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ISSUES OF IMPROVEMENT OF THE RE-COMMISSIONING METHODOLOGY OF LAND OUT OF AGRICULTURAL TURNOVER ON THE BASIS OF LAND MANAGEMENT PROJECTS

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Abstract. The article highlights issues of abandoned cropland, as well as recommendations and suggestions for their re-use.

Keywords. agricultural land, arable land, geoportal, gypsum layer, rainfed lands.

Introduction. In our country, it is necessary to expand the arable land areas in the agricultural lands and their efficiency, to re-introduce more than 266,000 hectares of arable land, which were left out of the agricultural cycle due to various reasons.

In the Navoi region, the agricultural land area is 4,102,100 hectares, of which the total area of arable land is 108,200 hectares, and irrigated cropland is 91,200 hectares. As of 2021, there are 128.0 km of broken internal irrigation networks, 19 broken pumps, 76 non-working vertical irrigation wells, and agricultural land has become unusable. As a result, in the next 8-10 years, 3,704 hectares of 6,337 hectares of arable land in agriculture fell out of use due to lack of water supply and 2,633 hectares due to gypsum plastering.

The main part. Today, studies on the expansion of irrigated land areas through land development projects and improvement of the irrigation system using innovative methods in different regions of our country have not been sufficiently studied. For this reason, there was a need to improve the method of expanding arable land.

Along with foreign scientists, scientific researches have been carried out in our republic on the organization of rational and efficient use of land areas, especially agricultural land. Therefore, the theoretical and methodological foundations of the state land cadastre management were studied by J.E. Oleson, K. Otsuka, K. Shingo, B.H. Spinser and others from foreign scientists. Also, in the CIS countries: S.N. Volkov, A.A. Varlamov, S.A. Galchenko and other scientists researched the theoretical and methodological foundations of land development and land monitoring, the scientific basis of land development and indicators of economic efficiency achieved in improving land reclamation focused studies were conducted by S.A. Tkachuk, O.O. Karamatov, A.L. Zhelyaskov, P.F. Loyko, V.N. Khlystun, etc.

S.Avezbaev, A.R.Babajanov, Q.R.Rakhmonov, A.S. Chertovitskiy, G.A. Tolipov, A.K.Bazarov, R.A.Turaev, G.T.Parpiev and other scientific researchers on land formation, effective use of land resources and its management in Uzbekistan conducted research and achieved positive results.

Working on land development projects requires the collection, study, processing, and analysis of a large amount of information. Such information will be an information resource of the state and they will be stored in the only electronic information database created today in our country. All economic and administrative

decisions in the field of organizing rational and efficient use of land in the regions are adopted by local government bodies. Therefore, it will be necessary to develop and put into practice a document that incorporates economic calculations of the effectiveness of putting unused agricultural land into circulation, as well as proposals for management decisions in the field of rational use of such land, based on the information base stored in a single electronic information database (geoportal).

As part of administrative district land formation schemes, "Measures for re-introduction of unused agricultural land into circulation" are developed. The content of the newly created section in the administrative district land formation scheme is presented in Figure 1 below.

Quantitative (plot area, location, cadastral number, etc.) and quality (productivity, technological properties of soils) situations of unused agricultural land in the development of the section "Measures for the re-introduction of unused agricultural land into circulation" and the possibility of their introduction into circulation availability information is used.

