

UDC: 332.6:330.322(575.1)

ADVANCED ANALYSIS AND EVALUATION OF SYSTEMIC CHALLENGES INFLUENCING THE ROLE OF THE LAND CADASTRE IN INVESTMENT PROCESSES

Khudoyberdiev Feruz Shamshodovich

*Professor, Doctor of Philosophy in Technical Sciences (PhD), Department of
“Land resources use and state cadastres”, Bukhara State Technical University*

xudoyberdiyev89@list.ru

Annotation. *This article presents a scientific analysis of the impact of the land cadastre system on investment processes. The research identifies key factors limiting investment efficiency, including insufficient spatial accuracy of land parcels, incomplete attribute data, disparities between cadastral and market values, weak interagency integration, and the partial implementation of GIS technologies. Drawing on Presidential Decree No.6061 “On Improving the System of Land Accounting and State Cadastres,” the norms of the Land Code, and analytical reports by the OECD, FAO, and the World Bank, the study examines the legal, economic, and technical dimensions of land cadastre information. The findings demonstrate that improving the accuracy of land data, accelerating digitalization, and integrating land information systems can significantly reduce investment risks, enhance the precision of site selection, and increase overall economic efficiency. The article proposes scientific and practical recommendations for modernizing the land cadastre system, harmonizing valuation methodologies with IVS standards, establishing a unified digital land registry, and achieving full integration of geo-information platforms.*

Keywords: *Land cadastre, investment processes, spatial accuracy, attribute data, cadastral value, interagency integration, geoinformation system, digitalization, land law, servitude, restrictions registry, orthophotoplan, investment risks.*

Introduction. In recent years, the Republic of Uzbekistan has undertaken large-scale reforms aimed at improving the investment climate, enhancing transparency in land relations, and aligning state cadastres with modern digital standards. In particular, the Presidential Decree No.6061 of September 7, 2020, “On Improving the System of Land Accounting and State Cadastres,” established tasks for the full digitalization of land accounting and state cadastres, the development of a unified geoinformation system, and the assurance of openness and reliability of cadastral data



[1]. These reforms are directed toward improving the quality of legal, economic, and spatial information on land parcels, which is essential for the successful implementation of investment projects.

The current Land Code of the Republic of Uzbekistan provides detailed regulations on the legal status and categories of land plots, usage restrictions, servitudes, sanitary and environmental requirements, as well as the procedures for maintaining land records [2]. These norms serve as a fundamental basis for ensuring legal clarity within investment processes. The completeness and accuracy of the land cadastre system are of strategic importance not only for public administration but also for investment planning. Without a comprehensive database containing information on land boundaries, parcel size, value, proximity to utility networks, infrastructural capacities, and natural-geographical characteristics, it is impossible to adequately assess investment risks or ensure the effective siting of investment projects.

International studies also confirm the direct impact of land cadastre information on investment processes. In particular, the World Bank’s Doing Business – Registering Property indicator highlights that the accuracy of the state cadastre, the speed of property registration procedures, and the transparency of information are decisive factors for investors [3]. Methodological guidelines on land governance developed by FAO and the OECD likewise emphasize that the openness of land information reduces investment risks, accelerates land allocation procedures, and enhances economic efficiency [4], [5].

At the same time, practical observations show that although Uzbekistan’s land cadastre system has been increasingly supporting investment processes, several systemic challenges remain. According to recent annual reports of the Cadastre Agency and the State Cadastre Chamber, certain regions still face issues such as low boundary accuracy, inconsistencies between spatial and attribute layers, non-uniform approaches to land valuation, and the absence of fully integrated data exchange among state institutions [6]. These issues lead to delays in investment activities, increased costs, and greater uncertainty in project planning.

These factors necessitate a comprehensive scientific analysis of the land cadastre’s influence on investment processes. The legal and physical-technical condition of a land parcel, environmental constraints, existing utility networks, and the relationship between market and normative land values directly determine the effectiveness of investment decisions. Therefore, modernizing the land cadastre, strengthening its integration with investment processes, and introducing geoinnovative, digitally driven management mechanisms have become highly relevant scientific and practical priorities today.



