

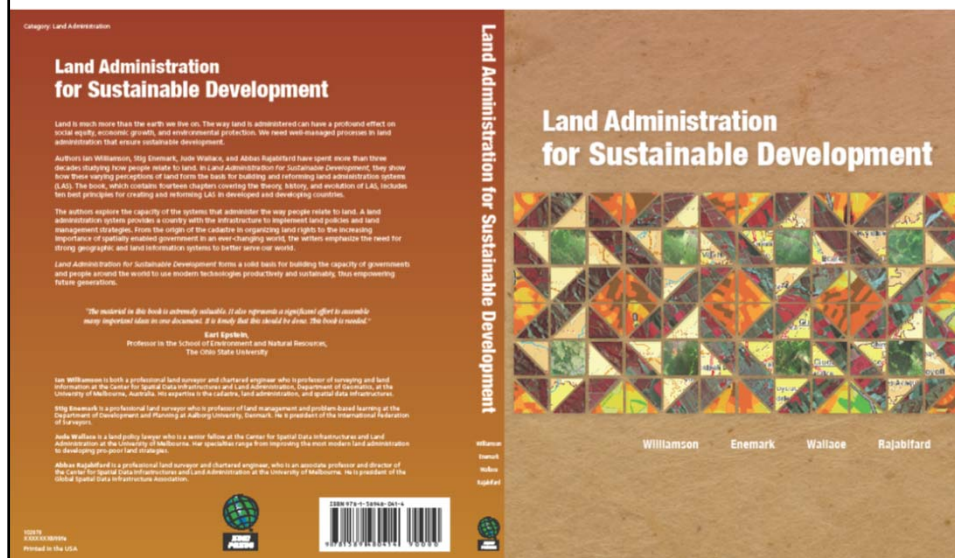
# Land Administration for Sustainable Development

A new book by

Ian Williamson, Stig Enemark  
Jude Wallace, Abbas Rajabifard

FIG INTERNATIONAL CONGRESS 2010  
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Land Administration for Sustainable Development  
Williamson, Enemark, Wallace and Rajabifard 487 pages  
Publisher - ESRI Press Academic, 2010



## New Book

The idea came from **Ian** and **Stig** to document their work over the last 30 years in the areas of cadastre, land administration and land management

Included **Jude** with a strong legal background and **Abbas** with a strong SDI and GIS knowledge

The vision was to write a book with a universal theoretical foundation that explores the systems that administer the ways **people relate to land**

## Land administration

Land Administration Systems (LAS) provide the infrastructure for implementing land policies and land management strategies in support of sustainable development.

A “**state of the art**” book – rather than a text book

## Contents

### Part 1 Introducing land administration

- Setting the scene
- People and land administration

### Part 2 A new theory

- The discipline of Land administration
- Land administration processes
- Modern land administration theory

### Part 3 Building modern systems

- Building land markets
- Managing the use of land

- Marine administration
- SDI and technology
- World wide land administration activities

### Part 4 Implementation

- Capacity building and institutional development
- Land administration tool box
- Project management and evaluation

