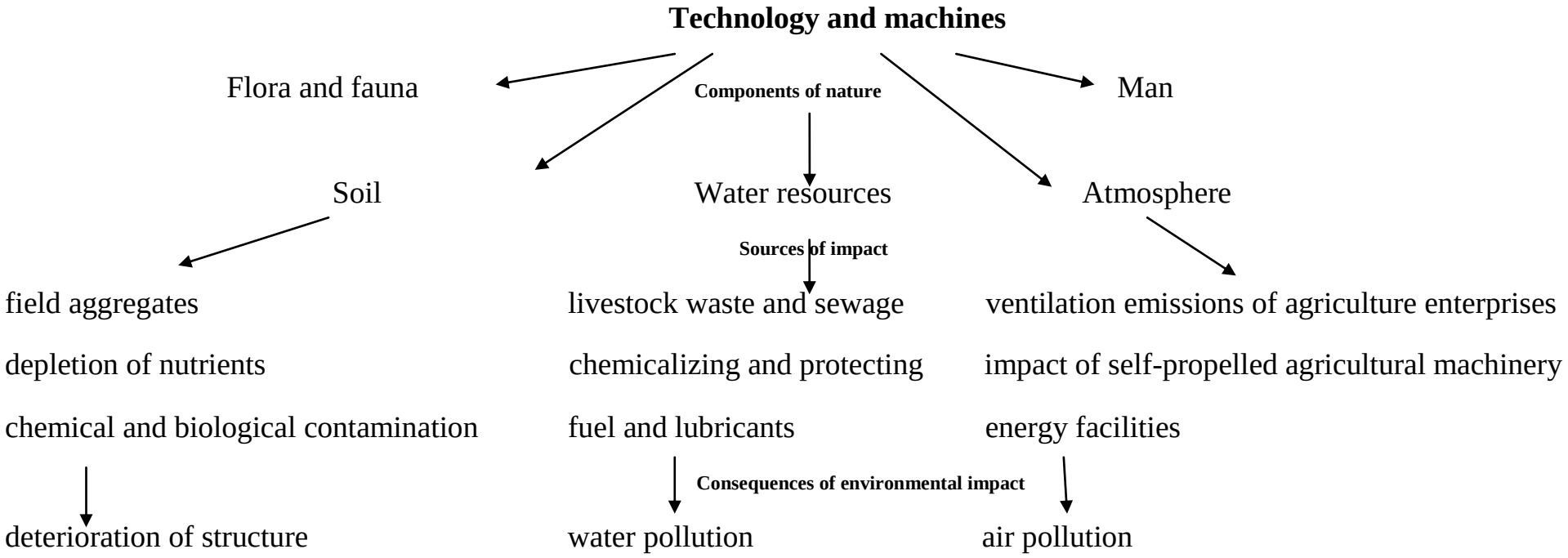


Figure 26- Negative effects of agricultural machinery on the components of the natural environment

At present, 13 hectares of mechanized works are spent per hectare of arable land on average in the country. This indicator grows with the intensification of agriculture. The power and, correspondingly, the mass of tractors increase. Over the past 30 years, the mass of tractors per unit and the yield of arable land has increased threefold. At the same time, the share of wheeled tractors increased to 70% in the structure of the tractor fleet, including the share of heavy machines such as K-701 and K-744, as well as foreign analogues, whose specific soil pressure is twice higher than the prevailing caterpillar tractor

Overharden the soil heavy harvesters, transport-technological means and other machines. During the harvest period, the transport and technological equipment develops 1.5-2 times more pressure than tractors. This increases the traction resistance of the soil during processing, the consumption of fuels and lubricants increases dramatically, the rate of production decreases, and the number of mechanical operations increases for the qualitative preparation of the plow layer. Hardening deformations of the soil under the influence of these tractors extend to a depth of 40-60 cm, and sometimes up to 1 m.

To solve a rather complex problem of machine degradation of the soil, certain scientific and organizational measures have recently been created. In particular, on the basis of generalization of numerous scientific studies, the GOST has been developed, which regulates the norms of impact of machines on soil. It presents the permissible norms of the effect of machines on the soil to a depth of 0.5 m for the spring and summer-autumn period with different moistening conditions.

