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BEST PRACTICES FOR LAND ADMINISTRATION SYSTEMS IN DEVELOPING COUNTRIES

IAN P. WILLIAMSON

Professor of Surveying and Land Information
Department of Geomatics
The University of Melbourne
Parkville,
Victoria, AUSTRALIA
Email: i.williamson@eng.unimelb.edu.au

From July-October, 2000
Land Administration Consultant
The World Bank
DECRG,
1818 H Street, NW
Washington, DC 20433, USA
Email: iwilliamson@worldbank.org

Abstract

This paper provides an introduction to best practice in land administration systems. It draws on a number of key documents such as the Land Administration Guidelines produced for the United Nations (UN) Economic Commission for Europe (1996), the International Federation of Surveyors (FIG) Statement on the Cadastre (1995), the UN-FIG Bogor Declaration on Cadastral Reform (1996), the FIG Cadastre 2014 publication (1998) and the UN-FIG Bathurst Declaration on Land Administration for Sustainable Development (1999).

It also draws on a wide range of publications concerned with best practice in the development of cadastral and land administration infrastructures, as well as the author's experience over many years. While the paper is focussed on world's best practice, it does so in the context of developing and emerging industrial countries such as Indonesia which have diverse land tenure relationships ranging from areas in cities with active land markets approaching modern land markets, to whole provinces which are almost completely under traditional or customary tenure.

While the paper recognises that each country has different requirements for cadastral and land administration infrastructures due to their specific social, legal, cultural, economic, institutional and administrative circumstances, the paper highlights some common principles in the design

and implementation of land administration infrastructures that are usually applicable for countries such as Indonesia, either now or in the foreseeable future. Importantly not all principles will be applicable for all countries.

The paper discusses the principles under the following headings:

1. Land policy principles
2. Land tenure principles
3. Land administration and cadastral principles
4. Institutional principles
5. Spatial data infrastructure principles
6. Technical principles
7. Human resource development principles

The paper concludes by highlighting the importance of developing a vision for a land administration system within each country.

Introduction

This paper provides an introduction to best practice in land administration systems. It draws on a number of key documents such as the Land Administration Guidelines produced for the United Nations (UN) Economic Commission for Europe (1996), the International Federation of Surveyors (FIG) Statement on the Cadastre (1995), the UN-FIG Bogor Declaration on Cadastral Reform (1996), the FIG Cadastre 2014 publication (1998) and the UN-FIG Bathurst Declaration on Land Administration for Sustainable Development (1999). It also draws on a wide range of publications concerned with best practice in the development of cadastral and land administration infrastructures, as well as the author's experience over many years. While the paper is focussed on world's best practice, it does so in the context of developing and emerging industrial countries such as Indonesia which have diverse land tenure relationships ranging from areas in cities with active land markets approaching modern land markets, to whole provinces which are almost completely under traditional or customary tenure.

In particular the paper adopts the recommendations from both the Bogor Declaration and Bathurst Declaration.

While the paper recognises that each country has different requirements for cadastral and land administration infrastructures due to their specific social, legal, cultural, economic, institutional and administrative circumstances, the paper highlights some common principles in the design and implementation of land administration infrastructures that are usually applicable for countries such as Indonesia, either now or in the foreseeable future. Importantly not all principles will be applicable for all countries.

A Land Administration Reform Framework

In undertaking land administration reform by drawing on "Best practices in land administration", it is important to consider the factors that affect the reform and the choice of the specific strategies adopted. These factors are many and varied which re-enforces the statement that the land administration system for each country requires its own individual strategy. On the other hand strategies can be developed using the "tool box" approach. That is each specific strategy and resulting system can be made up of many separate, well understood, proven and widely accepted components (see for example Holstein

(1996a), Dale and McLaughlin (1988) and (1999), UNECE (1996), UN-FIG (1996) and (1999)).

