

Challenges and strategies for implementing the "Special Ordinance for Cadastral Update" of the Municipal Government of Guayaquil

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Abstract— The implementation of the "Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have a Final Inspection and/or Cadastral Registry and with a Land Use Different from that Recorded in the Cadastre System" represents a significant effort by municipal authorities to improve the accuracy and efficiency of real estate registration, which has a direct impact on tax collection, urban planning, and the provision of public services. However, it is crucial to evaluate whether this regulation has been effectively applied in all sectors of the city, considering the specific characteristics of each, from central areas to the most peripheral ones, which present different socioeconomic and urban dynamics. This is key to creating regulatory frameworks that are applicable and viable in diverse urban realities, considering social, economic, and cultural specificities. These studies can show which approaches and solutions are most successful in improving cadastral conditions, which is useful for policymakers at the local, regional, and national levels. Ordinance reforms provide empirical evidence and data that help design experience-based public policies. This study aims to analyze the challenges faced by cadastral updating processes (building regularization) in Guayaquil, assessing both their positive aspects and limitations, and subsequently proposing strategies to improve the efficiency and effectiveness of these land use planning mechanisms.

Keywords: Urban planning, municipal ordinances, land registry, building regularization

INTRODUCTION

In Ecuador, the 2008 Constitution incorporated new urban planning and development tools into its legal framework. Consequently, on October 19, 2010, the Organic Code of Territorial Organization, Autonomy and Decentralization (COOTAD) was enacted, consolidating as one of the most important regulations for territorial organization and decentralization, replacing the previous Organic Law of Municipal Regime (Benabent, M., & Vivanco Cruz, L., 2017). COOTAD, in its Art.139, defines as the responsibility of Municipal Decentralized Autonomous Governments (GADs) the formation and administration of urban and rural real estate cadastres; determining as mandatory for these GADs to update cadastres and urban and rural property valuation every two years. In compliance with this provision, GAD Guayaquil issued the "Special Ordinance for the cadastral update of completed buildings that do not have construction registration, final inspection and/or cadastral registration and with land use different from that recorded in the Cadastre System,"

published on June 19, 2020, in Official Gazette No. 17.

The generation of ordinances is a key process within the framework of urban planning and territorial organization, especially when seeking to regulate and manage land use, constructions, and activities within a specific area, such as cities or municipalities. Ordinances are local regulations that guide and structure urban development, protect the environment, and establish conditions for the orderly growth of the population. Ordinances must align with national and regional laws, and with international frameworks when necessary (for example, environmental or human rights commitments). In many countries, local ordinances must conform to territorial planning and urban planning regulations dictated by higher authorities.

In recent decades, the city of Santiago de Guayaquil has experienced rapid urban growth; according to the 2022 census, it registered 2,772,896 inhabitants (INEC, 2022). Accelerated urban growth and internal migration have generated the proliferation of informal settlements which require cadastral updating processes (building regularization and land use changes) for their integration into the urban fabric. It should be noted that informality is not exclusively present in areas with low socioeconomic levels; it is also reflected in a high number of buildings in more privileged areas of the city, which have increased their construction area without complying with the regulations contained in the "General Ordinance of Buildings and Constructions of Guayaquil."

The article analyzes the challenges of territorial planning in the city of Santiago de Guayaquil, cantonal head of Guayas province, with emphasis on cadastral updating (building regularization). It examines the effectiveness of regularizations as an urban planning tool, identifying institutional limitations such as lack of personnel, procedural delays, excessive required documentation, and multiple corrections. Through critical analysis, strategies and mechanisms are proposed to optimize these processes, contributing to more efficient and equitable territorial planning in Ecuador's main port city.

The study of the effectiveness of the "Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have Final Inspection and/or Cadastral Registry and with Land Use Different from that Recorded in the Cadastre System" is relevant because accurate and well-managed cadastral updating is fundamental for efficient urban planning. Cadastral updating is linked to the city's ability to generate fiscal revenue; its lack of updating affects citizens' quality of life, as resources for works and services are limited. If tax collection does not adjust to reality, it becomes a limitation for the execution of infrastructure and service projects, mainly in sectors that require greater municipal intervention.

MATERIALS AND METHODS

a. METHODOLOGY

The study adopts a mixed approach, combining quantitative and qualitative analysis to examine cadastral updating (regularization) processes in Guayaquil.

A sampling method is used that allows for in-depth examination of local context particularities; tabulated data sources were derived from user assignments from citizen services provided by the College of Architects of Ecuador, Provincial College of Guayas.