In terms of environmental adaptation of machines and tillage machines, there are a number of new technical solutions. These include new types of caterpillar machines, elastic (ultra-low pressure) tires of wheels of tractors, combines, vehicles.

A serious prospect in reducing the technogenic load on the soil is the use of combined units that combine various operations for basic, pre-seeding tillage, fertilization, and sowing.

Ecologization of soil cultivation is associated with the use of a wide range of technical means adapted to a variety of natural and economic conditions. A variety of different working organs of soil-cultivating machines have been created, including for basic tillage (chisels, rippers, splitters, loosening-pruning tenons paraplow, etc.), for surface processing (passive, active and rolling types, slotted, needle discs, etc) A promising direction is the introduction of minimal and zero technologies for cultivating crops. They imply a significant reduction in the methods of mechanical impact on the soil or their complete elimination.

All this should be taken into account in the projects of intra-organizational land use planning.

Test

1. In areas with negative processes in the land it is necessary to do the following land use planning

Choose one (or more) correct answer:

a. Drawing up working projects to improve and protect land from various negative impacts
b. Drawing up projects for intensive land use
c. Evaluate the soil
d. Conduct an economic assessment of land

2. In terms of environmental adaptation of propulsors and tillage machines, there are a number of new technical solutions

Choose one (or more) correct answer:
a. Creating more powerful tractors
b. Narrowing the width of the wheels of tractors
c. New types of caterpillar propulsors
d. Designing the combines with a large volume of bunkers

3. The area of saline land in the Republic of Kazakhstan is currently (thousands of hectares):

Choose one (or more) correct answer:
a. 114235,7
b. 287.6
c. 64517.8
d. 33844.3

Lecture 15. Characteristics of land management in areas with erosion processes

15.1. Basic principles and requirements for land use planning in erosion areas
15.2 Basic principles of forming land use and its production units
15.3 Basic principles of the organization of lands and crop rotations
15.4 Features of the arrangement of crop rotations in areas of water and wind erosion of soils

15.1. Basic principles and requirements for land use planning in erosion areas

All lands in erosion areas are divided into eroded (water erosion) and deflated (wind erosion) - those that lost their initial fertility under the influence of erosion, deflation; eroded and deflated lands that are subject to erosion and deflation processes (modern erosion); erosion and deflationally dangerous - those that are currently not subject to flushing, erosion and blowing processes, but with improper cultivation, water and wind erosion may occur.

According to the degree of erosion and deflation, the soils are subdivided into weak, medium and strong washed and weak, medium and strong deflated. The degree of erosion is established by the erosion of the upper horizon, and the deflation is determined by the removal of soil particles.

It should be kept in mind that the degree of erosion of soils and the presence of eroded processes are closely interrelated, therefore, in the development of measures for the qualitative improvement of land, issues of preventing erosion and improving the fertility of these soils should be addressed.

Planning of land use in the areas of erosion and deflation has its own characteristics, as along with the solution of land use planning issues, an anti-erosion complex is being designed, including organizational-economic, agrotechnical, agroforestry and hydrotechnical measures.

The development of a complex of anti-erosion measures is carried out in the following order:

- drawing up of schemes of anti-erosion measures in the whole country, region
- development of a set of measures to combat erosion and deflation of the administrative district
- drawing up of schemes of anti-erosion measures for the catchment basin
- development of projects for intra-organizational land use planning with a set of measures to protect the soil from erosion

Anti-erosion measures are carried out on all lands where there are conditions for erosion processes, therefore, land use planning in erosion areas must be carried out taking into account the erosion protection of lands.

15.2 Basic principles of forming land use and its production units

It is known that different agricultural crops have not the same soil protection capacity, and under conditions of erosion processes this situation has an important (sometimes decisive) significance in establishing the specialization of the economy. If large areas are prone to erosion, specialization in crop production should be established on crops of continuous planting with a reduction in the cultivation of tilled crops. At the same time, the optimal size and level of intensity of production is determined both in plant growing and in animal breeding.