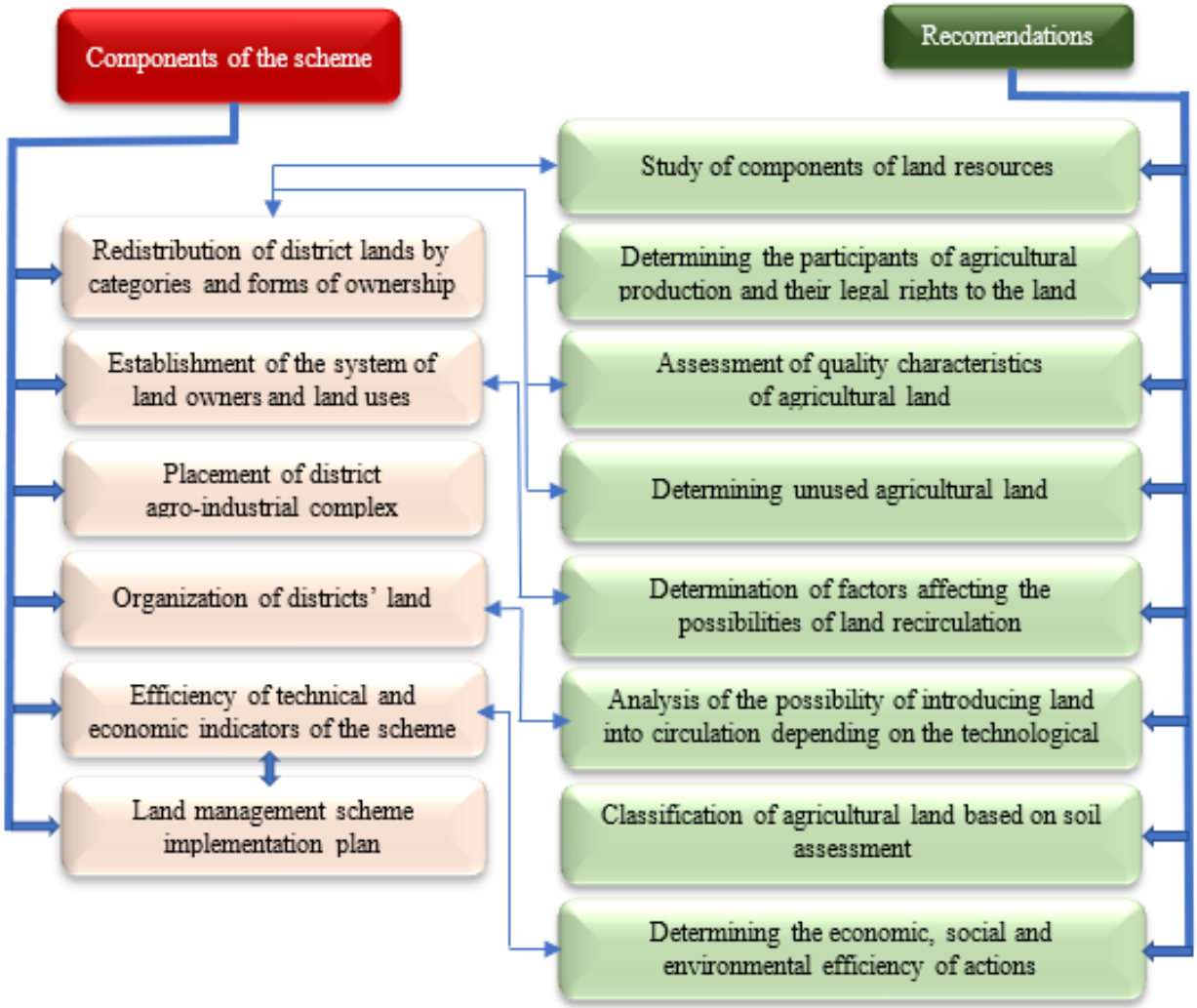

Figure 1. **The content of the section in the administrative district land formation scheme**

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Of course, in addition to the above, cartographic material will be prepared and presented, showing unused agricultural land and options for their introduction into circulation.

An investment land project for unused agricultural land will be developed and presented to potential investors and individuals interested in land use on the basis of public-private partnerships. They choose plots of land that are acceptable to them. When returning land plots to agricultural circulation, investors can be various legal entities and individuals, the state itself, and in the form of a public-private partnership, on the one hand, the state can be, and on the other hand, various individuals.