In designing a strategy it is important to recognise that almost every country will require ***a range of different strategies depending on the relationship of humankind to land*** in each specific region in the specific country. In simple terms these arrangements include:

?? Cities and urban areas, where active land markets operate on titled land,
?? Cities and urban areas, occupied by informal settlements (squatter, illegal or low cost systems outside the formal or regulatory structures),
?? High value agricultural lands which are titled and are part of the formal land market,
?? Private untitled lands in rural areas and villages,
?? Informal or illegal settlements in rural areas, especially in government forests,
?? Lands which are subject to indigenous rights, such as Adat lands in Indonesia,
?? Lands in all categories which are the subject of claims from previously dispossessed persons, and
?? Government or state lands, reserves and forests

To some degree these categories are common to all developing (and many developed) countries.

The next consideration is that the relationship of humankind to land is dynamic with the result that there is ***an evolution in the each of these categories***. None of these relationships stay the same in the long term. They are affected by the impact of the global drivers on the relationship of humankind to land such as sustainable development, urbanisation, globalisation, economic reform and environmental management, and the stage of development of the specific country. In simple terms in the Asian-Pacific area for example there are four general categories of countries:

?? Developed countries, such as Japan, Korea, Australia, New Zealand and Singapore,
?? Newly industrialised countries or countries in transition, such as PRC, Indonesia, Thailand, Malaysia and the Philippines,
?? Countries at an early stage of development such as Vietnam and Laos, and
?? Island states such as Fiji, Tonga and Vanuatu.

While each country has different development priorities, those in each group do share some similar priorities. A complication is that many countries do not fit easily into these categories with some countries having aspects of all categories. But in general the stage of development overall of an individual country does significantly influence the choice of which land administration strategies are adopted.

The combination of these factors determine or at least strongly influence, the specific strategy or strategies adopted in reforming or establishing the land administration system. These strategies draw on the land administration and cadastral "tool box" for their institutional, legal, technical and administrative solutions.

For example there is a whole range of surveying and mapping technologies and approaches depending on what is the stage of development of the country and what is the major relationship of humankind to land which is being surveyed or mapped. These options include sporadic and systematic approaches, graphical and mathematical surveys, different positioning technologies such as satellite positioning or scaling off photomaps, different mapping technologies such as photomaps, topographic mapping and simple cadastral maps.

In addition there is a whole range of options for the recording or determination of land tenure relationships. There are government guaranteed land titles, deeds registration systems, title insurance systems, qualified titles (both to boundaries and title), individual ownership and communal ownership.

For all these arrangements there are a range of technologies which are again strongly influenced by the wealth and development of the country. For example whether titles or deeds and cadastral maps will be computerised or held as paper records or whether the Internet can be utilised to access land records.

Institutional arrangements are influenced by the same factors. Whether the system is decentralised, deconcentrated or centralised. The level of education and training in a country. For example if Indonesia wished to have a land administration system supported by a land title and cadastral surveying system similar to Australia for example, 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 and as a

result this re-enforces the need to develop appropriate solutions matched to the stage of development and specific requirements of Indonesia.

Recognising these constraints, there are a range of "best practices" that are useful in undertaking the establishment or re-engineering of land administration systems. These are set out below under the headings of:

a) Land policy principles
b) Land tenure principles
c) Land administration and cadastral principles
d) Institutional principles
e) Spatial data infrastructure principles
f) Technical principles
g) Human resource development principles

Best Practices in Land Administration

Land Policy Principles

1) The pivotal tension of sustainable development is between the environment and the pressures of human activity. It is the system of recognising, controlling and mediating rights, restrictions and responsibilities over land and resources that forms the fulcrum. Thus "land administration" can and should play an important role in the infrastructure for sustainable development (Figure 1). In this context, "Sustainable development means development that effectively incorporates economic, social, political, conservation and resource management factors in decision-making for development. The challenge of balancing these competing tensions in sophisticated decision making requires access to accurate and relevant information in a readily interactive form. In delivering this objective, information technology, spatial data infrastructures, multi-purpose cadastral systems and land information business systems will play a critically important role. Unfortunately modern societies still have some way to go before they will have the combination of legal, institutional, information technology and business system infrastructures required to support land administration for sustainable development" (Ting and Williamson, 1999b).