The degree of erosion development affects:

- the size of farms and its production units;
- on the formation of the boundaries of land use of its production units. In the conditions of water erosion, it is necessary to take into account the location of ravine-girder systems, the terrain and soil cover of the terrain, the degree of erosion of lands, and with wind erosion - the presence and location of wind-impact slopes, the placement of soils with light mechanical composition, the direction of harmful winds. In areas of wind erosion, these boundaries should be located perpendicular to the direction of prevailing winds, forest belts, main roads and other territorial elements.

15.3 Basic principles of the organization of lands and crop rotations

In areas of soil erosion and deflation, the main principle of the organization of lands and crop rotations as an important part of intra-economic land use planning is the creation of organizational and economic and territorial conditions for rational (in this particular setting) and the most efficient use of each hectare of land and increasing the fertility of eroded lands .

With high development of the territory, there are practically no reserves for increasing valuable lands, therefore, under these conditions, all measures envisaged in the projects should be aimed at protecting the soil from erosion, deflation and development of measures to improve the use of existing land

Where there is a decrease in arable land for tapping, first, it is necessary to find ways to compensate for its plots by eliminating excesses in existing roads, forest belts, settlements, or to provide measures to intensify the use of all agricultural lands.

For perennial plantations, first of all, it is necessary to take the slopes of the beams with the arrangement of terraces or the lower parts of arable tracts.

In the areas of water erosion of soils, along with the agrotechnical and forest-meliorative measures, hydraulic engineering structures are being designed: erosion ponds, ditches, wide-base ramparts, sprayers, bottom dams, dams, water retaining shafts, and flattening of gully tops, etc.

In the overall system of measures to protect the soils from flushing, erosion and blowing on arable land, an important role belongs to the development and implementation of a system of scientifically based crop rotations. In conditions of significant flat flushing and presence of soil deflation, when all organizational and economic measures are developed taking into account the protection of soils from erosion, the significance of crop rotation will increase dramatically.

Arable land is the most valuable agricultural land, and its lands are used mainly in a certain system of crop rotation, depending on the degree of erosion processes, other natural and economic factors.

The design of different types and types of crop rotation in conditions of soil erosion and deflation determines the solution of the following interrelated issues:

1) effective use of primarily eroded soils and increasing their fertility;

2) the introduction of such a system of crop rotation, which would have a significant effect on the cessation of erosion processes and the retention of moisture at the site of its fallout;

3) as a separate crop rotation, and their system must fully ensure the use of the entire complex of anti-erosion measures;

4) the system of crop rotation should ensure planned production of crop production, and in terms of its size, location relative to the terrain, the composition of soils create favorable conditions for high-productive use of agricultural machinery;

6) the introduction of such a system of crop rotation, with the development of which the least costs are ensured;

7) the placement of crop rotation is done taking into account their further internal organization.

The question of the types, types and number of crop rotations is solved when developing projects for intra-organizational land management and farming systems depending on the specific natural and economic conditions of each farm, and therefore the composition of crops in them is determined in accordance with the structure of sown areas.

One of the effective methods for protecting the soil from deflation in the crop rotation is the strip placement of crops. Such a soil-protective method found its spread in areas of wind erosion.

Placing strips is made across the direction of the prevailing winds. The essence of this activity is reduced mainly to the alternation of strips of crops of solid sowing with pure vapors or tilled. The width of the strips depends on the mechanical composition of the soils, the degree to which they are struck by blowing, and the multiple width of the seizure aggregate.

The indicator of the rationale for designing certain types, types and amount of crop rotations is their anti-erosion effectiveness, as well as the best economic indicators.

15.4 Features of the arrangement of crop rotations in areas of water and wind erosion of soils

In connection with the accelerated development of the productive forces in ag-

riculture, the requirements for creating territorial conditions for more intensive use of land, powerful agricultural machinery, the introduction of advanced technology to improve soil fertility, taking into account its protection from erosion processes, are therefore increasing, so the right decision Issues of the internal arrangement of crop rotation arrays or the organization of a crop rotation area, which is one of the main intra-organizational land arrangement.

On the territory of arable land undergoing erosion processes (washing and deflation), it is important to create not only a basis for introducing and maintaining correct crop rotations, but also appropriate conditions for detaining surface runoff of thawed and storm water, reducing wind speed, making full use of atmospheric precipitation, preventing Washing, erosion and deflation of soils, carrying out various anti-erosion measures.

