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FIG WORKING WEEK 2023

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Protecting
Our World,
Conquering
New Frontiers

Performance Evaluation of Land Administration Systems - Implications of Global Initiatives

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Overview

- Introduction
- Why is evaluating the Land Administration System important?
- Investigated evaluation frameworks
- Performance evaluation indicators
- Conclusion

Introduction

Land Is Important

- The ultimate resource
- The primary factor of production
- Foundation of Economic
- Integrity of each country related to Land-Human relation



Esri.com

unece.org

economicdiscussion.net

Land Administration Systems are the basis for recording the complex range of rights, restrictions, and responsibilities related to people, policies, and places

Land Administration Systems

- Land Use
- Land Tenure
- Land Valuation
- Land Development

LAND
REGISTRATION

**PRINCIPLES FOR AN
INTEGRATED LAND ADMINISTRATION SYSTEM TO
SUPPORT SUSTAINABLE DEVELOPMENT**

by
Lin A. Tang

2002

Submitted in total fulfillment of the requirements for the degree of Doctor of Philosophy
The University of Melbourne

2012

**Land Administration for
Macroeconomic Management**

Nilofer Christensen

Submitted in total fulfillment of the requirements of the degree of

Doctor of Philosophy

November 2012

Department of Infrastructure Engineering
The University of Melbourne

**A Framework for the Evaluation
of Land Administration Systems**

Daniel Steudler

Submitted in total fulfillment of
the requirements for the degree of
Doctor of Philosophy

2004

February 2004
Department of Geoinformatics
The University of Melbourne

2013

**Using land administration for
land risk management**

Katie Elizabeth Potts

Submitted in total fulfillment of the requirements
of the degree

Doctor of Philosophy

October 2013

Centre for Spatial Data Infrastructures and Land Administration
Department of Infrastructure Engineering
The University of Melbourne
Melbourne, Victoria 3010, Australia

**Cadastral Data Modelling -
A Tool for e-Land Administration**

By
Saeid Mohsen Kalantari Soltanieh

April 2008

2008

A Thesis submitted to The University of
Melbourne in fulfillment of the degree of
Doctor of Philosophy
Centre for Spatial Data Infrastructures and Land Administration,
Department of Infrastructure Engineering,
The University of Melbourne,
Victoria, Australia

2014

**TOWARDS 3D-ENABLED URBAN
LAND ADMINISTRATION
INVISIBLE CONSTRAINTS AND
STRATEGIC CHOICES**

Serene Shih Lynn Ho

Submitted in total fulfillment of
the requirements of the degree of
Doctor of Philosophy

November 2014

Centre for Spatial Data Infrastructures and Land Administration
Department of Infrastructure Engineering
The University of Melbourne

Produced on recycled paper

**Chapter 4: Land Administration
for Housing Production**

Maryiva Agambide

Overview

The integration of land administration processes and the collaboration of land agencies are considered essential for the effective delivery of sustainable land for housing production. However, in most countries housing and land management policies are usually split between multiple government agencies. The background literature suggests that the activities of government agencies that perform these functions are disparate and lack harmonisation. The lack of integration allows land administration agencies to operate according to their internal norms and functions. As a result, policy responses are inevitably disjointed – across and between different levels of government. This is considered more pronounced in federalized countries than other systems of government.

This chapter presents the interrelationship across land administration functions (land tenure/registration, land value, land use and land development) and between different levels of government in the management and delivery of land for housing production. It aims to identify and evaluate a Land Administration Integration Framework for Housing (LAIPH) to improve inter-agency collaboration. The methods include the use of a case study approach. It focuses on countries of Nigeria and Australia.

This study demonstrates that the interrelationship between land administration and housing production is lower and more disjointed than expected. The integration is lower and more disjointed than expected. The integration is lower and more disjointed than expected.