The research is based on the following aspects:

- Documentary analysis of current regulations, cadastral updating plans and programs (regularization).
- Review of statistical data on cadastral updating processes (regularization) (2020-2025).
- Semi-structured interviews with municipal officials and technicians.
- Direct observation in regularized areas.
- Analysis of representative cases of successful and problematic regularizations.

Content analysis techniques were applied for documentary examination, descriptive statistical analysis for

quantitative data, and thematic analysis for qualitative information. Source triangulation allowed for validation of findings.

RESULTS

1. Positive Aspects of Cadastral Updating (Regularizations)

Successful or approved regularizations have provided legal security to Guayaquil families who have voluntarily accessed compliance with regulations, allowing access to basic services such as drinking water, sewerage, and electrical energy in sectors poorly served by the council.

Examples could be sectors such as Flor de Bastión, Monte Sinaí, among others, where cadastral updating (regularization) has facilitated infrastructure investments that serve to significantly improve citizens' quality of life. Additionally, it will allow thousands of property owners to regularize their property situation, accessing cadastral registration without the need for demolitions or costly sanctions.

1.1. Urban Integration

Cadastral updating processes (regularization) will contribute to the integration of certain informal settlements into the general urban fabric, improving connectivity and access to urban facilities necessary for the development of their basic activities. The opening of roads and implementation of public transportation systems have reduced the isolation of these communities (Guerrero et al., 2020).

Formal recognition of property improves its commercial value and allows its incorporation into planned urban development. Legalization also drives progressive improvement of the physical environment and housing, allowing for revaluation of urban heritage.

1.2. Economic Dynamization

Formalization has stimulated the local economy through property valorization as constructions are incorporated into the tax system. Local studies indicate increases of 40-60% in property values (de Murzi & Orejuela, 2022). Regularized buildings will begin to pay taxes fairly, representing an increase in the Municipality's tax base, contributing to greater fiscal equity and public works financing. Additionally, there is recognition of neighborhood economic activities, as the most recent reforms included the possibility of regularizing small family businesses (stores, bakeries, beauty salons, workshops), especially in popular areas, facilitating local economic development without resorting to arbitrary closures or sanctions.

By having updated deeds and cadastral registration, many owners were able to access bank credits and formalize purchase-sale operations, activating the real estate market in previously informal sectors.

2. Relationship with Generative Artificial Intelligence Model Evaluations

Deficiencies in the Reforms to the Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have Final Inspection and/or Cadastral Registry, and that also have Land Use Different from that Recorded in the Cadastre System in Guayaquil, according to the investigated documentation, can be classified as legal, technical, administrative, and social (Torres-Espinoza & Delgado-Bohórquez, 2023).

2.1. Legal Deficiencies

- Lack of clarity in scope: it is not always clear which buildings or activities are actually covered by the ordinance, generating legal insecurity.
- Regulatory insecurity: constant reforms (five in total since 2020) generate confusion among citizens, technicians, and officials.

- Overlap with other regulations: may conflict with the Land Use and Management Plan (PUGS) or environmental and territorial planning norms.

2.2. Technical Deficiencies

- Incomplete cadastral updating: the cadastre continues to present deficiencies in peripheral or urban expansion areas, limiting the ordinance's effectiveness.
- Incompatible informal land use: in many cases, it allows legalizing constructions with land uses not permitted by the PUGS, generating technical contradiction with territorial planning.
- Lack of structural verification: does not require in-depth technical inspections, putting the safety of buildings regularized only with documentary procedures at risk.

2.3. Administrative Deficiencies

- Prolonged bureaucratic procedures: although the latest reform (June 2025) seeks to simplify procedures, cumbersome processes such as plans, permits, deeds, or land use validation that are difficult for vulnerable sectors to comply with are still maintained for some cases. In extreme cases, processes require between 15-20 different documents, including topographic, environmental, risk, and service feasibility studies. This documentation, with costs ranging from \$2,000-5,000, represents a significant barrier for low-income communities. The average time to complete a cadastral updating process (regularization) approximately ranges between 9 and 12 months, potentially exceeding 15 months on occasions, significantly exceeding normatively established deadlines. Delays are concentrated in the phases of inspector assignment (25%), technical evaluation (45% of time), and final approval (30% of time). The need for approvals from multiple entities (Municipality, service companies, environmental entities) generates duplication of procedures and lack of coordination. 40% of delays are attributed to this institutional fragmentation.
- Limited Municipal capacity: there is insufficient personnel or technology to quickly process the thousands of applications generated by the ordinance. Analysis revealed that the Municipality has only 32 specialized technicians to handle cadastral updating processes (regularization), resulting in a ratio of approximately 20 applications processed daily per technician (data obtained through random survey of DUMCE personnel). This work overload generates significant delays in the evaluation and approval of submitted procedures (Rico et al., 2022).
- Lack of follow-up and oversight: once the regularization Certificate is issued, there is no strong subsequent control system. According to data obtained from control records of regularizations assigned in CAE Guayas, 26% of regularization applications require corrections, in 18% of cases processes must be re-submitted, unnecessarily prolonging their resolution time. The most frequent observations include: lack of complementary documentation (18%), non-compliance with technical specifications (14%), and inconsistencies in dimensioned schemes or parameters (8%).

