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BUILDING LAND INFORMATION POLICIES

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ABSTRACT

"Civilized living in market economies is not simply due to greater prosperity but to the order that formalized property rights bring"
(Hernando de Soto, 1993).

The quote is from a famous article "The Missing Ingredient" in The Economist, September 1993. The quote may also be used as an expression of the importance that international organizations, such as the UN, FAO, and Habitat attach to cadastral systems. The World Bank has also recognized the importance of establishing appropriate land administration systems as a basis for generating economic development, social coherence and environmental sustainability. Security in land rights is seen as a basic element in this process where land is increasingly seen as an asset.

Now - how does this relate to the focus of this special forum? Very much in fact. The paper argues that the property perspective on land and natural resources provides the key driver for developing appropriate institutional, legal and technical processes to integrate land administration and topographic mapping programs within the context of a wider national land policy. This way, the paper intends to set the scene for this special forum.

The paper presents a conceptual understanding in the areas of Cadastre, Land Administration, and Land Management as a basis for building adequate land information policies. To develop this understanding the paper looks at each area as a system or an infrastructure designed for handling specific tasks and serving specific needs in society. The paper analyzes the function and the basic elements of the systems and looks at the interaction between the four key areas: land tenure, land value, land-use, and land development.

Basically such systems are embedded in the historical, cultural and judicial setting of the individual country. However, in spite of the different origins, the systems seem to merge into a global model serving some basic societal needs. The paper presents an outline of this development towards a global model for sustainable land administration infrastructures, and the paper also underlines the role of FIG in this regard.

Finally, the paper points at four key challenges to be faced by the politicians in this area in order to pave the way into the third millennium:

- *The Educational Challenge:* To establish adequate educational programs at university level to combine the three areas of measurement science, spatial information management, and land management.
- *The Professional Challenge:* To establish national professional associations which accommodate a modern interdisciplinary profile. This includes adoption of ethical principles and model codes of professional conduct suitable for performing this modern role.
- *The Capacity Building Challenge:* To assess the capacity needs in land administration and to develop the capacity needed at societal, institutional and personal level.
- *The Institutional Challenge:* To establish appropriate institutional and organisational infrastructures to manage the integration of topographic mapping and cadastral information into a coherent land administration system for sustainable development.

The paper aims to establish the basic understanding for dealing with these challenges.

1. INTRODUCTION

The last decade has seen moves towards establishment of fully digitized cadastral systems throughout the world. It is recognized that cadastral systems are not ends in themselves. Cadastral systems must serve a multi-purpose use and thereby meet the challenge of modern Geographic Information Systems (GIS) and the modern Information Technology (IT) environment.

Cadastral systems should be seen as a core component of more comprehensive land administration systems or infrastructures concerned with the processes of determining, recording and disseminating information about tenure value and use of land when implementing land policies. Appropriate land administration systems then provide the basis for sound land management towards economic, social and environmental sustainability.

Since the early 1990´s there has been a major evolution in this area of land administration. FIG has played a significant role in terms of facilitating the understanding of the role of land administration, and by establishing a powerful link between appropriate land administration and sustainable development.

In this regard, organisations such FIG, UN, the World Bank and also the whole surveying/land administration community should recognize that the increasing demand for sustainable land administration infrastructures includes some educational, professional, capacity building, and institutional challenges to be met at the threshold of the third millennium.

2. CADASTRAL SYSTEMS

The International Federation of Surveyors (FIG, 1995) defines a cadastre as a "parcel based and up-to-date land information system containing a record of interests in land (e.g. rights, restrictions and responsibilities). It usually includes a geometric description of land parcels linked to other records describing the nature of the interests, ownership or control of those interests, and often the value of the parcel and its improvements. It may be established for fiscal purposes (valuation and taxation), legal purposes (conveyancing), to assist in the management of land and land-use control (planning and administration), and enables sustainable development and environmental improvement".

However, the concept of Cadastre is difficult to identify. It may be designed in many different ways, depending on the origin, history and cultural development of the region or country. Basically, a cadastre as such is just a record that identifies the individual land parcels/properties. The purpose of this identification may be taxation (as was the reason for establishing the European cadastres) or it may be security of land rights (as was the case when establishing the Torrens systems in the new world such as Australia). Today, most cadastral registers around the world are linked to both the land value/taxation area and the area of securing legal rights in land.

Therefore, it makes sense to talk about Cadastral Systems or Cadastral Infrastructures rather than just Cadastre. These systems or infrastructures include the interaction between the identification of land parcels, the registration of land rights, the valuation and taxation of land and property, and the control of present and possible future use of land. This is shown in figure 1 below (developed from Enemark, 2003).

