



# XXVII FIG CONGRESS

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## Advancing Land Administration System - Implications of Recent International Trends

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Land is  
Important

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

# Land Administration Systems

- Land Use
- Land Registration
- Land Valuation
- Land Development

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



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

by  
Lisa A. Tang

2002

Submitted in total fulfillment of the requirements of 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 only

## Chapter 4: Land Administration for Housing Production

Maryiva Agambiele

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 governments' 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 identifies and evaluates a Land Administration Integration Plan for Housing (LAIPH) to improve inter-agency collaboration. The plan includes the use of a case study approach. It focuses on four countries of Nigeria and Australia.

This study concludes that the interrelationship between land administration functions and between different levels of government is lower and unproductive for housing production. The study also identifies the perspective of a multi-agency integration plan for housing production. It is not just a matter of collaboration between agencies to an ideal model, but rather to study it as a learning and innovation process as well as results and innovations.

2012

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  
Doctor of Philosophy

May 2017

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## Land Administration for Sustainable Development



## BIM and Urban Land Administration

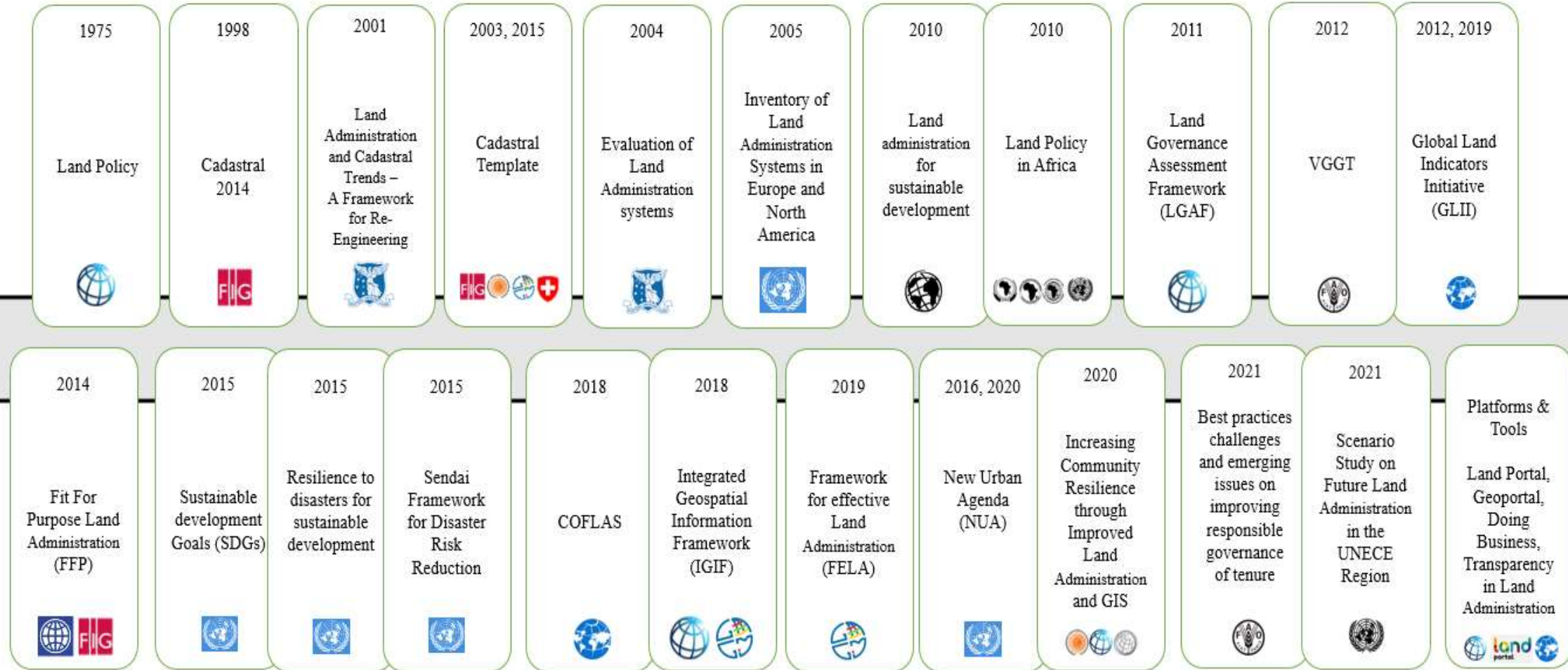
Abbas Rajabifard  
Behnam Atazadeh  
Mohsen Kalantari