At the same time, such factors as the existing organization of the territory, the relief of the terrain (steepness, length, shape and exposure of the slopes), the area of the catchment areas (areas), the dismemberment of the arable tracts by the gully-girder net, the soil cover (type And mechanical composition, erudition and anti-erosion resistance), land categories, the direction of harmful and blizzard winds, the frequency of dust storms and dry winds, the composition of crops in crop rotations, their soil-protective Properties and agro-technics of cultivation.

Proceeding from this, the territorial arrangement of crop rotations should consist in a joint and mutually coordinated solution of the following main issues: 1) placement of crop rotation fields; 2) location of protective forest belts; 3) location of roads, field camps and water supply sources; 4) in-field organization of the territory, placement of: a) work sites; B) crop and steam strips; C) forest belts and roads within fields.

The sequence of their development should be adopted depending on the specific conditions. For example, in farms with developed soil erosion, forest strips, roads, etc. are first placed.

Under conditions of water and wind erosion, the following requirements are imposed on the design of crop rotation fields and associated linear elements:

1. In the conditions of rough terrain long borders of fields should be located only across the slope direction, starting directly from the watershed, and on a complex relief with large slopes - along the terrain.

2. Placement of the boundaries of the fields across the slope should be made with permissible (up to 2%) angular deviations from the direction of the contours.

3. The width of the fields along the slope should be set taking into account the allowable length of the drainage lines, which depends on the slope of the site and the types of soils.

4. In conditions of complex relief, the fields should be planned in such a way that conditions for contour-meliorative processing and implementation of soil conservation measures are created.

5. Establishment of the boundaries of fields on a complex relief should be carried out taking into account the permissible gradient when working in the working direction.

6. With wind erosion on a flat relief, the long sides of the fields must be perpendicular to the prevailing direction of harmful winds.

7. With water and wind erosion, the location of the boundaries of fields should be made taking into account the protection of soils from their washout and erosion.

8. The fields should be designed sufficiently large in size and compact in configuration, taking into account the conditions for designing and locating work areas, forest belts and roads within the fields.

9. The projected fields should be homogeneous by soil characteristics and include the land of one or two categories of erosion.

10. Accepted design decisions on planning, crop rotation fields should be justified in an economic and anti-erosion relation. Placement of protective strips (water-regulating, field-protective and others) should be made for more complete regulation and retention of surface runoff, flushing and protection of fields from harmful winds.

In conditions of flat terrain with slopes up to 1^0, the location of forest belts in any direction is allowed. With developed water erosion and slopes of the terrain, more than 1 forest belts should be directed across the slope. On the long sides of the fields, placed so, water-regulating forest belts are planned.

In plain areas, the distance between forest belts should be 500-600 m, and on the slopes - do not exceed the length of the drainage lines.

In areas of wind erosion, protective forest belts are located perpendicular to the direction of harmful winds, and the distances between them should not exceed 300-400 m.

The most convenient location of roads in the anti-erosion relation is their direction along the watersheds or across the slope. The most convenient location of roads in the anti-erosion relation is their direction along the watersheds or across the slope. In complex terrain, roads should be placed horizontally.

Test

1. Water erosion is
Choose one (or more) correct answer:
a. Soil erosion caused by soil mulching
b. Erosion caused by wind
c. Deflation erosion
d. Loss of soils under the influence of running water

2. There are the following types of soil erosion
Choose one (or more) correct answer:
a. Agricultural
b. Water
c. Technical
d. Wind

3. What determines the intensity of wind erosion of soils?
Choose one (or more) correct answer:

a. wind speed
b. presence of vegetation cover
c. the chemical composition of the soil
d. the biological activity of the soil

4. In what order is the development of anti-erosion measures complex carried out?
Choose one (or more) correct answer:
a. Development of anti-erosion measures for the catchment basin
b. Development of schemes for intensification of land use
c. Development of a set of measures to control erosion and deflation of the administrative district
d. Development of land use schemes in industrial enterprises

5. Designing different types of crop rotation in conditions of soil erosion and deflation determines the solution of the following interrelated issues
Choose one (or more) correct answer:
a. Introduction of crop rotations with a steam field
b. Efficient use of primarily eroded soils and the exaltation of their fertility
c. Introduction of as many tilled crops as possible in the crop rotation
d. Introduction of such a system of crop rotation, which would have a significant impact on the cessation of erosion processes and the retention of moisture at the site of its fallout