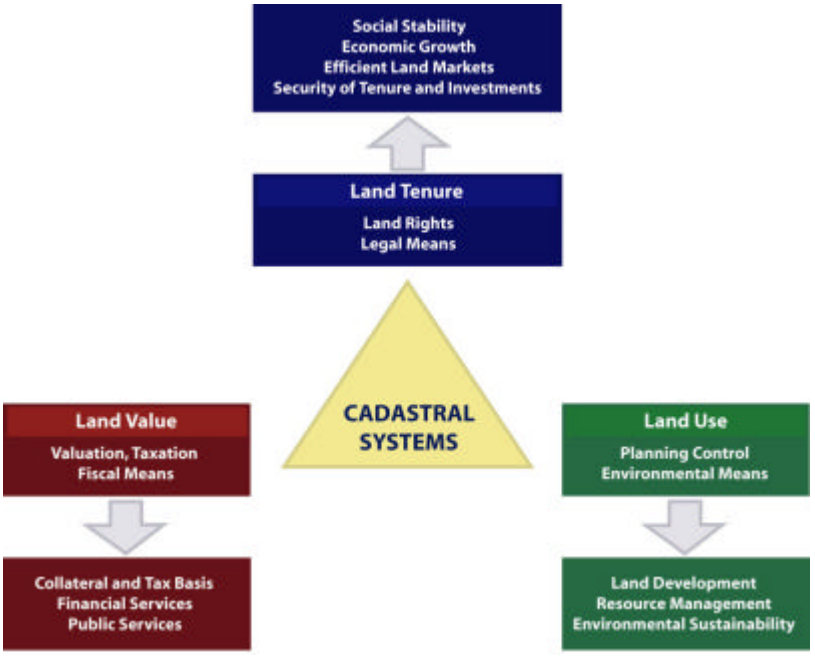

Fig. 1: *Cadastral systems provide a basic land information infrastructure for running the interrelated systems within the areas of Land Tenure, Land Value, and Land Use.*

Even though cadastral systems around the world are clearly different in terms of structure, processes, and actors, they are increasingly merging into a unified global model: the multi-purpose cadastre. This is due to some global drivers: globalisation and technology development. These trends supports establishment of multifunctional information systems with regard to land rights and land-use regulations. A third global driver is sustainable development with its demand for comprehensive information on the environmental conditions in combination with other land and property related data.

The identification of land parcels in the cadastral system provides the basic infrastructure for running the interrelated systems within the areas of Land Tenure, Land Value, and Land-Use. As a result, the traditional surveying, mapping and land registration focus has moved away from being primarily provider-driven to now being clearly user-driven. However, each of those systems includes tasks and processes that impose quite different demands on the cadastral system. The success of a cadastral system is a function of how well it internalizes these influences and achieves these broad social, economic and environmental objectives.

2.1 Land Registration Systems

Cadastral Systems are organized in different ways throughout the world, especially with regard to the Land Registration component. Basically, two types of systems can be identified: the Deeds System and the Title System. The differences between the two concepts relate to the cultural development and judicial setting of the country. The key difference is found in whether only the transaction is recorded (the Deeds System) or the title itself is recorded and secured (the Title System). The Deeds System is basically a register of owners focusing on "who owns what" while the Title System is a register of properties presenting "what is owned by whom". The cultural and judicial aspects relate to whether a country is based on Roman law (Deeds Systems) or Germanic or common-Anglo law (Title Systems). This of course also relates to the history of colonization.

Deeds registration is rooted in the Roman culture and is, therefore, common in Latin cultures in Europe (France, Spain, Italy, Benelux), in Latin America, and in parts of Asia and Africa who have been influenced by these cultures. The concept is also used in most of the United States. The Deeds Systems is found in different forms, where the role of the cadastral identification as well as the role of the surveyors varies significantly.

Title registration has its origin in the German culture and is found in the central European countries (Germany, Austria, Switzerland). Different versions of the German system are found in the Eastern European and the Nordic countries. The versions relate to the use of the property concept and the organization of the cadastral process including the use and the role of private licensed surveyors. A special version of the Title System is found in UK, where the concept of general boundaries is used to identify the land parcels on the large-scale topographic map series. Title registration is found in a third variant: the Torrens system (developed by Sir Robert Torrens) and introduced in Australia by mid 1800´s to serve the need of securing land rights in the "new world". The Torrens Systems is implemented in Australia, New Zealand, Western states of Canada, and some countries in Asia and Africa.

The systems in Latin America, Africa and Asia are often rather incomplete in terms of content as well as coverage. Furthermore, some land rights cannot be recorded in Western judicial systems due to the nature of the rights. This relates to the traditional land rights on the African continent known as "customary rights", and also the "indigenous land rights" related to the indigenous people in the American and Australian parts of the world. In many parts of the world, there is a problem of providing shelter for people migrating to settle in the major urban areas to find a living. These "informal settlements" or "squatting" are often basically illegal and not based on any kind of formal rights.

The formalized western land registration systems are basically concerned with identification of legal rights in support of an efficient the land market, while the systems do not adequately address the more informal and indigenous rights.

2.2 Comparing Cadastral Systems

The basic grouping into deeds and title systems may still provide the best picture. The grouping may, however, be supplemented with a number of other elements. The processes around property formation and property transfer vary quite significantly with regard to the actors and institutions involved, and with regard to the outcome of the process in terms of accessibility, identification and security of land rights. The role of the surveyors also varies a lot from being a private consultant, a public servant, or being non-existent. To compare different cadastral systems at least four issues must be taken into account:

- *Property definition* –the legal/economic/physical concept;
- *Property determination* – process of determination; general/fixed boundaries;
- *Property formation* – process, institutions and actors; the role of the surveyors;
- *Property transfer* – process, institutions and actors; legal consequences.

By focusing on processes, institutions, and actors, the systems reflect the cultural and judicial setting of which they are an integrated part.