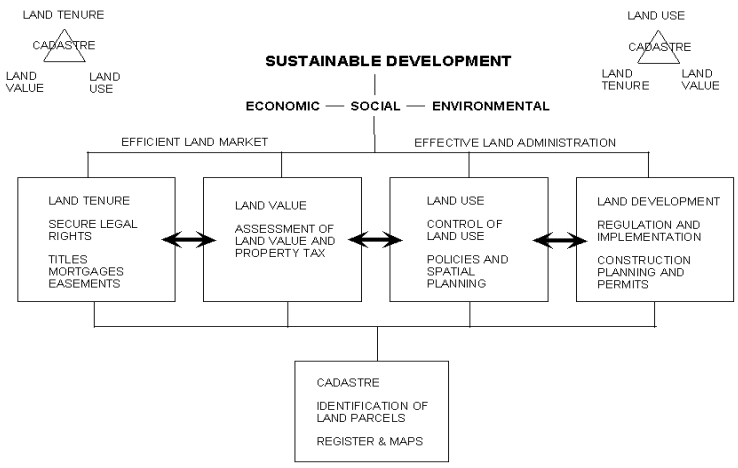

FIGURE 1
The land administration infrastructure supporting sustainable development
(Enemark and Sevantal, 1999)

2) Emerging economies face a daunting task. Perhaps the focus should not be so much on "catching up" as on learning from the mistakes of those who have gone before. There is also the likelihood of finding more innovative methods. The fact that a fully surveyed cadastral layer is too expensive at a particular stage in a country's development or in the development of part of a country, should not mean that documentation or registration of a diversity of rights over land cannot go ahead. The benefits and risks need to be weighed.

3) Land administration is ***not*** land reform. Land administration reform should if possible be ***non political*** and should be concerned with putting in place an efficient land administration infrastructure to manage the humankind to land relationship. Land reform and land tenure reform, have by their very nature political objectives, such as re-distributing land between different groups, and as such should be kept separate from the development of a ***land administration infrastructure***. In general the introduction of a land administration system should ***not*** change the land tenure relationships between people and land. On the other hand land administration systems will enable land tenure reforms to be introduced. In one sense a land administration infrastructure provides an inventory of rights, restrictions and responsibilities in a country.

4) The humankind to land relationship in all countries is ***dynamic*** (Figure 2). This means the land administration response to manage that relationship

will always require change. The current global drivers for change include sustainable development objectives, urbanisation, globalisation, economic reform and environmental management, with technology impacting across all areas.

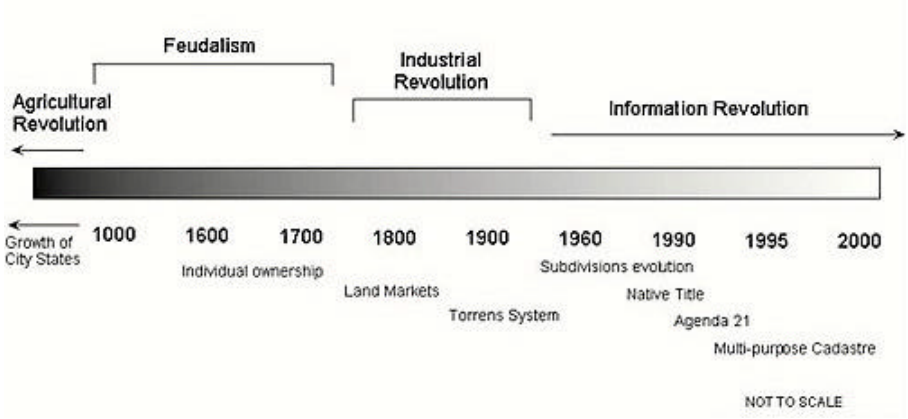

FIGURE 2
A Western view of the changing humankind to land relationship

5) Land administration systems of the future will need to manage a growing complexity of rights, restrictions and responsibilities over land due to a greater awareness of environmental and social imperatives, as distinct from a more traditional focus on economic imperatives (Figure 3).