A number of incentives are provided by the state to create the interest of investors involved in bringing unused agricultural land into use. They are:

- exempting investors from land tax during the development of unused land;
- state reimbursement of 50% of the expenses incurred for re-introduction of unused land into circulation;
- to cover the loan interest involved in the implementation of the necessary measures for the re-introduction of unused agricultural land into circulation;
- allotment of subsidies for payment of 60% of insurance premiums for lands re-used for agriculture;
- to remove from the tax base the profit received in the first three years from the land areas that are brought back into agricultural circulation.

By providing incentives to rights holders and investors, it is possible to ensure the employment of the rural population, reduce the level of unemployment in territorial units, and reduce social instability, as additional jobs will be created as a result of the re-introduction of unused agricultural land into circulation. By giving benefits to the participants of land relations, the cultivation of environmentally friendly agricultural products will increase, the areas exposed to salinity will decrease, the area of arable land will increase, and the ecological conditions of the population's life and activities will improve.

From an economic point of view, the granting of incentives to rights holders and investors provides significant financial support by reducing the costs of developing unused land or reorganizing or reconstructing irrigation networks.

Together with the above proposals, we recommend the extensive use of public-private partnerships in repurposing unused land. In this, of course, it is necessary to rehabilitate the land areas that they put into use and to be exempted from land tax and other payments in the period until they start receiving the first income from these areas. This will increase the interest of private partners involved in land reclamation to perform this work at a high level.

After the end of the development period and the normal harvest of agricultural crops on these land areas, all the taxes and fees stipulated by the legislation will be collected from them. All calculations, including the payback period, that is, the period of absorption, are determined by calculating the differences in income and expenses from agricultural activities.

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The re-use of abandoned agricultural land will certainly require some capital investment. These funds are formed from the costs of digging vertical wells for extracting underground water, building irrigation networks, reconstruction of existing irrigation canals, installation of new pumps, cleaning of collector-water supply networks, implementation of cultural and technical activities on land areas in the studied region. The efficiency of such capital expenditures is usually determined using the following equation:

$$E = \frac{СД}{К}, \quad (1)$$

here: E – capital expenditure efficiency ratio.

СД – net income from land involved in re-production, mln. soum.

К – the amount of capital funds to be spent for re-introduction of land into circulation, mln. soum.

In this case, the payback period for capital expenditures is determined using the following equation:

$$Т = \frac{К}{СД}, \quad (2)$$

The organization of efficient use of cropland that is returned to agriculture requires the use of crop rotation schemes that allow the use of water-efficient technologies.

In the re-production of arable land in the region, which has been left out of the agricultural circulation, it is recommended to use crop rotation schemes, which allow to restore and increase the productivity of arable land. These crop rotations include alfalfa, maize, sugarcane crops, oil crops, legumes and cereals. Based on the study of the field conditions and analysis of the existing situation, the following crop rotation schemes are as follows:

1) 3:3:1:3:2

here: 3 plots - alfalfa, 3 plots - corn grain, 1 field - oilseeds, 3 plots - sugarcane crops and 2 plots - wheat crops.

2) 3:3:2:1:2

There will be: 3 plots of alfalfa, 3 plots of corn, 2 plots of sugarcane crops, 1 field of legumes and 2 plots of wheat. The use of such crop rotation schemes will naturally restore the fertility of the land, as well as the development of animal husbandry in the regions.

Development of animal husbandry together with farming, firstly, if fodder and other crops left over from agriculture are feed for livestock, and secondly, organic fertilizers obtained from animal husbandry will be an important source of restoring and increasing soil fertility. In addition, the use of organic fertilizers instead of mineral fertilizers as much as possible allows to grow more environmentally friendly agricultural products.

With the implementation of the necessary measures, it will be possible to grow the following agricultural products on the basis of the above proposed rotation schemes on the land areas that will be returned to agricultural circulation (Table 1).