2012

Submitted in total fulfillment of the requirements of the degree of Doctor of Philosophy
The University of Melbourne

2017

**Building Information Modelling for
Urban Land Administration**

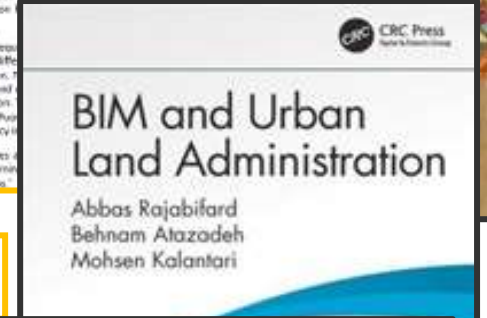
Behnam Atazadeh

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Submitted in total fulfillment of
the requirements of the degree of
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May 2017

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The 2030 Agenda: Sustainable Development Goals

1 Agenda 17 Goals 169 Targets 232 Indicators

Land Matters In SDGs



Transforming our world, Leave no one behind

SDGs - Goal 1

End poverty in all its forms everywhere

1 NO
POVERTY



Target 1.4: By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance.

Land Records

Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters.

Resilience



World Bank Group

The ability of land and people-to-land relationships to recover after hazard events requires reliable administration systems and authoritative geospatial information

2020

Need for an Effective, Efficient, and Integrated Land Administration System

FELA

Effective and efficient land administration (Effective land administration must be fit-for-purpose, appropriate and adequate, interoperable and sustainable, flexible and inclusive, and able to accelerate efforts to document, record, recognize, and monitor people to land relationships, in all forms), integrated geospatial information

FFP-LA

Efficient, Effective and Integrated Land Administration System (Sound land governance and administration requires operational processes to implement land policies in comprehensive, integrated and sustainable ways). Through updating and upgrading procedures the systems can then, in turn, develop into modern and fully integrated systems for land information and administration. Even though security of tenure is now at the top of the global agenda, there is a “security of tenure gap” between countries that have efficient and effective land administration systems in place and those that do not.

NUA

“fit-for-purpose and age-, gender- and environment-responsive solutions within the continuum of land and property rights, with particular attention to security of land tenure for women as key to their empowerment, including through effective administrative systems”. It mentions the importance of adequate spatial and territorial planning that integrates “water resources planning and management, urban-rural continuum on the local and territorial scales and including the participation of relevant stakeholders and communities”