## Solid Ground Increasing Community Resilience Through Improved Land Administration and Geospatial Information Systems

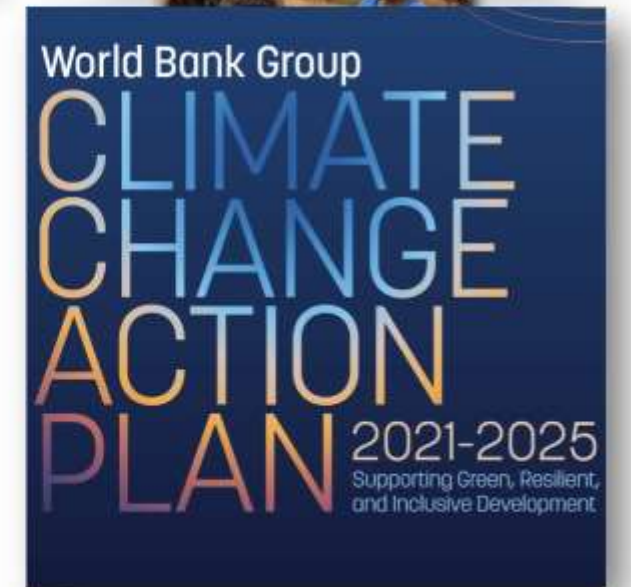
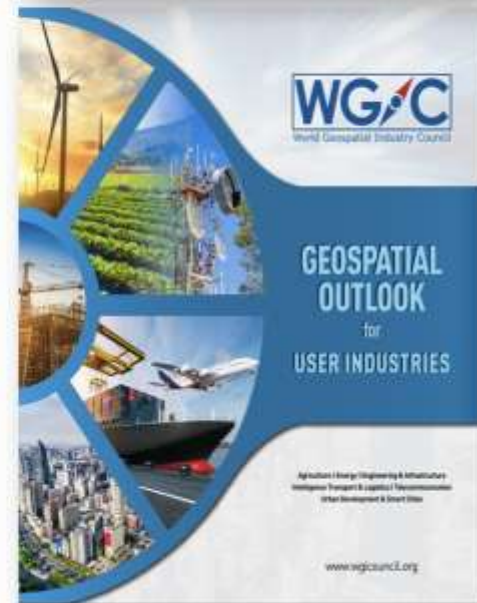
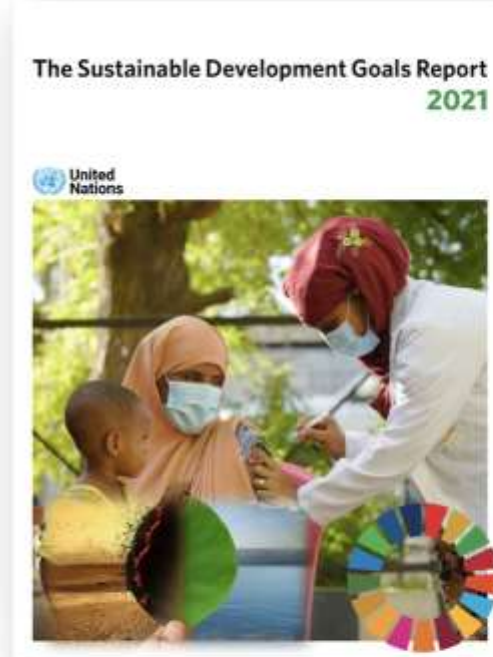
WORLD BANK GROUP