Table 1

Products obtained from cultivated plots put into use in Karmana district of Navoi region

#	Agricultural crops	Cultivated area, ha	Productivity, c/ha	Gross yield, t
1	Alfalfa	618	40	2 472
2			110	6 798
3	Corn (for grain)	648	75	4 860
4	Oil crops	62	20	124
5	Melons crops	618	200	12 360
6	Legumes	64	25	160
7	Other crops	305	40	1220
	Total:	**2315**	**x**	**x**

As shown in Table 1, 2,315 hectares of land in the district will be put to use through the proposed crop rotation schemes 2,472 t. alfalfa hay, 1,220 t. other crops, 4,860 t. allows to grow corn grain and many other agricultural products. This, in turn, will create an additional 7,580 jobs in agriculture.

The amount of gross and net income that can be obtained as a result of the sale of agricultural products grown in agriculture is presented in Table 2 below.

Table 2

Incomes from reclaimed land (project)*

#	Agricultural crops	The resulting product size, t	1 t. selling price, million soums	Gross income, million soums	Expenditure, million soums	Profits, million soums
1	Alfalfa	5356	0,65	3481,4	2750,0	731,0
2	Corn (for grain)	4860	3,0	14580,0	12240,0	2340,0
3	Oil crops	124	3,0	372,0	305,0	67,0
4	Melons crops	12360	2,4	29664,0	21360,0	8304,0
5	Legumes	160	7,0	1120,0	870,0	250,0

6	Corn (for the stem)	3240	0,50	1620,0	1140,0	480,0
7	Other crops	1220	2,5	3050,0	2470,0	580,0
	Total:	**x**	**x**	**53887,4**	**41134,6**	**12752,4**

**** Explanation:*** *The calculation was made based on the information of the Regional Department of Agriculture.*

The amount of income obtained as a result of re-use of arable land is 12752.4 mln. soum.

As it was recognized above, the return of arable lands left out of agricultural circulation and the establishment of cultivation of agricultural products on them creates the need to perform a number of works at the expense of certain amounts of capital costs. Such works include creation of new irrigation canals and networks, renovation of some of the existing ones, cleaning of some of the collector-water supply networks and other works.

Reuse of 2,315.0 ha of land in Karmana district, Navoi region. Based on the indicators presented in Table 2, the cost of capital expenditures was visualized by the author in Table 3.

Table 3

Capital expenditures for reclamation of abandoned agricultural land*

#	Activities to do	Measurement unit	One unit cost, million soums	Work volume	Total capital costs, million soums
1	Digging vertical wells	дона	220,0	66	14520,0
2	Construction of new irrigation networks	км	300,0	20,0	6000,0
3	Reconstruction of existing irrigation networks	км	120,0	44,0	5280,0
4	Build a pump	дона	150,0	7	1050,0
5	Cleaning of collectors	км	20,0	48,0	800,0
6	Cultural and technical activities	га	0,543	1121,8	609,0
	Total:	**x**	**x**	**x**	**28259,0**

**** Explanation:*** *Processed on the basis of information from the Regional Department of Agriculture.*

As can be seen from Table 3, the return of 2315.0 ha of land to agricultural production will cost 28259.0 mln. Soum requires capital funds. Capital costs are recouped in 3 years after the start of cultivation of agricultural crops. Capital expenditure efficiency in this (E) [95; 124-129-p.]:

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$$E = \frac{12752,4}{28259,0} = 0,45 \text{ га тенг бўлади.} \quad (3)$$

Based on the above, it can be concluded that it is necessary to improve the existing organizational and economic mechanisms for the return to production of arable land that has fallen out of agricultural circulation, in particular, to add an additional section to the district land formation scheme and, on the basis of this, to introduce improved and water-saving rotation schemes for the land to be returned to agriculture. introduction and establishment of cultivation of agricultural crops based on these will give the expected results.

Ensuring the economic stability of our country, fully satisfying the population's demand for food products, and further development of agriculture depends on the productive and rational use of the soil. This, in turn, requires the creation of investment projects to return arable land to agriculture.

