

Cadastral valuation of land for privatization purposes

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Abstract. The article examines the problems of the cadastral assessment of land resources, including non-agricultural land, which is considered part of the national wealth of the country. A number of natural, social, economic, ecological and political factors influencing the consumption characteristics of non-agricultural land, including the land of settlements, are considered. Using analytical analysis together with computational and monographic methods, the land valuation methodologies created as a result of research conducted in this direction in the republic to date were analysed and their shortcomings identified. A number of features that are not taken into account in the existing methods, and that follow from the requirements of the present-day market economy, have been identified. Specific scientific recommendations on determining the relative value of land plots are given on the basis of the types and nature of the real estate located in settlements. Based on these recommendations, a procedure for calculating the consumption value of the land of settlements is proposed. The use of the proposed recommendations and calculations is important for expanding the practice of evaluating land intended for non-agricultural purposes, for forming a land market that does not yet exist in the country, and for turning land into a market asset.

Keywords: *settlements, cadastre, value assessment, economic, social, market assets, local descriptions, cost, income, regulatory assessment.*

1 Introduction

In Uzbekistan, land is public property and the country's national wealth [1]. According to the official data received, its amount is 44 892.4 thousand hectares. More than 90.0 percent of these areas are given by the state to various enterprises, institutions and organisations, as well as to citizens, for use on the basis of established rights [2]. The land involved in use is a means of production [3]. The rational and effective use of any means of production in

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accordance with the market economy depends, first of all, on how deeply and comprehensively its most important features are studied. This rule applies, first of all, to land, including non-agricultural land, and their full and proper use in the economic sectors; the privatization of such land can be organised on the basis of a proper cadastral assessment.

In Uzbekistan, land valuation has been carried out for many years. Several soil scientists and economists [3, 4, 5, 6, 7] have conducted large-scale scientific research on solving land valuation problems. Today, the cadastral assessment methodology for agricultural land has been created in the country and is widely used in practice [8]. On this basis, the results of land evaluation work have been used to solve a number of market problems positively. However, creating such a comprehensive and simple method of cadastral assessment for non-agricultural land, and recommending it for the practice of organising the use of non-agricultural land, remains one of the main problems that need to be solved today. The adoption of the law on the privatization of non-agricultural land [9], and of the special legal regulations [10] on its implementation in the following years, has made this problem even more urgent.

2 Materials and methods

Non-agricultural land includes, first of all, land under residential areas. Therefore, determining the cadastral value of the land of the cities, urban-type settlements and rural settlements existing in the territory of the republic can be carried out on the basis of studying the most important theoretical and practical aspects of the formation of such a value and strictly observing them.

World valuation practice singles out a number of factors that have a significant impact on the valuation of property, including residential land [4, 11]. **Physical factors** are the climate, resources, topography of the place, soil and man-made buildings, structures, devices, communal facilities, the shape of the land plots, and so on. **Social factors** are the indicators of population growth in settlements, the way of life, the number of family members, the level of crime, changes in the level of education, and similar characteristics. **Economic factors** are the indicators of the level of income, employment, credit policy, interest rates, rates of rent payments, the increase or decrease of construction costs, and prices. **Political factors** are zoning, building codes and regulations, various services, health and safety, tax policy and environmental protection.

All the above-mentioned factors affect the value of the land and play an important role in the formation of the cadastral value of the land of settlements. Taking these into account, the main goal of the research is to develop specific scientific recommendations for the creation of a cadastral evaluation methodology for the lands of settlements. In order to achieve this goal, one of the main tasks of the research is to study the various factors affecting the use of such land areas and the methods available in evaluation practice to date, and to create an improved evaluation methodology based on them. Scientific observation, analytical analysis, computational and monographic research methods were widely used to solve it.

3 Results and discussion

As recognised above, non-agricultural land can include mostly settlement land. As of 1 January 2023, such land amounts to 225.8 thousand hectares. Information on the distribution of these areas by main land types is given in Table 1.

Table 1. Distribution of the land of settlements in the Republic of Uzbekistan by main land types (as of 01.01.2023).

No.	Main land types	Area, thousand ha	Share of the total land area, %
1	Cultivated lands	1.2	0.5
2	Perennial trees	1.2	0.5
3	Meadows and hayfields	8.5	3.8
4	Homestead lands	77.6	34.4
5	Lands occupied by forests	2.8	1.2
6	Other places	134.5	59.6
	Total land area	225.8	100.0
	of which irrigated	50.7	22.4

Compiled on the basis of information from the Cadastre Agency. The irrigated area is shown separately and is not an additional component of the total.

