

# Ways to improve the efficiency of land use in rural settlements of Uzbekistan

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**Abstract.** This study addresses the implementation of Presidential Decree No. PF-5199 (October 7, 2017) of the Republic of Uzbekistan, which focuses on protecting farmers' rights and optimizing agricultural land use. The research examines strategies to enhance land use efficiency in rural settlements across three districts of Karakalpakstan (Tortkol, Ellikkala, and Beruniy). Key organizational measures identified include: (1) improving registration systems for land rights and immovable properties, (2) optimizing land use practices, (3) formalizing rental agreements, (4) maintaining accurate land rights documentation, and (5) conducting timely land inventories. These interventions demonstrate significant potential for increasing the productivity of existing agricultural lands in rural areas. The findings highlight how systematic approaches to land management can yield positive impacts on agricultural efficiency while supporting the goals of national land reform policies.

## 1 Introduction

In the development of the country's economy and social lifestyle in accordance with market relations, the rational organization of the use of land areas, which are considered national wealth, is of great practical importance [1]. In this case, the problem of proper and efficient organization of land use in settlements is especially distinguished, because the use of such land areas, on the one hand, is distinguished by its diversity, and on the other hand, it differs from other land categories by its extremely high intensity of use [2].

Nowadays, the innovative reform of the economy of our country is the most important issues in terms of regulating the system of using land resources and improving its mechanisms, not only the sustainable development of the agrarian sector, but also the efficiency of production, ensuring food safety and increasing the export capacity, and providing employment to the rural population. In particular, it is great practical importance to increase the efficiency of land use in the rural settlements of the southern-Tortkol, Ellikkala and Beruniy districts of the Republic of Karakalpakstan, and to obtain state registration of various rights to land and other immovable properties [3].

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One of the organizational measures that allows to increase the efficiency of the use of existing land areas in rural settlements is to regulate the system of timely state registration of the rights to homestead lands and various immovable properties on the borders of these villages. On the basis of registration, information on the legal and economic conditions of estates is collected, systematically stored and provided in a timely manner to organizations that require such information [4].

Registration of rights to a plot of land and other immovable properties on it includes issues related to the use of a certain plot of land and immovable properties, formalization of rental rights and recording information about the rights to them in accepted documents. In this case, the initial documents will consist of information on the legal status of land and other immovable properties [5]. However, since land use is directed to a specific purpose and is related to a specific area and a specific entity, it includes information on the location of land plots and the dimensions of land use.

It should be noted that the state registration of various rights to land and other immovable property in rural settlements is being carried out in the southern districts of the Republic of Karakalpakstan in the same manner as in other regions of the republic, by the authorities responsible for such work [6]. Today, registration is fully automated and does not require a long period of time. However, registration of rights to land and other immovable property in rural settlements in the southern districts does not meet today's requirements. This situation, on the one hand, has a negative impact on the amount of taxes collected from land and other immovable properties, and on the other hand, it does not allow the correct and uniform maintenance of the geoportal, which is a single information base of land plots created throughout the republic [7].

In order to put an end to such a situation, to regulate the registration system, in our opinion, it is necessary to implement the following measures [8-10]:

- it is necessary to establish permanent work on explaining to rural households that the event of state registration of rights to estate lands and other immovable properties in them is of state importance by the experts of the district regional branch of the state cadastral chamber. The fact is that the state registration of estate land plots and rights to other immovable properties located on it, on the one hand, guarantees the rights of individuals to these land plots and other immovable properties by the state, and on the other hand, regulates the amount of taxes paid for these land plots and immovable properties, allows to replenish the local budget with funds. However, due to the fact that the necessary explanatory work was not carried out among the local population, the rights to the plots of land have not yet been fully registered. In the previous chapter, this situation was analyzed, and the study of the state of registration of land plots of households in 5 rural settlements of one Tortkol district showed that still 26.12 hectares of land, that is, the rights to estate land, have not been registered in the prescribed manner. This does not allow to correctly determine the amount of tax collected for estate land plots. That is, if 1 sq. The tax rate is 860 UZS for a plot of land in Tortkol district, for 1.0 hectares this figure is 8.6 million UZS, for 26.12 hectares of land, the total is 224.6 million UZS. Therefore, for these 5 small rural settlements, it is not possible to transfer 224.6 million UZS to the local budget due to the lack of improvement of the registration system. So, it can be seen from these accounts that organizing the work of speedy registration of unregistered land plots in the prescribed manner, on time, first of all, increases the efficiency of the use of these lands, and allows to set the tax system in the right direction.