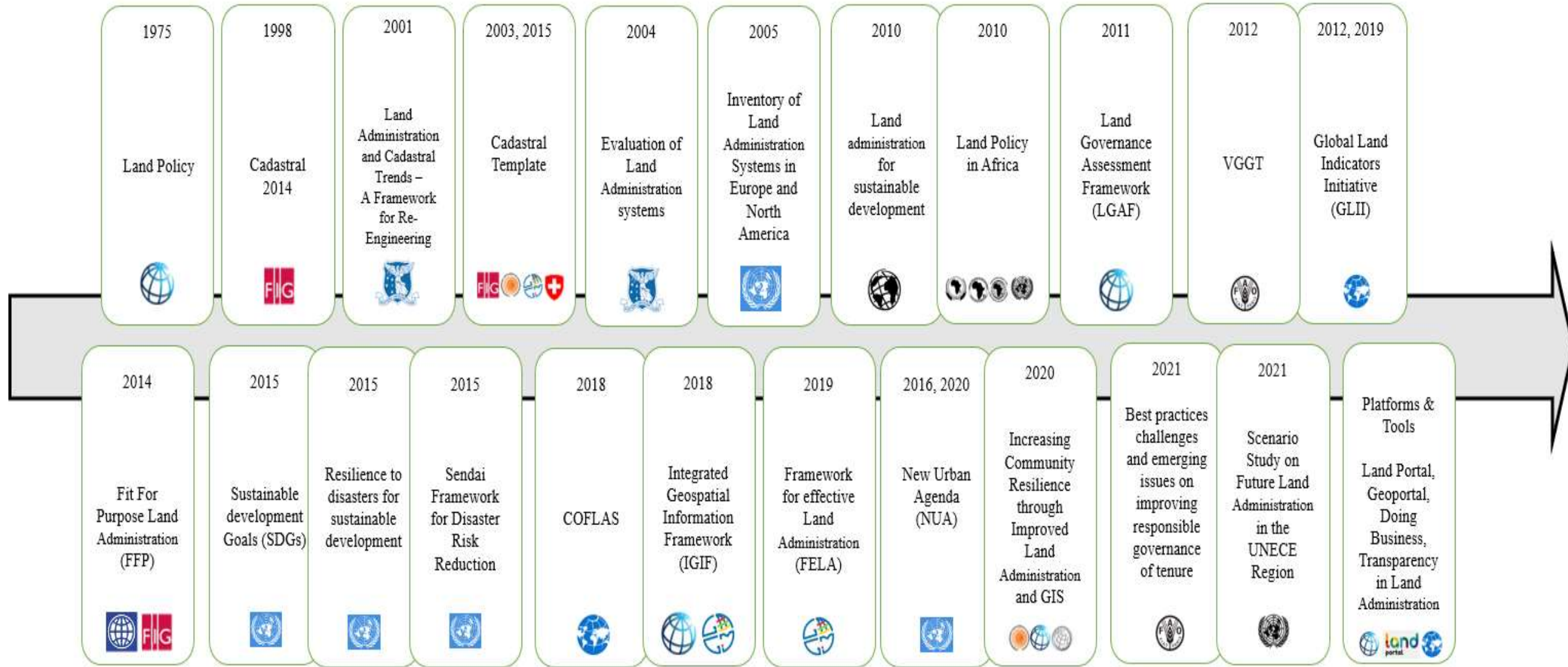
VGGT

Confirms that up-to-date information that is consistently available and accessible over space and time underpins good land administration and management, leading to good land governance and sustainable development.

Why is evaluating the Land Administration System important?

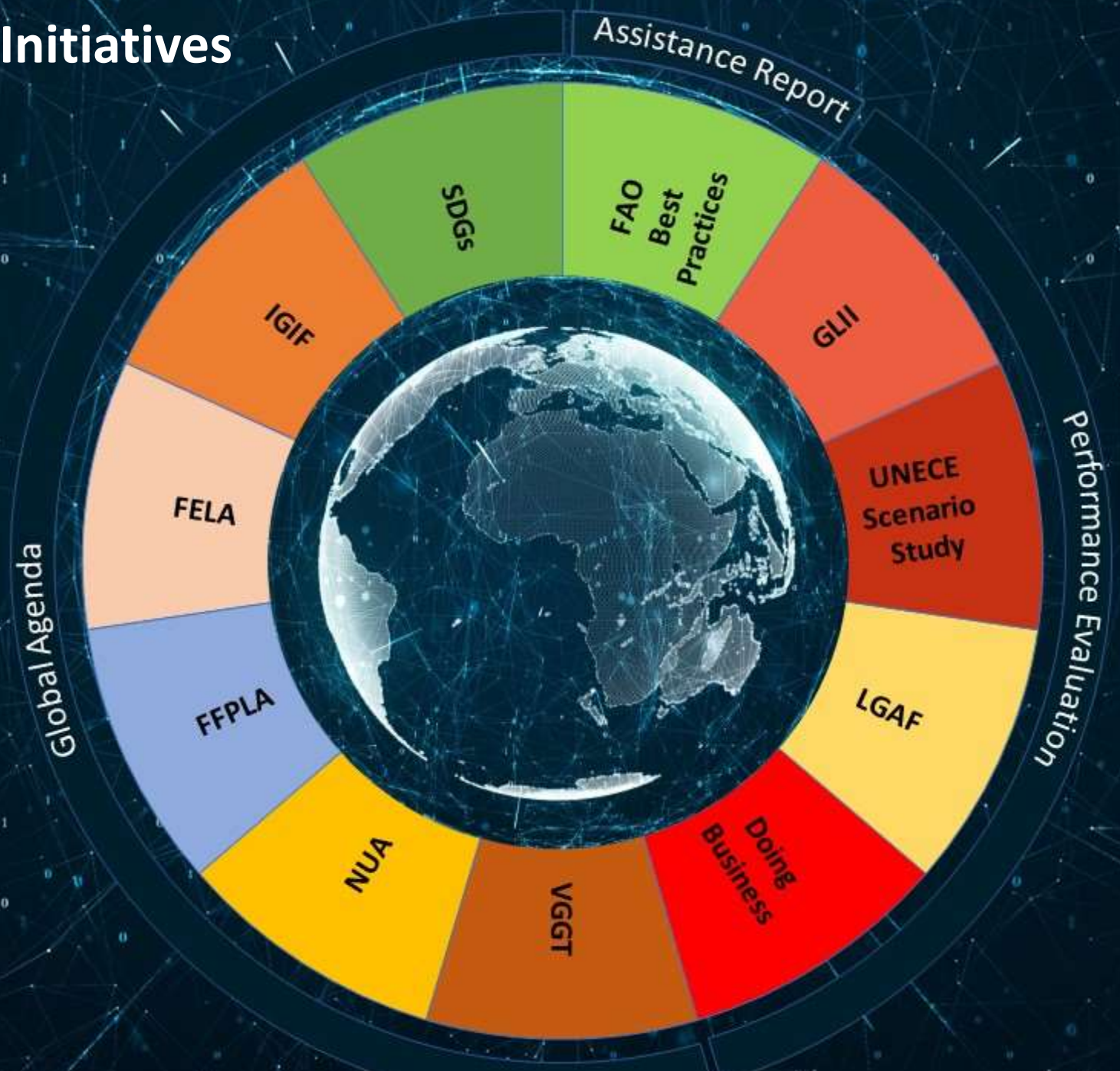
- According to global initiatives, there is a need for an efficient, effective and integrated Land Administration System.
- Evaluation frameworks are a critical tool for assessing and enhancing the effectiveness of LASs, providing a structured approach to identify strengths, weaknesses, and opportunities for improvement, and supporting evidence-based decision-making to achieve better land management outcomes.