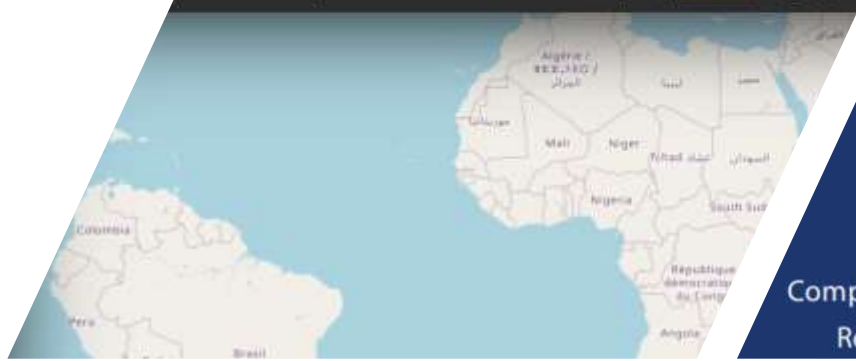
GFDRR

# Identifying Global Initiatives



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





## TOOLS TO SUPPORT TRANSPARENCY IN LAND ADMINISTRATION

SECURING LAND AND PROPERTY RIGHTS FOR ALL



TRENDING

Launch of The AfCFTA-anchored Pharmaceutical Initiative's Ce



# ECA

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## Opportunities



Home Countries Issues Join the Debate Data Library News & Events Com

Data / Statistical Data (Indicators)

## Statistical Data (indicators)

Explore our collection of open land data from around the world using a range of different statistical filter results. All the data can be downloaded freely for use offline.

Displaying 1 - 16 of 60 statistical indicators

Indicator name	Dataset	Provider	Iss
<input type="text"/>	FAO - Land Use	- Any -	-

The 2030 Agenda:  
Sustainable Development Goals

## 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.

**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.

Land Records

Resilience





# Solid Ground

Increasing Community Resilience through Improved Land Administration and Geospatial Information Systems

## 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

2018-2020

## Research Problem

Current Land Administration Systems design and development need to be reassessed, *reformed* and adjusted in line with the **global trends, challenges, and advancements.**



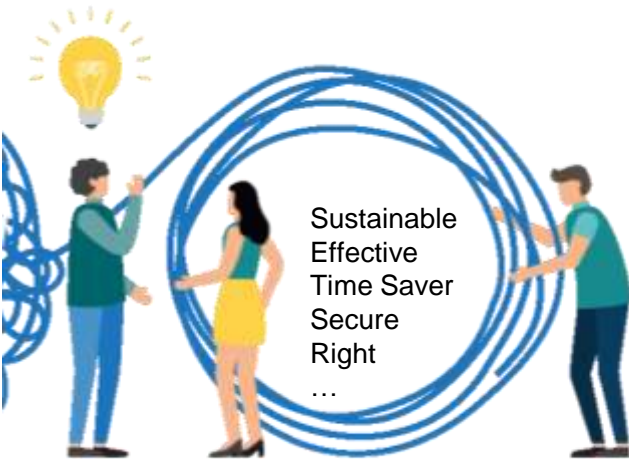
# Different Approaches and Framework for Re-Engineering LAS

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Different Aspects of LAS

## Requirements



### Technical Aspect

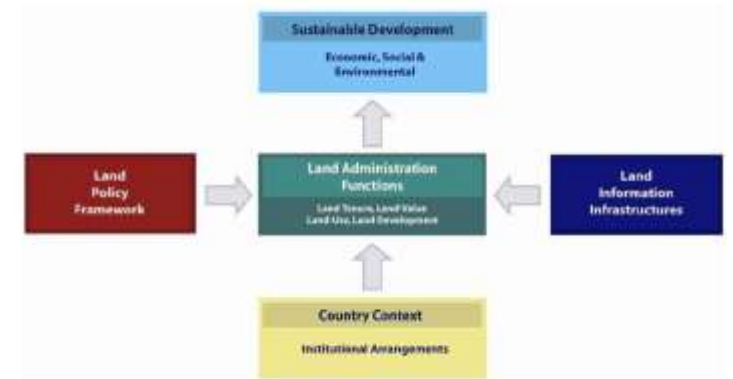
- Data Acquisition
- Data Validation
- Storage and Integration
- Visualisation
- Data Dissemination and Sharing
- Data Modelling
- Data Query and Analysis



