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TRANSFORMING URBAN LAND USE: ECONOMIC AND ORGANIZATIONAL PATHWAYS TO SUSTAINABILITY

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ABSTRACT

As Uzbekistan undergoes rapid urbanization, the sustainable management of urban land has become a pressing concern. This study explores the economic and organizational pathways necessary to transform urban land use in Uzbekistan, ensuring that urban development aligns with the principles of sustainability. It begins by examining the theoretical foundations of sustainable urban land use, followed by an analysis of current challenges within Uzbekistan's urban land management framework. The study identifies key economic mechanisms, such as land value capture, green taxation, and subsidies for sustainable practices, as vital tools for promoting efficient and equitable land use. Additionally, it highlights the need for organizational reforms, including decentralization, enhanced participatory planning, and improved land tenure security, to create responsive and adaptable governance structures. Environmental considerations are also emphasized, with recommendations for integrating green infrastructure and public transportation into urban planning. The study concludes with a set of actionable recommendations tailored to Uzbekistan's unique context, providing a roadmap for policymakers to achieve sustainable urban development. By implementing these strategies, Uzbekistan can ensure that its urban growth is not only economically viable but also environmentally sound and socially inclusive.

KEYWORDS: *Urban Land Use, Sustainability, Economic Mechanisms, Organizational Reforms, Land Value Capture, Green Taxation, Land Tenure Security, Urban Planning, Decentralization, Uzbekistan, Environmental Integration, Public Transportation*

INTRODUCTION

Urban land use is a critical factor in the sustainable development of any nation, and Uzbekistan is no exception. As the country continues to urbanize rapidly, the pressure on land resources in urban areas has intensified, necessitating a strategic and sustainable approach to land management. The challenge lies in balancing the need for economic growth with the imperative of environmental stewardship and social equity.

In Uzbekistan, the traditional mechanisms of urban land use have often been insufficient to address the complexities of modern urbanization, leading to inefficient land use, environmental degradation, and social disparities. Therefore, there is a growing need to transform these mechanisms by integrating innovative economic and organizational strategies that align with the principles of sustainability.

This transformation requires a comprehensive understanding of the existing challenges and opportunities within Uzbekistan's urban land management framework. By analyzing the current organizational and economic mechanisms, this study aims to propose pathways that not only enhance the efficiency of land use but also contribute to the broader goals of sustainable development. This involves rethinking how urban land is allocated, utilized, and managed, with a focus on creating systems that are adaptable, resilient, and equitable.

The following sections will explore the theoretical underpinnings of sustainable urban land use, examine the specific context of Uzbekistan, and propose actionable strategies for improving the organizational and economic mechanisms that govern urban land. The goal is to provide a roadmap for policymakers, urban planners, and stakeholders to ensure that Uzbekistan's urban growth is sustainable, inclusive, and economically viable.

LITERATURE REVIEW

The sustainable management of urban land is a subject of growing importance, especially in rapidly urbanizing nations like Uzbekistan. The literature on urban land use and sustainability provides a broad spectrum of theoretical frameworks, empirical studies, and case analyzes that offer insights into the economic and organizational mechanisms necessary for sustainable development.

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1. Theoretical Foundations of Sustainable Urban Land Use

The concept of sustainable urban land use has been explored extensively in the literature, often framed within the broader context of sustainable development. Early works by scholars like McHarg (1969) and Lynch (1981) emphasized the importance of planning and ecological considerations in urban development. More recent studies, such as those by Beatley and Manning (1997) and Elmqvist et al. (2013), have expanded on these ideas, integrating economic, social, and environmental dimensions to propose holistic approaches to urban land management. These foundational theories underscore the need for a balanced approach that considers the interdependence of urban systems and the environment [1,2,3,4].

2. Economic Mechanisms for Sustainable Urban Land Use

Economic mechanisms play a crucial role in determining how urban land is used and managed. According to studies by Coase (1960) and Ostrom (1990), market-based approaches, property rights, and collective action are essential for efficient land use. In the context of Uzbekistan, research has highlighted the importance of economic incentives, land pricing, and taxation policies in promoting sustainable land use. Studies by scholars such as Naughton-Treves and Sanderson (1995) and more recent work by Gasparatos et al. (2017) suggest that the implementation of economic instruments like land value capture, green taxation, and subsidies for sustainable practices can significantly influence urban land management outcomes [5,6,7,8].

3. Organizational Structures and Governance

The role of organizational structures and governance in urban land use is another critical area explored in the literature. Governance frameworks that emphasize participatory planning, transparency, and accountability are seen as vital for achieving sustainable urban development. Works by Healey (1997) and Albrechts (2006) highlight the importance of collaborative planning processes that involve a wide range of stakeholders, including government agencies, private sector actors, and civil society. In Uzbekistan, the governance of urban land has been characterized by a strong centralized approach, but recent studies suggest a shift towards more decentralized and participatory models that could enhance sustainability. Scholars like Deininger and Feder (2009) and Rakodi (2006) argue that such organizational reforms are necessary to address the unique challenges faced by rapidly growing cities in developing countries [9,10,11,12].

4. Case Studies and Empirical Evidence

Empirical studies and case analyze provide concrete examples of how economic and organizational mechanisms have been applied to transform urban land use in various contexts. Research by Roberts (2000) and World Bank (2010) offers insights into successful urban land management practices in cities across Asia, Africa, and Latin America, where similar challenges to those in Uzbekistan have been addressed. These case studies demonstrate the effectiveness of integrated approaches that combine economic tools with robust organizational frameworks. For instance, the experience of Curitiba in Brazil, as documented by Rabinovitch (1996), showcases how strategic planning and economic incentives can lead to sustainable urban growth [13,14].