2.4. Social Deficiencies

- Unequal access: the ordinance's benefits do not easily reach those living in popular or marginal areas due to technological, economic, or educational barriers.
- Poor socialization: many citizens are unaware of the ordinance or do not understand how to apply it, limiting its impact.
- Possible incentive for irregular constructions: by opening the possibility of regularizing illegal buildings, it may be rewarding informality and disincentivizing regulatory compliance from the beginning.

A practical example could be a bakery built without a license in a residential area, which can benefit from the ordinance and regularize its commercial land use. However:

- This may violate the PUGS if the area is exclusively designated for housing.
- It may cause disturbances to neighbors (noise, traffic).
- It does not guarantee that the construction meets structural or sanitary safety standards.

Although the ordinance has a laudable objective - formalizing and updating Guayaquil's urban cadastre - its legal, technical, and social deficiencies limit its effectiveness. Harmonization with the PUGS, better oversight, and more transparent and equitable processes are needed to prevent the norm from becoming an open door to informality or an inefficient instrument.

3. Impact on Territorial Planning

As of June 2025, the Municipality of Guayaquil has received more than 53,000 applications to regularize buildings that lack final inspection, cadastral registration, or have land use different from that registered in the cadastral system. Of these, more than 45,000 cases have been processed, representing approximately 85% of submitted procedures, according to figures from Diario El Universo in its June 30, 2025 publication.

This high volume of applications reflects citizen interest in formalizing their properties and neighborhood economic activities. The Directorate of Urbanism, Mobilization, Cadastre and Buildings (DUMCE) has implemented measures to improve service, such as expanding the waiting room and restructuring personnel, including technicians with supervisor profiles and area heads to approve applications more quickly, according to the official website of the I.M. Municipality of Guayaquil in its September 13, 2024 publication.

However, since May 2025, consultations or corrections services go through a valuation filter through Universal Window officials, who resolve basic questions from owners and technical professionals in charge of submitted processes and, after analysis, proceed to schedule technical consultations at DUMCE. This procedure has generated dissatisfaction among professionals in private practice because it further delays possible observation corrections.

4. VOSViewer Analysis

Following the proposed methodology, interviews were conducted with different actors involved in the regularization process: CNEI officials, GAD Guayaquil officials, and additionally, numerical information was obtained on regularization processes submitted to the Municipality of Guayaquil, prior to the latest reform to the "Substitute Ordinance to the Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have Final Inspection and/or Cadastral Registry and with Land Use Different from that Recorded in the Cadastre System," published in Official Gazette No. 32, Friday, March 12, 2021. Additionally, access was obtained to a sampling of control conducted by the College of Architects of Ecuador, Provincial College of Guayas (CAE - Guayas) among a percentage of members.

Figure 1. Graphical report of processed procedures in the period 2020–2024, broken down by type of income



Source: M.I. Municipality of Guayaquil, Official Letter No. DUMCE-2025-18760, dated June 12, 2025.

From interviews with public officials, the following stands out:

CNEL (Strategic Public Electric Company National Electricity Corporation)

- The Projects and Engineering Department is responsible for providing service to subscribers who require obtaining CNEL Certification to comply with requirements demanded by the Municipality of Guayaquil for processing regularization applications for their buildings.
- The main function of Projects and Engineering is the review and approval of urbanizations, an activity that demands time and much attention from technicians who, numbering 12, must distribute work to cover the entire city.
- Initially, CNEL Certification was not required to regularize a building, but when the "First Reform to the Substitute Ordinance to the Special Ordinance for the cadastral update of completed buildings that do not have final inspection and/or cadastral registration, and that also have Land Use different from that recorded in the Cadastre System" was issued, it became part of the REQUIREMENTS to be presented.
- CNEL Certification indicating compliance with distance requirements between buildings and medium and high voltage line passage, in accordance with ARCONEL-018/18 resolution, is requested by many subscribers as a requirement for their regularization procedures, implying a strong work overload for Department technicians, such that response time is quite extended.