A website has been established http://www.cadastraltemplate.org to compare cadastral systems on a worldwide basis. About 35 countries are currently included (June 2004) and the number is still increasing. The web site is established as a result of one of the objectives of Working Group 3 "Cadastre" of the PCGIAP (Permanent Committee on GIS Infrastructure for Asia and the Pacific). The cadastral template is basically a standard form to be filled out by cadastral organizations presenting their national cadastral system. The aims are to understand the role that a cadastre plays in a state or a National Spatial Data Infrastructure (NSDI), and to compare best practice as a basis for improving cadastres as a key component of NSDIs. The Cadastral template project is carried out in collaboration with Commission 7 "Cadastre and Land Management" of the International Federation of Surveyors (FIG), which has extensive experience in comparative cadastral studies. (Steudler, et.al. 2004).

2.3 Evolution of Cadastral Systems

Throughout the world, the cadastral concept has developed significantly over the past few decades. The most recent examples are current world concerns of environmental management, sustainable development and social justice.

The human kind to land relationship is dynamic and is changing over time as a response to general trends in societal development. In the same way, the role of the cadastral systems is changing over time, as the systems underpin these societal development trends. In the Western world this dynamic interaction may be described in four phases as shown in figure 2 below.

	Feudalism - 1800	**Industrial revolution 1800-1950**	**Post-war reconstruction 1950-1980**	**Information revolution 1980 -**
Human kind to land evolution	Land as wealth	Land as a commodity	Land as a scarce resource	Land as a community scarce resource
Evolution of cadastral applications	Fiscal Cadastre. Land valuation and taxation paradigm	Legal Cadastre. Land market paradigm	Managerial Cadastre. Land management paradigm	Multi-purpose Cadastre. Sustainable development paradigm

Fig. 2: *Evolution of Western Cadastral System (Developed from Williamson and Ting, 1999)*

Over the last few decades land is increasingly seen as a community scarce resource. The role of the cadastral systems has then evolved to be serving the need for comprehensive information regarding the combination of land-use and property issues. New information technology provides the basis for this evolution. This forms the new role of the cadastral systems: the multi-purpose cadastre.

3. LAND ADMINISTRATION SYSTEMS

Land administration systems are concerned with the social, legal, economic and technical framework within which land managers and administrators must operate (UN-ECE, 1996). 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 land administration systems is shown in figure 3 below (developed from Enemark, 2003).

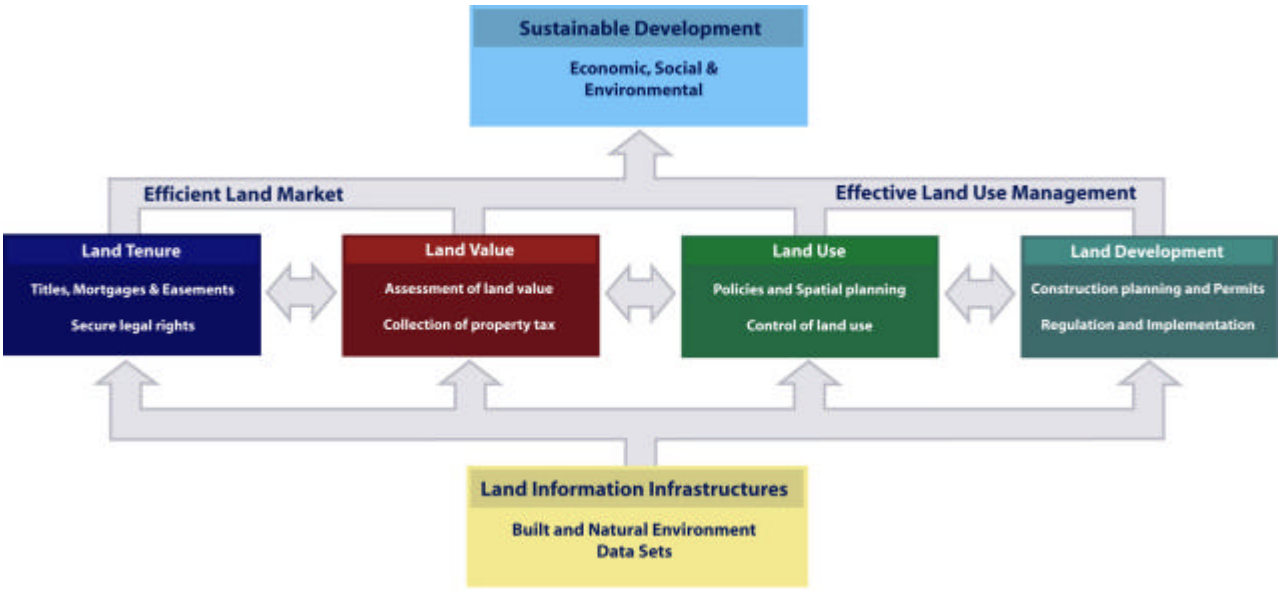

Fig.3. *A Global Land Administration Perspective*

Land administration comprises an extensive range of systems and processes to administer:

- *Land Tenure:* the allocation and security of rights in lands; the legal surveys to determine the parcel boundaries; the 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:* 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 national, regional/federal, and local 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.