From the data in Table 1 it can be seen that the main part of the total land in this category is homestead land and, of course, other land, that is, land occupied by various buildings. However, because there are various other types of land within the borders of most settlements, changes in the area of such land are always observed. This can be seen in the example of the city of Tashkent (Table 2).

Table 2. Areas of the existing land categories within the borders of Tashkent city (as of 01.01.2023).

No.	Land categories	Area, thousand ha	Share of the total land area, %
1	Agricultural lands	4.1	9.4
2	Lands of settlements	12.2	28.0
3	Land intended for industry, transport, communication, defence and other purposes	25.2	57.9
4	Lands intended for nature protection, health improvement and recreation purposes	0.3	0.7
5	Lands intended for historical and cultural purposes	0.5	1.1
6	Water fund lands	1.2	2.8
	Total land within the city limits	43.5	100.0

Compiled on the basis of information from the Cadastre Agency. The individual shares sum to 99.9% because of rounding.

The data in Table 2 show that most of the land within the city limits (57.9%) is land intended for industry, transport, communications, defence and other purposes. Therefore, in the process of evaluating land within the boundaries of large cities for the purposes of privatization, a separate approach should be applied to each land plot depending on its main nature.

It should be noted that the assessment of the cadastral value of agricultural land is determined by the functions of the land as the main means of production, as a labour tool and as a subject of labour in agriculture. Therefore, the basis of the assessment of such land is the

functional impact factors of the land resource on agricultural production (soil fertility, expenses, income, and so on). However, non-agricultural land, unlike agricultural land, has a different functional nature (place of population settlement, means of production, place of various productions, services, and so on). In addition, the nature of individual plots of land in residential areas often changes. For example, a plot of land occupied by private houses today may turn into a plot of land with a cultural and household service facility for the population after a certain period of time, or a plot of land for public use today may become a plot of land occupied by a production enterprise in the next year. In addition, the above-mentioned physical, social, economic and political factors have a great influence on the value of the land of residential areas. All this indicates that the process of determining the cadastral value of the land of residential areas is an extremely complicated process. However, it is necessary to solve this problem as positively as possible: in particular, to create an improved and at the same time simple methodology for determining the cadastral value of land in settlements, to use it to determine the cadastral value of such land in the different regions of the republic, and to use its results to solve market issues of land use, including the issue of land privatization.

The results of the monographic studies conducted show that, to date, economists have tried to develop a number of methods for determining the cadastral value of the land of settlements [11, 12, 13, 14]. These methodologies are sometimes based on the cost, profitability and comparative approaches used in the evaluation of such properties [4, 13], where the characteristics of land as real estate are highlighted; sometimes there are approaches to the evaluation of the value of the objects or engineering infrastructures located on the upper and lower parts of these plots of land [5, 14], and to the segmentation of settlement land and its separate evaluation [11, 12]. Therefore, it is natural that the results of such different approaches will differ. Such a situation, without a doubt, limits the scope for using the results of the evaluation and does not allow the land of settlements to be transformed fully into market assets.

In order to implement the privatization of non-agricultural land, Resolution No. 71 of the Cabinet of Ministers of the Republic of Uzbekistan of 14 February 2022 approved the administrative regulation on the provision of state services for the privatization of land plots to citizens and legal entities of the Republic of Uzbekistan on the basis of the right of permanent use (ownership), lease and inheritance for life. It contains a special procedure for calculating the purchase price of the plot of land being privatized. Accordingly, the calculation of the purchase price of a plot of land granted to legal entities on the basis of permanent use (ownership) or lease is carried out on the basis of the following formula:

$$P = K_{\text{yur.}} \times S + B + T, \quad (1)$$

and the calculation of the purchase price of land plots belonging to citizens of the Republic of Uzbekistan on the basis of permanent use (ownership) or of the right of execution inherited for life is carried out on the basis of the following formula:

$$P = K_{\text{jis.}} \times S + B + T, \quad (2)$$

where P is the purchase price of the plot of land being privatized, in soums (the national currency of Uzbekistan); $K_{\text{yur.}}$ And $K_{\text{jis.}}$ Are 20 times the basic tax rate established on that day for 1 square metre, in soums, when determining the purchase price for legal entities and for individuals, respectively; S is the area of the plot of land being privatized, in square metres; B is the payment based on the rates set for the services of issuing an extract from the state register and registering property objects, in soums, in accordance with Resolution No. 186 of the Cabinet of Ministers of 10 July 2014 "On improving the procedure for the differentiated approach to determining the prices of public services in the field of the state cadastre"; and T is the amount of payment for the preparation of the topographical plan of

the plot of land and the area adjacent to it, calculated on the basis of five times the basic calculation amount for one hectare of land, in soums.