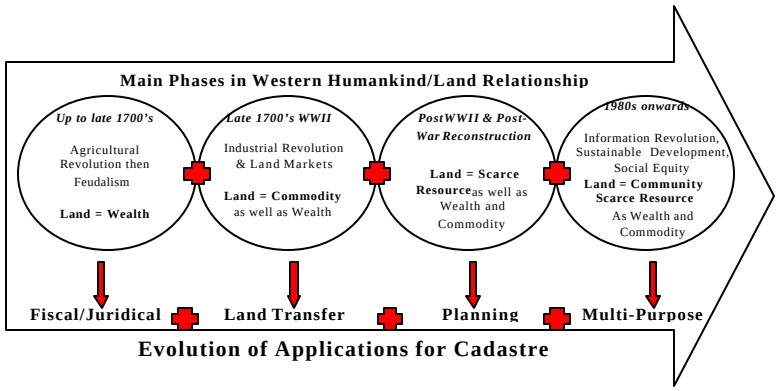

FIGURE 3

6) In general, land policy should precede and determine legal reform, which in turn should result in institutional reform and finally implementation (Figure 4). The reality is that legal and institutional reform are very difficult and require a major political commitment. As a result these

functions and reforms should at least continue in parallel. However it is important that legal reform, institutional reform and implementation ***with regard to introducing or reforming a land administration system***, should usually be undertaken by one cohesive management team, unit or organisation within a country. Policies regarding land administration implementation, which are developed away from the daily operations of an organisation, has little ownership and little chance of implementation without tension and management inefficiencies. On the other hand, land reform policy development is a different matter and obviously will need to be developed within a more political environment and as such can, and should, be developed separate from the development of the land administration system.

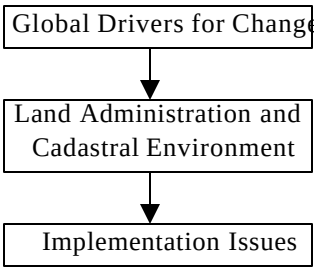

Figure 4. Hierarchy of Perspectives

7) A land administration system should provide the ***infrastructure*** to manage land. Land policy decisions and land reform decisions should be kept separate from the management of the land administration system. An example is forestry and state lands which should all be included or recorded in the land administration system, yet management and policy decisions with regard to such lands are usually the responsibility of other agencies. On the other hand the land administration infrastructure in a country will be critical to the implementation of any sustainable development or environmental management policies. The land administration infrastructure is the foundation on which such policies are implemented. As such all national environmental and sustainable development policies should clearly articulate the role of land administration in implementing the policies.

8) A land administration infrastructure requires a legal framework which enforces the rule of law. Such a framework requires not only good laws but also legal institutions, professionals and government officials who are versed in the law, and a justice system which enforces the law. Such a legal framework is essential to ensure that land holders are secure in their occupation, they are not dispossessed without due process and compensation, and the land market can function with confidence and security.

9) There has been a significant change in the debate about cost recovery in land information systems over the last decade, especially in developed countries. In simple terms there is increasing recognition in developed countries that government is responsible for the majority of the initial costs in establishing the spatial data infrastructure in a state or nation, and particularly with regard to the cadastre. Transfer or exchange of data is at a nominal cost with increasingly partnerships being created to exchange different data within the state or national spatial data infrastructure (SDI) at no cost. Governments recognise that the benefits being returned to government from this policy, especially in the land administration context include:

   a) development of a spatial information marketplace,
   b) subsequent dealings within the land administration system,
   c) economic development,
   d) social stability,
   e) reduced land disputes, and
   f) improved environmental management.