GAD GUAYAQUIL - Public Officials

- 32 technicians are assigned for process review, which is insufficient in relation to the number of applications submitted for regularization, being a factor that affects response time for users.
- They claim that the number of corrections would be lower if technicians responsible for submitting applications had greater knowledge of the Ordinance, avoiding errors in schemes and when placing parameters. When issuing a correction, the deadline for corrections is maximum 15 days; if not made within that period, the system closes the process (declared in withdrawal) and must be submitted as a new procedure, increasing the number of processes to review.
- Of every 20 processes reviewed, at least 10 result in correction or denial, since they require additional procedures (CNEL Certification, Building line, Boundary and survey rectification, Surplus purchases); as officials conduct reviews using Google Earth and Geoportal platforms (CNEL and Municipality) for initial verification that they are not violating norms (projections, overhangs, public space invasion), in addition to verifying if the declared property areas correspond to what is found on site. Another observation to review is verifying the type of zone where the property in question is located, to corroborate that it does not contradict the permitted USE.

DUMCE (Directorate of Urbanism, Mobility, Cadastre and Buildings. Municipality of Guayaquil)

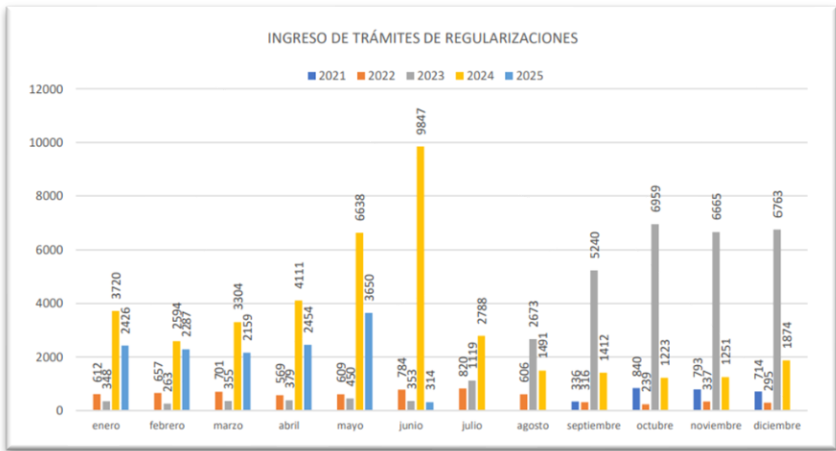
From Official Letter No. DUMCE-2025-18760, dated June 12, 2025, the following information is extracted:

Since the entry into force of the "Substitute Ordinance to the Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have Final Inspection and/or Cadastral Registry and with Land Use Different from that Recorded in the Cadastre System" published on March 20, 2021, and its reforms, 10,660 applications have been submitted through the online system and 94,338 in the municipal procedure management system, totaling 104,998 regularization applications.

Based on the validity of the "Fourth Reform to the Substitute Ordinance to the Special Ordinance for the Cadastral Update of Completed Buildings that Do Not Have Final Inspection and/or Cadastral Registry and with Land Use Different from that Recorded in the Cadastre System" published on July 15, 2024, until the end of 2024, 10,039 applications were submitted and so far in 2025, 13,290, totaling 23,329 requirements.

Of 23,329 submitted applications, 9,107 are approved, which has allowed updating information recorded in the municipal cadastre system, and 7,551 are in process, representing a total of 15,778 applications processed to date.

Figure 2. Graphical report of processes processed in the period 2020–2024, monthly



Source: M..I. Municipality of Guayaquil, Official Letter No. DUMCE-2025-18760, dated June 12, 2025.

Figure 3. Graphical report of processes processed in the period 2024–2025, cut-off June/2025

 MUY ILUSTRE MUNICIPALIDAD DE GUAYAQUIL POR GUAYAQUIL INDEPENDIENTE								
Cuenta de TIPO DE SOLICITUD Etique								
Etiquetas de fila	ANULADA	APROBADA	APROBADA POR REVISAR	DESISTIMIENTO	NEGADA	POR REVISAR	SOL. INFORMACION SUBSANADA	Total general
2024	143	6564	41	1415	1065	168	30	613
2025	252	2543	861	39	393	7383	137	1682
Total general	395	9107	902	1454	1458	7551	167	2295

Source: M..I. Municipality of Guayaquil, Official Letter No. DUMCE-2025-18760, dated June 12, 2025.