- the issue of establishing a state of special specialists engaged in the state registration of land and other immovable properties in the neighborhood assembly and establishing its activities is also very important in the proper organization of the use of estate land. Today, the state registration of rights to various plots of land and other immovable properties on them is mainly carried out by specialists in the district (city) branches of the Chamber of

State Cadastres. Here, in most cases, 1 or 2 specialists are engaged in such work. But this is not enough, because the homestead lands are located in different regions of the southern districts under study and have different natural, social, economic and ecological conditions. In addition, all owners of land and other immovable property are required to be permanently registered with full understanding of the state's interests. For this purpose, it will be necessary for such specialists to work in this village, in this neighborhood. They also do the necessary outreach to the local population and do direct registration.

## 2 Materials and methods

One of the main land accounting tasks, land inventory (surveying) is of great importance in assessing the effectiveness of the use of farm lands on the borders of settlements and in developing the necessary measures to increase it. According to Professors S.N. Volkov and I.I. Denisovs, the inventory is carried out to determine the location and boundaries of land areas or to make clarifications on them, to identify unused or unreasonably used land plots, or to identify land plots that are being used beyond their intended purpose, as well as those that are being used for purposes other than those permitted [11, 12].

This is an organizational event, usually held simultaneously, in which areas occupied by agriculture and other types of land are surveyed in order to obtain information about the quantity and quality of land [14]. Therefore, the main task of the land inventory of settlements is to obtain accurate information about the quantity, quality and use of land plots in this area, as well as to define and determine whether the borders of land plots have been transferred without any dispute. On the other hand, the main task of this event is the legal status of land plots (inherited ownership, permanent use, lease, etc.), actual and legally established use of land plots, their areas, location, character of land uses, dynamics of quality, restrictions and to obtain true information about storage.

In order to carry out land inventory in rural settlements in a timely and efficient manner, the following must be determined at the initial stage [13]:

- the purpose and tasks of inventorying the land of the rural settlement;
- inventory objects;
- the procedure for carrying out an inventory of land and other real estate objects;
- periods and queues for carrying out inventory of land and other real estate objects;
- participants in the inventory process of land and other real estate objects;
- sources of funding for the inventory of land and other real estate objects, etc [11].

It can be noted that at the same time as the inventory of the land of the rural settlement located in the irrigated region, it is necessary to inventory the objects closely related to the land, in particular, houses, irrigation fountains, hydrotechnical structures, collector-supply networks, because such construction objects, structures determining and assessing the general condition allows to objectively assess the general condition of the irrigated land areas in this area.

## 3 Results and discussion

We can see the positive effect of the land inventory work of rural settlements on increasing the efficiency of land use as a result of the comprehensive inventory work conducted in 2024 in the 3 villages of the studied districts (“Matonat” in Beruniy district, “Dostlik” in Ellikkala district and “Ullibog” in Tortkol district, Table 1).

**Table 1.** Results of land inventory of rural settlements (2024).

Name of settlements	Total number of families	Total estate lands attached to families, ha	Lands in full use with the help of family members, ha	Unused or poorly used land, ha	Reasons	
					due to advanced age	due to insufficient manpower
<b>Matonat</b>	312	65.52	56.44	9.08	4.60	4.48
<b>Dostlik</b>	366	69.54	58.62	10.92	4.22	6.70
<b>Ullibog</b>	234	47.60	41.62	5.98	2.32	3.66
<b>A total of three villages</b>	912	182.66	158.68	25.98	11.14	14.84

From the data in Table 1, it can be seen that a total of 25.98 hectares of farm land in all three settlements were not used for the cultivation of agricultural products or were used at a very low level. When the reasons for non-utilization were investigated, it was found that out of the total unused 25.98 hectares, the owners of 11.14 hectares of homesteads did not use their homesteads enough due to old age and their children moved to other areas, while the owners of the remaining 14.84 hectares of homestead lands (mainly men) is not being used at the specified level due to the fact that they leave for neighboring countries as labor migrants every year in March-November.