5. Relevance to Uzbekistan

The application of these global insights to the context of Uzbekistan requires a nuanced understanding of the country's unique socio-economic, political, and environmental conditions. The literature on Uzbekistan's urban land use is relatively limited, but key studies have identified the challenges and opportunities that exist within the country's specific context. Research by Abdullaev et al. (2009) and Djanibekov et al. (2013) provides a foundation for understanding the current state of urban land management in Uzbekistan, highlighting issues such as land tenure insecurity, inefficient land allocation, and the need for organizational reforms [15, 16].

The literature review reveals that while there is a robust body of knowledge on sustainable urban land use, there is a need for more context-specific research that addresses the unique challenges of Uzbekistan. By drawing on global theories and empirical evidence, this study aims to contribute to the ongoing discourse on sustainable urban development in Uzbekistan, proposing economic and organizational pathways that are both innovative and feasible within the country's current framework.

MATERIALS AND METHODS

In recent decades, the concentration and activation of industrial and non-industrial activities has been so rapid that the environment of some cities in the world could not meet many biological and production needs. The increasing pace of the urbanization process, the emergence of a system of relations between man and nature has become one of the global problems of today.

Article 6 of the Law of the Republic of Uzbekistan "On Local State Power", Decree of the President of the Republic of Uzbekistan dated September 7, 2020 "On measures to radically improve the system of land accounting and state cadastres" No. PF-6061, 2020 of the President of the Republic of Uzbekistan Decision PQ-4819 dated September 7, 2021 "On measures to organize the activities of the Cadastre Agency under the State Tax Committee of the Republic of Uzbekistan", the Cabinet of Ministers of the Republic of Uzbekistan dated June 22, 2021 "Some regulations regulating the field of state cadastre management" Based on the decision No. 389 "On Approval of Legal Documents", the distribution of available land areas in the city of Bukhara according to the land report

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as of January 1, 2023 on the types of land of land owners and land users in the city and their distribution, submitted by the Bukhara City Branch of the State Cadastre Chamber, is as follows:

No	Er categories	Total area, to
1	General e r area	7285
1.1	That's it including e kin e r area	1160
1.2	That's it including a lot yearly tree groves	707
1,2,1	gardens	476
1,2,2	vineyards	163
1,2,3	traps	0
1,2,4	another a lot yearly tree groves	68
1.3	that's it including gray areas	3
1.4	that's it including grasslands	35
1.5	that's it including farm lands	611
1.6	that's it including ameliorative construction land in the state	0
1.7	that's it including garden vegetable growing Associations	0
1.8	that's it including forest lands	23
1.9	that's it including other lands	4746

The formation of the urban environment and the main factors affecting the environment in large cities. Cities, as a rule, represent the closing links in the chain of resource cycles, where the stages of processing, consumption and return to nature of substances and energy are carried out.

There are certain contradictions between the socio-economic development of the city and the increase of the natural environment of its territory. The serious shortcomings of modern environmental management are the failure to analyze the ecological and economic situation, insufficient specificity of the planned measures and their weak socio-economic justification.

To date, the increase in the city's population has naturally led to the expansion of the city's boundaries, the reduction of land resources, and, accordingly, the destruction of the natural landscape and the sharp deterioration of sanitary and hygienic conditions in the city. In this regard, every year it becomes more and more important not only to preserve the land, but also to use it wisely and efficiently.

The grouping of land plots as part of agricultural land was carried out as follows:
I - suitable for cultivated fields, hayfields, pastures occupied by mines, perennial plantations, farm roads, communications, forest plantations designed to protect the land from the effects of negative (harmful) natural, anthropogenic and man-made phenomena, as well as water bodies designed to support agricultural activities. agricultural land;
II – Agricultural land, unsuitable for arable land, but used for growing some types of industrial crops, perennial plantations, shrubs, tea, grapes, rice;
III – agricultural land occupied by buildings. 1 buildings and structures used for production, storage and primary processing of agricultural products;
IV - agricultural lands occupied by water bodies and used for business activities;
V – Agricultural lands with forests.
VI – Other agricultural lands, including wetlands, degraded lands, landfills, landfills, ravines, sand lands.

Economic evaluation of land should not negate the principle of public property. In order to correctly determine the socio-economic effect of the construction, a realistic assessment of the land plot is necessary. This applies primarily to fertile land where industrial crops can be grown, as well as to land containing underground natural resources.

The development of vacant areas in cities is justified by the reduction of construction costs and, as a rule, it comes from the price per square meter of residential or common area. However, works on engineering preparation of the territory (vertical planning, laying drains, drainage, lowering the level of groundwater, fighting against ravines and landslides) and engineering improvement (water supply, sewage, heat supply, gas supply, electricity, telephony, transport equipment etc.) are not considered enough.

Large-scale trade is reflected in the profitability of the area in terms of the efficiency of the enterprises, the time spent by the population to move from the place of residence to the place of work, and other factors of functional amenities. Naturally, it is desirable to demolish old and cheap buildings and replace them with high-rise buildings.

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Bukhara region is one of the main suppliers of the most valuable agricultural crops in our republic. Conditional value of 1 hectare of arable land in Bukhara is 4 times more expensive than the average indicator in the republic. The area of this category of land decreased by 0.4 thousand compared to last year due to the transfer of 0.2 thousand hectares to the category of industrial and other special purpose lands, 0.1 thousand hectares to the category of settlements and 0.1 thousand hectares to the category of specially protected areas.

The study of the balance of territories in accordance with the master plan shows that there are spare lands within the city of Bukhara due to the unfavorable allocated land for construction, free and other lands. Among the tourism cities of Bukhara region, Bukhara city is the region with the largest population. Therefore, it is necessary to pay great attention to the rational use of the city territory and to develop improved projects based on science.