As a result of unreasonable use of agricultural land, the decrease in soil fertility and crop yield, extremely high average annual water consumption in agriculture (90-91% of total water resources are in agriculture), direct investments for irrigation and land reclamation, including public-private partnership conditions it is recognized that the issue of attraction is not paid attention to, the resource and production potential of the regions are not used rationally, and the coefficient of useful work of irrigation networks is still low (0.68). In general, the study of these documents involves the use of agricultural land, development of new land, improvement of the efficiency of use of water and hydro facilities, improvement of land reclamation, development of breeding and seed production of agricultural crops, deep processing and sale of agricultural products, by implementing 5 main directions. it is necessary to accelerate the development of logistics and marketing systems and the integration of science and practice.

Development of agriculture, ensuring the food security of the country, organization of rational and efficient use of existing arable land, effective use of water resources, search for usable underground water reserves, development and utilization of additional land areas are demanded. The sharp increase in the population in recent years, the need to provide employment to existing labor resources, the replacement of agricultural land allocated for non-agricultural purposes over the years justify the importance of introducing new land into agricultural production.

It is known that the deterioration of the condition of irrigation and land reclamation networks has been observed in the republic over the years, due to the frequent change of entities using agricultural land, the lack of a mechanism to ensure their financial stability, the inviolability of their rights to plots of land, the irrigation of their territories and it did not help to keep the reclamation networks in good working order. As a result, the irrigation networks built in the valleys were not cleaned in time, the concrete ditches (tray systems) were not repaired, and the collectors were not cleaned. All this leads to large areas of arable land falling out of agricultural circulation. To put an end to this situation, it is necessary not to forget

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that the development of additional new lands in the future is one of the important directions of agricultural development. Because the growing population of the republic, the need to sustainably provide them with food products, to create additional jobs in order to improve the employment of the rural population, especially the need to establish expanded reproduction production, creates the need to develop new lands and attract them to the agricultural cycle.

In accordance with the concept of effective use of land and water resources in agriculture, it is very important to give land users the right to independent placement of agricultural crops, no-till cultivation and secondary lease of land. At the same time, the withdrawal of a plot of land or a part of it for state and public needs is allowed after the market value of the funds spent on the consent of the land user and the damage caused due to the withdrawal have been fully compensated, as well as infrastructure facilities to be built on newly acquired and used agricultural areas (permission to place a field shed, product storage warehouses, irrigation facilities, etc.) increases interest in new land development. In particular, the compensation payment for irrigated land taken away for non-agricultural use, without applying the coefficients taking into account the location of the taken land area, is 10 times the amount required for the development of such new land, dry land and establishing 20 times the costs associated with the radical improvement of the land occupied by non-irrigated perennial trees will stop the unjustified reduction of agricultural land.

In accordance with “The concept of improving the efficiency of the use of land and water resources in agriculture”, 298,000 hectares of unused land will be returned to agriculture in 2020-2030, and 180,000 hectares of pastures and wastelands will be developed, 50, It is planned to include 0,000 ha of dry land as irrigated land, 137,000 additional pastures and dry land, and 437,000 forest land[1]. Consequently, a total of 804,900 pastures, gray, forest and dry lands are planned to be developed in the republic. To do this, build 10 reservoirs (total volume 306.4 million cubic meters), dig 7,665 wells for the use of underground water, attract farms and citizens who want to acquire land based on the privileges and guarantees provided for in the concept, public-private partnership Attracting large farms and investors based on the conditions, establishing the cultivation of nutritious and medicinal plants that do not require water, planting haloxylon on 315,000 hectares of land, planting pistachios and almonds on 37,000 hectares of forest fund land, 26,000 hectares of forest fund It is planned to plant medicinal plants on their lands, to develop livestock and poultry farming on 59,000 hectares of forest fund lands, and today these activities are being carried out consistently according to the plan.