Investigating Global Initiatives



Since 1975, international efforts have been on a trajectory toward sustainable land management

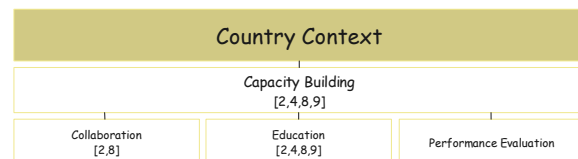
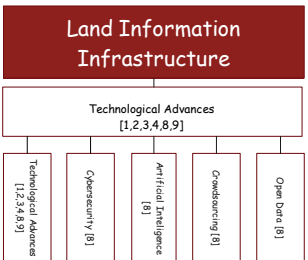
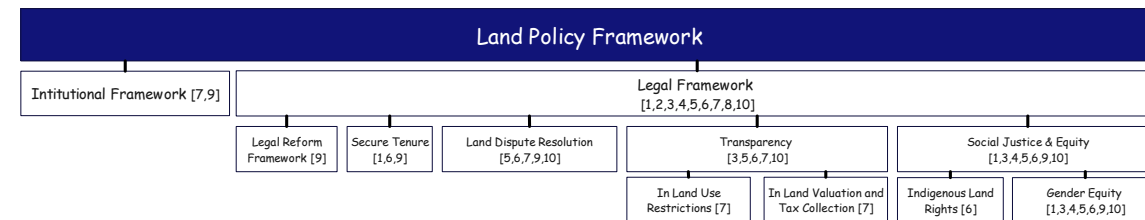
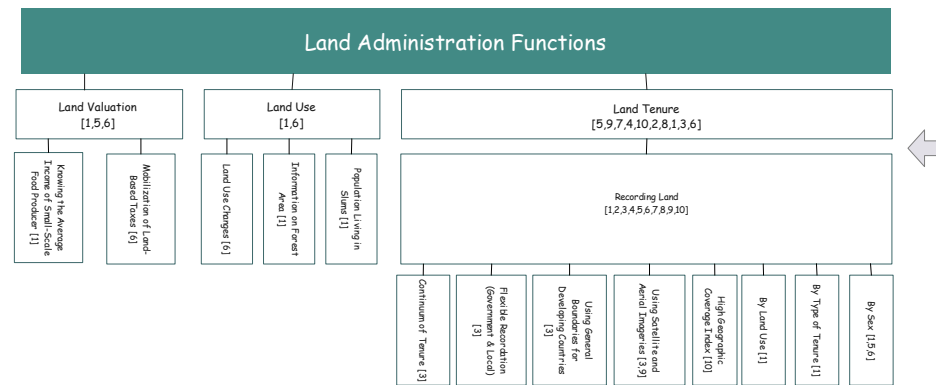
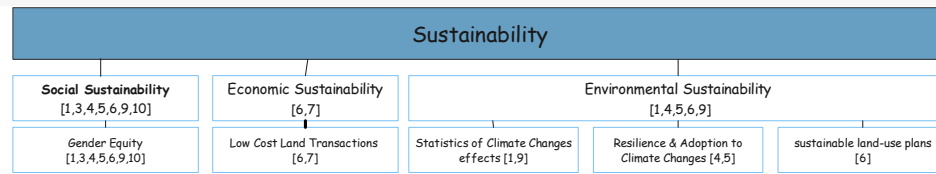
Selected Global Initiatives