Research subject. the factors of land cadastre information that directly influence investment processes, including: the legal status of land parcels, their spatial (geodetic) accuracy, the completeness of attribute data, discrepancies between cadastral and market values, interagency data exchange, and the degree of integration with geoinformation systems. These factors are documented in the open reports of the Cadastre Agency of Uzbekistan [6], the OECD Investment Review [5], and World Bank indicators.

Research objective. The objective of this research is to scientifically assess the impact of the land cadastre system on investment processes, identify existing systemic challenges, and develop scientific and practical recommendations for improving the system in accordance with international standards. This objective is closely aligned with the modernization tasks outlined in Presidential Decree No.6061 “On Improving the System of Land Accounting and State Cadastres,” as well as with land-use-related issues highlighted in the Doing Business indicators [1], [4].

Problem analysis. The effectiveness of investment processes, the accuracy of project siting, the predictability of infrastructure expenditures, and the security of capital investments primarily depend on the completeness, accuracy, and legal reliability of information contained in the land cadastre. Although significant digitalization reforms have been implemented in Uzbekistan’s cadastre system in recent years, the tasks outlined in Presidential Decree No.6061 “On Improving the System of Land Accounting and State Cadastres” have not yet been fully accomplished [1].

Below, the main challenges that exert the strongest impact on investment processes are analyzed in a comprehensive manner:

1. Low accuracy of spatial data. During the period of the long-standing traditional cadastral system, the boundaries of many land parcels were not based on precise geodetic foundations. According to the open reports of the State Cadastre Chamber for 2022-2023, several districts and cities still exhibit inconsistencies in land parcel boundaries and discrepancies in coordinate accuracy [6].

Low boundary accuracy poses a direct risk to investment processes. As a result, the actual size of a project site may be incorrectly assessed, territorial constraints may be overlooked, land-related legal disputes may increase, and the start of project implementation may be delayed. The World Bank’s Doing Business - Registering Property report likewise identifies boundary accuracy as one of the most critical indicators in property registration procedures [3].

2. Insufficient completeness of attribute (land-related descriptive) data. In many regions, key attribute indicators related to land parcels-such as land category



and type of use, infrastructure conditions, sanitary and environmental restrictions, servitudes, and protection zones-are either incomplete or outdated. This issue is consistently highlighted in the Cadastre Agency’s open data for 2021-2023 [6].

The outdated nature of attribute data poses significant risks for investors. As a result, planning project expenditures becomes difficult, the environmental risks of a site remain unassessed, and the true value of the land parcel is inaccurately determined. FAO’s Good Governance in Land Administration report likewise identifies outdated attribute information as one of the major risk factors for investment [4].

3. Discrepancies between cadastral value and market value. In many regions, the cadastral value of land parcels differs significantly from their actual market value. This discrepancy is explicitly highlighted in the OECD’s Investment Policy Review: Uzbekistan 2020 report [5]. The main causes include the irregular updating of cadastral values, the lack of centralized market monitoring, the partial alignment of valuation methodologies with IVS standards, and the insufficient reflection of the socio-economic significance of land in valuation processes. The gap between cadastral and market values creates considerable risks for investment activities. As a result, acquisition costs become uncertain for investors, biased valuation distorts the technical and economic indicators of projects, and financial procedures-such as mortgage and lending-become more complex.

4. Low level of interagency integration in the process of registering land rights. Although the land allocation process in investment projects requires extensive data exchange among multiple agencies, the OECD’s review on Uzbekistan notes that this integration does not function adequately [5]. As a result, information is maintained separately across different systems, authorization steps are duplicated, significant time is lost, and the manual execution of certain approval procedures increases operational risks. Consequently, this leads to increased time costs, higher expenditures, and elevated investment risks.

5. Incomplete integration of geoinformation systems (GIS). Although Presidential Decree No.6061 “On Improving the System of Land Accounting and State Cadastres” mandates the integration of all state cadastres into a unified geoinformation system, GIS platforms have not yet been fully implemented in many regions [1]. This is reflected in the use of spatial layers in different formats, inconsistencies between cadastral and infrastructure maps, and the fragmentation of environmental and protection zone data across various agencies. As a result, comprehensive spatial analysis during site selection becomes limited, the assessment of project risks becomes more difficult, and the quality of investment decisions



declines. FAO and the World Bank also recognize GIS integration as a key factor in ensuring a favorable investment environment [8], [7].