### Part 5 The future of land admin.

- Future trends

## Four basic components

### A global approach

Developed and less developed countries

### People, politics and places

The people to land relationship

### 1. Understanding the land management paradigm

Any country needs to deal with management of land

### 2. Common processes found in every system

Land registration, valuation, land use control and land development

### 3. A toolbox approach

A variety of tools – best practice

### 4. Supporting sustainable development



## Setting the scene

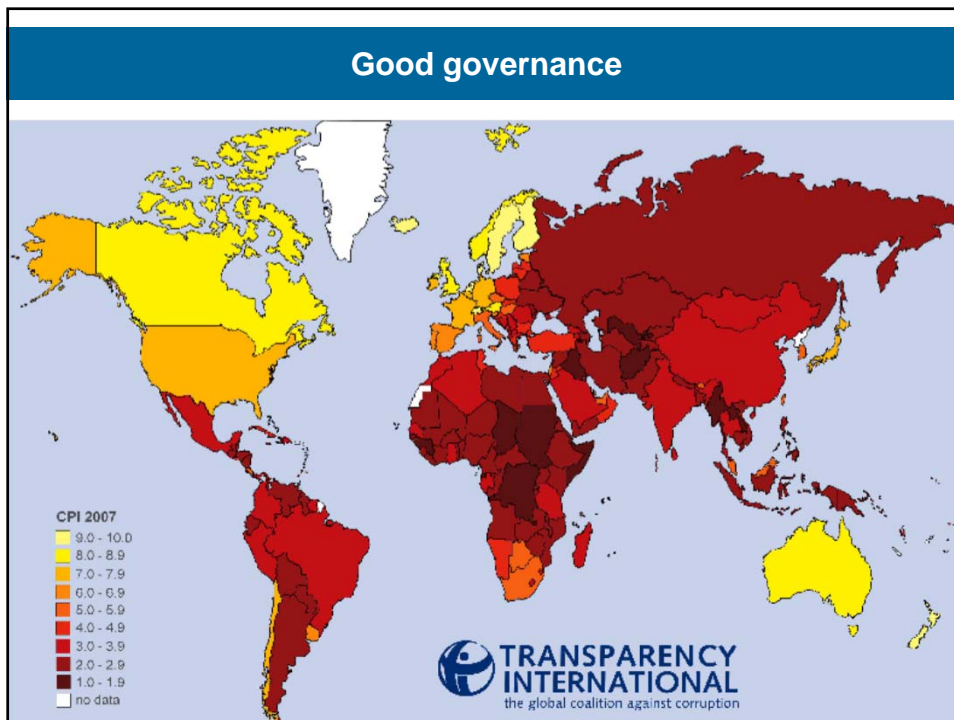
TABLE 1.1 – TRADITIONAL BENEFITS OF LAS

<b>Support for governance and rule of law</b>	The formalization of processes used for land management engages the public and business, and, in turn, this engagement leads to their support for the institutions of government.
<b>Alleviation of poverty</b>	A primary means of alleviating poverty lies in recognizing the homes and workplaces of the poor and their agricultural land as assets worthy of protection.
<b>Security of tenure</b>	This is the method of protecting people's associations with land. It is the fundamental benefit of formal land administration. Ensuring security throughout the range of tenures used in a country helps provide social stability and incentives for reasonable land use. Conversion of some of the rights into property is the core process of commodification of land needed for effective markets.
<b>Support for formal land markets</b>	Security and regularity in land arrangements are essential for successful, organized land markets. LAS manage the transparent processes that assist land exchange and build capital out of land.
<b>Security for credit</b>	International financing norms and banking practices require secure ownership of land and robust credit tenures (that is, tenures which support security interests in land) that can only exist in formal LAS.
<b>Support for land and property taxation</b>	Land taxation takes many forms, including tax on passive land holding, on land-based activities, and on transactions. However, all taxation systems, including personal and company taxation, benefit from national LAS.
<b>Protection of state lands</b>	The coherence of national LAS is dependent on its coverage of all land. Thus, management of public land is assisted by LAS.
<b>Management of land disputes</b>	Stability in access to land requires defined boundaries, titles, and interests. If LAS provide simple, effective processes for achieving these outcomes, land disputes are reduced. The systems also need additional dispute management processes to cover breakdown caused by administrative failure, corruption, fraud, forgery, or transaction flaws.
<b>Improvement of land planning</b>	Land planning is the key to land management, whether the planning is institutionalized within government or achieved by some other means. Impacts of modern rural and urban land uses affect adjoining land and beyond: these impacts need to be understood and managed by effective land planning assisted by LAS.



Continued on next page

## Good governance



## Ten land administration principles ...

- LAS provide the **infrastructure** for implementation of land policies and land management strategies in support of sustainable development.
- The **land management paradigm** provides a conceptual framework for understanding and innovation in land administration systems.
- LAS is all about engagement of **people** within the unique social and institutional fabric of each country.
- LAS are the basis for conceptualising **rights, restrictions and responsibilities** related to people, policies, and places

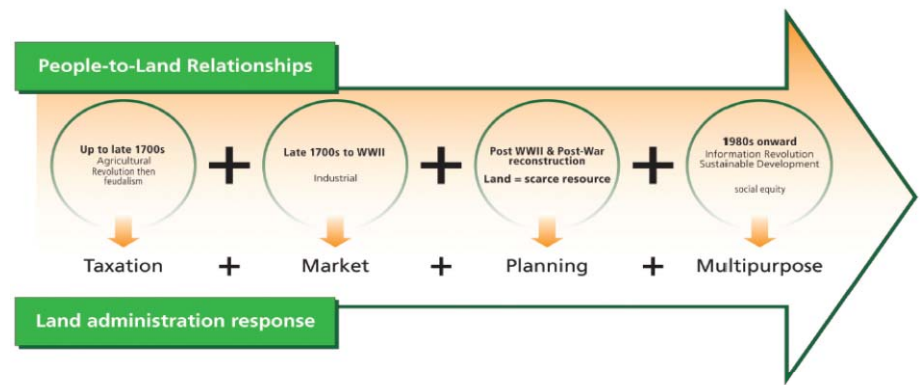
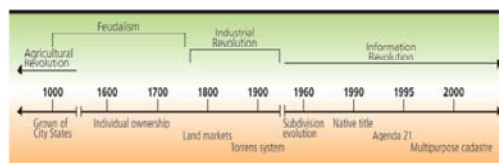
## ...Ten land administration principles

- The **cadastre** is at the core of any LAS providing spatial integrity and unique identification of every land parcel.
- LAS are **dynamic**.
- LAS include a set of **processes** that manage change
- **Technology** offers opportunities for improved efficiency of LAS and spatial enablement of land issues.
- Efficient and effective land administration systems that support sustainable development require a **spatial data infrastructure** to operate.
- Successful *LAS* are measured by their ability to manage and administer land **efficiently, effectively and at low cost**.