### Institutional Aspect

### Legal Aspect

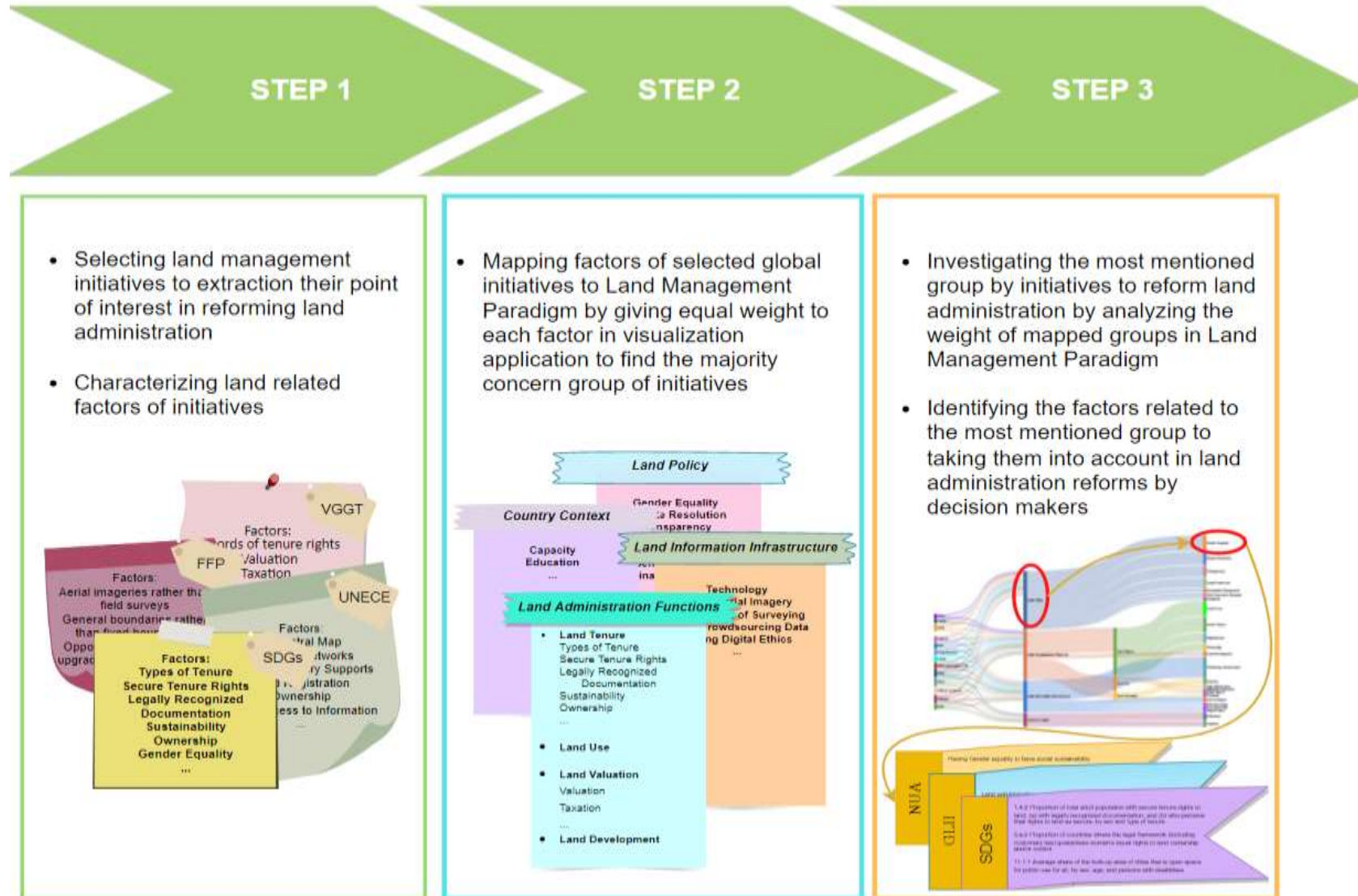
## Land Management Paradigm, Enemark



## Research Aim

Proposing required parameters for designing an effective Land Administration System by considering the implications of new technology and the latest global initiatives on land management. Also by mapping parameters on the Land Management Paradigm, we suggest the important parameters for decision makers.

