

## Need for Establishing Sustainable National Concepts

# Understanding the Land Management Paradigm

*There is a worldwide need to build understanding of the Land Management Paradigm and for institutional development to establish sustainable national concepts. This includes creation and adoption of a policy on land development, and an approach that combines the land administration/cadastral/land registration function with topographic mapping. The author seeks to awaken more awareness of global trends in this area, recognising that the systems design involved is always unique.*

By Professor Stig Enemark, Aalborg University, Denmark

In most Western European countries Land Administration System policies and technologies developed from a systematic and complete cadastral map. This was itself originally established as a basis for land valuation and taxation according to the use of land, particularly the yielding capacity of agricultural land. This promoted a classic 'whole-to-part' strategy, allowing Land Administration Systems (LAS) to support a

more integrated approach to land management. By contrast, the 'new world', the USA and Australia, and many developing and countries 'in transition', focus on LAS to support efficient land markets and manage land-use policies. These systems are mainly designed to manage transfer of individual land parcels and have resulted in LAS and associated spatial data models that rely on 'part-to-whole' strategies. As a re-

sult, LAS cannot adequately support the management and decision making needed to handle wider economic, environmental and social issues.

### Unified Model

However, the constraints of local history are diminishing. While national strategies and models vary across European countries, common policies, strategies and technology solutions are becoming apparent, offering timely lessons for other regions in the world. LAS are increasingly being tested against an emerging vision of a more unified model appropriate for developed economies but also capable of providing direction for transitional economies. This vision reflects drivers of globalisation and technology development that support the establishment of multifunctional information systems incorporating diverse land rights, land-use regulations and other useful data. Another major driver, sustainable development, stimulates demands for compre-

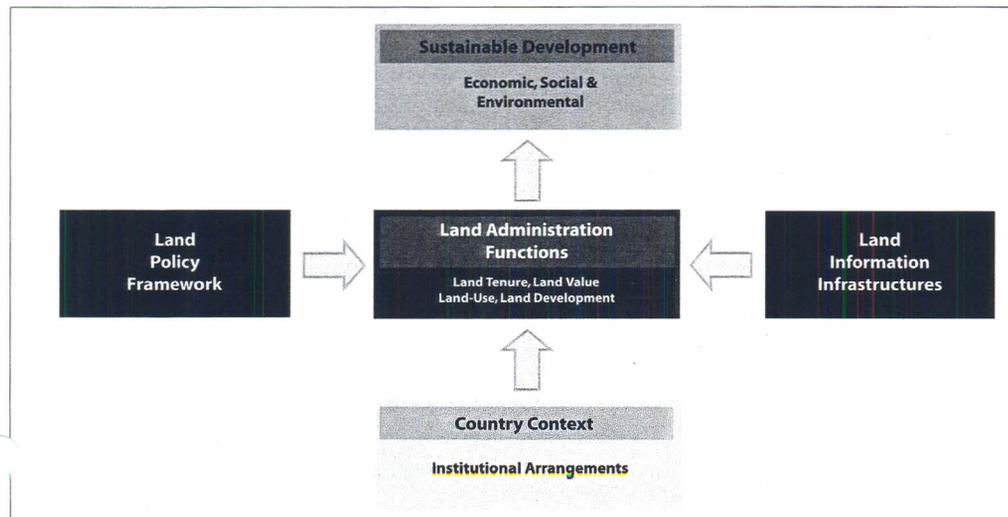


Figure 1, The Land Management Paradigm.

### FIG Definition of Cadastre

A parcel-based and up-to-date land information system containing a record of interests in land. Cadastre usually includes a geometric description of land parcels linked to other records describing the nature of interests, ownership or control over these, and often the value of the parcel and its improvements. It may be established for fiscal purposes (e.g. valuation and equitable taxation), legal purposes (conveyancing), to assist in the management of land and land use (e.g. for planning and other administrative purposes) and enables sustainable development and environmental protection.

prehensive information about environmental conditions in combination with other land-related data.