## ...Ten land administration principles

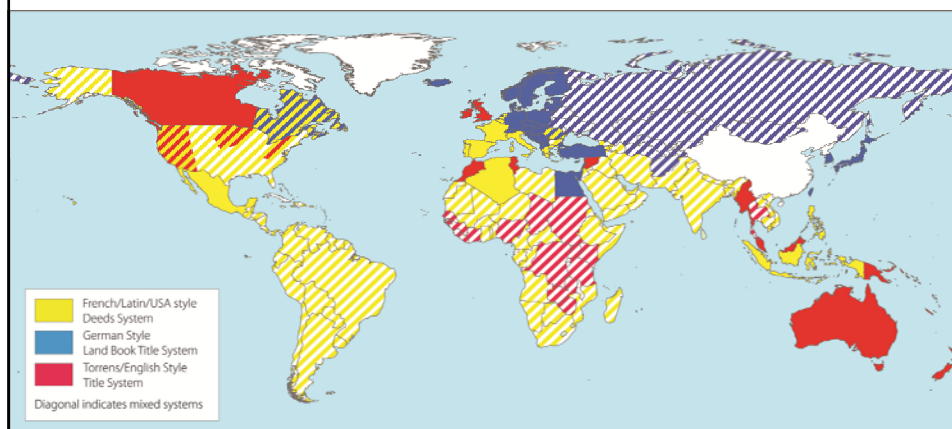
<b>1. LAS</b>	LAS provide the infrastructure for implementation of land policies and land management strategies in support of sustainable development. The infrastructure includes institutional arrangements, a legal framework, processes, standards, land information, management and dissemination systems, and technologies required to support allocation, land markets, valuation, control of use, and development of interests in land.	<b>6. LAS are dynamic</b>	LAS dynamism has four dimensions. The first involves changes to reflect the continual evolution of people to land relationships. This evolution can be caused by economic, social, and environmental forces. The second dimension is evolving ICT and globalization, and their effect on the design and operation of LAS. The third dimension is the dynamic nature of the information within LAS, such as changes in ownership, valuation, land use, and the land parcel through subdivision. The fourth dimension involves changes in the use of land information.
<b>2. Land management paradigm</b>	The land management paradigm provides a conceptual framework for understanding and innovation in land administration systems. The paradigm is the set of principles and practices that define land management as a discipline. The principles and practices relate to the four functions of LAS—namely, land tenure, land valuation, land use, and land development, and their interactions. These four functions underpin the operation of efficient land markets and effective land use management. "Land" encompasses the natural and built environments, including land and water resources.	<b>7. Processes</b>	LAS include a set of processes that manage change. The key processes concern land transfer, mutation, creation and distribution of interests, valuation, and land development. The processes, including their actors and obligations, explain how LAS operate as a basis for comparison and improvement. While individual institutions, laws, technologies, or separate activities within LAS, such as property in land, a land registry, specific piece of legislation, or technology for cadastral surveying, are important in their own right, the processes are central to overall understanding of how LAS operate.
<b>3. People and institutions</b>	LAS are all about engagement of people within the unique social and institutional fabric of each country. This encompasses good governance, capacity building, institutional development, social interaction, and a focus on users, not providers. LAs should be reengineered to better serve the needs of users, such as citizens, governments, and businesses. Engagement with society, and the ways people think about land, are at its core. This should be achieved through good governance in decision making and implementation. This requires building the necessary capacity of individuals, organizations, and wider society to perform functions effectively, efficiently, and sustainably.	<b>8. Technology</b>	Technology offers opportunities for improved efficiency of LAS and spatial enablement in terms of land issues. The potential of technology is far ahead of the capacity of institutions to respond. Technology offers improvements in the collection, storage, management, and dissemination of land information. At the same time, developments in ICT offer the potential for spatial enablement in terms of land issues by using location or place as the key organizer for human activity.
<b>4. Rights, restrictions, and responsibilities</b>	LAS form the basis for conceptualizing rights, restrictions, and responsibilities (RRRs) related to policies, places, and people. Rights are normally concerned with ownership and tenure; whereas restrictions usually control use and activities on land. Responsibilities relate more to a social, ethical commitment or attitude toward environmental sustainability and good husbandry. RRRs must be designed to suit the individual needs of each country or jurisdiction and must be federated among different levels of government, from local to national.	<b>9. Spatial data infrastructure</b>	Efficient and effective LAs that support sustainable development require an SDI to operate. The SDI is the enabling platform that links people to information. It supports the integration of natural (primarily topographic) and built (primarily land parcel or cadastral) environmental data as a prerequisite for sustainable development. The SDI also permits the aggregation of land information from the local to the national level.
<b>5. Cadastre</b>	The cadastre is at the core of LAS that provide spatial integrity and unique identification of every land parcel. Cadastres are legible representations of how the community breaks up its land into usable pieces, usually called parcels. Most cadastres provide security of tenure by recording land rights in a land registry. The spatial integrity within the cadastre is usually provided by a cadastral map that is updated by cadastral surveys. Unique parcel identification provides the link between the cadastral map and the land registry and serves as the basis of LAS and the land information it generates, especially when it is digital and geocoded. The cadastre should ideally include all land in a jurisdiction: public, private, communal, and open space.	<b>10. Measures for success</b>	A successful land administration system is measured by its ability to manage and administer land efficiently, effectively, and at low cost. The success of a land administration system is not determined by the complexity of legal frameworks or the sophistication of technological solutions. Success lies in adopting appropriate laws, institutions, processes, and technologies designed for the specific needs of the country or jurisdiction.

## Land administration discipline





## Land Registration Systems around the World



Deeds System (French/Latin/USA style): A register of owners; the transaction is recorded – not the title.  
 Title System (German, Torrens/English style): A register of properties; the title is recorded and guaranteed.