These four systems are interrelated. The actual economic and physical use of land and properties influences the land value. The land value is also influenced by the possible future use of land as determined through zoning and land-use planning regulations and permit granting processes. And the land-use planning and policies will, of course, determine and regulate the future land development.

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The information on land and properties permeates through the overall system and provides the basic infrastructure for running the systems within the four interrelated areas. The Land Information area should be organized to combine the cadastral and topographic data and thereby linking the built environment (including the legal land rights) with the natural environment (including environmental and natural resource issues). Land Information should be organized as a spatial data infrastructure at national, regional/federal and local levels based on relevant policies for data sharing, cost recovery, access to data, standards, etc.

The design of adequate systems in the areas of Land Tenure and Land Value should lead to the establishment of an efficient land market. The design of adequate systems in the areas of Land-Use Control and Land Development should lead to an effective land-use administration. The combination of an efficient land market and an effective land-use administration should then form the basis for a sustainable approach to economic, social and environmental sustainability.

A modern land administration system 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 foundation of any system of social order is the framework of laws, which reflect the Constitution of the country, governs the administrative processes, and expresses the rights and obligations to the citizen. In the case of land laws relating to land administration, the following indicates what should be included when drafting and enacting appropriate land laws (developed from UN-ECE, 1998):

- Define legal forms of land tenure (ownership, leasehold, use of land);
- Distinguish between real and personal property (immovable and movable property);
- Distinguish between different forms of land tenure (ownership, leasehold, use);
- Define how rights can be established and transferred;
- Establish an independent public land registration institution with clear powers;
- Ensure that registered rights are guaranteed by the State;
- Establish simple administrative systems for land transfer and property formation;
- Establish quick and simple procedures for mortgage and forced sales;
- Co-ordinate legislation related to planning, land-use, land value, land registration;
- Ensure clarity of responsibilities and powers of the authorities involved;
- Specify the administrative role of the agencies and actors involved.

An example of a national approach to Land Administration Systems can be found in "The Danish Way" (ten thematic articles) on the address: www.ddl.org/thedanishway (Enemark and Schoeler, 2002).

3.1 Land Information Management

The modern land administration system is concerned with detailed information at the individual land parcel level. As such it should service the needs of both the individual and the community at large. Benefits arise through its application to e.g.: guarantee of

ownership and security of tenure and credit; facilitate efficient land transfers and land markets; support management of assets; and provide basic information in the processes of physical planning, land development and environmental control. This type of system acts as a kind of backbone in society.

These ambitious goals will not be achieved unless there is a commitment to designing and implementing effective land administration infrastructures. These may be described as the organisations, standards, processes, information and dissemination systems and technologies required supporting the allocation, transfer, dealing and use of land (UN/FIG, 1999). Information technology will play an increasingly important role both in constructing the necessary infrastructure and in providing effective citizen access to information. Also, there must be a total commitment to the maintenance and upgrading of the land administration infrastructure.

City Governments currently manage considerable collections of land related information. However, the traditional separation of this information into different component themes, combined with disjoint information management regimes, leads to a considerable loss in value of the information as a resource. Comprehensive and City-wide Land Information Management (LIM) provides the means to technically and institutionally integrate these component themes of land information into a truly corporate information resource (FIG/UN-HABITAT, 2002). Figure 4 below illustrates how this concept can add value by combining information concerning use, condition, value, and tenure of land and disseminating this to the decision makers.

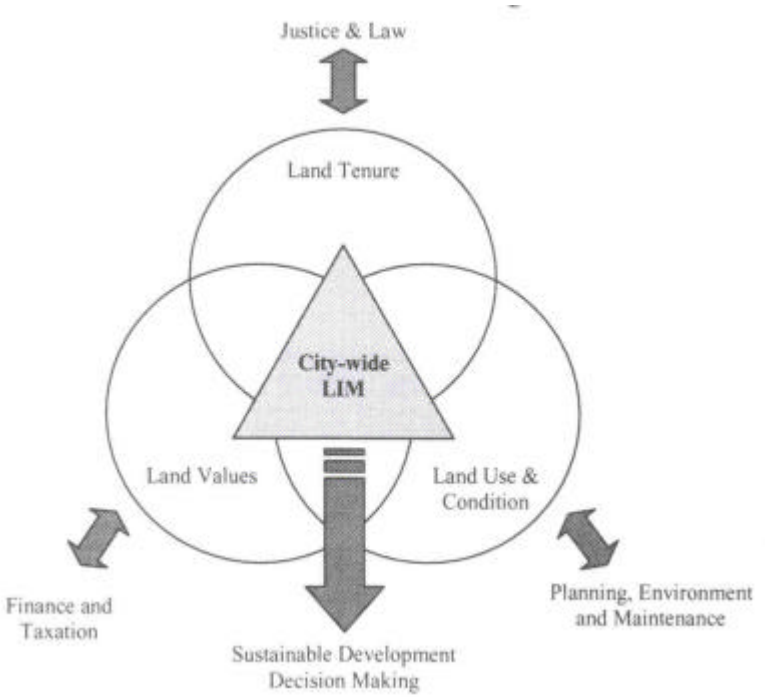


Fig. 4. *Citywide Land Information Management in support of sustainable development decision-making (FIG/UN-HABITAT, 2002)*

The Land Information Management System of a city should fit into the corresponding spatial data infrastructure of the country (see section 4.1 below). Certain information needs can best be served from the national level e.g. data standardisation, small-scale mapping, and policies for cost recovery and access to data.