Required Parameters for Modernizing LAS- Implications of Global Initiatives

Land Management Paradigm		Land Policy Framework					LI Infrastructure	Land Administration Functions			Country Context			Sustainability						
		Legal Framework			Institutional Framework	Infrastructure	Land Tenure	Land use	Land Valuation	Capacity Building			Economic Sustainability	Environmental Sustainability		Social Sustainability				
Extracted Parameters		Social Justice & Equity	Transparency	Land Dispute Resolution	Secure Tenure	Legal Reform Framework	Existence of Institutional Framework	Technological advances (Digital Cadastre)	Land registration attributes	Land use information	valuation and taxation	Collaboration	Performance Assessment	Education	Low-Cost Land Transactions	Statistics of Climate Changes effects	Resilience & Adoption to Climate Changes	sustainable land-use plans	Gender equality	
Global Initiatives	SDGs	✓			✓			✓	✓	✓	✓				✓				✓	
	LGAF		✓	✓			✓		✓		✓				✓		✓			
	VGGT	✓	✓	✓					✓										✓	
	FFP-LA	✓	✓					✓	✓										✓	
	IGIF, FELA							✓	✓			✓		✓						
	GLII	✓	✓	✓	✓				✓	✓	✓				✓			✓	✓	
	NUA	✓						✓	✓					✓			✓		✓	
	Doing Business	✓	✓	✓					✓	✓										✓
	UNECE Scenario Study							✓	✓			✓		✓						
	FAO Best Practices	✓		✓	✓	✓	✓	✓	✓					✓		✓				✓
Evaluation Frameworks	Stuedler		✓		✓	✓	✓	✓	✓			✓	✓				✓			
	Dawidowicz	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓						✓	
	Chekole	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓		✓			✓	
	LEI					✓	✓	✓	✓				✓	✓						
	Nyangweso								✓				✓							