   In the cadastral and land administration area this policy is driven by a need of central government to establish a common spatial data infrastructure (SDI) for a jurisdiction. Land information and the underlying SDI are becoming essential to the good governance and the adoption of sustainable development objectives. Historically land titles offices have given little attention or shown little concern for the needs of establishing a cadastral map for a region or creating a land information base outside their own needs. These offices have argued that they are in the business of supporting land markets and are simply not interested in putting in too much effort into cadastral mapping. In a similar way, local government will not use and support a national or state spatial data infrastructure unless it is in local government interest and reduces their costs. They will certainly not expend their own resources for a function which they see is not their business. Therefore in order to establish a spatial data infrastructure for a state or country, central government has to fund the creation and use of their SDI through the establishment of partnerships (and funding mechanisms) to make it worth while for all users to use the same SDI. There are some important lessons for developing countries in these experiences.

10) Land administration and cadastral systems, and land titling are not just rural activities, but are ***national*** activities. They are just as relevant to urban areas as rural areas. Addressing urban poverty is a major issue, as is

rural poverty. Land administration reform in countries like Indonesia is just as urgent in informal or squatter settlements in urban areas (and is often more urgent) than in rural areas. The importance of this is highlighted now there is a recognition that cities are increasingly the engines of economic development in developing countries. This is especially an issue from the perspective of social stability, environmental management and sustainable development. At the same time issues of addressing indigenous rights within a land administration infrastructure are just as critical as rural and social issues, but require different strategies. More importantly it is virtually impossible to undertake substantial land administration reform without considering all land, and that includes urban as well as rural, state, forest and indigenous land. A national approach is essential for land administration reform.

11) Decentralisation (or what is often termed deconcentration) is a key to land administration implementation in most countries. All land records are usually kept at the local land office level including cadastral maps, land registration documentation and land tax records. The local land office usually works closely with the elected local authority which is responsible for land use, development and environmental management. However a key aspect of decentralisation or deconcentration is that there must be a central authority to establish policies, ensure quality of services, provide or coordinate training, to limit corruption and implement a personnel policy (particularly with regard to circulating senior staff). The central authority must have a funding base to ensure that the policies adopted at a local level will support state or national objectives. In those cases where total responsibility is given to a local level (including the financial responsibility), there is an inevitable tension with national objectives. Such an approach means that the establishment of a national focus for land administration, including the creation of a spatial data infrastructure, will be very difficult, if not impossible. The local authority inevitably works to its own agenda with little regard for national policies. Such an approach has particularly negative consequences for the achievement of national sustainable development objectives.

Land Tenure Principles

12) Experience suggests that it would be unwise to adopt a positive title registration system without adopting ***adverse possession to part parcels***

(note this is a different issue to adverse possession of whole parcels). The importance of this is that it ensures that boundaries reflect occupation. This permits "general" boundaries, and more importantly graphical cadastres, to be adopted. Importantly, experience in countries such as Malaysia and Australia show that the issue of adverse possession to part parcel can have a significant, and even a dramatic negative effect, on the operation of the land market in a country. Cadastral systems which do not permit adverse possession to part parcel are usually less efficient and significantly more expensive.

13) Developing countries should consider the range of alternatives to confirming security of tenure and promoting the growth of the land market. A good example is the Qualified Title (QT) strategy adopted by Malaysia, possibly the NS3 Certificate strategy adopted by Thailand prior to the TLTP and the Qualified Title approach adopted in some Australian states to bring general law land under title registration. This paper is not suggesting that the Malaysian approach is necessarily the best strategy for every country. However it does appear to offer another strategy, other than the use of systematic titling. It is a particularly useful approach for the development of row or link housing in urban areas although it has been reasonably successful in rural areas as well. At the same time, Malaysia recognises the weaknesses of the QT approach, especially if sustainable development objectives are to be met. If the QT system as practised in Malaysia was to be considered for application in another country it would be important to spend considerable time fully understanding the strengths and weaknesses of the system. The reality is that the statutory framework gives little insight into how the system really works. An examination of the needs of any country ***across all tenure relationships*** before a final decision is made on the long term cadastral or land titling strategy should be undertaken. At the very least it appears Indonesia requires a major ongoing commitment to land administration policy reform at the same time as it pursues a systematic land titling approach. However within the current statutory and administrative structure, this may or may not be successful.

