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The Social Tenure Domain Model (STDM): Conceptual Foundations, Comparative Insights, and Practical Applications for Inclusive Land Governance

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Abstract: The Social Tenure Domain Model (STDM) represents a major shift toward inclusive and fit-for-purpose land administration systems capable of addressing complex tenure realities in developing countries. Conventional land administration approaches have historically focused on legally registered ownership and surveyed parcels, excluding large populations living under informal, customary, and communal tenure arrangements. This paper presents a comprehensive synthesis of the conceptual foundations, methodological approaches, and practical applications of STDM, drawing on recent implementations across Africa and Asia. Using a qualitative literature review and comparative case analysis, the study examines how STDM operationalizes the continuum of land rights, supports participatory mapping, and enhances tenure security without requiring immediate formal titling. The paper further explores institutional, legal, and technical challenges affecting STDM adoption, including issues of legal recognition, data sustainability, and integration with formal land information systems. The findings demonstrate that STDM provides a viable pathway toward inclusive land governance when aligned with fit-for-purpose land administration principles and embedded within supportive policy and institutional frameworks.

Keywords: *Social Tenure Domain Model; Land Tenure; Fit-for-Purpose Land Administration; Participatory Mapping; Land Governance; Digital Cadaster.*

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I. INTRODUCTION

Land tenure security is widely recognized as a fundamental pillar of sustainable development, poverty reduction, social stability, and economic growth (Enemark et al., 2016; UN-Habitat, 2017). Secure tenure encourages individuals and communities to invest in housing, agriculture, and local enterprises, while also enabling access to public services, infrastructure, and credit (Bennett et al., 2019). Conversely, insecure tenure is closely associated with urban informality, land conflicts, forced evictions, and socio-economic inequality, particularly in developing countries (Zevenbergen et al., 2018).

Across much of the Global South, land tenure systems are characterized by legal pluralism resulting from colonial land legacies, customary practices, rapid urbanization, and weak institutional capacity (UN-Habitat, 2019). Informal settlements continue to expand in urban and peri-urban areas, while customary and communal tenure systems dominate rural landscapes. Although these tenure arrangements often enjoy strong social legitimacy, they are rarely captured within formal land administration systems.

Conventional cadastral systems have struggled to address these realities. Predominantly designed around surveyed parcels, exclusive ownership, and statutory registration, traditional land administration approaches are costly, time-consuming, and poorly suited to capturing overlapping and socially embedded tenure relationships (Lemmen et al., 2017). As a result, large segments of the population remain excluded from official land records, undermining tenure security and effective land governance.

In response, international land governance discourse has increasingly promoted fit-for-purpose land administration (FFPLA) as a pragmatic alternative to conventional cadastres (Enemark et al., 2016; UN-Habitat, 2020). Within this paradigm, the Social Tenure Domain Model (STDM) has emerged as a leading pro-poor land tool, enabling the

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recording of a continuum of land rights, including informal and customary tenure, alongside formal rights (Zevenbergen et al., 2018; UN-Habitat, 2019).

This paper provides an expanded synthesis of the conceptual foundations, methodologies, and practical applications of STDM, drawing on recent literature and case studies from Africa and Asia. The study contributes to contemporary debates on inclusive land administration, digital Cadaster s, and tenure-responsive land governance.

II. CONCEPTUAL FOUNDATIONS OF THE SOCIAL TENURE DOMAIN MODEL

➢ *Land Tenure as a Social Relationship*

STDM is grounded in the recognition that land tenure is fundamentally a social relationship between people and land rather than merely a legal or technical construct (Lemmen et al., 2017). Traditional cadastral systems conceptualize land primarily as a commodity defined by legally bounded parcels and exclusive ownership rights. While effective in contexts with strong institutions and mature land markets, this approach marginalizes socially legitimate but legally informal claims (Enemark et al., 2016).

STDM addresses this limitation by prioritizing socially recognized tenure relationships, regardless of their formal legal status. This perspective aligns land administration practice with lived tenure realities, particularly in informal settlements, customary lands, and post-conflict or post-disaster contexts (UN-Habitat, 2019).

➢ *The Continuum of Land Rights*

A central theoretical pillar of STDM is the continuum of land rights concept, which challenges the binary distinction between formal and informal tenure (Zevenbergen et al., 2018). The continuum recognizes a spectrum of tenure arrangements ranging from informal occupation and use rights to leaseholds and full ownership. Importantly, tenure security can be improved incrementally without immediate conversion to formal title.