**TABLE 2.3 – GENERAL RELATIONSHIPS BETWEEN LAND REGISTRIES AND CADASTRES**

STYLE OF SYSTEM	LAND REGISTRATION	CADASTRE
<b>French/Latin/U.S. style</b>	Deeds system Registration of the transaction Titles are not guaranteed Notaries, registrars, lawyers, and insurance companies (U.S.) hold central positions Ministry of justice Interest in the deed is described in a description of metes and bounds and sometimes a sketch, which is not necessarily the same as in the cadastre	Land taxation purposes Spatial reference or map is used for taxation purposes only. It does not necessarily involve surveyors. Cadastral registration is (normally) a follow-up process after land registration (if at all) Ministry of finance or a tax authority
<b>German style</b>	Title system Land book maintained at local district courts Titles based on the cadastral identification Registered titles guaranteed by the state Neither boundaries nor areas guaranteed	Land and property identification Fixed boundaries determined by cadastral surveys carried out by licensed surveyors or government officers Cadastral registration is prior to land registration. Ministry of environment or similar
<b>Torrens/English style</b>	Title system Land records maintained at the land registration office Registered titles usually guaranteed as to ownership Neither boundaries nor areas guaranteed	Property identification is an annex to the title <ul style="list-style-type: none"> <li>Fixed boundaries determined by cadastral surveys carried out by licensed surveyors (Torrens)</li> <li>English system uses general boundaries identified in large-scale topographic maps</li> </ul> Cadastral registration integrated in the land registration process

# Land administration processes

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## CHAPTER 4 - LAND ADMINISTRATION PROCESSES

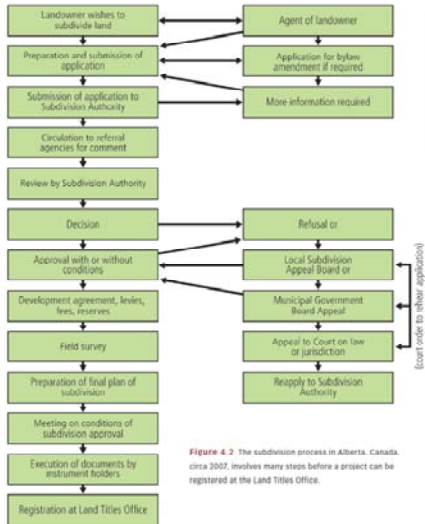


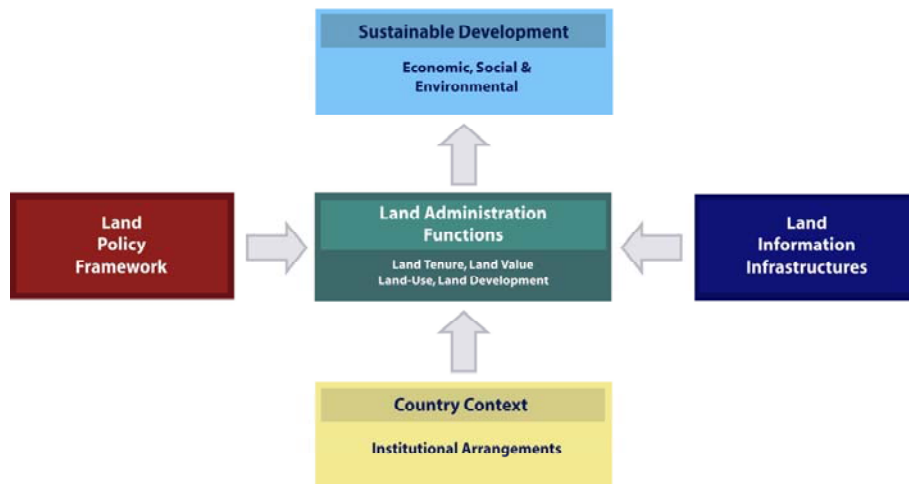
Figure 4.2 The subdivision process in Alberta, Canada, circa 2007, involves many steps before a project can be registered at the Land Titles Office.

TABLE 2.5 - BOUNDARY DETERMINATION PROCESSES USED IN DENMARK, CIRCA 2009

Agency	Activity
Owner	Instructs surveyor to determine boundary
Surveyor	Compares cadastral information to the conditions on the ground. Three situations may occur: <ul style="list-style-type: none"> <li>• If the field conditions are consistent with the recorded cadastral information, the boundary is final</li> <li>• If there is a prescriptive right acquired by time (20 years), the cadastre must be updated to reflect the new boundaries</li> <li>• If the position of the boundary has changed because of an unrecorded agreement between the neighboring parties, the cadastre must change to reflect the agreed boundaries</li> </ul> If the neighbors disagree, the surveyor acts as a judge following a formal procedure to determine the legal boundary and establishes a temporary boundary. The temporary boundary becomes the final boundary, if the court option is not invoked and the parties agree.
Owner and neighbors	An interested party can bring the case to court for official designation of the boundary, but this occurs very rarely
Court	Decides final legal boundary