Morphological analysis of functional zoning of Bukhara defines it as an agro-recreational city. There is only 7,285 ha of land in the urban area, agricultural land occupies the first place in the structure of urban land and is 1,160 ha (15.9%).

The city of Bukhara is not only the largest industrial center in the region, a tourism city of federal importance with a share of recreational land occupying an important part of the city structure - 344 hectares (5.1%), but also the center of the region as a business and social center. By establishing effective use of all types of land in the city, the possibility of further improvement of the living conditions of the population will be increased. In particular, the effective use of the land allocated for rest and recreation, by adapting the activity to modern students, will provide the basis for ensuring the constant flow of funds and the creation of new jobs, which is an important branch of the modern economy.



The city's economy is experiencing all the negative trends typical of the modern economy, growth is observed only in the food industry. At the same time, the suburban economy has the necessary opportunities to fully supply the city with agricultural products. We consider sanatorium and agricultural sectors as the most promising for development. But currently, for various (including political) reasons, no further development is being resumed in Bukhara's resorts. The tourism survival model that was popular in the past worked in a few places. However, having such resources, it would be unwise not to preserve them until they are required. For example, in the United States, recreation is only 5% of the country's territory, but its income is more than the entire agriculture. A very important problem of urban landscape optimization is the problem of creating an ecological infrastructure of open spaces consisting of water-green geocomplexes. In residential areas of large cities, at least 40% of the area should be allocated to ecological infrastructure. This implies an integral, continuous geosystem that really forms the unique ecological basis of the urban landscape. The ecological approach implies the priority of the landscape foundation in the selection of the territorial development of the city, in the development of the functional zoning and planning structure. The ratio of landscape types to the size of the area and their nature varies depending on natural conditions, established settlement systems and environmental management.

The researches of scientists dedicated to calculating the environmental, economic and technological needs of people in the area showed the following:

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USA - 1 person needs 2 hectares of land (0.6 hectares of arable land, 0.4 hectares of industrial crops, 0.8 hectares of natural landscapes, 0.2 hectares of industry and social infrastructure), which is the following average balance ratio (in shares of one in 10) 5-natural landscapes, 4-partly modified-agriculture, recreation, 1-urbanized areas. In Germany, the normative quality of ecologically balanced areas in the ratio of 5.5:4.5:0.5 is proposed.
For Bukhara region, the ratio is 6.5:3:0.5. Of this, 6.5% are natural landscapes, 3% are partly modified-agriculture, recreation, and 0.5% are urbanized areas.
According to the report on the availability of land area, there are only 3972 ha of green areas in the administrative-territorial boundaries of the city of Bukhara, including:
- forests-1086 ha,
- tree and shrub plantations - 261 ha,
- parks, squares, boulevards, etc.-1030 ha,
- perennial seedlings-1213,
- 1231 ha of green areas in horticultural associations.

Currently, the plantings in existing public buildings cover 177.2 hectares, which are urban parks, squares, boulevards and embankments. In the settlement, the crop norm for collective use is 91.6 hectares. Itching depending on the type of total crop.
Bukhara is a region of wonderful nature, beautiful landscapes and various monuments of ancient material culture. It is intended for recreation and tourism. Therefore, this beauty should be preserved. In order to maintain harmony in nature, extremes in construction or agriculture should be avoided.

Today, the more vulnerable, irreplaceable, unique and ultimately more expensive use type must be prioritized in development and selection. The criteria for choosing priorities in development must be the interest of the local population, that is, their labor skills, demographic characteristics, level and structure of unemployment, rootedness and location, ethno-confessional characteristics, etc.

ANALYSIS, FINDINGS, RESULTS

In our republic, effective use of land areas, including land allocated for cities, their protection, accurate quantitative accounting of land is one of the urgent issues today. Keeping an accurate account of urban land, drawing up specific plans for the future due to the expansion of cities, determining land tax in the context of land assessment of the urban area is based on the correct formation of the state land cadastre and other state cadastres.

Acquaintance of experts in the field with the existing methodology of quantitative accounting of land in urban areas will be important in the formation of their professional skills.

A transparent accounting of the land allocated for rational use of land areas, including urban land, is the basis for the solution of several problems presented in the previous sections of the research work. The analysis of the research carried out by scientists is especially useful in finding a solution to the objectives of the research work being carried out. We cite scientific and practical works on the issues of land accounting carried out by scientists and practitioners in production organizations. In particular, research on land use organization and land cadastre was carried out by S.A. Avezbaev, A.S. Altiev, S.A. Tkachuk, Q.R. Rakhmonov, S.N. Volkov, A.R. Babazhanov [17 ,18,19,20,21,22,23].

It is known that the results of land accounting are given in the land balance of districts and cities. The district and city divisions of the Cadastre Agency maintain the land account and provide information on the categories and types of land within the administrative boundaries of the district and city. This will reflect current or changed information about land areas and users. It should be noted that in the land balance, the amount of the land account is covered by the information on the section of land users (legal entities or individuals). Rights to land plots in cities are taken into account, and then the information is available in the state register.

Today, issues related to land accounting in our country, the district (city) land balance is being formed by district (city) branches of the State Cadastre Chamber of the Cadastre Agency under the Ministry of Economy and Finance as of January 1 of each year.

The completed land balance is reviewed in the district (city) hokim with the participation of relevant officials and approved by the relevant decision of the district (city) hokim and submitted to the regions and Tashkent city hokims (in the Republic of Karakalpakstan - to the Council of Ministers of the Republic of Karakalpakstan) for approval. The land balance approved by the district (city) administration is submitted for generalization to the regional offices of the State Cadastre Chamber within the specified period. The documents and data of the generalized land balance are approved by the appropriate decision in the prescribed manner after being reviewed with the participation of the relevant officials.