Within the number of processed applications, 2,295 were corrected, 1,458 denied, 1,454 with system withdrawal for not having presented corrections, totaling 5,207 applications that did not fulfill the objective of updating their properties' cadastral information, which can be attributed to various factors such as lack of information, ignorance of the process, denials due to technical criteria according to information provided by the technical responsible party, etc.

Figure 4. Graphical report of revenues from approved procedures in the period 2024–2025, cut-off June 2025

Tabla de valores que se cobra al aprobarse la solicitud.

actualización	Periféricas	Demás sectores de la ciudad
Hasta 500 m2	10% SBU	10% SBU
Mayor a 500 m2 hasta 1000 m2	100% SBU	200% SBU
Mayor a 1000 m2	200% SBU	400% SBU

Source: M.I. Municipality of Guayaquil, Official Letter No. DUMCE-2025-18760, dated June 12, 2025.

"Additionally, another result within the framework of applying the aforementioned Ordinance is collection (fine paid by the user upon obtaining the benefit) under the provisions of art. 13 of the Ordinance regulating the matter. During 2024 and so far in 2025, approximately \$2,274,948.50 was collected, estimating that these values may increase considerably, especially in this month when the Ordinance's validity period is until June 30, 2025."

5. Sampling of Control Conducted by the College of Architects of Ecuador, Provincial College of Guayas (CAE - Guayas) Among a Percentage of Members

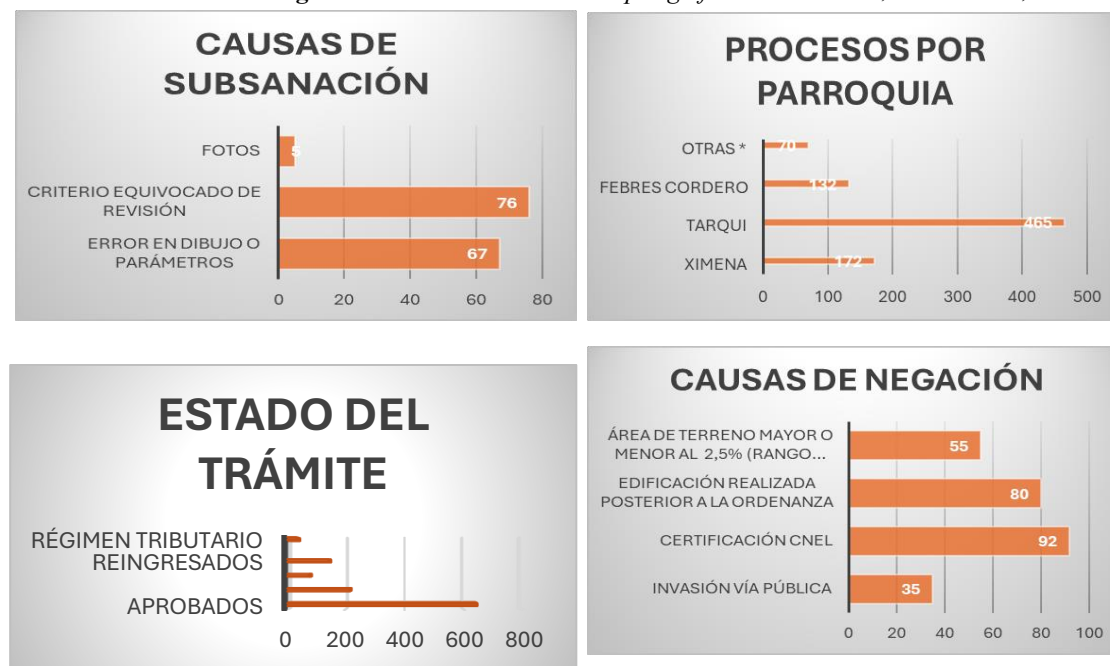
The following presents the tabulation of data provided by CAE - Guayas, from a universe of 115 active members who satisfactorily served 839 users (cases), although 1,042 citizen services were provided.