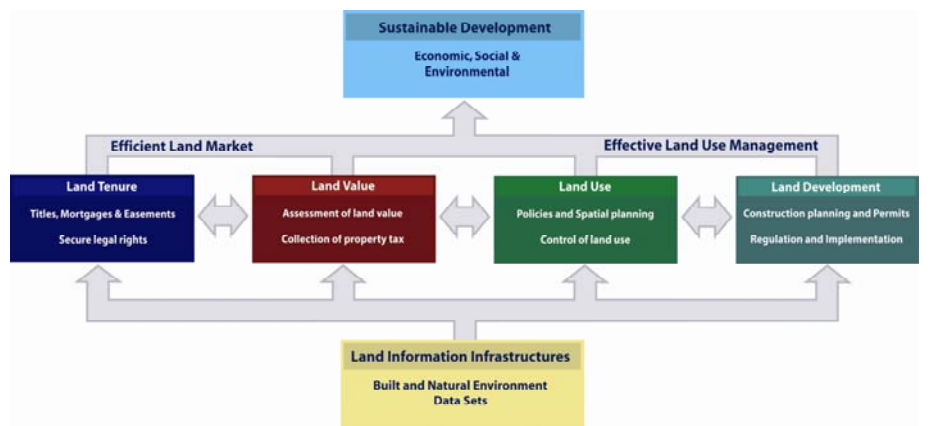
# Understanding the Land Management Paradigm



Land Management includes all activities associated with the management of land and natural resources that are required to fulfill political objectives and achieve sustainable development.



**LAS provide the infrastructure for implementation of land policies and land management strategies in support of sustainable development.**

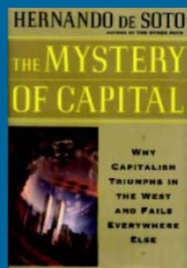


**Land Tenure:** the allocation and security of rights in lands; the legal surveys of boundaries; the transfer of property through sale or lease; and the management; adjudication of disputes regarding rights and boundaries.  
**Land Value:** the assessment of the value of land and properties; the gathering of revenues through taxation; and the management and adjudication of land valuation and taxation disputes.  
**Land-Use:** the control of land-use through adoption of planning policies and land-use regulations at various levels; the enforcement of land-use regulations; and the management and adjudication of land-use conflicts.  
**Land Development:** the building of new infrastructure; the implementation of construction planning; and the change of land-use through planning permission and granting of permits.

**The increasing role of property rights**

**”Civilised living in market economies is not simply due to greater prosperity but to the order that formalised property rights bring”**

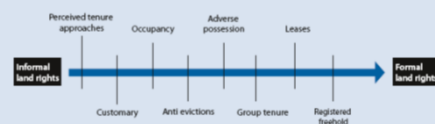
*Hernando de Soto – 1993*



**Continuum of rights (GLTN-agenda)**

**From: illegal or informal rights**

**To: legal or formal rights**



## Place matters

Everything happens somewhere

If we can understand more about the nature of “place” where things happen, and the impact on the people and assets on that location, we can plan better, manage risk better, and use our resources better.

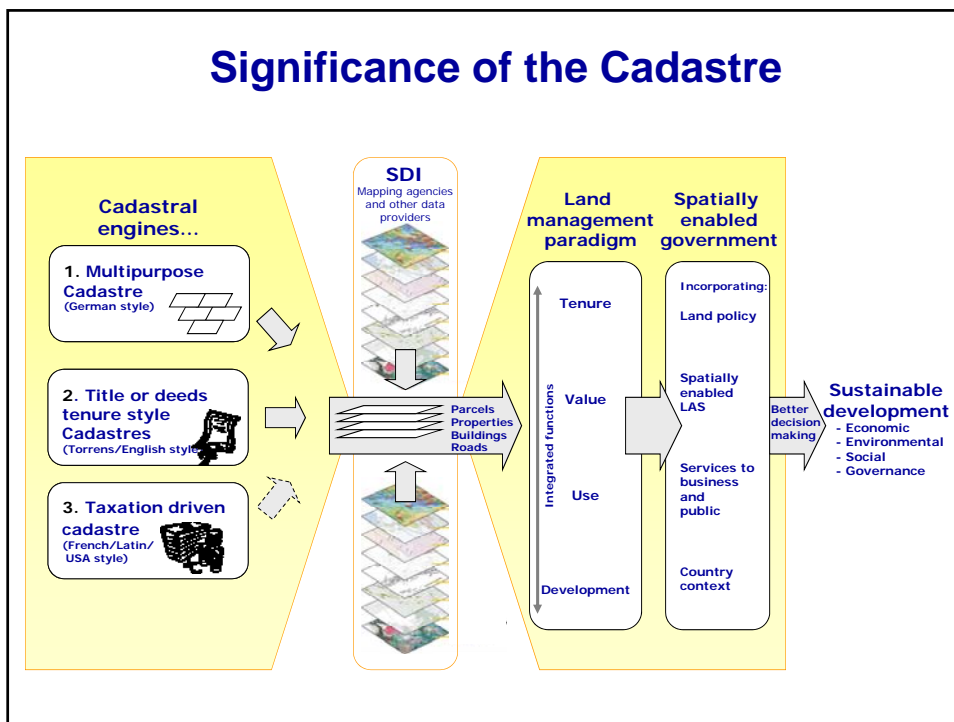
“Heading toward spatial enabled society”

## Spatially Enabled Government

A spatially enabled government organises its business and processes around “**place**” based technologies, as distinct from using maps, visuals, and web-enablement.

The technical core of Spatially Enabling Government is the **spatially enabled cadastre**.