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However, the study of the land balances that are being prepared today shows that there are some shortcomings in their development, as well as in keeping the land account. In particular, in the land balances created to date (statistical collection of the "Land Fund of the Republic of Uzbekistan"), information on the comprehensive study of agricultural land (in terms of land users, land types) has been given a lot of space. In this collection, only one row is allocated to other land categories, mainly in form 22 (provincial section). In the section of districts, other land categories were not clearly mentioned. In general, this collection is being continued as it was formed in the 50s and 60s of the last century. Almost no changes have been made to the reporting forms. Land balances are not organized according to land fund categories in administrative-territorial units, i.e. district (city), sub-district city, town, village, and estate.

In the National Land Report on the State of the Republic's Land Resources, other land categories are presented in a summarized way, the areas of the main land types in the district section. However, this information is not sufficient for land accounting in other categories except for the category of agricultural land. Providing the results of land accounting for other land categories in such a single, generalized table cannot ensure its transparency and accuracy in land accounting. Even in the forms of the land balance of agricultural land, there are a number of shortcomings. Such shortcomings and defects have a negative impact on the results of the land balance. Taking this into account, it is appropriate to make necessary changes to the land balance of the district (city) that is being formed today.

The more accurate, complete, truthful and transparent the results of land accounting are, the easier it is to manage, organize, protect and control its effective use.

In the quantitative analysis of the land area actually used in the cities, it was found that the information about the irrigated land allocated for perennial trees, the land allocated for various constructions, the land allocated for homesteads is not fully substantiated, and the information about the changes in the area is not provided on time or the information is provided late for the intended purposes. how many deficiencies are encountered.

It is no exaggeration to say that the introduction of innovative technologies in the field, including drones, remote sensing data, data collected using space images, GAT programs make land accounting somewhat easier. We can see this in the fact that electronic maps are created by decoding based on orthophoto plans and are used as the main tool for mapping land areas in districts and cities. The role of maps is also incomparable in obtaining and analyzing data on land categories and land types in urban accounting with high accuracy.

The analysis of the current state of quantitative land accounting , we can say that it is recommended to partially or completely revise the current system of land accounting. In the correct and transparent management of land accounting, the main goal is to develop and put into practice optimal methods of separately collecting and presenting the data of towns, villages and villages within the administrative boundaries of districts and cities.

The following proposals and recommendations for the correct and transparent accounting of urban land were developed based on a thorough analysis of existing documents and the results of practical work conducted in the field today.

Proposals and recommendations for the quantitative accounting of urban land:

1. Collection of high-accuracy, continuously updated data in the development of projects for the targeted distribution of land areas allocated to cities;
2. Taking into account the global WGS-84 coordinate system when defining the administrative boundaries of the districts;
3. Take necessary measures to permanently enter the changes determined on the basis of the latest data on land areas into the data book.
4. Determining the division of the city territory into towns, villages and villages according to their boundaries and depicting them on maps.
5. Land types for cities and towns, villages and farms to include in the land balance of the City Land Cadastre;
6. Formation of databases of the results of the quantitative calculation of urban land using GAT.
7. Development of well-designed electronic maps that are open to experts and users to visually monitor changes in urban land.

The goals of developing these suggestions and recommendations can be explained by the improvement of quantitative accounting based on the characteristics of urban land use, the optimization of existing land fund categories in cities. Proposals and recommendations proposed in the quantitative accounting of urban land are the basis for efficient use of urban land, improvement of the quality of urban land use, and rational use of every square meter of land.

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The method of organizing work on the implementation of functions and tasks of land monitoring in urban areas provides for interrelated functional-technological work blocks that allow obtaining, systematizing and storing information, analyzing data and providing information to its consumers. The use of assessment data from land condition and monitoring is the subject content of the 4th (final) functional-technological block of the land monitoring system for the region, formed as data analysis, targeted interpretation and service to information consumers.

The problem of providing information on the state of land to the city's executive authorities and management services, as well as interested parties, is particularly important at the moment, especially in connection with the implementation of permanent administrative reforms.

The essence of the urban land resources management process is based on the periodic execution of "command-execution" operations, each of which must solve a specific goal. Real estate state cadastre management and land monitoring is a passive process to a certain extent, and feedback in the form of active management influence on the object of monitoring is in the process of land protection (including the impact of negative processes) and state control over their use and protection in the allocation of land plots, land protection and is carried out in the design and implementation of land plots. control measures. Environmental management processes are considered in detail in the works. The results of monitoring observations should be used in the practice of urban planning, legal and economic regulation of land use. Land monitoring data are public property. They provide the following: management of the land fund and regulation of land relations in the city; economic, production, research and other permitted activities of legal entities and individuals; the right of citizens to receive information about changes in the state of the environment.

urban land monitoring databases ensures the acquisition of textual, tabular, graphic and cartographic documents of different thematic content and different sizes as the main spatially organized information compiled in accordance with the administrative-territorial levels of the city's land resources management. Monitoring data, as a rule, is formed by individual plots of urban land, as well as parts of the territory (cadastral division units; functional zoning element; territories of separate administrative districts, etc.) and the city as a whole.

The urban land monitoring data bank is an integral part of the unified information space of urban management and environmental protection policy, and in cooperation with the competent executive authorities forms the urban body of the federal service of state registration, cadastre and cartography and acts as its owner. Technical solutions for its design are based on the multi-topical aspect-hierarchical (science-hierarchical) principle of designing and creating urban land monitoring databases organized in accordance with the administrative-territorial levels of land resource management of the city. Primary information producing organizations urban land monitoring data is responsible for the reliability and completeness of the data provided to the Bank.