6 Incomplete formation of data on land-related restrictions and servitudes.

According to the open reports of the Cadastre Agency [6], in some regions, red lines, underground utilities, sanitary protection zones, environmental restrictions, and areas of cultural heritage sites are not fully reflected in the database. This may result in unforeseen legal constraints for investors, revisions to project cost estimates, and even the cancellation of planned projects.

7. Historical inconsistencies in land documents and the non-digitalization of archival records. Due to the fact that many land documents prepared during the 1970-1990 have not yet been fully digitized, discrepancies are often found in older records [6]; the land area or boundaries may be inaccurately represented, and the process of verifying legal certainty becomes prolonged. This has a direct negative impact on investment processes.

The outcome shows that although Uzbekistan's cadastre is rapidly advancing within the ongoing modernization process, achieving full compliance with international standards requires equitable digitalization, precise spatial measurements, and the improvement of valuation policies.

Conclusion. Although the land cadastre in Uzbekistan serves as a key system supporting investment activities, low spatial accuracy, outdated attribute data, and the absence of complete information on infrastructure and environmental restrictions continue to increase investment risks. Discrepancies between cadastral and market values reduce the reliability of valuation results, while weak interagency integration prolongs approval procedures and raises administrative costs. The incomplete integration of GIS data limits the ability to conduct comprehensive spatial assessments of project sites. Therefore, full digitalization of the land cadastre, improving data accuracy, harmonizing valuation practices with market requirements, and strengthening interagency integration will significantly enhance the transparency and security of investment processes.

Recommendations. This study demonstrates that the effectiveness of investment processes in Uzbekistan is highly dependent on the accuracy, completeness, and interoperability of land cadastre information. Despite ongoing reforms, significant gaps remain in spatial accuracy, attribute completeness, valuation practices, and institutional data exchange. These limitations continue to create uncertainties in project siting, increase transaction costs, and elevate financial and legal risks for investors. The empirical assessment highlights that improving spatial data quality through GNSS expansion, UAV-based surveying, and high-resolution



orthophoto production is essential for enhancing the reliability of cadastral boundaries. The findings also indicate that harmonizing attribute datasets, integrating environmental and infrastructural constraints, and transitioning to IVS-compliant valuation practices will substantially strengthen investment feasibility assessments. The development of a unified digital land registry and the establishment of a comprehensive restrictions and servitudes database are expected to streamline administrative procedures and reduce decision-making delays. Furthermore, the full digitalization of archival land records is necessary to eliminate historical inconsistencies and support legally secure transactions. Overall, the results underline the strategic importance of modernizing Uzbekistan’s land cadastre as a prerequisite for improving investment transparency, enhancing regulatory efficiency, and increasing investor confidence. Implementing the recommended geoinformation, valuation, and governance reforms will significantly reinforce the country’s competitiveness in attracting sustainable long-term investments.

References

1. On Improving the System of Land Accounting and State Cadastres. Presidential Decree of the Republic of Uzbekistan, September 7, 2020, No.6061.
2. Uzbekistan. Land Code of the Republic of Uzbekistan. Tashkent, 1998.
3. World Bank. Doing Business 2019: Registering Property. Washington, D.C., 2019.
4. FAO. Good Governance in Land Administration. Rome, 2017.
5. OECD. Investment Policy Review: Uzbekistan 2020. Paris: OECD Publishing, 2020. URL: <https://www.oecd.org/investment>
6. Cadastre Agency Open Annual Reports of the State Cadastre Chamber, 2021-2023. Tashkent. Cadastre Agency of Uzbekistan, 2023. Access mode: <https://kadastr.uz>
7. World Bank. Doing Business – Registering Property Indicator Reports (2018-2020). Washington, D.C.: World Bank Group. URL: <https://www.doingbusiness.org>
8. Food and Agriculture Organization (FAO). Good Governance in Land Administration. Rome: FAO Land Tenure Studies, 2017.