The study of the incomes of the families using the homestead land in these settlements with high efficiency shows that each household of 6 people with 0.16 hectares of homestead land has achieved production of 1.2-1.4 million UZS in 2021 at the expense of one person. In this case, the total value of products obtained from 0.16 hectares of farm land is 7.2-8.4 million UZS. In this case, the value of the product per square meter of land:

$GPV = \Sigma GPV / 0.16 = 7.2 / 0.16 = 450.0$  is one thousand UZS or  $GPV = 8.4 / 0.16 = 525,0$  is 1 000 UZS. If we take the value of products obtained from each square of land as 480,000 UZS on average, the value of products not obtained from 25.98 hectares of unused land:

$$25.98 \times 480.0 = 1247.04 \text{ million UZS}$$

From this, it can be concluded that “Small-scale farming” LLC in the region, where estate farms in this region are involved in the effective organization of land use, as well as community assemblies in villages, identify unused or under-utilized estate lands in each neighborhood and use these estates for short-term (e.g. for 1 year) it would be appropriate if they conduct relevant explanatory work to the owners of the plots of land on secondary lease and lead this work every farming year.

One of the other important organizational and economic measures to improve the efficiency of farm land use is to properly organize the supply of mineral fertilizers to these farms.

In most cases, each farm buys the mineral fertilizers it needs from a long distance, from the district center or from the base of mineral fertilizers. For this, large transport costs are incurred. In order to prevent such situations, it is necessary to establish branches selling mineral fertilizers to the population in each of these existing 56 villages and to provide them with the most necessary mineral fertilizers, seeds, and chemicals that eliminate diseases of crops and trees. In this, of course, it is necessary to play an important role in this region “Small-scale farming” LLC and district branches of the Republican Council of Farmers, Peasants and Landowners. As a result of the conducted social survey, it was found out that 52,000 UZS are spent on an average year for one farm owner to go and buy these

fertilizers to the district center. If the number of farmers and homestead households in the three surveyed districts is 55,844, the total transport costs are:  $55,844 \times 52,000 \text{ UZS} = 2,903.9$  million UZS. Establishing branches for the sale of mineral fertilizers, seeds and pesticides in each village will limit these costs.

Cultivation of food crops in peasant and household farms in settlements, mainly in rural settlements, plays an important role in the creation of gross domestic products. For example, the dynamics of agricultural products grown in farms and homesteads in Beruni district in 2015-2020 (Table 2) shows that in the following years, the amount of agricultural production increased as a result of the attention paid to the use of farms and homesteads by the state and a number of benefits. The study of the data from the district statistics department and the materials from the community meetings of the main villages in the district shows that when 115 farms in the village of “Matonat” in the “Shabboz” massif were studied, grain cultivation increased by 70% in 2020 compared to 2015, potato cultivation by 142%, vegetable cultivation by 162%, fruits and grapes by 162%, cultivation of sugar crops by 146%, meat by 132%, milk by 136%, egg cultivation by 152%. In the following years, indeed, the volume of production of agricultural products in farmsteads and farms increased.

**Table 2.** Indicators of grouping of existing peasants and homesteads by land area in “Matonat” rural settlement of “Shabboz” massif, Beruni district.