### The Paradigm

Land management is the process whereby land resources are put to good effect. It encompasses all activities associated with the management of land and natural resources required for the achievement of sustainable development. Organisational structure for land management varies widely between countries and regions throughout the world, reflecting local cultural and judicial settings. Institutional arrangements may change over time to better support implementation of land policies and good governance. Within this national context, land-management activities may be described by their three components: Land Policies, Land Information Infrastructures, and Land Administration Infrastructures in support of Sustainable Development. This Land Management Paradigm is presented in Figure 1. Land policy is part of national policy for promoting objectives including economic development, social justice and equity, and political stability. Land policies may be associated with:

- security of tenure
- land markets (particularly land transactions and access to credit)
- property taxation
- sustainable management and control of land use, natural resources and the environment
- provision of land for the poor, ethnic minorities and women
- measures to prevent land speculation and to manage land disputes.

### Land Admin Functions

The operational component of the land management paradigm comprises the range of land-administration functions that ensure proper management of rights, restrictions, responsibilities and risks in relation to property, land and natural resources. These functions include the areas of land tenure (securing and transferring rights in land and natural resources), land value

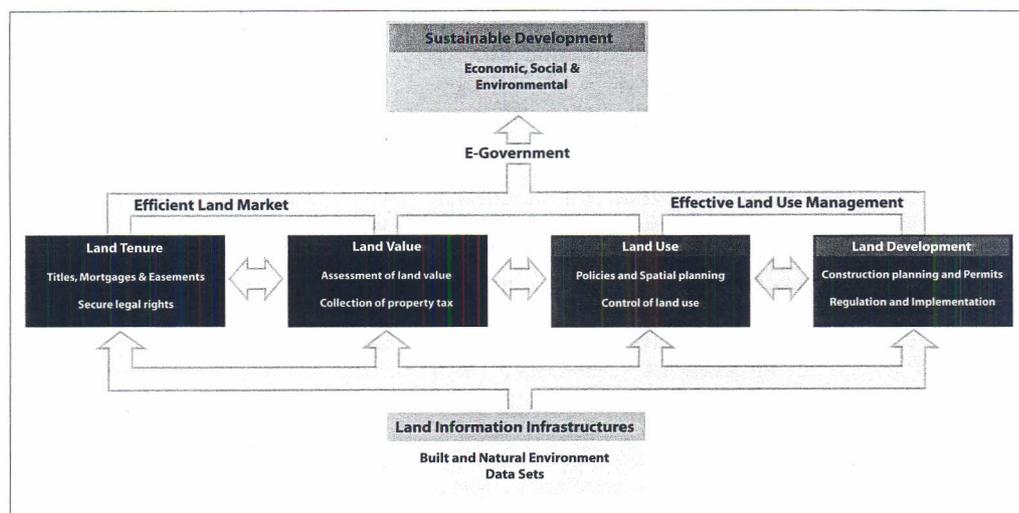


Figure 2, Global perspective of modern Land Administration Systems.

(valuation and taxation of land and properties), land use (planning and control of the use of land and natural resources) and land development (implementing utilities, infrastructure and construction planning). Land administration functions are based upon and facilitated by appropriate land-information infrastructures that include cadastral and topographic datasets and provide access to complete and up-to-date information about the built and natural environment. Sound land management is, then, the operational processes involved in implementing land policies in comprehensive and sustainable ways. In many countries, however, there is a tendency to separate land-tenure rights from land-use rights. There is then no effective institutional mechanism for linking planning and land-use controls with land values and the operation of the land market. These problems are often compounded by poor administrative and management procedures that fail to deliver required services. Investment in new technology will go only a small way towards solving a much deeper problem: the failure to treat land and its resources as a coherent whole.