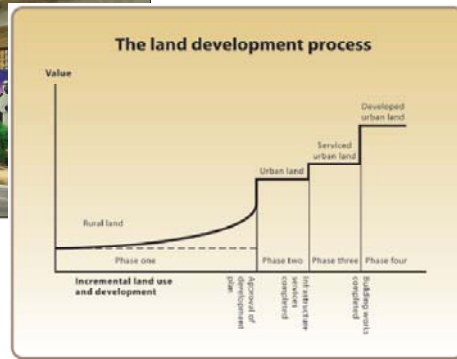
## Significance of the Cadastre



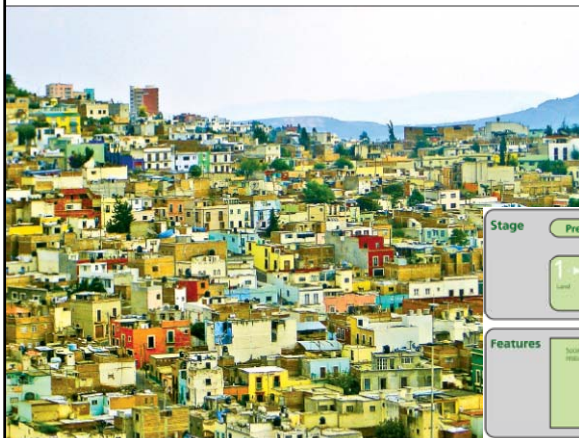
## Managing the Use of Land



## Land Development

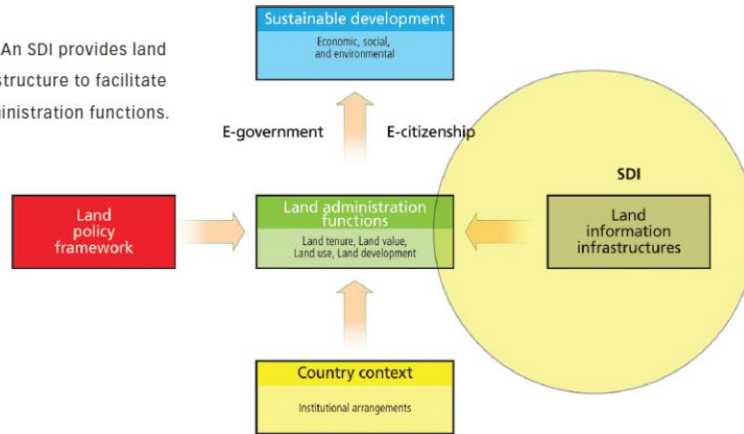


## Building land markets

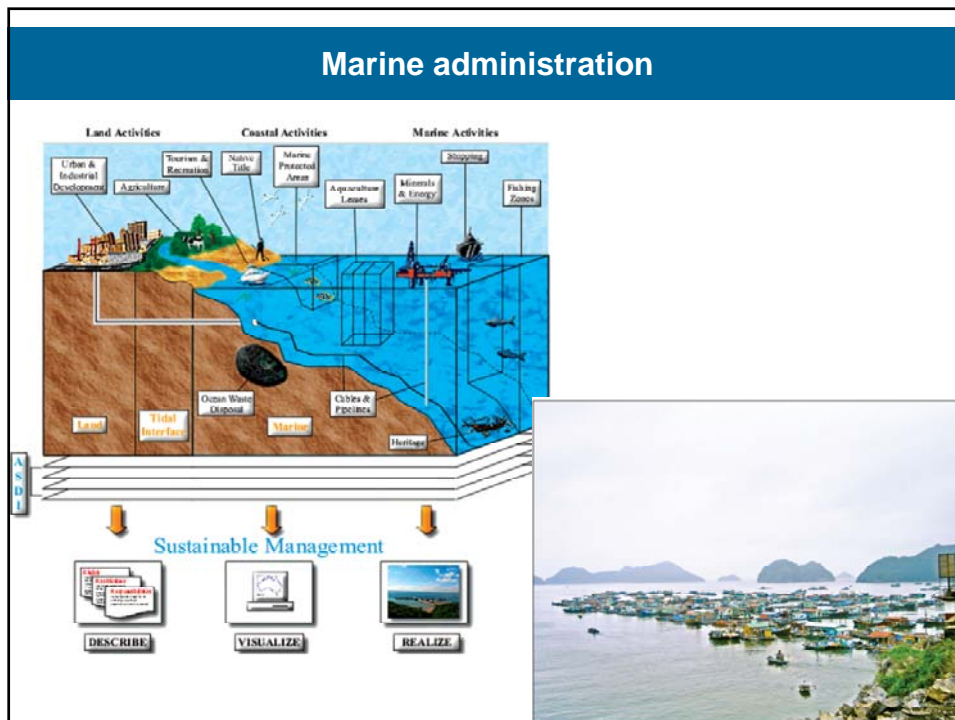


## Spatial Data Infrastructures

**Figure 9.1** An SDI provides land information infrastructure to facilitate land administration functions.



## Marine administration





## A worldwide Comparison of Cadastral Systems



### Cadastral Template

*A Worldwide Comparison of Cadastral Systems*

Cadastral country reports based on a jointly developed PCGIAP/FIG template.  
Established under UN mandate by Resolution 4 of the 16th UNRCC-AP in Okinawa, Japan in July 2003.  
UN endorsement for cooperation with UN-ECE WPLA, UN-ECA CODI, and PCIDEA.