4. LAND MANAGEMENT

An efficient system of land administration is necessary but not sufficient to ensure the best use of land as a resource. Land management can be described as the process by which the resources of land are put into good effect (UN-ECE 1996). Land management is about land policies, land rights, property economics, land-use control, regulation, implementation, and development. Land management, this way, encompasses all those activities associated with the management of land as an asset and a resource to achieve sustainable development.

The organisational structures for land management differ widely between countries and regions throughout the world, and reflect the cultural and judicial setting of the country or jurisdiction. The institutional arrangements may change over time to better support the implementation of land policies and good governance. Within this country context, the land management activities may be described by the three components: Land Policies, Land Information Infrastructures, and Land Administration Functions in support of Sustainable Development. This Land Management Paradigm is presented in Figure 5 below.

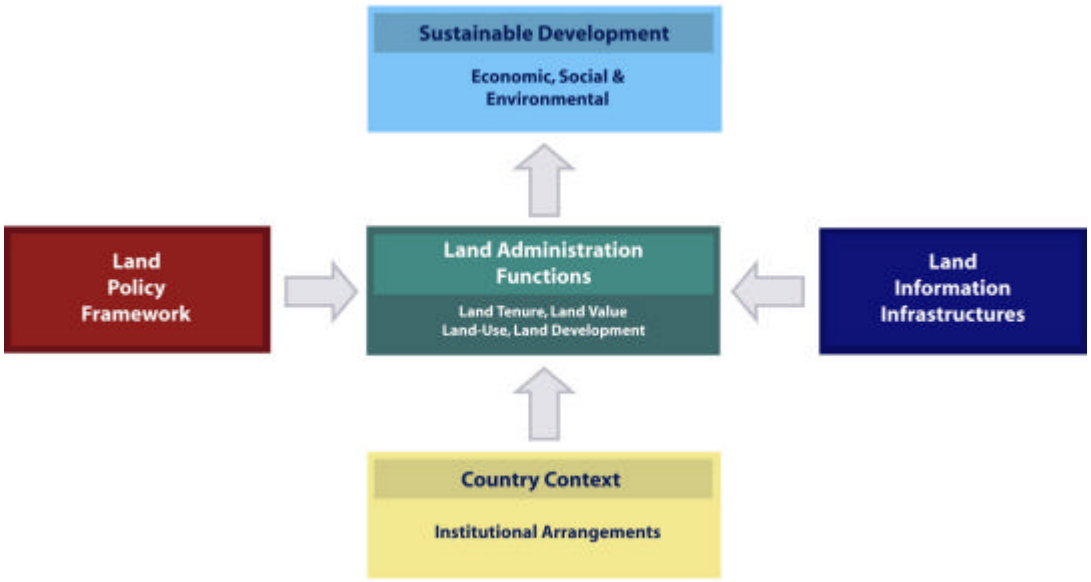


Fig. 5. *The land Management Paradigm*

Land policy is a part of the national policy on promoting objectives such as economic development, social justice and equity, and political stability. Land policies may be associated with: security of tenure; land transactions and access to credit; sustainable

management and control of natural resources and the environment; the provision of land for the poor; ethical minorities and women; land use and physical planning; real property taxation; measures to prevent land speculation and to manage land disputes.

The operational component of the land management paradigm is the range of land administration functions that ensure proper management of rights, restrictions and responsibilities in relation to property, land and natural resources. These functions include the areas of land tenure (securing and transferring rights in land); land value (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). The land administration functions are based on and facilitated by appropriate land information infrastructures that include cadastral and topographic datasets and provide access to complete and up-to-date information on the built and natural environment. This global approach to land management is illustrated in figure 6 below.