Required Parameters for Modernizing LAS- Implications of Global Initiatives

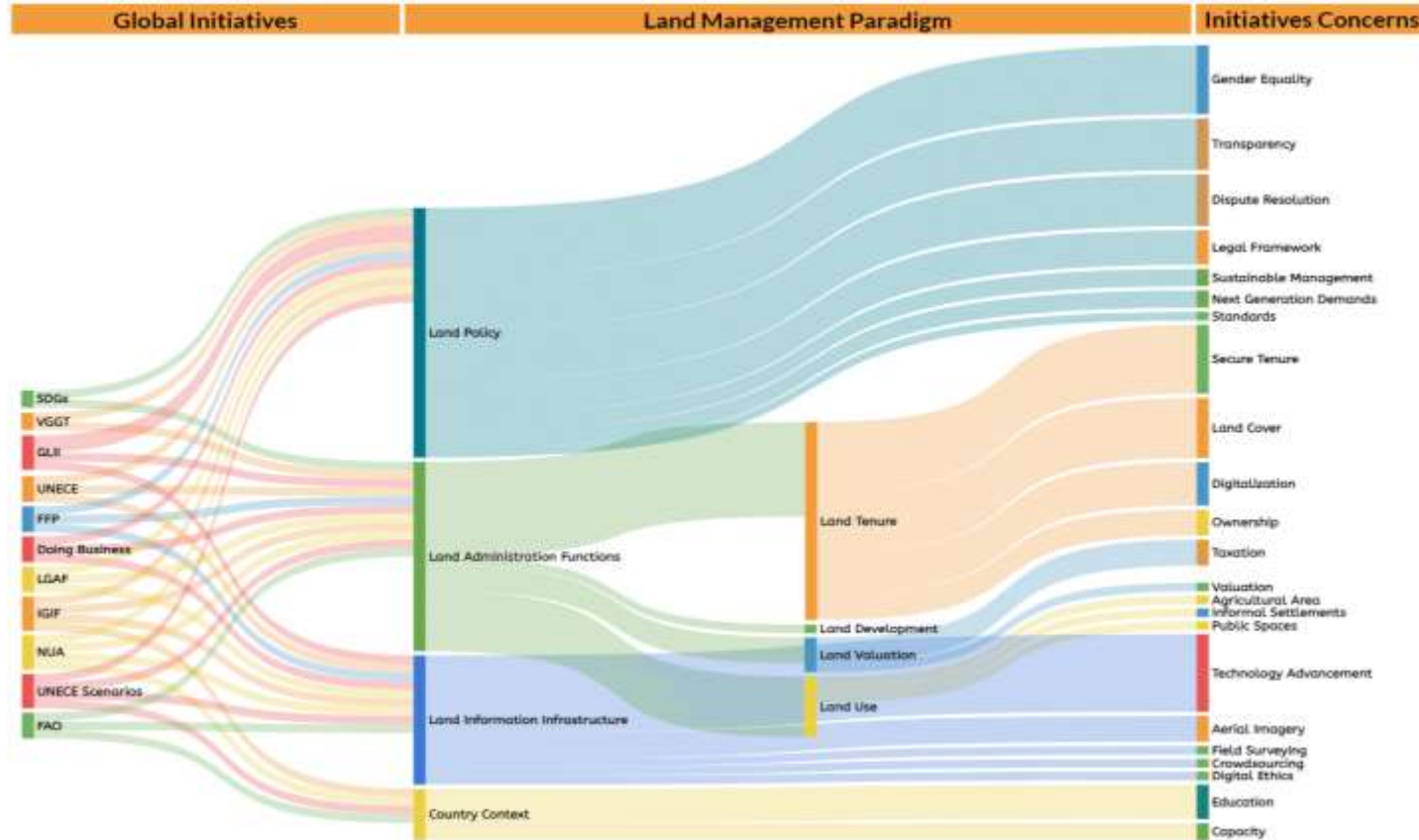


Reference No	Global Initiative
[1]	SDG
[2]	KaF
[3]	ITPLA
[4]	NUA
[5]	WNI
[6]	SLB
[7]	IGAF
[8]	LRW+
[9]	ITC
[10]	Doing Business

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Jahani Chehrehbargh, F., et al., *Advancing Land Administration System-Implications of Recent International Trends*, in *FIG Congress. 2022: Warsaw, Poland*.

Overview of Selected LASs Evaluation Frameworks

Steudler, 2004

Evaluation areas:

Policy level, Management level,
Operational level, External factors,
Review process

LEI, 2020

Evaluation areas:

Policy and Legal Framework,
Institutional Reform, Technology,
Financial Analysis, Sustainability

Dawidowicz, 2018

Evaluation areas:

Legal Aspects,
Organizational and
structural aspects,
Economic aspects, Real-
world model, Geodetic
and cartographic aspects,
Data availability and
quality (source data),
System functions (tasks),
Technology,
Standardisation, Staff,
External environment

Chekole, 2020

Evaluation aspects:

Political, Policy, Legal and institutional, Social,
Economic, Environmental, Public-private
partnership, Technical

Nyangweso, 2022

Internal process Evaluation of:

Innovations, Operation process, Marketing,
After-sales service (Customer Satisfaction)

Performance evaluation indicators in the land policy framework

Dimension	Indicator
Policy and legal framework	<ol style="list-style-type: none"> 1. Availability of cadastral and land administration principles 2. Availability of policy and legal framework for land reform 3. Existence of political will in support of the cadastral system 4. Existence of a government policy for the uniformity of cadastral system policy throughout the country 5. The existing of political will to reform 6. Availability of universal, transparent, equitable, cohesive and flexible legal provisions for cadastre 7. Availability of legal bases, such as laws, regulations, and standards 8. Availability of mechanism for resolving disputes arising among landholders 9. Availability of policy development for participation in the cadastral system 10. Existence of the cadastral system policy for cost recovery
Institutional framework	<ol style="list-style-type: none"> 1. Availability of strategic aspects and targets (with smart visions and objectives) 2. Availability of land administration business processes 3. Availability of clear mandates for institutions regarding cadastre 4. Keeping the cadastre and land and mortgage register in the same organization