## Methodology



## Global Agenda

01 Voluntary Guidelines on the Responsible Governance of Tenure (VGGT)

02 Fit For Purpose Land Administration (FFP)

03 Sustainable Development Goals (SDGs)

04 Sendai Framework for Disaster Risk Reduction

05 Integrated Geospatial Information Framework (IGIF)

06 Framework for Effective Land Administration (FELA)

07 The New Urban Agenda (NUA)

08 VGGT Best Practices Challenges

09 UNECE Specified Factors Affecting Land Administration

## Global Initiatives

### Evaluating Models & Frameworks

01 Working Party on Land Administration (WPLA)

02 A Framework for Re-Engineering Land Administration

03 LAS Evaluation Framework by Daniel Stuedler

04 Cadastral Template

05 Land Governance Assessment Framework (LGAF)

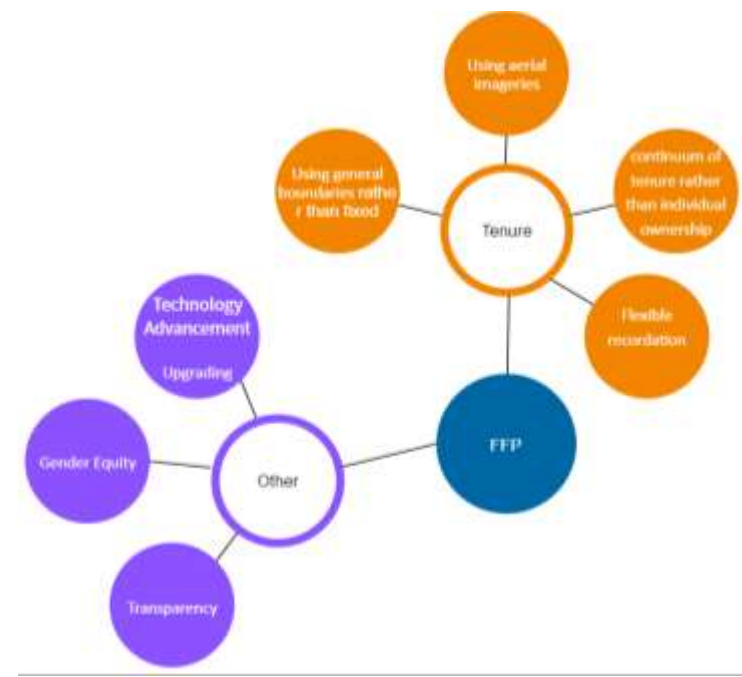
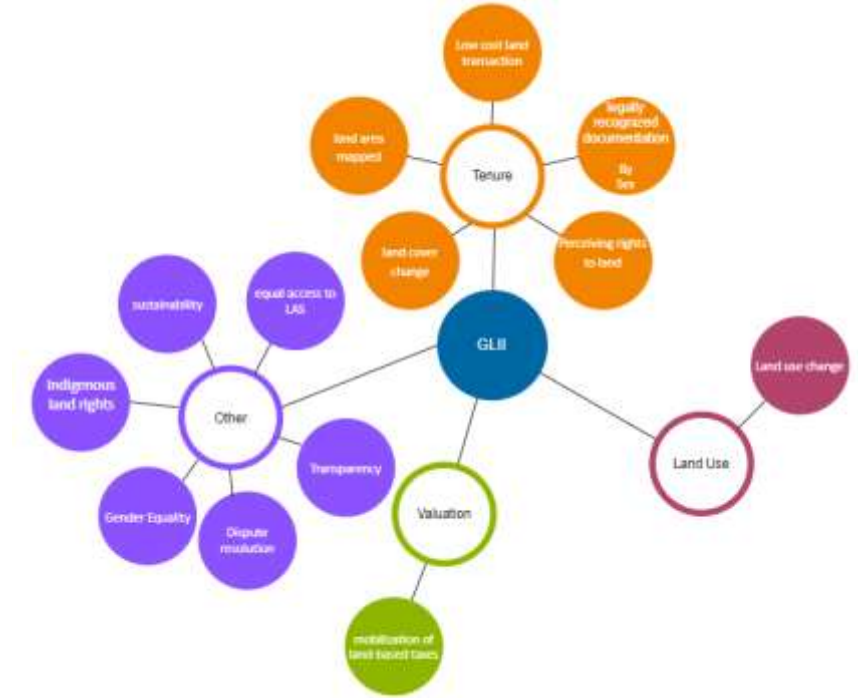
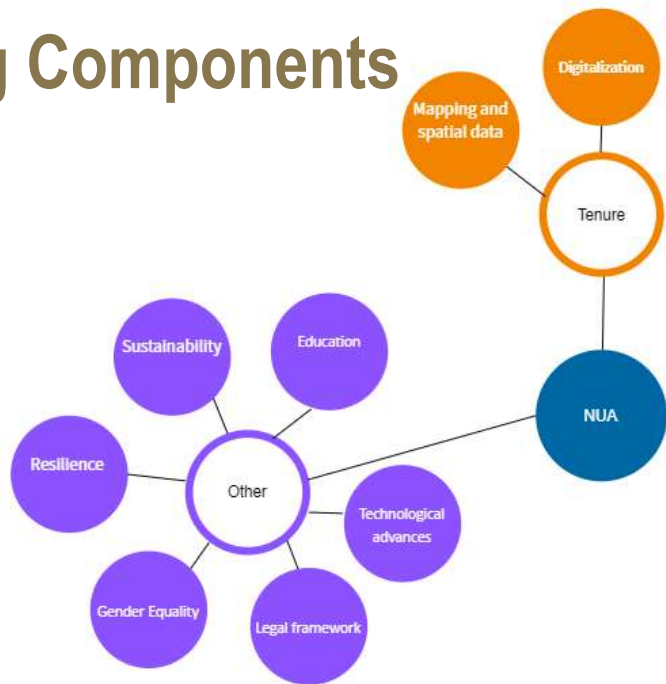
06 Global Land Indicators Initiative (GLII)