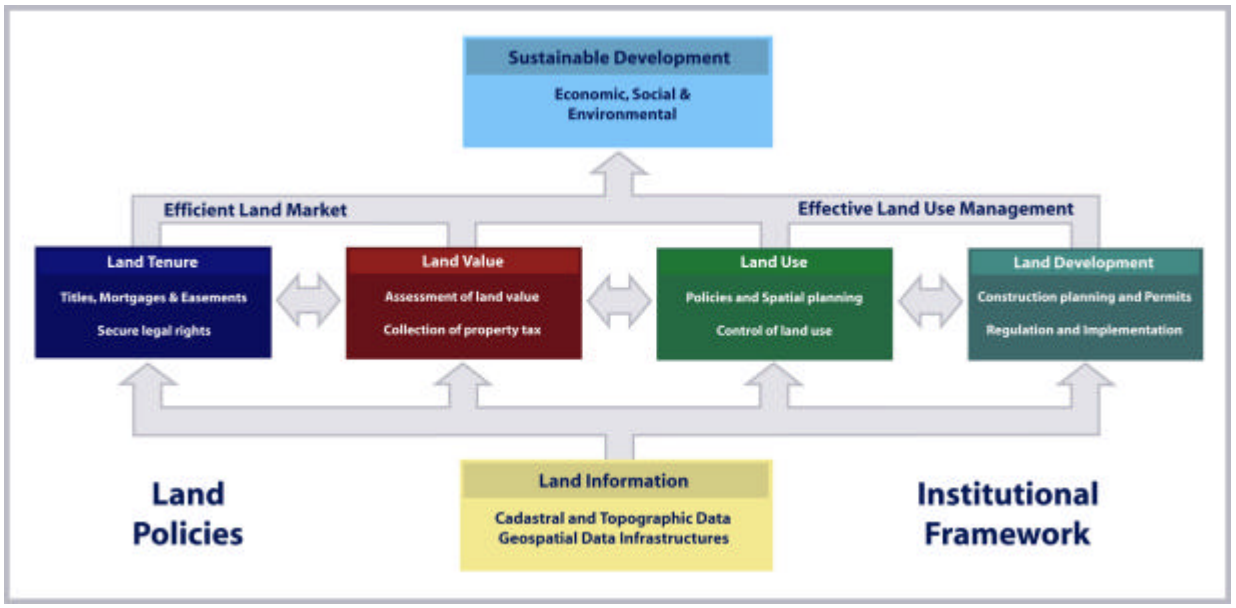


Fig. 6. *A Global Land Management Perspective*

Sound land management is the operational processes of implementing land policies in a comprehensive and sustainable way. In many countries, however, there is a tendency to separate land tenure rights from land-use rights. There is no effective institutional mechanism for linking planning and land-use controls with land values and the operation of the land market. The problems are often compounded by poor administrative and management procedures that fail to deliver the services that are needed. Investment in new technology will only go a small way towards solving a much deeper problem, which is the failure to treat land and its resources as a coherent whole. A concept for an integrated approach to land management is shown in figure 7 below (developed from Enemark 2001).

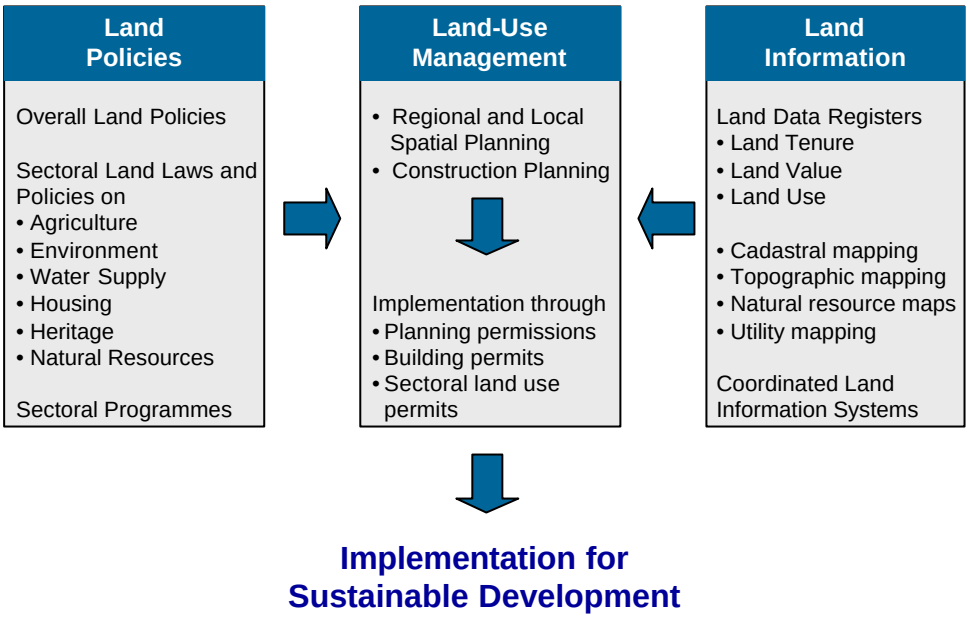


Fig. 7. *Integrated Land Use Management for Sustainable Development.*

4.1 Spatial Data Infrastructures

Spatial data infrastructures in a land management framework provide mechanisms for sharing geo-referenced information. These mechanisms are conceptual, political and economic, and they are of course interrelated. Key elements include adoption and implementation of technical standards, adoption of access policies and cost recovery policies, and design of co-operative relationships between governmental levels and between the public and private sector.

- *Conceptual mechanisms* include design of organisational concepts for data sharing and custodianship, e.g. a centralized or a decentralized approach. The process of designing concepts for data sharing will always include some political and economic aspects as well.
- *Political mechanisms* include provision of an effective institutional framework and the distribution of power between the governmental levels. It also includes design and adoption of policies for access to data, e.g. policies for protection of privacy such as personal and financial integrity of the individual.
- *Economic mechanisms* include cost recovery policies as well as strategies for distribution and maintenance. The key issue here is provision of a universally accepted policy for access to data. The tension between claimed need for cost recovery and the societal benefits of free data sharing is the crucial issue in most countries when designing spatial information strategies.

The governmental initiatives and policies on Geospatial Data Infrastructures should establish these mechanisms and thereby coordinate and integrate the basic building blocks of a National Spatial Data Infrastructures (NSDI´s): the digital registers and maps at various levels and the necessary logical data models that facilitate an integrated utilisation and availability of the data.