Glossary

Agro-landscape anthropogenic landscape, the natural vegetation of which in the overwhelming part of the territory was replaced by agro-cenoses fields, pastures, hayfields, perennial plantations of crops
Agrochemical investigation of soils is carried out for their agrochemical evaluation and control over the change in fertility. The results of agrochemical research are the basis for the development of a scientifically based fertilizer system and activities to increase soil fertility and crop yields.
Agroecological evaluation of lands It is a comparison of the requirements of crops to the conditions of growth with the agro-ecological conditions of a particular territory. In fact, agroecological evaluation of lands is an assessment of their fertility, in which they determine how profitable it is to cultivate a particular crop in a certain territory. Without an agroecological assessment, an agricultural producer can sow crops in the field, where it will grow poorly and make low crop yield. The practical experience of agroecological evaluation of lands in Russia shows that it allows to find out with high detail and reliability how suitable a particular field is for growing an agricultural crop. At the same time, the widespread cadastral evaluation of land (based on the average grade of bonitet, when the index of humus is added to the index of stony) with its scores does not provide the useful information for the agronomist as an agroecological evaluation of land does.
Land use Act is a form of an identification document in accordance with Article 12 of the Land Code of the Republic of Kazakhstan. This is a document that contains the identification characteristics of a land plot, necessary for maintaining land, legal and urban cadastres. Such documents include: Private Property Rights Act on Land Use; Permanent Land Use Act; Temporary (long-term, short-term) paid Land Use (lease) Act; Unpaid Land Use Act
Anthropogenic landscape one of the types of cultural landscape is the complete opposite of the natural landscape. That is, the anthropogenic landscape is a landscape that has been altered by a man. Anthropogenic landscapes should be considered as man-made landscapes, as well as all natural complexes in which any of their components, including vegetation with the animal world, underwent a radical change under the influence of man. Most of the modern landscapes can be considered anthropogenic, since they are to some extent changed by man. Deforestation, heaps (potholes) are only part of the most visible transformations of nature by man.
Intra-economic land use planning

This is a complex of activities of organizing, using, protecting lands within the boundaries of certain farms, for the construction of territories within land use, as well as for the most productive use and conservation of soil fertility. The objects of intra-economic land use planning are only agricultural enterprises engaged in agricultural production.
General Scheme of Land Use Planning for the Country One of the main types of land management documentation is the General Scheme for Land Management of the Territory of the Republic of Kazakhstan. This is a pre-planning document used to prepare scientifically based decisions on organizing rational use and protection of land, redistributing land between sectors of the national economy, forming new forms of land ownership and land use, land development and reclamation, resettlement of citizens in areas with high land security developed for the whole territory of Kazakhstan
Geobotanical surveys are usually accompanied by soil surveys on sites occupied by natural and improved hayfields and pastures, forests, shrubs, swamps or sands. They are conducted to obtain the natural and economic characteristics, qualitative and quantitative accounting and evaluation of natural land, which can serve as the basis for developing activities for their use, improvement and protection.
State land property monopoly right on land. It is realized by the power of the state in interests of the whole society as a whole. State lands can be provided to legal entities and individuals for permanent or temporary rent
State registration of lands provides a record in the documents of the established form of information on land plots, which uniquely fix their legal status, qualitative, quantitative, value characteristics, geographical parameters. The peculiarity of land registration is that it gives official state status to the entire cadastral process, as well as information about the land plot obtained during its conduct.
State cadastral registration of land is a procedure of entering information into a single database of the State Register for real estate. ... Cadastre accounting is a mandatory stage before the registration of rights to real estate.
Deflation it is the destructive effect of wind: waving of sands, forests, plowed soils; occurrence of dust storms; grinding rocks, stones, structures and mechanisms with solid particles carried by the force of the wind. Wind erosion is divided into two types: Daily and Dust storms
Land cadastre a systematized set of documented information on natural, economic and legal status of lands.
Landowner the owner of land (on private property rights).
Land ownership