07 Doing Business

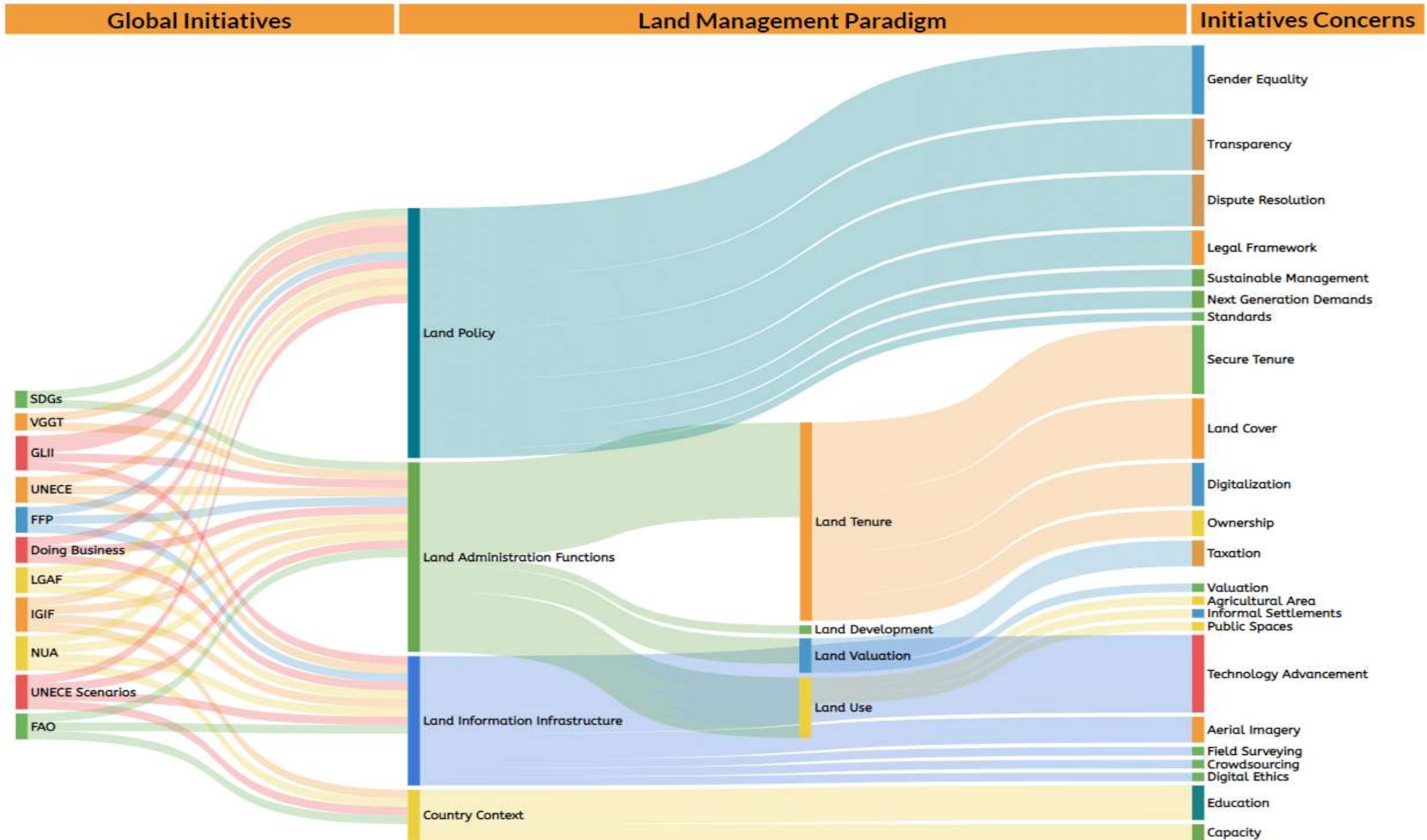


<p><b>SDGs</b></p> <p>13.3 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation, and 30 who possess their rights to land as users by sex and type of tenure</p> <p>14.1 Proportion of agricultural and fishery products from sustainable agriculture</p> <p>15.1 Sustainable use of land, freshwater, marine and coastal ecosystems, and terrestrial and inland water systems and their natural habitats</p> <p>15.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and control</p> <p>16.1 Proportion of urban population living in slums, informal settlements, or inadequate housing</p> <p>17.2 Ratio of land consumption rate to population growth rate</p> <p>17.7 Average share of the total revenues of cities that is spent on public services for all, for the age environment with disability</p> <p>18.1 Forest area as a proportion of total land area</p> <p>18.2 Proportion of population that has access to and benefits from digital technologies that are covered by protected areas, for appropriate indigenous status holders</p> <p>18.3 Progress towards sustainable forest management</p> <p>18.5 Progress towards land that is degraded over total land area</p> <p>17.18.1 Regional capacity indicator for Sustainable Development Goal monitoring</p>	<p><b>IGIF</b></p> <p>Capacity and Education</p> <p>Connectivity and Engagement</p> <p>Data</p> <p>Governance and Institutions</p> <p>Information</p> <p>Legal and Policy</p> <p>Partnerships</p>	<p><b>FFP</b></p> <p>Active, inclusive rather than transactional</p> <p>Sound of tenures rather than land transactions</p> <p>Opportunities for existing upgrading and improvement</p> <p>Using a participatory approach to identify the legal and social tenure rights</p> <p>Using affordable, flexible, technologies for building a spatial framework</p>	<p><b>GLII</b></p> <p>Land administration efficiency</p> <p>Land use change</p> <p>Indicators of land-based issues</p> <p>Transparency of land information</p> <p>Regularly updated (in the past 3 years)</p> <p>Availability of digital metadata information</p> <p>Land dispute resolution efficiency</p> <p>Respected land rights</p> <p>Equal rights of women</p> <p>Indigenous land rights</p> <p>Personal tenure security</p> <p>Secure tenure under a principle of tenure regularisation</p> <p>Regularisation of changes in land use undertaken by</p> <p>Progress in sustainable land planning</p>	<p><b>VGGT</b></p> <p>Records of tenure rights</p> <p>Resolution</p> <p>Resilient spatial planning</p> <p>Resolution of disputes over tenure rights</p> <p>Transparency matters</p> <p>Timely change</p> <p>Confidence in external services (banks, utilities, and others)</p>