STDM operationalizes this concept by providing a flexible data model capable of recording diverse tenure arrangements regardless of their legal recognition (Lemmen et al., 2017; UN-Habitat, 2020). This approach is particularly relevant in contexts where formal registration is slow, costly, or politically sensitive.

➢ *Core Components of STDM*

The STDM framework is structured around three interrelated components: Parties, Social Tenure Relationships, and Spatial Units (UN-Habitat, 2019). Parties may include individuals, households, groups, communities, or institutions. Social tenure relationships describe the nature of the relationship between parties and land, such as occupation, tenancy, inheritance, or customary ownership. Spatial units represent the physical extent of land and may include parcels, plots, buildings, or natural resource areas.

Unlike conventional cadastral models, STDM supports multiple parties and overlapping tenure relationships within a single spatial unit, reflecting real-world tenure complexity (Lemmen et al., 2017).

➢ *STDM and Fit-for-Purpose Land Administration*

STDM closely aligns with the principles of fit-for-purpose land administration, which emphasize flexibility, inclusivity, affordability, and incremental improvement (Enemark et al., 2016). Rather than prioritizing high-precision surveys and immediate legal formalization, STDM focuses on functionality and usability, enabling rapid data collection and early governance benefits (UN-Habitat, 2020).

The differences between conventional cadastral systems and the Social Tenure Domain Model are fundamental, particularly in their treatment of tenure types, spatial representation, participation, and cost structures. These distinctions are summarized in Table 1, highlighting the pro-poor and flexible orientation of STDM in comparison to traditional cadastral approaches (Enemark et al., 2016; Lemmen et al., 2017).

Table 1 Traditional Cadaster Versus STDM

Aspect	Conventional Cadastral Systems	Social Tenure Domain Model (STDM)
Primary focus	Legally registered ownership	Continuum of land rights
Tenure types captured	Formal ownership and leaseholds	Formal, informal, customary, communal, overlapping rights
Spatial unit representation	Fixed, surveyed parcels	Flexible spatial units (parcels, plots, buildings, points, polygons)
Legal status requirement	Mandatory statutory recognition	Social legitimacy acceptable
Data collection approach	Professional surveying	Participatory enumeration and mapping
Community participation	Limited	High
Cost and time requirements	High	Relatively low
Suitability for informal settlements	Low	High
Integration with formal systems	Direct but rigid	Incremental and interoperable via LADM
Governance orientation	Land market–driven	Pro-poor and tenure-responsive

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➢ *STDM, LADM, and Digital Land Information Systems*

Technically, STDM is implemented as a specialization of the ISO-compliant Land Administration Domain Model (LADM), ensuring interoperability with formal land information systems (Lemmen et al., 2017). This alignment supports the integration of socially documented tenure into digital cadastres and national land registries, a critical requirement for land administration modernization (Zevenbergen et al., 2018).

III. METHODOLOGICAL APPROACH

This study adopts a qualitative synthesis methodology combining peer-reviewed literature, institutional reports, and documented STDM case studies published between 2016 and 2025 (Bennett et al., 2019; Njogu & Gitau, 2023). The analysis focuses on how STDM is conceptualized, implemented, and institutionalized across different contexts.

STDM implementations typically rely on participatory enumeration and mapping, where community members identify spatial units and tenure relationships using locally appropriate technologies such as handheld GPS devices, mobile applications, and satellite imagery (UN-Habitat, 2020). Community validation processes enhance data legitimacy and reduce disputes.

Open-source geospatial technologies such as QGIS and PostgreSQL/PostGIS are widely used, ensuring affordability, transparency, and scalability while supporting integration with national land information systems (GLTN, 2018).

IV. REVIEW OF CASE STUDIES

➢ *Asia and Post-Disaster Contexts*

In Asia, STDM has been applied in post-disaster recovery and resilience-building initiatives. In Nepal and the Philippines, STDM supported equitable resettlement planning, identification of vulnerable households, and transparent allocation of assistance following natural disasters and public health emergencies (UN-Habitat, 2019; Njogu & Gitau, 2023).