Figure 5. Table A - General Sampling of Cases Admitted, Corrections, Denials

FICHA DATOS COMPILADOS DE INVESTIGACIÓN					
ARTÍCULO CIENTÍFICO PREVIO A TITULACIÓN MAESTRÍA ORDENAMIENTO TERRITORIAL					
AUTOR: Karina Murgueitio Roa, Arq.					
DATOS GENERALES					
ESTADO DEL TRÁMITE	Nº	PROCESOS POR PARROQUIA	Nº	CAUSAS DE SUBSANACIÓN	
APROBADOS	645	XIMENA	172	ERROR EN DIBUJO O PARÁMETRO	67
SUBSANACIÓN	216	TARQUI	465	CRITERIO EQUIVOCADO DE REVISIÓN	76
NEGADOS	78	FEBRES CORDERO	132	OTRAS * (Detalle y cantidad)	
REINGRESADOS	145	OTRAS *	70	FOTOS (Requieren más detalle)	5
INGRESADOS A RÉGIMEN TRIBUTARIO	37	PASCUALES	60	CAUSAS DE NEGACIÓN	
		LETAMENDI	4	INVASIÓN VÍA PÚBLICA	35
		GARCÍA MORENO	1	CERTIFICACIÓN CNEL	92
		URDANETA	1	EDIFICACIÓN REALIZADA POSTERIOR A LA ORDENANZA	80
		POSORJA	4	ÁREA DE TERRENO MAYOR O MENOR AL 2,5% (Rango permitido)	55

Source: Own elaboration

Figure 6. Table A - General Sampling of Cases Admitted, Corrections, Denials



Source: Own elaboration

Figure 7. Table B - General Sampling Cases Land Use and Additional Procedures

FICHA DATOS COMPILADOS DE INVESTIGACIÓN			
ARTÍCULO CIENTÍFICO PREVIO A TITULACIÓN MAESTRÍA ORDENAMIENTO TERRITORIAL			
AUTOR: Karina Murgueitio Roa, Arg.			
CAMBIOS DE USO DE SUELO			
RESIDENCIAL/COMERCIAL		COMERCIAL	
INGRESADOS	309	INGRESADOS	76
APROBADOS	272	APROBADOS	60
TRÁMITES ADICIONALES			Nº
POSESIÓN EFECTIVA /CAMBIO DE PROPIETARIOS			50
LÍNEA DE FÁBRICA			62
RECTIFICACIÓN DE LINDEROS Y MENSURAS			60
COMPRA DE EXCEDENTES			34
CNEL			91
OTROS (Indicar el trámite, cantidad y tiempo de respuesta según tabla de rangos)			
ACTUALIZACIÓN DE DATOS REGISTRALES	3	A	De 1 a 3
EXTINCIÓN DE PATRIMONIO	5	C	De 3 a 6
CERTIFICADO DE AFECTACIÓN INTERAGUA	4	B	De 6 a 9
CERTIFICADO DE REGISTRO CATASTRAL RUSTICO	4	A	De 9 a 12
DECLARATORIA DE PROPIEDAD HORIZONTAL	8	B	De 12 a 15

Source: Own elaboration

During technical visits, it was verified that some did not qualify to access the regularization procedure; therefore, the number of users whose property was in the name of a deceased owner and whose heirs did not agree to carry out effective possession of the property is not quantified, as well as those who had executed space expansions after August 2020, as determined until the fourth reform of the substitute ordinance. It should be mentioned that these citizen services were provided between September 2023 and September 2024 (approximately one calendar year).