Groups	Distribution by land area, ha	Number of farms in groups	At the expense of one household					
			Average area	Average number of family members	Average gross income, thousand UZS	Average gross cost, thousand UZS	Average net income, thousand UZS	Income per family member, thousand UZS
I	for 0.20 hectares	40	0.18	6	7680.2	4132.4	3547.8	591.3
II	from 0.20 up to 0.30	30	0.26	7	8630.2	4321.1	4309.1	615.6
III	from 0.30 up to 0.50	30	0.42	8	10445.2	5224.4	5220.8	652.6
IV	Above 0.50	15	0.60	8	14844.4	7384.6	7459.8	932.5
	Total	115	0.40	7	10400.0	5690.6	4710.0	672.9

From the information in Table 2, it can be seen that the gross income of 40 households with a land area of up to 0.20 hectares is 7680.2 thousand UZS per family, and the net income is 3547.8 thousand UZS. These farms mainly grow vegetables and potatoes on their farms (80.0% of the area). 20 of the 30 farms in group III mainly grew agricultural products (cabbage, potatoes, carrots, onions, tomatoes) and partly fruit and grapes, and the remaining 10 farms were mostly engaged in animal husbandry. As a result, both the value of gross products and the net income of each family member are quite large.

10 of IV-group farms are engaged in animal husbandry, 3 in farming and 2 in poultry farming. The average number of family members in them is 8, the gross income is 14844.4 thousand UZS, the net income is 7459.8 thousand UZS, and the net income for each family member is 932.5 thousand UZS.

In order to increase the efficiency of land use in rural settlements in the southern districts of the Republic of Karakalpakstan, the issue of providing permanent irrigation water to farmers and farm lands there is also very important. Despite the fact that these

districts are located on the banks of Amudarya, it is difficult to provide irrigation water to farm lands from April 1 to October 1 of the year due to the fact that surface irrigation water is decreasing year by year. In the next 10 years, in some years even in the main months of summer, during the growing season of food crops on homesteads, insufficient irrigation water is causing great damage to rural families. In order to prevent this, it is necessary to start digging of special artesian wells in every household and farm where the supply of irrigation water is heavy. The conducted studies show that it will be necessary to dig such wells in 621.4 out of 55,844 farmers or homesteads in the 3 districts involved in the study. For this purpose, the Karakalpakstan branch of the Council of Farmers, Farms and Homeland Landowners of Uzbekistan together with the Department of Neighborhood and Family Support of the Republic of Karakalpakstan, the Water Management Department, will form and approve the address program of wells dug in the homesteads of the residents in areas with severe water supply by April 1, 2022 and August 1, 2022 and it is necessary to carry out the work determined on the basis of this program. According to the received official data, 10.2 million UZS will be spent on digging and operating each artesian well working with electricity. Total costs in this:

$$6214 \times 10.2 = 63382.8 \text{ million UZS}$$

The amount of expenses spent on artesian wells dug in order to provide enough irrigation water to farmers and households in rural households where irrigation water does not reach or does not reach in 3 southern districts is 63382.8 million UZS. If it is possible to get an average net income of 3547.8 thousand UZS from one homestead land of around 0.15-0.20 hectares (under average economic conditions), (according to table 3.3) the net income received in one year from homestead lands in 6214 households with artesian wells:

$$3\ 547\ 800 \text{ UZS} \times 6\ 214 = 22\ 046.02 \text{ million UZS}$$

With such a net income, the expenses incurred on dug artesian wells will be recouped in 3 years, i.e.:

$$C_d = C_g / NI = 63382.8 / 22046.02 = 3 \text{ years}$$

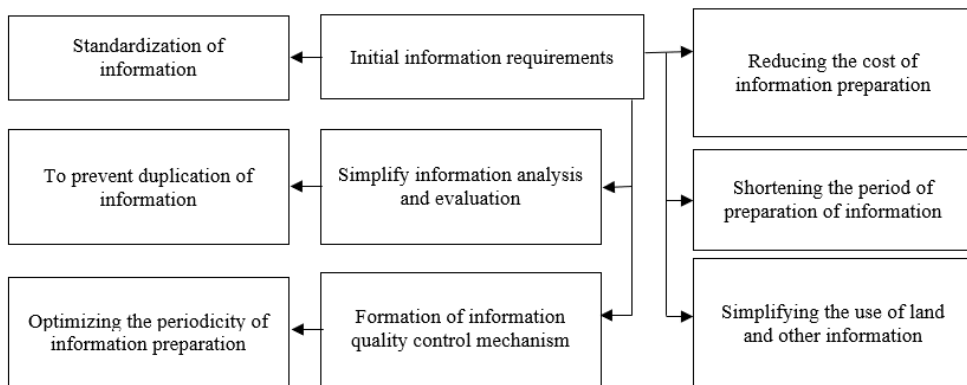
In fact, the digging and commissioning of artesian wells is an important factor in the timely supply of irrigation water to farmers and households.