1. Land ownership on private property rights 2. A plot of land in someone's possession
Land use established by a set of rules or historically formed rules for land use as means of production and for other purposes.
Land users people owning and using land plots on the right of permanent (unlimited) use or on the right of uncompensated, urgent use; land users - people who receive land for unlimited, long-term and temporary use
Land Use Planning the main stage of the entire land management, the main stage of the land management process and its outcome, because on the basis of land management projects, a transition to new forms of land ownership and land use, to a new organization of the territory, to a new order in the use of land is carried out.
Land management project this is a set of documents on creating new forms of land arrangement, their economic, technical and legal justification, ensuring the rational use of land. All land management projects require an appropriate engineering, technological zonal and socio-economic justification.
Earth the territorial space within which the sovereignty of the Republic of Kazakhstan is established, the natural resource, the universal means of production and the territorial basis of any labor process
Earth as a universal means of production Earth as a natural-historical body becomes a means of production, when live and past work joins it. It acts as a means of production in all branches and spheres of people's activity, for it is the universal condition for their life activity. However, its role in different spheres of activity is not the same. In industry, it acts as a foundation, a spatial operational basis, or a kind of pantry. The process of production in industry has nothing to do with the fertility of soils. Fertility is used in agriculture, where land acts simultaneously as a means and tools of labor, that is, as the main means of production. It accumulates in big proportions not only the natural qualities of the earth, but also the past labor of human society.
Land as goods Land plots as commodities include both the benefit needed by consumers and the costs or investments without which ownership and use are impossible. These qualities are manifested in the form of their usefulness, rarity, limitation and capital intensity. The common use value of the land is its utility, i.e. the possibility of using for a certain economic function (crop cultivation, production location) or personal use.
Zone (natural) a significant territory is a part of the physical and geographical belt with a special character of geomorphological processes, with special types of climate, vegetation, soils and fauna
Land zoning

zoning means determining the territory of lands establishing their designated purpose and mode of use
Cadastral evaluation of agricultural land The purpose of the evaluation is to determine the cadastral value of agricultural land to justify land tax, rent and other payments in transactions with land plots
Land categories is a set of homogeneous for their intended or functional purpose of land, allocated as a special group of land, depending on their natural, social and economic significance
Climate (dr.-Greek κλίμα (genus κλίματος [1]) - slope (referring to the slope of the sun rays to the horizontal surface) - a long-term (several decades) weather conditions. Weather, unlike the climate, is an instantaneous state of certain characteristics (temperature, humidity, atmospheric pressure).
Inter-farm land-use planning it is a set of activities for forming new, ordering and modifying existing land holdings and land use, special land funds, establishing boundaries and the regime for the use of lands of administrative-territorial and other special formations (nature protection, recreational, reserved, historical and cultural destination, etc.), and land allocation in kind (on the ground).
Formation of land tenure and land use of agricultural enterprises it is a land management activity which includes drawing up, reviewing, approving a project and transferring it to nature, as a result of which they create a new land plot and issue documents for it.
Formation of non-agricultural land management is usually accompanied by a redistribution of land between categories and branches of the national economy and sometimes the use of productive land. Non-agricultural land use assumes the following order of land management actions: - preparatory work; - drafting and justification of the project; - adoption and approval of project documentation by the competent authorities of decisions on the provision of the site; - allocation of land in kind; - distribution of land management materials and a document certifying the right to land.
Organizing lands and crop rotations This part of the project is carried out taking into account productive (soil fertility, degree of hydration, erudition, cultivation) and territorial (location, configuration, remoteness from economic centers) properties of the land. Establish an economically and ecologically balanced composition of land, clarify boundaries and design a system for the use of territories with special environmental, recreational and conservation regimes, solve issues of land transformation, develop land reclamation and environmental activities, determine priorities, volumes, cost, efficiency and priority of activities. Organizing a system of crop rotations has always been considered the basis for in-