14) The experience in developed countries is that land administration and cadastral systems can no longer rely on manual processes or traditional structures that supported individual economic or taxation imperatives. Stand-alone or isolated approaches that supported individual purposes where data and processes were maintained separately (in data silos), such as land valuation, land titling and management of state lands and forests, are not sustainable. They are being replaced by multipurpose cadastral

systems where information about natural resources, planning, land use, land value and land titles, including private or individual rights and indigenous interests, can be integrated for a range of business purposes (Figure 5). Within a developing country perspective, the institutional arrangements to support such a vision are much more difficult. On the other hand there are some excellent examples in developing countries where the institutional arrangements are such that surveying, mapping, land registration and valuation are within the one government department (Thailand). Such arrangements certainly facilitate more integrated developments and the inevitable need to better utilise land administration data for purposes other than "stove pipe" or stand-alone systems.

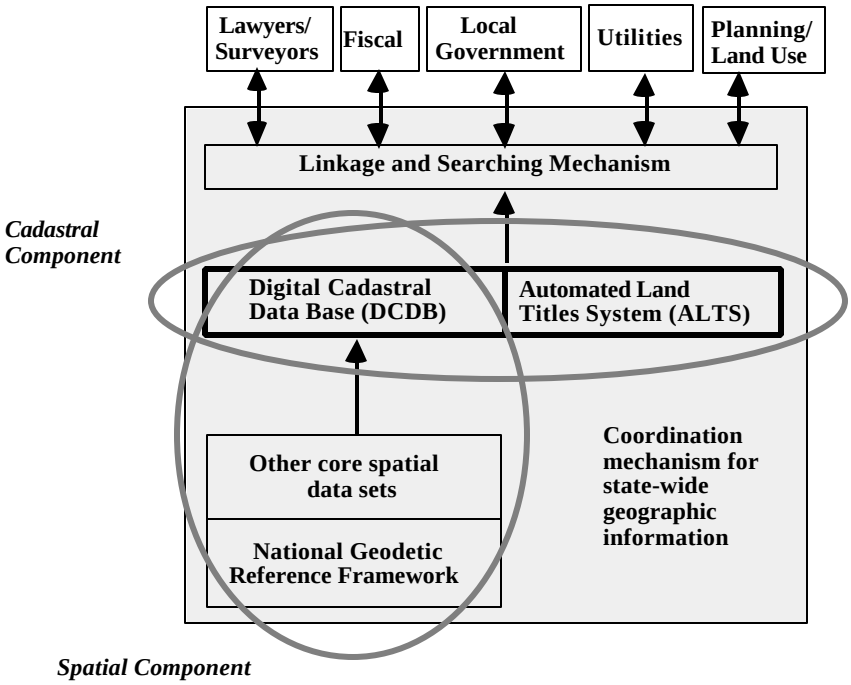

FIGURE 5
A parcel based land information system

15) ***Development is inevitable***. Also any land administration reform must recognise the vast array of land tenure relationships from an active land market as found in an industrialised country to traditional and customary tenures. The key to future development is to adopt sustainable development objectives. Where development proceeds it must be done with transparency, fair compensation and the involvement of all

stakeholders. Fundamental to this objective is the legal recognition and documentation of indigenous rights. There is an increasing amount of experience internationally on strategies and approaches to document and map the spatial dimension of indigenous rights.

16) Indigenous rights are often very different from "western" private or individual rights. Typically they cannot be adjudicated and mapped using the same approaches and techniques. Indigenous peoples often have different spatial concepts from Western society. It is inappropriate to assume a contemporary cartographic knowledge by indigenous peoples. The key is to develop a land administration infrastructure that accommodates both tenure forms. Just as there are many different forms of "western" land tenures, there are equally many different forms of indigenous tenures.