The legal status and thematic structure of the main output materials produced as a result of the operation of the urban land monitoring subsystem ensure the solution of the usual, regularly occurring problems of land management and receiving answers to the arbitrary requests of users. Particular attention is paid to the requirements for cartographic data, their role in the output product prevails.
Information on the assessment of land conditions is produced within the framework of interdepartmental cooperation of urban organizations involved in the implementation of land use issues and land monitoring. During the operation of the urban land monitoring system, a number of technological processes must be carried out (Fig. 1).

It involves the technology of systematic operation of land monitoring in cities, primary data is collected, stored and processed using research methods (remote land sensing, ground surveys and observations, data exchanges). As a result, a number of technological processes should be implemented, such as comprehensive analysis of land monitoring data.

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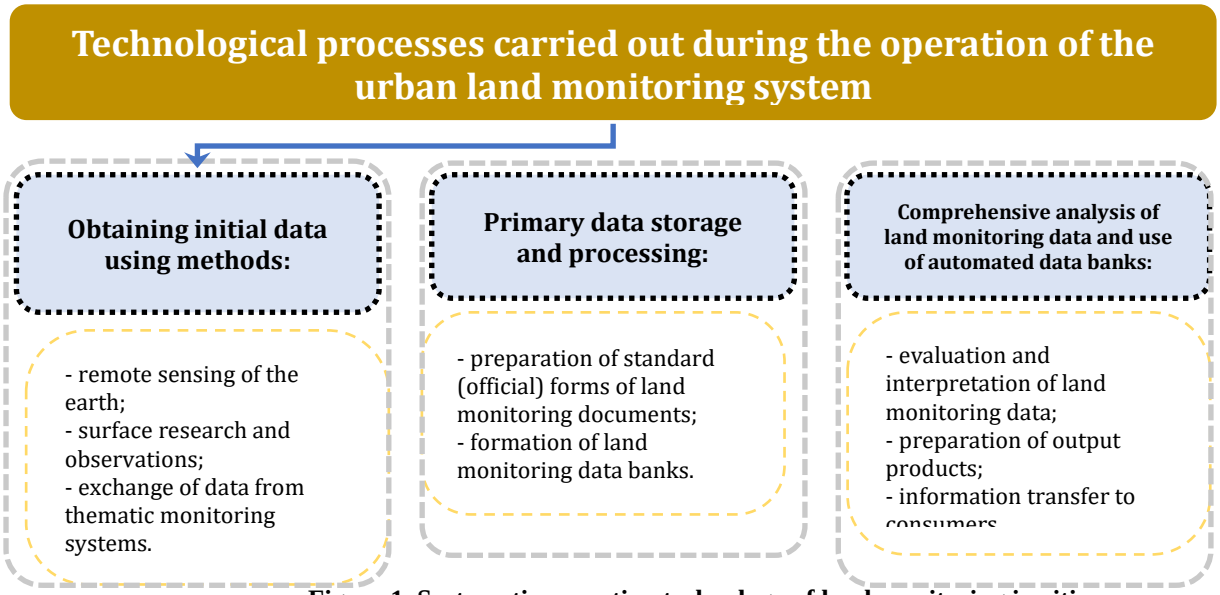


Figure 1. Systematic operation technology of land monitoring in cities

Information about organizations and their owners is located in a distributed database. There are units in the structure of city bodies, whose task is to monitor city land. UzDaverloyiha is the main owner of the land assessment and monitoring data bank in the city of Bukhara. Owners of relevant information providing monitoring data, as well as enterprises and institutions that collect, systematize, process and reproduce data are responsible for the reliability and completeness of data.

Data exchange can be done in manual and automated modes. Communication channels providing information to republican and city, including regional (district, district) governing bodies are provided.

When monitoring urban land, it is necessary to work with large arrays of the same type of structured data that are constantly updated. Some of these data must be archived for later retrospective data analysis, which complicates manual processing of monitoring materials. For this, it is necessary to create a geoinformation system for monitoring urban land.

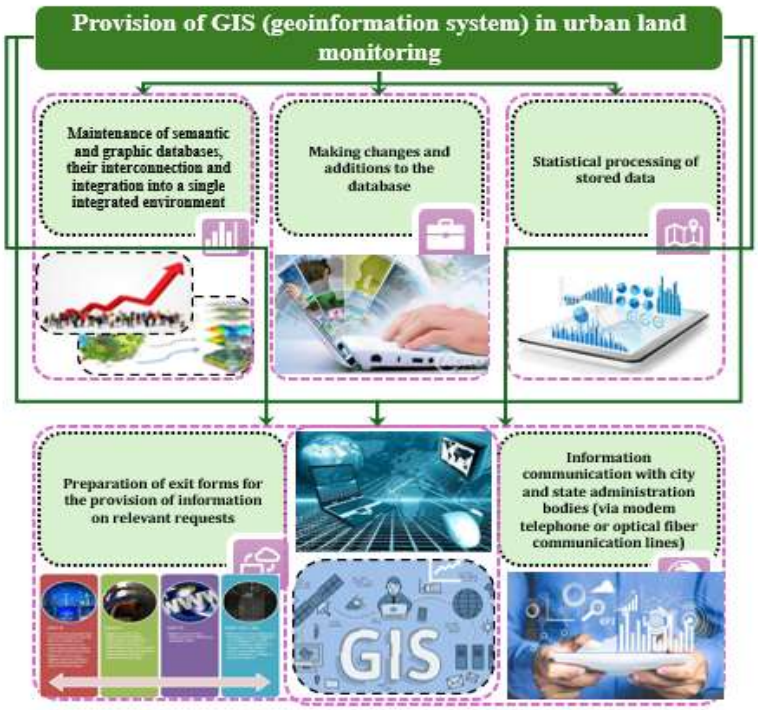


Figure 2. Scheme of GAT supply in urban land monitoring

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A geo-information system for monitoring urban land should be provided with the ability to perform tasks such as maintaining graphic databases, making changes and additions to the database if necessary, processing data, and establishing a regular exchange of data with city and state administration bodies.