farm land management, since arable land is the most valuable agricultural land and is intended for the cultivation of most food, technical and fodder crops. When drafting the project, the types, kinds, number, size and location of crop rotations are established.
Project implementation is the timely transfer of land owners and users to the use of the land plot granted to them in accordance with the purpose and conditions (restrictions, encumbrances) of land use, as well as in the implementation of all the projected activities for the development of the territory (melioration, reclamation, construction, etc.).
Land Use Planning A systematic land evaluation and water potential, alternative forms of land use and other physical, social and economic conditions, aiming at selecting and adopting land-use options that are most beneficial to land users without degrading resources or the environment, and when selecting activities that encourage such land use. Land use planning can be at the international, national, district or local levels (village). It includes the participation of land users, project designers and decision-makers, and covers educational, legal, fiscal and financial activities.
The soil the surface layer of the Earth's lithosphere, which has fertility and is a polyfunctional heterogeneous open four-phase (solid, liquid, gaseous phase and living organisms) structural system formed as a result of weathering of rocks and vital activity of organisms
Principles of the formation of land use for non-agricultural purposes Based on experience in the formation of non-agricultural land use and the assessment of the impact of non-agricultural land management objects on land use, the following principles are guided. Ensuring the interests of the national economy of the country as a whole. Priority of agricultural land use. Absolute economy of the land, minimum spending of territory for non-agricultural needs. Full account of the impact of non-agricultural land use and the object placed on it on the territory and the surrounding environment.
Natural Area (Greek zone - "belt"), the physical and geographical zone is a part of the geographical envelope of the Earth and the geographical belt, which has its characteristic natural components and processes. It is the climate, relief, hydrological and geochemical conditions, as well as soils, vegetation and fauna. Climatic conditions (temperature, humidification, cyclicity of their changes) are the determining factors. Natural areas are named for their type of vegetation - their most striking geographical feature. Zones regularly change from the equator to the poles and from the oceans deep into the continents. Natural zones are one of the stages of physical and geographical zoning
Natural landscape The territory that has not undergone changes as a result of economic and other activities and is characterized by a combination of certain types of terrain, soil, vegetation, formed in uniform climatic conditions

The natural territorial complex (NTC)

It is a territory that has a certain unity of nature, due to the common origin and history of development, the peculiarity of the geographical position and the current processes operating within it. At the same time, the NTC is a natural combination of geographic components or complexes of lower rank, which form systems of different levels - from the geographical envelope to the facies (landscape studies)

In-Farm Land Management Project

is a collection of legal, economic and technical documents (text, accounting, graphical) for the organization of rational use and protection of land.

The size of land ownership (land use) of an agricultural enterprise

depends on many conditions and factors, the main ones of which are:

the production direction (specialization) of the farm, the composition and combination of its branches;

natural conditions characterizing soil fertility, meliorative and cultural technical condition of lands, their contour, dismemberment, remoteness from economic centers, main roads, etc.;

the availability of work force potential, the structure and level of the administration and management staff, the availability of the staff of machine operators and other workers, the possibility of attracting labor from outside (especially during busy periods of work), land shares and property shares attributable to one employee of the agricultural enterprise;

availability of main and circulating production assets in farms, primarily of agricultural purpose, monetary assets and the possibility of attracting and using bank loans for the development of the material and technical base

Placement and formation of land tenure and land use

The work of the designer in allocating land tenure (land use) of the economy is to determine the location of the farm, giving the land and the land use the best configuration and form, including in the structure of the land mass the farm of the individual areas, various types of agricultural and non-agricultural land.

Placement of production units and economic centers

The placement of production is usually understood as the determination of the location of livestock farms, points of processing and storage of agricultural products, repair shops, garage facilities, etc. Production facilities can also include crop rotation tracts, sites of perennial plantations and other economic areas on which production is carried out.

Placement of farmstead economy

Forming new land uses, designing begins with the placement of the farmstead. When determining the location of the estate, an important factor is reliable water supply, in addition, take into account the requirements of the organization of territories and production. The distance of transportation, transportation costs, expenses for the management of production depend upon the location of the farmstead on the territory of the farm. It should be located in the center of land use and convenient to its individual parts of the most labor-intensive land and facilities, as well as external economic centers (railway stations and others). With the correct location of the farmstead, the aver-

age distance for the transportation of relocations will be minimal.

Varieties of inter-farm land-use planning

- formation and regulation of land ownership and land use of agricultural enterprises and peasant (farm) farms.
- formation and change non-agricultural enterprise.