Performance evaluation indicators in the land administration functions

1. Existence of modelling relations between objects (terrain object – rights, restrictions, and responsibilities – claimant)
2. Ensuring attributes of cadastral data
 - Reliability
 - Accuracy
 - Timeliness
 - Flexible content (data content is adapted to the needs of cadastre users)
 - Completeness (scope of information provided by the system)
3. Existence of object geometry as an attribute
4. Existence of individual data layers
5. Easy access to data for all interested parties
6. Geographic coverage
7. Existence of numeric terrain models instead of charting
8. Unique identifiers in the database of real estate objects
9. Existence of the survey document containing cadastral measurements that constitutes a legal field source document
10. Ensuring data are collected only once and are kept at a level that guarantees the highest effectiveness
11. Existence of a multifunctional cadastral system that calculates land and property tax

Performance evaluation indicators in the land information infrastructure

1. Availability of a multifunctional cadastral system
 - registering all Rights, Restrictions and Responsibilities (RRR) associated with private and public property
 - reality modelling in any format (2d, 3d)
 - data models as part of data distribution practices
 - the same procedures apply to private and public property
 - an intuitive and secure system guarantees data validity and prevents data loss
2. Spatial data infrastructure (SDI)
 - Existence of digital technology for storing, inputting (electronic data transfer) and releasing data
 - Existence of automated data collection and update
 - Existence of software supporting the integration of graphic and descriptive data
 - Existence of visualizing option for any content in any format (2D,3D)
 - Integrating the land IT system into daily workflows
3. Using modern measuring methods (photogrammetry, GPS)
4. Existence of cadastral measurements with high-precision boundary surveys based on international precision standards
5. Existence of appropriate Infrastructure facilities (power, communication lines, internet connectivity)
6. Keeping cadastral databases on the same server
7. Creating backup copies of databases
8. Availability of website access via modern electronic communication channels
9. Using modern techniques for processing cadastral data
10. Existence of fast electronic processing of title documents and other documents
11. Existence of continuous data flow after the completion of automatic validation procedures
12. Using modern equipment and indoor analysis methods
13. Existence of data search, data integration, data comparison, identification of correlations between legally independent and legally organized, terrain objects, and the development of specific reports in the cadastral system
14. Existence of protection of data against destruction or illegal change
15. Ensuring cadastral resources are open to all interested parties
16. Availability of international standards such as LADM, technical standards

Performance evaluation indicators in the country context aspect

Capacity Building

Evaluation Indicators

- 1 Existing education plan to train staff and qualified technicians
- 2 Ensuring the cadastral system is maintained by qualified surveyors and experts in all areas
- 3 Availability of encouragement of the private sector involvement (Public-private partnership)
- 4 Keeping the cadastre by private institutions under the supervision of public institutions
- 5 Availability of stakeholder-focused strategy

Finance

Evaluation Indicators

- 1 Existence of public willingness to pay for or demand services
- 2 Ensure revenue and costs are aligned
- 3 Existence of the government willing to fund operations and maintenance
- 4 Existence of the cadastral system policy for cost recovery
- 5 Managing political economy risks
- 6 Using New technologies to improve the system's economic efficiency
- 7 Existence of investment proposal for land IT in SDI

Sustainability

Evaluation Indicators

- 1 Existence of society benefits from and acknowledges the policy
- 2 Existence of a cadastral system policy ensures the sustainability of the environment

Performance Assessment

Evaluation Indicators

- 1 Availability of performance assessments
- 2 Existence of a method of analysing satisfaction with the current LAS
- 3 The presence of regular revisions to objectives and strategies, along with the existence of cadastral policies supporting the following aspects - SDG indicator 1.4.2, digital cadastral data lodgement portal, high-speed internet for digital data lodgement, 3D digital cadastral system development, data preparation, sharing and IP, and base-map preparation and maintenance.
- 4 Existence of regularly monitoring customer satisfaction levels
- 5 Availability of identifier of the most common issue(s) affecting land ownership

Conclusion

- ✓ To improve LASs, a comprehensive evaluation framework that includes relevant indicators is necessary to assess the performance of LASs
- ✓ The evaluation frameworks that were examined did not include measures for certain aspects, including:
 - The land rights of indigenous communities
 - The transparency of restrictions on land use, land valuation, and taxation
 - Addressing the effects of climate change and its impact on land tenure security
 - Gender equality in land record
 - The ability to record different types of boundaries (such as general or fixed)
 - Taking into account the continuum of tenure

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More Info