The process of development of such new lands will be greatly benefited by the use of innovative technologies, in particular, water-saving technologies, the use of remote sensing with the help of unmanned aerial vehicles and geographic information systems (GIS) to quickly study the existing condition of the developed lands and obtain their cartographic materials quickly at low costs.

[1] Ўзбекистон Республикаси Президентининг 2019 йил 17 июндаги «Қишлоқ хўжалигида ер ва сув ресурсларидан самарали фойдаланиш чора-тадбирлари тўғрисида» ПФ-5742-сон Фармони.

According to the analytical data, it was determined that almost 66.0% of the land to be developed and included in the agricultural cycle is planted with fodder, that is, fodder crops, 1.25% oil crops, 9.20% sugar crops, and 4.60% leguminous crops.

Planting fodder crops on large areas, on the one hand, allows to restore and increase the fertility of the soil scattered on the land, and on the other hand, it allows to develop livestock breeding in the region and further improve the supply of livestock products to the population.

In addition to the above, the development of 60,609.0 hectares of land in the region and its introduction into agriculture will allow the creation of almost 10,000 new jobs in the near future. In general, in the near future, it will be possible to grow the following agricultural products on the 60609.0 ha land area, which will be developed on the basis of innovative technologies in the region and put into agriculture (Table 4).

Table 4

Quantities of agricultural products grown on reintroduced agricultural lands in Navoi region

(according to the project)

#	Agricultural crops	Land area, ha	Productivity, c/ha	Gross yield, t
1	Alfalfa	7350,0	40,0	29400,0
2		14701,0	110,0	161711,0
3	Corn (for grain)	17910,0	60,0	107460,0
4	Oil crops	760,0	20,0	1520,0
5	Vegetables	10,0	200,0	200,0
6	Melons crops	5554,0	250,0	138850,0
7	Legumes	2774,0	25,0	5548,0
8	Rice	50,0	40,0	200,0
9	Wheat	1574,0	38,0	5981,0
10	Fruit (fpple, quince, pear, etc.)	965,0	120,0	11580,0
11	Grapes	1530,0	110,0	16830,0
12	Potatoes	3000,0	120,0	36000,0
13	Corn (for the stem)	4403,0	250,0	110075,0
14	Mulberry leaf	30,0	10,0	30,0
	Total:	**60609**	**x**	**x**

***Explanation:** The calculation was made based on the information of the Regional Department of Agriculture.*

Conclusion. From the analytical calculations, it was found that the development of new lands in the above amounts in the region and inclusion in the

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agricultural circulation will allow for the additional cultivation of various agricultural products in large quantities in the coming years. Taking this into account, it is permissible to make the following proposals in order to support these works within the framework of the development of new lands based on innovative technologies.

- application of fixed land tax rates for 10 years until appropriation;
- independent placement of crops, planting of crops without tillage and sub-leasing of land areas by mutual agreement;
- non-acceptance of allocated lands, guaranteeing that their confiscation will be carried out only by court order;
- to compensate investors for the expenses related to the construction of irrigation infrastructure and a certain part of the loan interest;
- covering a certain part of the expenses related to water payment to the land users operating within the framework of the public-private partnership project;
- to ensure that all costs related to the development and full implementation of land development projects, which provide for the development and inclusion of new lands in agriculture, will be covered by the state;
- providing all-round support to currently operating farms in additional development of new lands and their involvement in agriculture, providing necessary financial and technical assistance;
- to increase the interest in the development of breeding and breeding activities related to the creation of high-yielding, drought-resistant varieties of agricultural crops.

In general, it should be noted that the expansion of irrigated cropland and perennial tree plantations through the redevelopment of brownfields and pastures, dry land and forest fund land is one of the main directions of agricultural development in the near future.

This is one of the urgent issues not only for the Navoi region, but also for the development of agriculture in all regions of our republic. Therefore, the consistent implementation of the above developed and recommended proposals is of great importance in the positive resolution of the envisaged issues.

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