Zoning of the territory

the process and the result of the division of territory into areas or the identification, allocation and delimitation of areas in any environment. Districting is always accompanied by specific goals - from the convenience of research and display of studied phenomena to solving applied problems of administrative-territorial division, management, impact on the economy in directive or indicative planning, regional policy, etc.

Reserves of production

these are the opportunities to improve the use of resources as a result of improving the organization of labor, the production process and management, and the intensification of the technological process.

Relief

(form of relief, from Latin relevo - I raise) – a shape, outlines of the earth's surface, a set of unevennesses of the solid earth's surface and other solid planetary bodies, diverse in shape, size, origin, age and history of development. Composed of positive and negative forms.

Owners of land (Landholder)

owners of land (on private property rights).

Means of production

The totality of means of labor and objects of labor. Means of production and labor of man are inseparably connected and interdependent. Means of production and people who have certain experience, skills, physical capabilities to work and bring these production tools into operation, constitute productive forces. Assignment of means of production makes special social relations between people – labour relations

Scheme of territorial planning of the district

a document of territorial planning that allows, in accordance with urban planning requirements for preserving the objects of historical and cultural heritage and specially protected natural areas, environmental and sanitary well-being requirements, to coordinate the mutual interests of local self-government bodies and local self-government bodies of settlements by defining functional zoning of inter-settlement territories, restrictions on the use of inter-settlement territories, establishing (change) boundaries of settlements in the inter-settlement areas, planning local facilities accommodation of the district.

Territorial planning

spatial (territorial) planning solves the problems of organizing the entire space in large areas, where settlements occupy only a small part.

With spatial planning, the issues of land use development are coordinated with the main directions of economic growth, population migration, the requirements of nature protection and the improvement of social infrastructure.

Territory

(Latin territorium) - part of the land surface with certain boundaries.

Territory is primarily called the land area, which is subject to the jurisdiction of the state or administrative unit (territorial formation) in its structure

Urban areas

These are the areas of cities and towns of urban type in administrative boundaries, which may include agricultural land and various forests: the state forest fund, agricultural forests, municipal as well as the land of the private sector with a low level of improvement - almost a village in the city. Urbanized areas are distinguished by the degree of technogenic transformation of space, or, in general, anthropogenic development of the territory.

Land management in urban areas is carried out simultaneously with the implementation of urban planning activities. In this case, the land management and town planning documentation of the appropriate level should complement each other.

Establishment of district borders

the boundaries of administrative regions and entities of the Republic of Kazakhstan are established (restored) and regulated in cases of the formation of new administrative-territorial units, their unification, abolition, transformation, delimitation of existing administrative-territorial entities in the absence of known boundaries established between them, and also in the case their changes or clarifications on the initiative of the relevant administrative-territorial entities in accordance with the decisions of their superiors executive bodies.

Arranging the territory of crop rotations

plays an important role, since on the territory of each crop rotation it is possible to create not only a basis for introduction and compliance of crop rotations by proper placement of fields, but also conditions for agrotechnically correct and efficient mechanized production processes, and also provide reliable protection of fields and crops from negative natural phenomena. At the same time, the issues of creating territorial conditions for concentrating crops in large areas, high-performance machinery, and activities to increase soil fertility are solved.

The arrangement of the crop rotation area should contribute to the receiving sustainable gross product collections by groups of homogeneous crops during all years of rotation, ensuring the least costs of capital expenditures and annual production costs, depending on the arrangement of the crop rotation area.

The arrangement of the territory of crop rotations consists in the mutually agreed placement of the following elements:

1. fields and work sites;
2. protective forest belts;
3. field roads;
4. field mills and water sources.

The placement of the named elements of the device of the territory of the crop rotations is closely related to each other, forming a single, integrated design task

Accounting of the quality of land

reflects the data, characterizes the land by its natural and acquired properties, affects

their productivity and economic value, as well as for the degree of technogenic pollution of soils
Private land property is carried out and realized by the power of individual citizens and groups in their interests
Private land ownership it is a form of land owning in which individuals and economic entities in the agrarian sector of the economy are subjects of the right to use, own and dispose of, they have a right at their own discretion to make any transactions that are not prohibited by law. Varieties of private property - joint, shared, collective, mixed, etc.

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