<p><b>LGAF</b></p> <p>Legal and Institutional Framework</p> <p>Land Use Planning Management and Control</p> <p>Management of Public Land</p> <p>Public Provision of Land &amp; Services</p> <p>Rights Realisation and Conflict Management</p>	<p><b>Scenario Study</b></p> <ol style="list-style-type: none"> <li>1. Demographic change</li> <li>2. Economic development</li> <li>3. Environmental sustainability</li> <li>4. The digital transition</li> <li>5. Inclusive economy</li> <li>6. Resilient ecosystems</li> <li>7. Anticipatory environmental change</li> <li>8. Socio-cultural transformation</li> <li>9. New political will/cities</li> <li>10. Global regional power shifts</li> <li>11. Urbanisation</li> </ol>	<p><b>Doing Business</b></p> <p>Brand access to property rights index</p> <p>Geographic coverage index</p> <p>Land dispute resolution index</p> <p>Reliability of infrastructure index</p> <p>Timeliness of information index (0-10)</p>	<p><b>VGGT Best Practices</b></p> <p>Policy and legal reform</p> <p>Local government as land administrator</p> <p>Capacity development</p> <p>Conflict resolution</p> <p>Gender equality and women's rights</p> <p>Improving government of natural land</p> <p>Responsible agricultural investments</p> <p>Landmark Success Management</p> <p>Confidence capacity development</p> <p>Impact of climate change on tenure security</p> <p>Addressing gender equity and</p> <p>Improving use of the free market mechanisms and technologies</p> <p>Improving land information management</p> <p>Supporting smallholder agriculture and</p> <p>Transparency</p> <p>Multi-stakeholder</p>	
<p><b>NUA</b></p> <p>Dark Ocean Data Environment of sustainability</p> <p>Social Sustainability</p> <p>Good Sustainability</p> <p>Means of Implementation</p> <p>Partnerships</p> <p>SDG resources</p> <p>Technology and Innovation</p>	<p><b>Scenario Study</b></p> <p>Systemically integrate digital to land digital Africa</p> <p>Open data and knowledge</p> <p>Artificial intelligence and self-governance</p> <p>Confidence in the digital world</p> <p>Cost effective, sharing, transparent and distributed solutions</p> <p>Innovation through open access, incubators and hackathons</p> <p>Co-funding</p> <p>High requirements and cultural programmes</p>	<p><b>Doing Business</b></p> <p>Brand access to property rights index</p> <p>Geographic coverage index</p> <p>Land dispute resolution index</p> <p>Reliability of infrastructure index</p> <p>Timeliness of information index (0-10)</p>	<p><b>VGGT Best Practices</b></p> <p>Policy and legal reform</p> <p>Local government as land administrator</p> <p>Capacity development</p> <p>Conflict resolution</p> <p>Gender equality and women's rights</p> <p>Improving government of natural land</p> <p>Responsible agricultural investments</p> <p>Landmark Success Management</p> <p>Confidence capacity development</p> <p>Impact of climate change on tenure security</p> <p>Addressing gender equity and</p> <p>Improving use of the free market mechanisms and technologies</p> <p>Improving land information management</p> <p>Supporting smallholder agriculture and</p> <p>Transparency</p> <p>Multi-stakeholder</p>	