Figure 8. Table B - General Sampling Cases Land Use and Additional Procedures



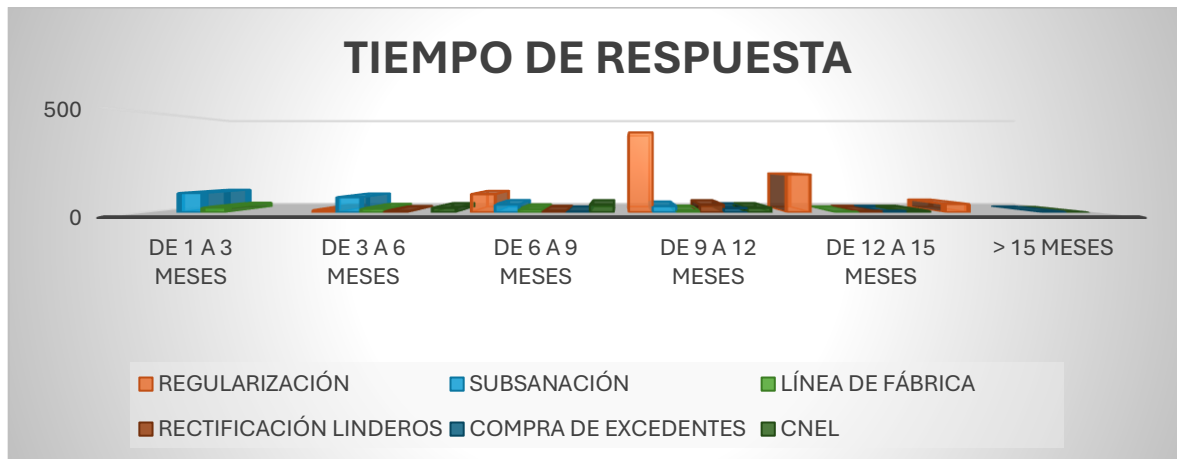
Source: Own elaboration

Figure 9. Table C - General Sampling Cases Response Time to Requested Procedures

FICHA DATOS COMPILADOS DE INVESTIGACIÓN									
ARTÍCULO CIENTÍFICO PREVIO A TITULACIÓN MAESTRÍA ORDENAMIENTO TERRITORIAL									
AUTOR: Karina Murgueitio Roa, Arg.									
TIEMPO DE RESPUESTA									
TABLA DE RANGOS (EN MESES)		NÚMERO DE CASOS (Según tabla de rangos)							
		TRÁMITE	A	B	C	D	E	F	
De 1 a 3	A	REGULARIZACIÓN		11	91	400	189	42	
De 3 a 6	B	SUBSANACIÓN	97	76	39	31			
De 6 a 9	C	LÍNEA DE FÁBRICA	24	18	15	8	3		
De 9 a 12	D	RECTIFICACIÓN LINDEROS		6	7	38	7		
De 12 a 15	E	COMPRA DE EXCEDENTES			3	21	7	3	
> 15	F	CNEL		22	38	22	7		

Source: Own elaboration

Figure 9. Table C - General Sampling Cases Response Time to Requested Procedures



Source: Own elaboration

STRATEGIES FOR BUILDING REGULARIZATION REFORM

As part of the strategic process to obtain true territorial planning regarding buildings, it must be clear that institutional strengthening involves generating an expansion in the technical team in charge, thus creating multidisciplinary teams (architects, engineers, lawyers). Implement continuous training programs for professionals involved in the process and citizenship in general, thus unifying criteria of inspectors in charge of process review through permanent technical instruction (Avila Beneras et al., 2020).

Among internal institutional processes, processes must be simplified and modernized, employing digitization of all documentation, implementing digital platforms for correction services, and establishing mandatory electronic signature requirements for professionals responsible for procedures.

As part of external processes, a reduction in required documentation must be proposed. Eliminate redundant or unnecessary documents, thus accepting sworn statements instead of effective possessions to present regularization applications. Create reusable technical information banks regarding exceptions that may arise in the review phase.

Among strategies within technical processes, technical criteria should be standardized, creating standardized checklists, implementing automatic pre-evaluation systems, and establishing clear approval criteria.

As part of follow-up and backup process strategies, the following steps should be established to propose a correlation between process flow and technical review:

1. Inter-institutional Coordination

Inter-institutional Technical Committee

- Create a permanent committee with all involved entities (public and private)
- Establish coordination protocols and maximum deadlines
- Implement shared information systems
- Develop simultaneous approval procedures

Establish Collaboration Agreements

- Formalizing agreements with public service companies
- Establish prioritization protocols for cadastral updating areas (regularization)
- Create joint financing mechanisms
- Develop inter-institutional training programs

2. Community Participation and Technical Assistance

Technical Assistance Program

- Create a free technical assistance program from related professional colleges (architects, engineers)
- Develop educational guides for communities
- Establish decentralized service offices

DISCUSSION

Cadastral updating processes (regularization) in Guayaquil present a complex panorama that combines significant achievements with important limitations that affect their effectiveness as a territorial planning tool.

Regularizations have proven fundamental for improving the living conditions of thousands of Guayaquil families, providing legal security, access to basic services, and economic development opportunities. Successful cases demonstrate the potential of these processes to transform settlements with informal constructions into neighborhoods integrated into the formal urban fabric (Lopez et al., 2021).

It is recommended to deepen studies of social and economic impact of regularizations, comparative analyses with other Latin American cities, and evaluation of environmental sustainability of these processes. Likewise, it is necessary to investigate innovative financing mechanisms and community participation.

In conclusion, regularizations constitute a necessary but insufficient tool for Guayaquil's territorial planning. Their optimization, through implementation of proposed strategies, is fundamental for building a more orderly, equitable, and sustainable city (Zambrano-Monserrate et al., 2023).

CONCLUSION

Results suggest the need to transition from a reactive to a preventive and proactive approach. This implies not only improving existing processes but also developing mechanisms that prevent the formation of new informal settlements.

Proposed strategies are technically viable and financially feasible, considering municipal budget and possibilities for inter-institutional cooperation. Their implementation will require political will, trained human resources, and a medium-term time horizon (3-5 years).

Current system limitations are structural and require comprehensive interventions. Insufficient technical personnel, procedural delays, excessive required documentation, and lack of inter-institutional coordination configure a scenario that significantly limits the effectiveness of regularizations as a territorial planning tool.