Today, this methodology is used in the privatization of non-agricultural plots through auctions. However, it is necessary to admit that, if we take into account that the demand for residential areas in irrigated regions, especially in cities and towns, is increasing year by year, it can be seen that the purchase price of a plot of land calculated on the basis of this methodology is extremely low. For example, if we calculate the purchase price of an 800-square-metre plot of land in District 3 of Chirchik on the basis of this methodology, as of 1 March 2025 it will be 28 million soums. But today's market price of this plot of land, that is, its price on the informal market, is at least 120–130 million soums. It is clear from this that it is necessary to create a more objective methodology for the accurate calculation of the cadastral value of such land in order to calculate the purchase price of non-agricultural land plots and to apply them to the privatization process.

The development of settlements and, as a result, the increase in the value of land within their borders is achieved mainly through the transformation of settlements into places of attraction for labour, capital and entrepreneurship. For this, wage rates, profits and interest are used as market mechanisms [15]. From this it becomes clear and obvious that the tax policy of the state is a decisive factor for the development of settlements. After all, taxes on wages, capital and entrepreneurship reduce the interest in their increase. Settlements trying to develop need to reduce the burden of taxes on these factors and to concentrate the main part of them on land resources, which cannot be reduced. In this case, the influx of labour, capital and entrepreneurship into the settlement will increase, land rent will increase, and the level of development will not be affected. It is very important to attract more capital for the development of the settlement, because if there is enough capital, labour and land will be more productive, which means that wages and rent will be higher. Rent is an economic application of land relations in a legal form [4, 11]. In practice, the payment in the form of rent that the tenant pays to the landowner (the city or the state) for permission to use the land naturally takes the form of land rent. Whatever the components of this payment, it has in common with ground rent that it determines the value of the land, that is, it is the capitalised income from the rental of the land.

Taking these into account, it is necessary to pay special attention to the following rules of fundamental importance, which are necessary for the cadastral assessment of the land of settlements. First, the fact that settlements belong to different regions, are large and small, are developed at different levels and are provided with engineering infrastructure at different levels does not allow a single scale and basic normative value to be developed and used for the cadastral assessment of the land of settlements in today's conditions. Second, the practice of determining the normative value of the land of settlements in many countries shows that the normative value of the land is not less than 70–75 percent of the market value, and that the difference between the individual cadastral value of the land plot of the settlement and the calculated base normative value of the corresponding cadastral plot does not exceed 50.0 percent [16]; if differences of a large magnitude are observed, it is necessary to specify which cadastral assessment section this individual land plot belongs to. Third, cadastral value assessment should be derived from, take into account and be based on the generally accepted principles of urban planning concerning the formation and development of settlements at different levels.

In fact, the above once again shows that the assessment of the cadastral value of the land of settlements is a very complicated process. In this case, it is important to divide the settlement into separate regions, to determine the nature of the plots at the time of evaluating the plots there depending on the general condition of each region, to take into account the various district factors affecting the evaluated land plot, and to take into account the characteristics of the urban planning of the evaluated land plot. It is from this point of view

that the approach proposed by B.Yu. Khodiev and Z.S. Abdullaev has a certain practical significance [11]. In their opinion, the following groups of factors have a positive or negative effect on the cadastral value assessment of residential land plots and on the formation of this assessment: the convenience of access for the population to the centre of the settlement and to the cultural and household service facilities of importance for the settlement; the provision of centralised engineering facilities and the improvement of the territory, and the convenience of transport to workplaces; the level of development of the field of cultural and household services to the population within the micro-district, quarter or other project units of local importance; the historical value of the buildings and the aesthetic and landscape value of the area; the environment and the sanitary and microclimatic conditions; the engineering-geological conditions of the constructions and the degree of probability that the area will be exposed to catastrophic natural and anthropogenic influences; and the recreational value of the territory.

In fact, each plot of land located within the border of a settlement, regardless of the nature of its use, is inextricably linked with the above seven groups of factors. It is the influence of this group of factors that can increase or, on the contrary, decrease the value of a plot of land. Taking this into account, researchers proposed to divide each group of factors into several subgroups of factors that can be encountered in relation to a specific plot of land, and recommended a number of correction coefficients for them [4, 11, 13]. As a result of taking into account the influence of each small factor during the evaluation of the land plot, it is necessary to enter the appropriate correction coefficient for the land plot. On the basis of the information received, the interpretation of each assessment section is carried out. It shows the role of the plot of land in the city planning and the impact of the above-mentioned factors on it. Such an explanation is the basis for quantitatively recording the influence of the above-mentioned factors on the evaluation plot. The quantitative values of the factors are recorded in a special calculation table. Using this information, it is suggested that the initial coefficient of the relative value of the area for each assessment section be determined using the following formula:

$$K = 1 + K_1 + K_2 + K_3 + K_4 + K_5 + K_6 + K_7, \quad (3)$$

where K is the generalised coefficient of the relative value of this area within the boundaries of a specific assessment area, and $K_1 \dots K_7$ are the correction coefficients for the factors of groups 1–7.