The possibility of integrating the geoinformation system into the state land monitoring system, state and city ecological monitoring systems, including telecommunications, should be provided for urban land monitoring. In addition, it is necessary to ensure protection against unauthorized access, including when transmitting information through communication channels and magnetic carriers.

The choice of technical means in the creation of a geoinformation system for monitoring urban land is determined by the size of the created data bank, the structure and nature of information flows, the reliability of the system and the requirements for data security. Different vocabularies, classifiers and thesauri are needed for the operation of a geoinformation system for urban land monitoring. The main ones are "classifier of urban land", " classifier of negative processes in urban land" and "classifier of indicators recorded during monitoring of urban land".

The output data of the geoinformation system of urban land monitoring is used in the development of recommendations for the rational use of land and the subsequent design of land protection, the removal of harmful industries and some sectors that make up the city. Users of monitoring data of the appropriate volume can be any legal entities and individuals, including foreign and international organizations interested in receiving them. The circle of main users includes organizations and individuals participating in the land market, in addition to the owners of the rights to land plots.

It is not enough to describe the condition of land only by monitoring it at the level of the whole city or in its separate administrative units. Plots located in natural complex lands, in zones of complex ecological and engineering conditions and intended for placement of objects that impose high requirements on environmental quality should have more detailed quality characteristics that can be obtained only as a result of detailed inspections. These include recreational use and community facilities, as well as plots earmarked for housing. Therefore, in the development of the ecological basis of land use, in order to improve the ecological situation in large cities, it seems necessary to include another document that is important in urban conditions, first of all, for natural complex lands.

This is the monitoring passport of the land plot, the monitoring passport of the land plot, which records the original quality of the land and its dynamics. Such a document is necessary for the formation of urban land monitoring data, which describes the ecological, urban planning and legal status of individual sections. The information of the data bank allows for more complete consideration of the quality of land in the cadastral assessment, ensuring rational use of land and increasing natural resources, as well as forecasting negative processes in urban land as a result of economic activity, etc. the content of the passport should be formed according to the results of a special inspection of the condition of land plots conducted during their monitoring. The form of the monitoring passport is developed poaspektnuyub, which includes a comprehensive and comprehensive description of the land in the plot, as well as a final expert opinion on the quality of the plot as a whole.

The proposed version of the compiled list of the most important indicators of land quality for large urban conditions obtained as a result of urban land monitoring and recorded in the monitoring passport includes six groups of indicators (Fig. 3).

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EPRA International Journal of Research and Development (IJRD)
Volume: 9 | Issue: 8 | August 2024 - Peer Reviewed Journal

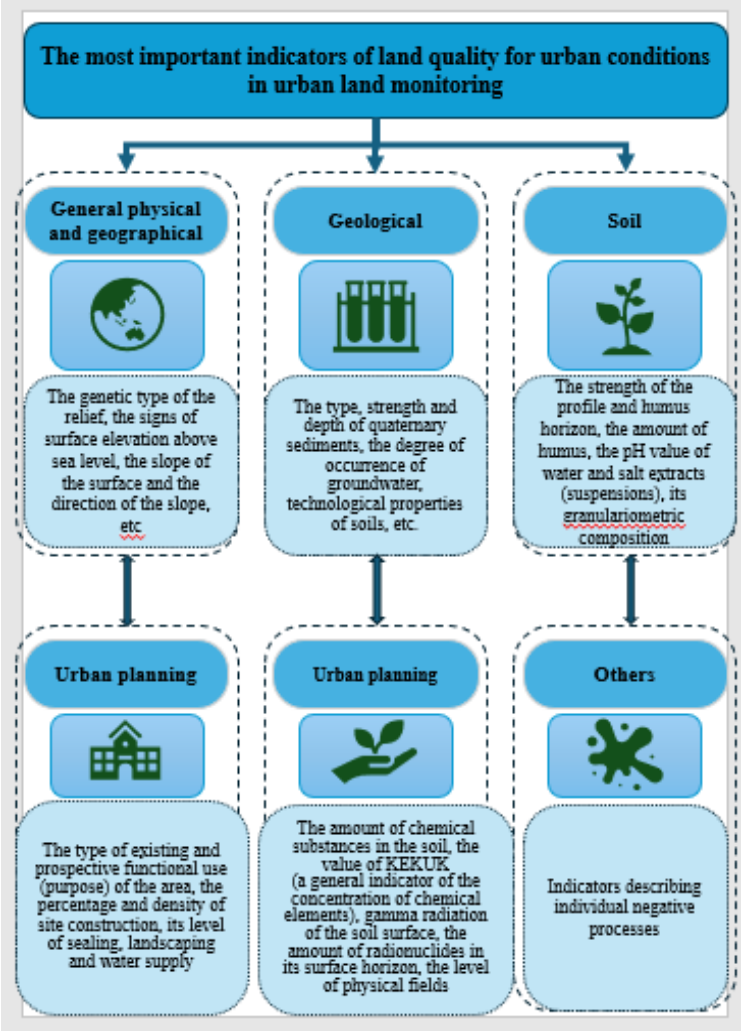


Figure 3. The most important indicators of land quality for urban conditions in urban land monitoring

Quality indicators describe the land plot as a whole or its homogeneous part (zone) according to this indicator. The values of certain quality indicators are measured in quantitative, metric units or selected on the basis of appropriate rating scales. According to the method of obtaining quantitative characteristics, indicators are divided into directly measured, analytically determined, calculated and determined by an expert. The main sources of specific information listed on some aspects of the land situation are documents of various statuses: survey reports, thematic maps, extracts from industrial cadastres, various classifiers and codifiers.