It is recommended to deepen studies of social and economic impact of regularizations, comparative analyses with other Latin American cities, and evaluation of environmental sustainability of these processes. Likewise, it is necessary to investigate innovative financing mechanisms and community participation.

In conclusion, regularization constitutes a necessary but insufficient tool for Guayaquil's territorial planning. Their optimization, through implementation of proposed strategies, is fundamental for building a more orderly, equitable, and sustainable city.

REFERENCES

- Avila Beneras, J., Fois Lugo, M., & Hechavarría Hernández, J. R. (2020). Strategies for accessibility to the teodoro maldonado hospital in guayaquil. a design proposal focused on the human being. *Advances in Intelligent Systems and Computing*, 1131, 1256–1262. https://doi.org/10.1007/978-3-030-39512-4_192
- Benabent, M., & Vivanco Cruz, L. (2017). Urban planning in Ecuador: territorial organization and decentralization. *Revista de Estudios Urbanos*, 5(2), 23-41.
- Carrión, A., & Erazo, J. (2012). The urban form of Quito: a history of centers and peripheries. *Bulletin de l'Institut français d'études andines*, 41(3), 503-522.
- de Murzi, T. P., & Orejuela, G. (2022). Residential tissues in Guayaquil: urban indicators relating to compactness and functionality. *ZARCH*, 19, 124–139. https://doi.org/10.26754/OJS_ZARCH/ZARCH.2022196923
- Fernandes, E. (2011). *Regularization of informal settlements in Latin America*. Policy Focus Report. Lincoln Institute of Land Policy.
- Fernández, R. (2010). *Urban planning in Latin America: territorial management experiences*. Editorial Universidad Nacional.
- Guerrero, R. M. P., España, W. M., & Dávila, J. S. (2020). Need of architectonic works in the vehicular inflation points of the francisco de orellana avenue in guayaquil. *Universidad y Sociedad*, 12(1), 17–32.
- Instituto Nacional de Estadística y Censos - INEC. (2022). *Population and Housing Census 2022*. Quito: INEC.
- Lopez, A. P., Vazquez, M. L., & Hernández, J. R. H. (2021). Pedestrian traffic planning with topos: Case study urdesa norte, guayaquil, ecuador. *Advances in Intelligent Systems and Computing*, 1253, 69–76. https://doi.org/10.1007/978-3-030-55307-4_11
- Massiris, Á. (2005). *Conceptual and methodological foundations of territorial planning*. Tunja: Universidad Pedagógica y Tecnológica de Colombia.
- Municipality of Guayaquil. (2023). *Territorial Development and Planning Plan 2021-2031*. Guayaquil: Planning Directorate.
- Municipality of Guayaquil. (2024). *Regularization Management Report 2015-2024*. Guayaquil: Territorial Planning Directorate.
- Rico, M. S. O., Vergara-Romero, A., Subia, J. F. R., & del Río, J. A. J. (2022). Study of citizen satisfaction and loyalty in the urban area of Guayaquil: Perspective of the quality of public services applying structural equations. *PLoS ONE*, 17(2), e0263331. <https://doi.org/10.1371/journal.pone.0263331>
- Smolka, M. (2003). Informality, urban poverty and land prices. *Land Lines*, 15(1), 1-4.

- Torres-Espinoza, J., & Delgado-Bohórquez, A. (2023). Sustainability evaluation and densification proposals in the center of Guayaquil city. *Estoa*, 12(24), 92–108. <https://doi.org/10.18537/est.v012.n024.a08>
- UN-Habitat. (2003). *The Challenge of Slums: Global Report on Human Settlements 2003*. London: Earthscan.
- UN-Habitat. (2020). *World Cities Report 2020: The Value of Sustainable Urbanization*. Nairobi: UN-Habitat.
- Universidad Casa Grande. (2023). *Analysis of informal settlements in Guayaquil: diagnosis and proposals*. Guayaquil: Urban Observatory.
- Zambrano, M. (2022). Urban cadastral updating (regularization) in Ecuador: balance and perspectives. *Revista Latinoamericana de Estudios Urbanos*, 8(2), 45-62.
- Zambrano-Monserrate, M. A., Ruano, M. A., Silva, C. A., Campoverde, R., Rosero, C., & Sanchez-Loor, D. A. (2023). Dynamism of the housing rental market in Guayaquil, Ecuador: an empirical analysis. *Empirical Economics*, 64(2), 747–764. <https://doi.org/10.1007/s00181-022-02271-z>