➢ *Africa*

In Kenya, STDM has been applied in informal settlements to document overlapping tenure claims and support participatory settlement upgrading. These initiatives have strengthened engagement between communities and public authorities and provided evidence for planning and service delivery (Njogu & Gitau, 2023).

In Namibia, STDM-supported projects in towns such as Okahandja enabled the documentation of socially recognized tenure arrangements, informing incremental tenure formalization and infrastructure planning (Marenga et al., 2024). These cases demonstrate STDM's effectiveness in bridging customary practices and statutory land administration systems.

Recent STDM applications across Africa and Asia demonstrate its adaptability to diverse contexts, including informal settlements and post-disaster recovery (Table 2) (Njogu & Gitau, 2023; Marenga et al., 2024).

Table 2 Summary of Selected STDM Applications

Country	Context	Application of STDM	Key Outcomes
Kenya	Informal urban settlements	Participatory mapping and tenure documentation	Improved visibility of tenure claims; support for settlement upgrading
Namibia	Informal settlement upgrading	Incremental tenure recording	Evidence-based planning and service delivery
Nepal	Post-disaster recovery	Identification of vulnerable households	Equitable resettlement planning
Philippines	Post-disaster reconstruction	Social tenure documentation	Transparent land allocation and reduced disputes

V. DISCUSSION

The reviewed evidence demonstrates that STDM effectively captures tenure complexity that remains invisible within conventional cadastral systems (Zevenbergen et al., 2018). Its participatory nature enhances community empowerment, improves data legitimacy, and strengthens transparency in land governance (UN-Habitat, 2019).

However, challenges persist, including limited legal recognition of socially documented tenure, institutional capacity constraints, data maintenance, and integration with formal land registries (Bennett et al., 2019; UN-Habitat, 2022). Addressing these challenges requires legal, technical, and organizational reforms.

VI. POLICY IMPLICATIONS

STDM provides policymakers with a practical pathway toward inclusive land governance by supporting incremental tenure formalization, participatory planning, and evidence-based decision-making (Enemark et al., 2016; UN-Habitat, 2020). Governments should integrate STDM into national land policies, establish legal recognition mechanisms, and promote interoperability with formal land information systems (UN-Habitat, 2022).

VII. CONCLUSION

This paper demonstrates that the Social Tenure Domain Model remains a robust and relevant framework for addressing contemporary land tenure challenges. By operationalizing the continuum of land rights and aligning with fit-for-purpose land administration principles, STDM

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supports inclusive, flexible, and scalable land governance solutions. When embedded within supportive legal and institutional frameworks, STDM can significantly improve tenure security and contribute to equitable and resilient land administration systems.

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REFERENCES

[1]. Bennett, R., Wallace, J., & Williamson, I. (2019). Organising land information for sustainable land administration. *Land Use Policy*, 82, 607–620.
[2]. Enemark, S., Bell, K. C., Lemmen, C., & McLaren, R. (2016). *Fit-for-purpose land administration: Guiding principles for country implementation*. UN-Habitat / World Bank.
[3]. GLTN. (2018). *Fit-for-purpose land administration: Supporting the global agenda on land*. UN-Habitat.
[4]. Lemmen, C., van Oosterom, P., Bennett, R., & Shnaidman, A. (2017). The land administration domain model. *Land Use Policy*, 67, 529–540.
[5]. Marenga, C., Maruza, T., Gitau, J., & Kohima, J. (2024). Land information in informal settlement upgrading: The Social Tenure Domain Model as an empowerment tool in Okahandja, Namibia. *FIG Working Week Proceedings*.
[6]. Njogu, S., & Gitau, J. (2023). The Social Tenure Domain Model framework: Lessons and opportunities from a decade of country applications. *FIG Working Week Proceedings*.
[7]. UN-Habitat. (2017). *New Urban Agenda*. United Nations Human Settlements Programme.
[8]. UN-Habitat. (2019). *Global land tools for achieving secure tenure*. United Nations Human Settlements Programme.
[9]. UN-Habitat. (2020). *Fit-for-purpose land administration: Country implementation guide*. United Nations Human Settlements Programme.
[10]. UN-Habitat. (2022). *Land governance and tenure security in the post-COVID-19 era*. United Nations Human Settlements Programme.
[11]. Zevenbergen, J., Bennett, R., & Lemmen, C. (2018). The continuum of land rights approach: An evaluation of its application. *Land Use Policy*, 75, 388–397.