# Identifying Components



# Mapping Global Initiatives to Land Management Paradigm





# CORE CAPABILITIES



**CSDILA**  
CENTRE FOR SPATIAL  
DATA INFRASTRUCTURES  
AND LAND ADMINISTRATION

Strategy and Policy Development,  
Consulting, Advisory Services and Training



Modelling and Analytics  
Frameworks



Prototype Platforms, Tools and  
Applications

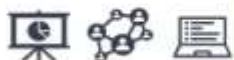


## CAPABILITY KEY



### MODERN LAND ADMINISTRATION SYSTEMS

*Modernisation of Land Administration Systems and development of 3D cadastres*



### BUILDING INFORMATION MODELLING (BIM)

*Developing multi-dimensional land and building rights, restrictions and responsibilities*



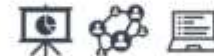
### SPATIAL DATA INFRASTRUCTURES (SDI and NSDI)

*Enhancing governance and digital engineering capabilities in our societies via SDI*



### DISASTER MANAGEMENT AND COMMUNITY RESILIENCE

*Developing Spatial Information ecosystems for management and decision support*



**D-LAB**  
DIGITAL TWIN  
SOLUTIONS

### DIGITAL TWIN TECHNOLOGIES

*Developing leading-edge spatially enabled digital twin solutions to meet business and decision-making requirements.*

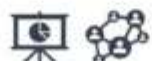


### CROWDSOURCING FEED



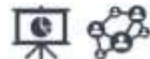
### SUSTAINABLE DEVELOPMENT GOALS (SDGs)

*Supporting the development of data infrastructures that implement the SDGs*



### URBAN ANALYTICS & PLANNING SUPPORT SYSTEMS

*Enhancing SDI platforms and tools for urban planning, design, management and urban analytics*



### SMART CITIES

*Modernising digital land and building data in the context of the Smart City*



### EXECUTIVE TRAINING & CAPACITY BUILDING

*Developing a training centre that builds capability in local practitioners and executives and developing organisations.*





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*PhD Candidate*

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