By creating an infrastructure and the relevant linkages positive results will emerge. Clear responsibility for data maintenance and upgrade will be established, duplication will be reduced and analysis improved. Sound decision-making processes are developed for governments at all levels, and valuable information is created for academic institutions, the private sector and the community. Throughout this environment there is a general expectation for the public sector to play a co-ordinating role in developing the spatial data infrastructure and for governments to initiate this process "for public good" (Grant, 1999).

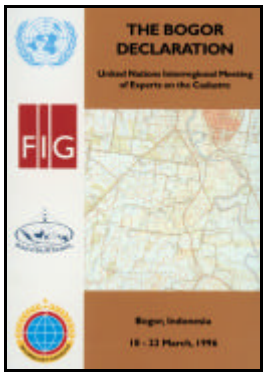
5. AN OVERALL CONCEPTUAL APPROACH

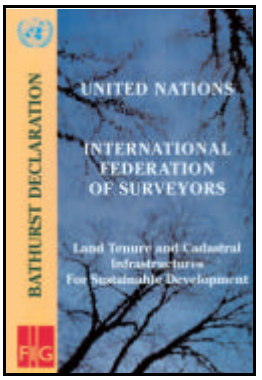
The conceptual understanding may take the form of a hierarchy of levels. The foundation stone is an overall national land policy. Appropriate cadastral systems support implementation of land policies by providing identification of the land parcels and a framework for security of tenure. Appropriate cadastral systems also support a wider land administration infrastructure within the areas of land tenure, land value, land use, and land development. Appropriate land administration systems form the basic for sound land management towards economic, social, and environmental sustainability. The land policies may be revised and adapted to meet the changing needs in society. This process of adjustment should be based on constant monitoring of the results of the land administration and land management activities. The conceptual approach looks as follows:

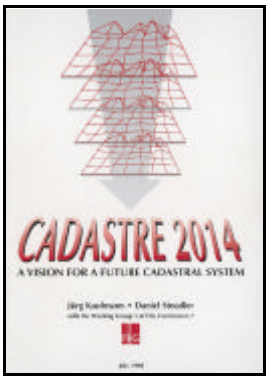
- Overall Land Policy
  - Determining values, objectives and the legal framework in relation to management of land as a legal, economic, and physical object.
  - Basis for building sound land administration infrastructures.
- Cadastral Systems
  - Identification of land parcels and securing land rights
  - Facilitate land registration, land valuation, and land-use control
  - Underpin sound Land Administration
- Land Administration Systems
  - Administration of land tenure, land value, land-use, and land development
  - Facilitate efficient land markets and effective land-use management
  - Underpin sound Land Management
- Land Management
  - Management of processes by which land resources are put into good effect
  - Facilitates economic, social, environmental sustainability
  - Underpins and implements sound Land Policies

6. THE FIG AGENDA

The international development in the area of Cadastre and Land Administration has been remarkable with FIG Commission 7 (Cadastre and Land Management) taking a leading role. Throughout the last 10-15 years a number of initiatives have been taken with a focus to explain the importance of sound land administration systems as a basis for achieving "the triple bottom line" in terms of economic, social and environmental sustainability. International organizations such as UN, FAO, HABITAT and especially the World Bank have been key actors in this process. A number of these key publications are shown below. The publications are available on the FIG web site www.fig.net







6.1 The FIG Publication Series

FIG has established a number of relevant initiatives in co-operation with international bodies such as the UN organizations. These are reported in the FIG publication series, such as No. 22 (Co-operation between FIG and The UN Agencies 2000-2003) 1999; No 24 (Women's Access to Land – FIG Guidelines) 2001; No 30 (the Nairobi Statement on Spatial Information for Sustainable Development) 2002; and No 31 (Land Information management for Sustainable Development of Cities – Best Practice Guidelines in City-wide Land Information management), 2002.

The FIG publication Series also includes a number of publications addressing educational, professional, and institutional issues of global relevance, such as Continuing Professional Development, Ethical Principles, and Business Matters for Professionals, Standardisation, and Mutual Recognition of Professional Qualifications. The FIG Publication Series is available on-line at the FIG Home Page http://www.fig.net/pub/figpub/pubindex.htm

6.2 Other Initiatives

ECE-WPLA (Economic Commission for Europe - Working Party on Land Administration) has produced a number of relevant publications of which "Land Administration Guidelines (UN-ECE 1996) may be the most important one. WPLA (formerly known as MOLA – Meetings of Land Administrators) is also an example of a well-functioning professional forum for discussing and developing land administration issues. Some WPLA meetings are held jointly with FIG Commission 7 (Cadastre and Land Management), such as the recent meeting in Athens, May 2003, addressing Spatial Information Management for Sustainable Real Estate Markets and Best Practice Guidelines on Nation-wide Land Administration. The activities of WPLA can be found at http://www.unece.org/env /hs/wpla/welcome.html

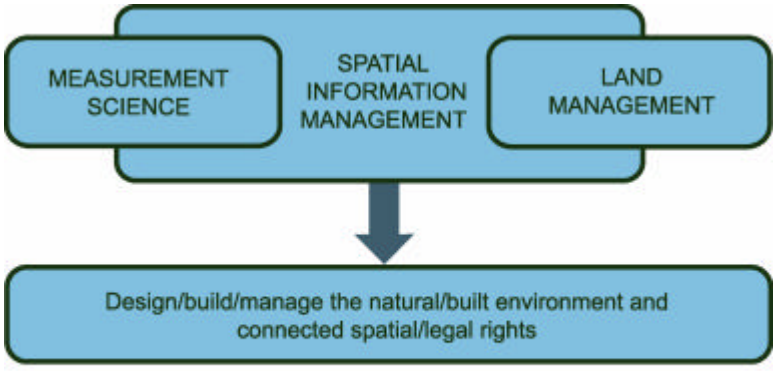
7. FACING THE CHALLENGES OF THE FUTURE

Good land management will help promote economic and social development in both urban and rural areas. For developing and transition countries, land reform policies are key components in achieving these goals. The challenges in this regard relates to educational, professional, and institutional issues. These challenges are further explored below.