#### Data per Country

(last update: 31 Dec. 2007, 42 countries)

as .htm

as .pdf

#### Field Definitions

#### I. Data per Data Fields

(last update: 4 Jan. 2008, 42 countries)

#### II. Principles and Statistics

(last update: 4 Jan. 2008, 42 countries)

- 1.1 Cadastral Principles
- 2.1 Population
- 2.3 Parcels
- 2.7 Professionals

#### Documents

- Questionnaires for Download (English, Español, Portugues)
- Publications
- Administrative Documents

#### Latest Updates

- Country report of Cyprus (31 Dec. 2007)
- Country report of Norway (8 Aug. 2007)
- Country report of Israel (16 Oct. 2008)
- Updates of Latvia and Netherlands (5 Aug. 2008)
- Country report of Austria as 38th country (15 Jan. 2008)
- Country report of Latvia (28 Oct. 2005)
- Country report of Tanzania (12 Jul. 2005)
- Country report of Finland (29 Apr. 2005)
- Country report of Namibia (7 Jun. 2004)
- Country report of Venezuela (in Spanish) (28 May 2004)

The "Cadastral Template" has been developed by a research group at the Department of Geomatics of the University of Melbourne. It consisted of Prof. Ian Williamson, Dr. Abbas Rajabifard, and Daniel Steudler, supported by Prof. Stig Enemark from Aalborg University, Denmark.



[www.cadastraltemplate.org](http://www.cadastraltemplate.org)

## Capacity Building

LEVEL	CAPACITY ASSESSMENT ISSUES	CAPACITY DEVELOPMENT OPTIONS
<b>Societal level</b>	Policy dimension Social and institutional dimension System dimension Legal and regulatory dimension	Land policy issues Land administration vision LAS Land tenure principles Legal principles
<b>Organizational level</b>	Cultural issues Managerial and resource issues Institutional issues and processes	Institutional infrastructure ISV Professional institutions
<b>Individual level</b>	Professional competence Human resources needs Educational resources	Education and training programs GPD programs Virtual programs Education and research center

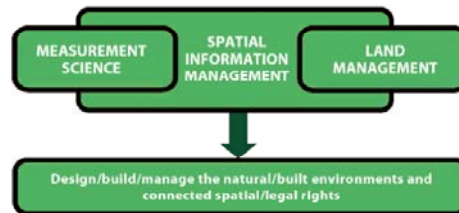


TABLE 12.1 – THE LAND ADMINISTRATION TOOLBOX	
<b>General tools</b>	<ol style="list-style-type: none"> <li>1. Land policy tools (chapters 1, 2, 3, 4, 5)</li> <li>2. Governance and legal framework tools (chapters 1, 2, 3, 13)</li> <li>3. Land market tools (chapter 6)</li> <li>4. Marine administration tools (chapter 8)</li> <li>5. Land-use, land development, and valuation tools (chapters 6, 7)</li> <li>6. ICT, SDI, and land information tools (chapter 9)</li> <li>7. Capacity and institution-building tools (chapters 11, 13)</li> <li>8. Project management monitoring and evaluation tools (chapters 10, 13)</li> <li>9. Business models, risk management, and funding tools</li> </ol>
<b>Professional tools</b>	<ol style="list-style-type: none"> <li>1. Tenure tools</li> <li>2. Registration system tools</li> <li>3. Titling and adjudication tools</li> <li>4. Land unit tools</li> <li>5. Boundary tools</li> <li>6. Cadastral surveying and mapping tools</li> <li>7. Building title tools</li> </ol>
<b>Emerging tools</b>	<ol style="list-style-type: none"> <li>1. Pro-poor land management tools</li> <li>2. Noncadastral approaches and tools</li> <li>3. Gender equity tools</li> <li>4. Human-rights tools</li> </ol>