DISCUSSION

Transforming urban land use in Uzbekistan presents both significant challenges and opportunities. As the country continues to urbanize, the need for sustainable land management has become increasingly urgent. This discussion explores the economic and organizational pathways necessary to achieve sustainable urban land use, focusing on how Uzbekistan can adapt and implement these strategies within its unique context.

1. Economic Incentives and Mechanisms

One of the critical pathways to sustainable urban land use in Uzbekistan involves the implementation of robust economic incentives. The current land use system in Uzbekistan often lacks the necessary economic mechanisms to encourage efficient and sustainable practices. For instance, land pricing and taxation policies have not been fully leveraged to promote sustainable development. By introducing land value capture mechanisms, Uzbekistan can ensure that the increase in land values, often resulting from public investments in infrastructure, benefits the broader community rather than just private landowners. Additionally, implementing green taxation policies, such as taxes on land that is left undeveloped or on practices that contribute to environmental degradation, could discourage unsustainable land use practices.

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Volume: 9 | Issue: 8 | August 2024 - Peer Reviewed Journal

Furthermore, subsidies and financial incentives for developers who incorporate sustainable practices into their projects could spur the adoption of green technologies and designs. These economic mechanisms must be carefully designed to align with Uzbekistan's broader economic goals and to ensure that they do not disproportionately impact low-income populations.

2. Organizational and Governance Reforms

The effectiveness of economic mechanisms in promoting sustainable urban land use is closely tied to the strength of organizational and governance structures. In Uzbekistan, the centralized nature of land governance has often led to inefficiencies, with decision-making processes being slow and sometimes disconnected from local realities. There is a need for reforms that enhance the responsiveness and adaptability of governance structures. Decentralization, for example, could empower local governments to make land use decisions that are more attuned to the specific needs and conditions of their communities. This would require building the capacity of local institutions and ensuring that they have the necessary resources and authority to manage urban land effectively.

Moreover, enhancing participatory planning processes is crucial. Involving a broader range of stakeholders, including residents, businesses, and civil society organizations, in land use planning can lead to more inclusive and sustainable outcomes. This participatory approach can also improve transparency and accountability in land governance, reducing the risk of corruption and ensuring that land use decisions reflect the public interest.

3. Addressing Land Tenure Security

Land tenure security remains a significant issue in Uzbekistan, where unclear and inconsistent land tenure arrangements can discourage investment in sustainable land use practices. Ensuring that land tenure is secure and clearly defined is essential for creating an environment where stakeholders are willing to invest in long-term sustainable projects. This involves both legal reforms to clarify land ownership and use rights and the strengthening of institutions responsible for land administration.

By improving land tenure security, Uzbekistan can also address social equity concerns, ensuring that all citizens, including vulnerable groups, have access to land resources. Secure land tenure can enable marginalized communities to participate more fully in urban development, fostering more equitable and sustainable urban growth.

4. Integrating Environmental Considerations

Sustainability in urban land use is inextricably linked to environmental stewardship. In Uzbekistan, environmental considerations must be integrated into every stage of urban planning and land management. This includes conducting thorough environmental impact assessments for new developments and implementing urban planning strategies that prioritize the conservation of natural resources and the mitigation of environmental risks, such as soil degradation and water scarcity.

Uzbekistan can also benefit from adopting international best practices in green urbanism, such as the development of green infrastructure and the promotion of public transportation over car-dependent urban sprawl. These practices not only contribute to environmental sustainability but also enhance the quality of life in urban areas.

5. Challenges and Limitations

While the pathways discussed offer promising directions for sustainable urban land use in Uzbekistan, several challenges and limitations must be acknowledged. First, the success of these strategies depends on the political will and commitment to implementing necessary reforms. Resistance to change, whether from vested interests or due to bureaucratic inertia, can impede progress. Additionally, the economic constraints faced by Uzbekistan, particularly in terms of funding large-scale infrastructure projects, may limit the extent to which these strategies can be implemented.

Moreover, the transition to more sustainable urban land use practices requires significant cultural and behavioral shifts among both policymakers and the public. Public awareness campaigns and education initiatives will be crucial in fostering a culture of sustainability that supports these changes.

Transforming urban land use in Uzbekistan through economic and organizational pathways is a complex but achievable goal. By implementing targeted economic incentives, reforming governance structures, securing land tenure, and integrating environmental considerations into urban planning, Uzbekistan can move towards a more sustainable future. While challenges remain, the potential benefits of sustainable urban land use, including improved environmental outcomes, greater social equity, and enhanced economic development, make this transformation a critical priority for the country's continued growth and prosperity.

RECOMMENDATIONS

To achieve sustainable urban land use in Uzbekistan, a comprehensive and strategic approach is needed. Based on the discussion of economic and organizational pathways, the following recommendations are proposed:

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Volume: 9 | Issue: 8 | August 2024 - Peer Reviewed Journal

1. Implement Land Value Capture Mechanisms

Uzbekistan should introduce land value capture mechanisms to ensure that the increase in land values resulting from public investments in infrastructure benefits the community as a whole. This can be achieved through:

- Tax Increment Financing (TIF): Use TIF districts to fund urban infrastructure improvements by capturing the future increases in property tax revenues that result from these investments.
- Development Impact Fees: Charge developers fees that reflect the true costs of the infrastructure needed to support new developments, ensuring that public investments are recovered.

2. Reform Land Taxation and Pricing Policies

Reforming land taxation and pricing policies is crucial for promoting efficient and sustainable land use. Recommendations include:

- Green Taxation: Introduce taxes on undeveloped or underutilized urban land to discourage land hoarding and speculative activities.
- Progressive Land Tax Rates: Implement a progressive tax system where higher land values are taxed at higher rates, incentivizing more productive and sustainable use of urban land.