17) The adjudication and administration of customary, indigenous, traditional or tribal lands usually requires the establishment of a specialist government organisation such as a Department or Board of Indigenous Lands, together with a judicial tribunal to oversee the adjudication of such lands and to resolve disputes.

Land Administration and Cadastral Principles

18) While it must be recognised that each country has different requirements for cadastral (Figure 6) and land administration infrastructures due to their specific social, legal, cultural, economic, institutional and administrative circumstances, there are common principles in the design and implementation of land administration infrastructures.

FIGURE 6

The cadastral Concept

19) Every nation, state or jurisdiction and many of the sub-areas within a national, state or provincial jurisdiction are different and require different

land administration approaches depending on the circumstances. Due to their different stages of development, different countries have different capacities for the development of land administration and cadastral systems.

20) A sustainable development objective for a country requires all land to be included or recorded in the land administration system. This means the cadastre must be ***complete***. In other words the land administration infrastructure should include all rights, restrictions and responsibilities with regard to all lands in a country. This means ***all*** state, private, traditional or customary, and forest lands, should be identified in the ***one*** land administration system. Without a complete cadastre, land can be "stolen", land tax processes are open to corruption, transparency in land administration is lost and good governance is undermined. While the reality is that such a vision may not be possible in the short to medium term in developing countries, it should be the accepted policy which provides a road map for future development. Most land tiling, land administration or cadastral projects world-wide do not attempt to establish a complete cadastre. The adoption of a policy of a complete cadastre has only been adopted in many developed countries in the last 10-20 years. However to some degree the strategy of separate projects, say focussed on adjudicating private lands, was promoted in an era prior to the recognition of the key role that land administration plays in promoting sustainable development. While the reality is that sustainable development is still just rhetoric in many countries (and I suggest some land administration projects), it is a global trend which will increasingly and inevitably impact on the design of such projects.

21) In developed countries, the value of land registration systems has expanded from being primarily a mechanism to quiet titles, reduce disputes and support efficient land markets, to being an important source of ***land information*** essential for the support of good governance and sustainable development. While this recognition and reality will most probably not be seen for some time in most developing countries, again there is an inevitability in the trend and as such developing countries should be aware of the need and the trend.

22) The success of a cadastral or land administration system is not dependent on its legal or technical sophistication, but whether it protects land rights adequately and permits those rights to be traded, if appropriate (for example in many countries it is not appropriate to facilitate a land market for indigenous rights. However it is essential to protect indigenous land

rights and ensure there are fair and equitable systems for leasing indigenous lands where that is government policy) efficiently, simply, quickly, securely and at low cost. The system should operate with no opportunity for political interference, ad hoc government decision making or corruption. All processes should be simple and transparent.

23) The key performance indicators for a successful land administration system are whether the LAS is ***trusted*** by the general populace, protects the majority of land rights, provides security of tenure for the vast majority of land holders and is extensively ***used***. If these criteria are not generally met then there is a fundamental problem with the system.

24) Land administration, cadastral and land titling projects are by their very nature, long term. As a result, it is essential to have two strategies running in parallel; the ***first*** to undertake the adjudication of individual, customary and common property rights in a systematic manner (land titling) and put in place a system to register on-going transactions and ***second*** is to continue policy development, improve the land law and regulations and ensure that adjudication and titling can still proceed in a sporadic manner. Simply a country cannot stagnate while policy development and statutory reform are underway.

25) Land administration reform should focus on ***processes*** such as adjudication, land transfer and mutation (subdivision and consolidation), rather than on institutions, legal and regulatory frameworks or specific activities such as land registration or cadastral surveying and mapping.

26) By their very nature, land administration systems are complex often with no clear directions for reform. Reforming LAS are similar to research projects. Their design is suited to the skills of persons with research experience. There is considerable benefit of involving persons who are active in land administration research, in the design and operation of land administration systems, particularly in the early stages and in pilot projects. The extensive involvement of such persons in the early stages of the Thailand Land Titling Project is an example of the use of their skills.