### Multipurpose Cadastre

The interface between LA infrastructure and professions and the public will increasingly be serviced by Information and Communication Technologies (ICT)

designed to implement e-government and e-citizenship. E-citizenship is mobilisation of society to engage in planning, use and allocation of resources, using technology to facilitate participatory democracy. E-government involves a government putting government information and processes on-line, and using digital systems to assist public access to them. The basic building block in any land administration system is the 'land parcel', as identified in the cadastre; the International Federation of Surveyors (FIG) definition of a cadastre is given in the sidebar. Today most cadastral registers in the world are linked to both land value/taxation and to the securing of legal rights in land. It makes sense to talk about Cadastral Systems or Cadastral Infrastructures. These systems or infrastructures include interaction between the identification of land parcels, registration of land rights, valuation and taxation of land and property, and the present and possible future use of land. Even though cadastral systems around the world clearly differ in terms of structure, processes and actors, their design is increasingly influenced by globalisation and technology shifts towards multipurpose cadastres. The same influences push land rights and land use towards integrated, multifunctional information systems. Modern cadastres and land information systems also reflect urbanisation and micro-economic

reform incorporating decentralisation, privatisation and quality assurance.

**LAS: Global Approach**

LAS are concerned with the social, legal, economic and technical framework within which land managers and administrators must operate. These systems support efficient land markets, and are at the same time concerned with the administration of land as a natural resource to ensure its sustainable development. This global approach to modern land administration systems is shown in Figure 2. Land administration involves managing an extensive range of interrelated systems and processes.

- ◆ *Land Tenure*: allocation and security of rights in lands, legal surveys to determine parcel boundaries, transfer of property or use from one party to another through sale or lease, and the management and adjudication of doubts and disputes regarding rights and parcel boundaries.
- ◆ *Land Value*: assessment of the value of land and properties, gathering of revenues through taxation, and management and adjudication of land-valuation and taxation disputes.
- ◆ *Land Use*: control of land use through adoption of planning policies and land-use regulations at national, regional and local level, enforcement of land-use regulations, and management and adjudication of land-use conflicts.

◆ *Land Development*: building of new physical infrastructure, implementation of construction planning and changes to land use through planning permission and granting of permits.

The design of adequate land-tenure and land-value systems should lead to the establishment of an efficient land market capable of supporting trading in complex commodities. The design of adequate systems in the areas of land-use control and land development should lead to effective land-use management. The combination of an efficient land market and effective land-use management should then form the basis for a sustainable approach to economic, social and environmental development. A modern LAS acts within the environment of adopted land policies that fulfil political objectives with regard to land issues. It also acts within an institutional framework that imposes mandates and responsibilities on the various agencies and organisations. The system is concerned with providing detailed information at individual land-parcel level. It should service the needs of both the individual and the community at large. Benefits arise through its application in guaranteeing ownership, security of tenure and credit, facilitating efficient land transfers and land markets, supporting management of assets, and providing basic information in physical planning, land-development and environmental control planning. The system thus acts as a backbone for society. An overall conceptual approach is presented below.

**Institutional Development**

Institutional development in Land Management implies adoption of long-term strategic actions and capacity-building activities, including the need to:

- establish a strategic approach to donor projects and ensure that capacity-building measures are addressed 'up front', not as an add-on
- develop national self-assessment procedures to identify capacity needs and thereby argue for establishing the necessary measures for capacity development in terms of policies, legal framework, institutional infrastructure and human resources and skills
- promote creation and adoption of comprehensive policy on land development and establish a holistic approach to land management that combine land administration/cadastral/land registration function with topographic mapping
- establish clear allocation of du-

**Overall Conceptual Approach**

*Overall Land Policy*

- ◆ Determining values, objectives and the legal framework in relation to management of land as a legal, economic and physical object.

- ◆ Basis for building sound land-administration infrastructures.

*Cadastral Systems*

- ◆ Identification of land parcels and securing land rights.
- ◆ Facilitation of land registration, land valuation, and land-use control.
- ◆ Underpinning sound Land Administration.

*Land Administration Systems*

- ◆ Administration of land tenure, land value, land use, and land development.
- ◆ Facilitation of efficient land markets and effective land-use management.
- ◆ Underpinning sound Land Management.