7.1 The Educational Challenges

Traditional education of surveyors has focused on geometry and technology more than on land use and land administration. Taking a land administration approach to surveying education, there is a need to change the focus from being seen very much as an engineering discipline. There is a need for a more managerial and interdisciplinary focus as a basis for developing and running adequate systems of land administration.

A future educational profile for land administrators should be composed by the areas of Measurement Science and Land Management and supported by and embedding in a broad interdisciplinary paradigm of Spatial Information Management. Such a profile is illustrated below (Enemark and Prendergast, 2001).



THE EDUCATIONAL PROFILE OF THE FUTURE

7.2 The Professional Challenges

The spatial information revolution and the evolving land management paradigm in support of sustainable development have had many influences on professional structures over the last two decades. Professions such as surveying are being re-engineered and re-invented to accommodate the spatial information revolution, while endeavouring to maintain traditional services.

The international surveying profession and the national associations will have to adapt to these challenges and develop structures that accommodate a modern interdisciplinary profile. This includes adoption of ethical principles and model codes of professional conduct suitable for performing this modern role (FIG 1998).

The profile of the surveying profession in the third millennium will include a mix of technical surveying and mapping professionals, business practitioners, spatial data managers, land and environmental resource managers (in the public as well as the private sector), and legal and financial consultants on land management matters.

7.3 The Capacity Building Challenges

Capacity building is increasingly seen as a key component of land administration projects such as World Bank projects in developing and transition countries However, the capacity building concept is often used in a very narrow meaning such as focusing on staff development through formal education and training programmes to meet the deficit of qualified personnel in the actual project in the short term.

This conventional understanding has changed over recent year towards a broader and more holistic view covering social, organisational and educational aspects. Capacity Building therefore is a broader concept than just Human Resource Development (HRD) since it includes an emphasis on the overall system, environment, and context in which individuals, organisations, and societies operate and interact.

Where a donor project is established to create land administration infrastructures in developing or transition countries, it is critical that capacity building is a main steam component that is addressed up front, not as an add-on. In fact, such projects should be dealt with as capacity building projects in themselves. While attention should still be given to doing the project, the key focus should be on building capacity to meet the medium and long term needs (Enemark and Williamson, 2004).

The relationship of humankind to land varies in and between countries and regions, and adequate responses in terms of capacity building must reflect these fundamental conditions. For example, if a country such as Indonesia wished to have a land administration system supported by a land title and cadastral surveying system similar to Denmark or Australia, this could possibly require 40,000 professional land surveyors and 30 or more university programs educating professional surveyors (based on Steudler et. al., 1997). Clearly this is not realistic even in a medium term perspective. As a result, there is a need to develop appropriate solutions matching the stage of development and specific characteristics and requirements of the individual country (Enemark and Williamson, 2004).

7.4 The Institutional Challenges

Establishing appropriate institutional and organisational infrastructures is seen as a crucial key for achieving sustainability in any society. In a theoretical sense, the concept of property rights is such an institution. Appropriate cadastral systems play a most important role in terms of facilitating the real property transactions such as land transfers, land taxation and control of land-use and land development.

Another institutional challenge is about establishing a suitable balance between national policy-making and local decision-making. This challenge relates to good governance and to the issue of decentralization with regard to the delegation being made between governmental levels. Decentralization of land-use planning and decision-making immediately raise the question of suitable local institutions and organisations for managing these tasks. Such local institutions and organisations must be able to handle conflicts in a very concrete and direct sense. In the context of sustainability, the conflict between immediate gains and needs on one hand, and the concern of future generations on the other, is of course crucial.

A fundamental institutional challenge in this regard is related to understanding the value of developing appropriate institutional, legal and technical processes to integrate land administration and topographic mapping programs within the context of a wider national land policy.

8. FINAL REMARKS

The objective of this paper is to build a general understanding of the concept, purpose and benefits of establishing sustainable land administration systems. Especially in developing countries the debate should move from "whether this is desirable" to "what is the most appropriate land administration system to serve the needs of an individual country or jurisdiction". This debate should be aware of the global trends in this area while still recognising that the design of such systems will always be unique due to the different geographic and cultural preconditions and needs of each respective country.

Organisations such as FIG, UN, the World Bank and also the whole surveying/land administration community should recognize that the increasing demand for sustainable land administration infrastructures includes some educational, professional, capacity building, and institutional challenges to be met at the threshold of the third millennium.

This calls for increased international co-operation. FIG is prepared to invest in such corporative efforts.

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BIOGRAPHICAL NOTES

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