3. Enhance Land Tenure Security

Strengthening land tenure security is essential for encouraging long-term investments in sustainable land use. Uzbekistan should:

- Clarify and Codify Land Rights: Legal reforms should be undertaken to clearly define land ownership and use rights, reducing uncertainties that can deter investment.
- Strengthen Land Administration Systems: Invest in modernizing land administration systems, including digital land registries, to ensure that land tenure information is accurate, accessible, and transparent.

4. Decentralized Urban Land Governance

To improve the responsiveness and effectiveness of urban land management, Uzbekistan should pursue decentralization by:

- Empowering Local Governments: Transfer more decision-making authority to local governments, allowing them to tailor land use policies to the specific needs of their communities.
- Capacity Building: Provide training and resources to local government officials to enhance their ability to manage urban land sustainably.

5. Promote Participatory Urban Planning

Fostering a participatory approach to urban planning can lead to more inclusive and sustainable outcomes. Recommendations include:

- Establish Community Planning Forums: Create forums where residents, businesses, and civil society organizations can actively participate in urban planning processes.
- Ensure Transparency and Accountability: Implement mechanisms to ensure transparency in land use decision-making, such as public disclosure of planning documents and decisions, and independent oversight bodies.

6. Integrate Environmental Considerations into Urban Planning

Environmental sustainability should be at the core of urban land use planning. Uzbekistan should:

- Adopt Green Infrastructure Practices: Encourage the development of green infrastructure, such as parks, green roofs, and urban forests, to enhance the ecological resilience of cities.
- Prioritize Public Transportation: Develop and expand public transportation networks to reduce reliance on private vehicles, decrease urban sprawl, and lower greenhouse gas emissions.
- Conduct Environmental Impact Assessments (EIAs): Require EIAs for all significant urban development projects to assess and mitigate potential environmental impacts.

7. Develop Financial Incentives for Sustainable Development

Financial incentives can play a crucial role in promoting sustainable urban land use practices. Uzbekistan should consider:

- Subsidies for Green Building Practices: Offer subsidies or tax credits to developers who incorporate energy-efficient technologies, sustainable materials, and other green building practices into their projects.
- Grants for Sustainable Urban Projects: Establish grant programs to fund innovative urban projects that promote sustainability, such as eco-friendly public spaces, renewable energy installations, and sustainable transportation initiatives.

8. Increase Public Awareness and Education

Cultural and behavioral shifts are necessary to support sustainable urban land use. Recommendations include:

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- Public Awareness Campaigns: Launch nationwide campaigns to raise awareness about the importance of sustainable land use and the role of individuals and communities in achieving it.
- Education Programs: Integrate urban sustainability topics into school curricula and offer training programs for professionals involved in urban planning and development.

9. Monitor and Evaluate Urban Land Use Policies

Continuous monitoring and evaluation of urban land use policies are essential to ensure their effectiveness and adapt to changing circumstances. Uzbekistan should:

- Establish Monitoring Frameworks: Develop frameworks for regularly assessing the impacts of urban land use policies on sustainability, including economic, social, and environmental outcomes.
- Use Data-Driven Decision-Making: Leverage data analytics and geographic information systems (GIS) to monitor land use patterns and make informed decisions about future urban development.

By implementing these recommendations, Uzbekistan can create a more sustainable, equitable, and efficient system of urban land use. The proposed economic and organizational reforms will not only improve the management of urban land but also contribute to the country's broader goals of sustainable development, social equity, and economic growth. The success of these efforts will require strong political will, stakeholder collaboration, and ongoing commitment to sustainability principles.

CONCLUSION / SUMMARY

As Uzbekistan continues to experience rapid urbanization, the need for sustainable land use practices has become increasingly critical. This study has explored the economic and organizational pathways that can facilitate the transformation of urban land use in Uzbekistan, ensuring that the country's urban development aligns with the principles of sustainability.

1. Economic Mechanisms: The introduction of economic incentives such as land value capture, green taxation, and subsidies for sustainable practices can significantly influence the efficiency and sustainability of urban land use. These mechanisms are vital for promoting responsible development and ensuring that the benefits of urbanization are equitably distributed.
2. Organizational and Governance Reforms: The effectiveness of land use policies is heavily dependent on the strength of organizational structures and governance. Decentralization, participatory planning, and enhanced transparency are essential for creating responsive and adaptable urban land management systems that can address the specific needs of Uzbekistan's diverse urban environments.
3. Land Tenure Security: Secure land tenure is fundamental to encouraging long-term investments in sustainable land use. Legal and administrative reforms are necessary to clarify land rights and improve the efficiency of land administration systems, thereby reducing uncertainties and fostering a stable environment for development.
4. Environmental Integration: Sustainability requires that environmental considerations be fully integrated into urban planning. By prioritizing green infrastructure, public transportation, and thorough environmental impact assessments, Uzbekistan can mitigate the ecological impacts of urbanization and enhance the resilience of its cities.
5. Public Engagement and Education: A cultural shift towards sustainability is crucial for the success of these initiatives. Public awareness campaigns and education programs can foster a deeper understanding of sustainable practices among citizens, developers, and policymakers alike, driving broader support for sustainable urban land use.

The transformation of urban land use in Uzbekistan is not just a technical challenge but a multifaceted process that requires the integration of economic, social, and environmental considerations. The recommendations provided in this study offer a roadmap for achieving sustainable urban development, but their successful implementation will depend on strong political will, effective governance, and the active participation of all stakeholders.

Uzbekistan stands at a pivotal moment in its urban development journey. By embracing these pathways to sustainability, the country can ensure that its cities not only meet the needs of today's population but also provide a prosperous, equitable, and environmentally sound future for generations to come.

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