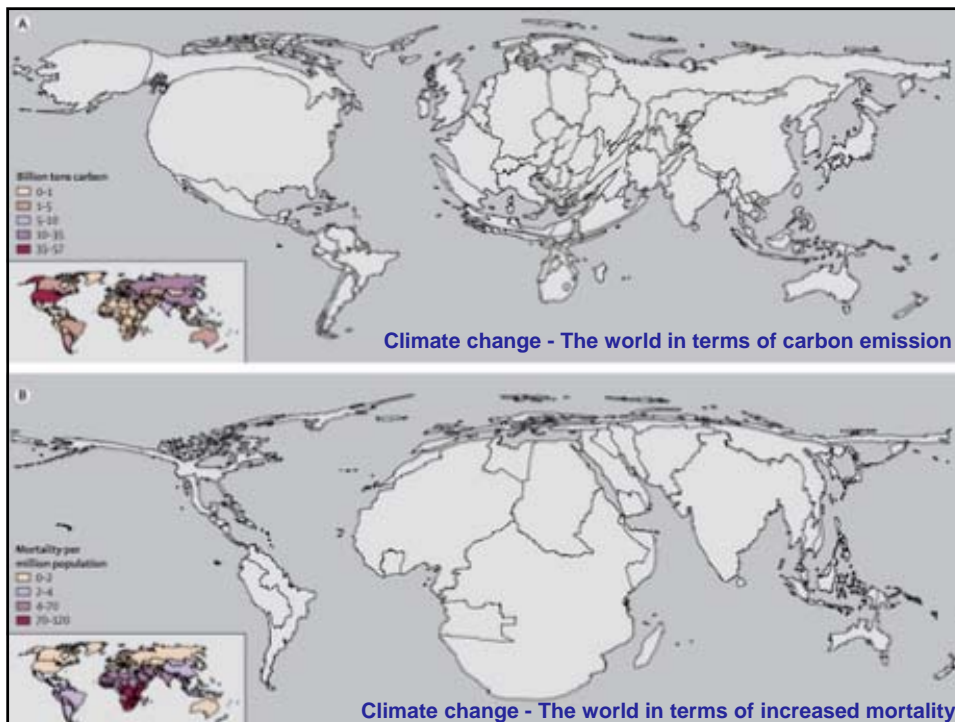
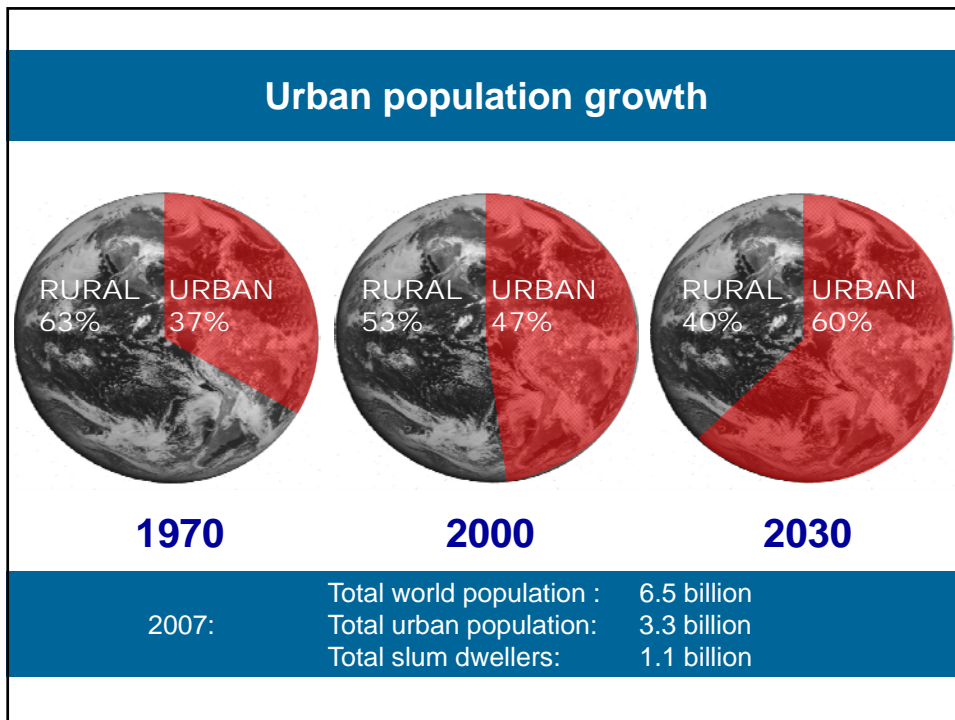
TABLE 12.3 – DIFFERENCES AMONG REGISTRATION SYSTEMS		
ASPECT	DEEDS REGISTRATION	TITLE REGISTRATION
<b>Administration system</b>	Generally, the deeds are copied, and copies are held in "land books."	The record is held on a single page or in a digital file referring to the parcel.
<b>Actors</b>	Lawyers or notaries are usually essential. Deeds registrars check and manage filing and recording of the deeds in the books.	Often, lawyers and surveyors are required. In the best systems, individuals can do their own conveying. The land registrars check and record the information in the documents as well as social transactions affecting the land.
<b>Agencies</b>	Registry offices are typically set up or overseen by local courts.	Registration or land title offices are typically set up under an administrative arm of government.
<b>Registration</b>	Involves lodging a copy of the deed in an official book or collection. Administration requires a complicated system of cross-referencing of parties' names, parcel identifiers, and deed numbers to retrace the history of the land.	Involves recording land transactions in the order in which they are lodged at the land title office on a single page, or single computer file. This page or file is called the "title," and registration is simply recording the transaction on the title.
<b>Forgery</b>	Forgery breaks the "chain of title," so that all later deeds are ineffectual.	Forgery by a person seeking registration is ineffective. The forger cannot get title. But all other people not party to the forgery can rely on registration of the forged instrument to gain a title for themselves.
<b>State insurance and guarantee</b>	There is no guarantee of title by the registration system.	The title is normally guaranteed by the state. Hence, the administration system must be very reliable.
<b>Private and professional insurance</b>	Professionals always carry insurance to protect their clients against failures in their work. Notaries carry insurance and can provide professional guarantees. In other places, notably the United States, private insurers sell insurance cover against failure of the system.	There is no need for private insurance of the title, but private cover can sometimes be offered to protect people against restrictions and responsibilities outside the title system affecting the land. Lawyers carry insurance against losses they or their staff cause.

## Project management and evaluation



## LAS issues in the next decades

- Land governance
- Urban growth
- Tools to administer the continuum of tenures
- Tools to manage RRRs
- LAS to capitalize on technology
- Institutional catch-up



## Key message

*Simply put,  
sustainable development  
requires sustainable  
land administration systems*

**Thank you for your attention**