*Land Management*

- ◆ Management of processes whereby land resources are put to good effect.
- ◆ Facilitation of economic, social, and environmental sustainability.
- ◆ Underpinning and implementation of sound Land Policies.

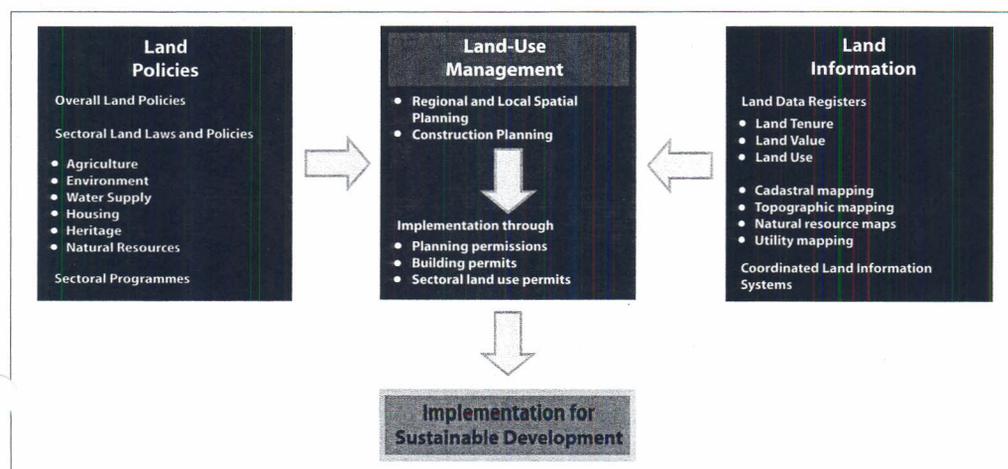


Figure 3, Integrated land-use management for sustainable development.

tween national and local government (decentralisation). Ensure that principles of good governance apply when dealing with rights, regulations and responsibilities with regard to land resources and land development

- promote understanding of land management as highly interdisciplinary, to include a whole range of policy measures: social, economic, environmental, judicial and organisational
- promote need for interdisciplinary approach to 'surveying education' that combines both technical and social science and thereby links the areas of measurement science and land management through strong emphasis on spatial-information management
- establish strong professional bodies, such as a national institute of surveyors responsible for the development and control of professional standards and ethics, enhancement of professional competence, and interaction with government agencies to develop optimal conditions and services
- promote the need for Continuous Professional Development (CPD) to maintain and develop professional skills and promote interaction between edu-

sional practice.

### Concluding Remarks

Adoption of a comprehensive policy on land management is crucial, since this will drive the legislative reform that in turn results in institutional reform and finally implementation, with all its technical and human-resource requirements. Such a comprehensive approach in the area of land-use management is shown in Figure 3.

### Acknowledgement

The contributions by Prof. Ian Williamson and Jude Wallace from the University of Melbourne are thankfully acknowledged.

### Biography of the Author

**Stig Enemark** is Professor in Land Management and Problem-Based Learning at Aalborg University, Denmark. He is currently president of the Danish Association of Chartered Surveyors and vice-president of the International Federation of Surveyors (FIG) 2005-2008. His teaching and research are concerned with land-administration systems, land management and spatial planning and related educational and capacity-building activities. He has acted as a consultant to the World Bank and the European Union, particularly in Eastern Europe and sub-Saharan Africa. He has authored more than two hundred publications and contributed papers by invitation to more than fifty international conferences.



Professor Stig Enemark

*Professor Stig Enemark, vice-president of FIG 2005-2008, Department of Development and Planning, Aalborg University, 11 Fibigerstrøde, 9220 Aalborg, Denmark, e-mail: enemark@land.aau.dk*

**Geo-Allen**

**Geo-Allen Co., Ltd. Suzhou, China**  
 web: [www.geoallen.com](http://www.geoallen.com)  
 web: [www.geosurveying.com](http://www.geosurveying.com)  
 Tel: +86-512-6862-9773  
 Fax: +86-512-6862-9776  
 email: [geoallen@163.com](mailto:geoallen@163.com)

No.59