The determination of the cadastral value of the land plot using the generalised coefficient of the relative value of the area within the boundaries of a specific assessment plot is generally carried out using the following equation:

$$R = S_{\text{yer}} \times (P_{\text{pos}} + P_{\text{har}}) \times K, \quad (4)$$

where R is the cadastral value of the land plot, in thousand soums; S_{yer} is the area of the plot of land, in square metres; P_{pos} is a linear function of the factors for a specific plot of land, taking into account the characteristics of the existing infrastructure in the settlement; P_{har} is a linear function of the action parameters for a specific land plot, taking into account the local characteristics of that plot; and K is the coefficient of transition from one type of functional use of land, for which information about transactions with land plots is available, to another type of functional use of land, for which market statistics are not available.

When assessing the cadastral value of the land of settlements, along with the above, the type of intended use of each land plot is distinguished. For example, a certain plot of land will be occupied by residential buildings, while another such plot of land may be occupied by a commercial or catering facility. In terms of real income, the second plot of land brings three to four times more income than the first. It is very necessary and appropriate to separate land plots according to their intended use and to introduce appropriate correction coefficients

for each type of use in the assessment of the cadastral value of land plots. Taking this into account, during the evaluation process it is necessary to include appropriate correction coefficients depending on the target use of the land within the border of the settlement. In this case, let us say, while accepting a coefficient of 1.0 for residential areas, it is necessary to accept higher correction coefficients for the areas occupied by business, trade and catering establishments, hotels and farms, depending on their potential income.

In addition, in our opinion, it is necessary to take into account the local, specific characteristics of each individual plot of land in residential areas. For example, one plot of land may be in a condition that does not meet the requirements from the point of view of complex topography or quality, from the point of view of engineering geology, from the point of view of the ecological description of the territory, or from the point of view of urban planning, while another plot of land, on the contrary, may be quite good in terms of the above conditions. Usually, such local descriptions of land plots are divided into two groups by most researchers [4, 13, 17]: those that increase the relative value of the land plot in a certain functional use, that is, the cadastral value of the land plot; and those that reduce the relative value of such a plot of land, that is, the cadastral value of the plot of land.

The following can be included in such local descriptions of any land plot: the engineering-geological conditions, the engineering equipment and beautification of the land plot, proximity and convenience of access to daily cultural and household service facilities, negative or positive visual and ecological views, urban development, and ecological conditions (various types of pollution, atmospheric air pollution, and so on). Of course, such local descriptions also have a significant negative or positive impact on the total value of the land plot, that is, on the cadastral value. For this reason, it is necessary to take such situations into account in the process of assessing the cadastral value of a specific plot of land in a settlement. This, of course, requires a wider coverage of the local descriptions listed above and the introduction of correction coefficients that increase or decrease the value of the land plot for each of them. Using such correction coefficients, the cadastral value of a certain plot of land can be determined using the following formula proposed by B.Yu. Khodiev and Z.S. Abdullaev [11]:

$$C = K \times C_b \times P, \quad (5)$$

where C is the cadastral value of a land plot in a certain functional use, taking into account the local description, in thousand soums; C_b is the basic cadastral value of a land plot with a certain functional use, in thousand soums; P is the area of the plot of land, in square metres; and K is the correction coefficient that increases or decreases the value according to the local description specific to this plot of land.

It is clear from the above that determining the cadastral value of non-agricultural land, and especially of the land of settlements, is a very complicated process, because each of these land plots requires a separate approach depending on a large number of local characteristics. In order to make this situation a little easier and to speed up the process of determining the cadastral value of such land, in our opinion it is necessary to develop accurate correction coefficients for all the above-mentioned descriptions of land plots on the basis of the main character of the settlements located in the territory of the republic, to distribute them to the assessment services in all regions, and to establish their wide use in the process of land assessment. In addition, the automation of this work, based on the creation of a special electronic programme for the assessment of the land of settlements, makes it possible to reduce drastically the time, labour and material costs spent on these works and to ensure the accuracy of the assessment results.

4 Conclusions

On the basis of the above scientific research, it can be briefly concluded that determining the cadastral value of non-agricultural land, and in particular of the land of settlements, for the purposes of privatization is one of the most complex issues of the complex of land valuation works. Setting it up correctly and creating an effective system for using its information will be another important step in the full formation of market relations in the country's economy. This, in turn, creates a basis for the comprehensive expansion of such assessment practice and, using its materials, for turning the land of settlements into a fully based market asset.

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