Provision of land information is also important in the system of innovative approaches to increase the efficiency of land use of farmers and homesteads, because land use of such farms is carried out in different directions, so cadastral information is very necessary for them. In addition, the continuous reform of ownership relations in relation to such land uses is also increasing the demand for land information.

It should be noted that land information changes under the influence of changes in the state of the natural environment and economic relations. At the same time, the limited land of farmers and homesteads and the deterioration of the local ecological situation (especially in the territory of the Republic of Karakalpakstan) lead to the fact that the role of land information as a means of organizing land protection and rational use is increasing. This and a number of similar reasons create the need for land cadastral assessment as an information base for assessing the value of agricultural and homestead land.

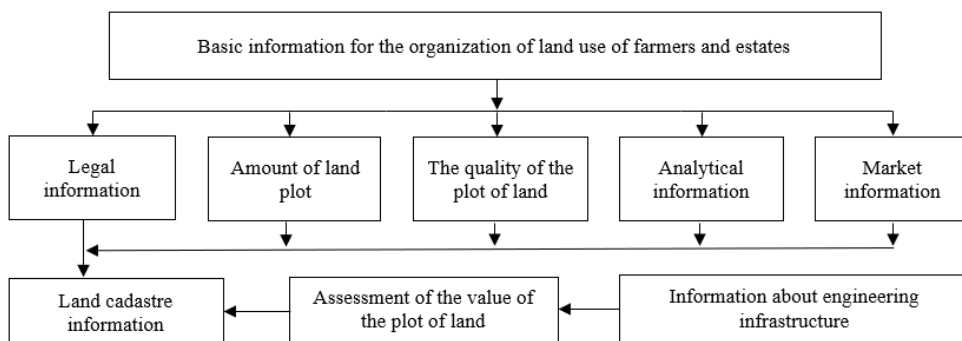
Organization of the use of agricultural lands creates the need to provide them, first of all, with reliable and high-quality information. At the same time, preparation of such information should meet generally accepted requirements. These requirements include standardization of information, prevention of duplication, optimization of the periodicity of

their preparation, reduction of preparation periods and costs, as well as ease of use and quality control of this information (Figure 1).



**Fig. 1.** Requirements for information on the organization of land use of farmers and estates.

These requirements also apply to the information necessary for the cadastral assessment of the land, which must include the legal, quantitative and qualitative characteristics of the land of the agricultural holdings, as well as analytical and market information, as well as for assessing their value. Such a complex of information can be reflected as follows (Figure 2).



**Fig. 2.** Types of initial information for the organization of land use of farmers and estates.

Collecting the basic land cadastral information in Figure 2 in a truthful manner and maintaining them correctly is a very important direction. So, the geoportals operated in our republic today will be of great practical importance in this regard. It is the truthful, transparent and correct management of this geoportals that makes it possible to obtain reliable information about the quantity, quality, legal status and value of land areas of farmers and households within the borders of rural settlements in the southern districts of the Republic of Karakalpakstan involved in the research. This, in turn, allows to accurately determine the amount of taxes and rents charged to them.

## 4 Conclusions

On the basis of the above, it can be briefly concluded that the use of land in settlements is organized on the basis of innovative approaches, in particular, the interdependence of farming and animal husbandry in farmers and homesteads, the organization of digging artesian wells for farms that are insufficiently supplied with irrigation water in the following years, as well as giving special importance to the information about such farms in the maintenance of the newly established single information base “geoportal” in the country will bring great economic and social benefits.

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