The development of a vision for a future land administration system is an integral part of any land administration reform strategy. For example the cadastral vision adopted by the UN-FIG Bogor Declaration on Cadastral Reform (1996) is to "…develop modern cadastral infrastructures that facilitate efficient land and property markets, protect the land rights of all, and support long term sustainable development and land management."

Typically a national land administration vision would have a *policy* vision, an *institutional* vision, a *legal* vision, a *technical* vision as well as an *overall* vision. Suffice to say ***the development of a land administration vision for Indonesia is not only possible but is essential as a road map for the future development of the nation.***

27) In undertaking the difficult task of implementing a land administration, cadastral or land titling project, it is often easy to forget why the project is being undertaken. A common fault of some LAS projects around the world is that they focus on the technical aspects of the project, such as mapping, adjudication, surveying and preparation of titles, and sometimes forget the main objective for the project. Such projects are never about land titling ***per se***, nor should they be. They are about facilitating sustainable development, land markets, social justice, institutional reform, poverty eradication, environmental management or addressing regional income disparities. It is essential that in all projects that there is a regular "reality check" against the primary objectives of the project, not just against how many parcels have been surveyed or titles issued, although this is an obvious essential indicator.

28) In designing a LAS project it is generally regarded that there are no simple answers and few systems from other countries which can easily be transferred to another. LAS projects are particularly unique in this regard due to the individual social, cultural, legal, institutional and administrative arrangements in each country. However every country can learn from the successes and mistakes of others. Designing a LAS is like designing a research project. As a result each LAS project should be extensively documented, and an effort should be made to ensure the best project documents are published in international journals, books and published reports for the benefit of land administrators and researchers.

29) Land administration reform is not simple systematic registration. Land administration reform, or cadastral reform, or land titling, are complex issues which require complex solutions, as has been shown in Indonesia. The simple application of land titling in any country can be a high risk approach unless it is done within a broad land administration framework. With an appropriate statutory and regulatory environment, systematic titling can be one of the best "tools" in the land adminsitration "toolbox". But it is just one response in the "toolbox" for land administration reform, even though it is a very important option and maybe the most important. In country environments where there is not an appropriate social, economic, legal and regulatory infrastructure to support land administration reform or

need, it may do more harm than good (for example where the rights in land to be adjudicated are weak or where there is no infrastructure to support the maintenance of the system).

30) There is considerable documented experience in designing land administration, cadastral and land titling systems. As a result there are a number of key issues and strategies to be considered within the design process:

a) The development of a strategic vision and associated implementation strategy
b) The recognition that land administration (and particularly land titling) is not an end in itself
c) The recognition that all countries are different and it is difficult to transfer experiences from one country to another
d) Land administration reform should concentrate primarily on the three cadastral processes of land adjudication, mutation (subdivision and consolidation) and land transfer, ***not*** the cadastral entities or institutions such as land titling, institutional arrangments, legal and statutory infrastructures etc. These are secondary considerations.
e) Institutional reforms are usually more important than statutory and regulatory reforms or the introduction of new systems and technologies.
f) The key institutional reform is to have all cadastral processes administered within one government department

31) The design of any land administration project should understand the components of a re-engineering process (Figure 7). First, this requires an understanding of the impact of global drivers (sustainable development, urbanisation, globalisation, economic reform and technology) on the changing relationship of humankind to land in the context of the individual country. This in turn effects the resulting land administration and cadastral environment and vision. Through a strategic planning process, which incorporates a full understanding of the existing LAS, a new conceptual LAS can be developed. Through an implementation process this results in an operational LAS, which through benchmarking, performance monitoring and feedback, influences all the previous steps in an ongoing reform and re-engineering process. Obviously this is a simplified view of business process re-engineering. Re-engineering has a focus on improvements in performance, a focus on processes not products and well as the adoption of a whole range of management concepts such as adopting a "business risk" approach and usually the introduction of information technology.

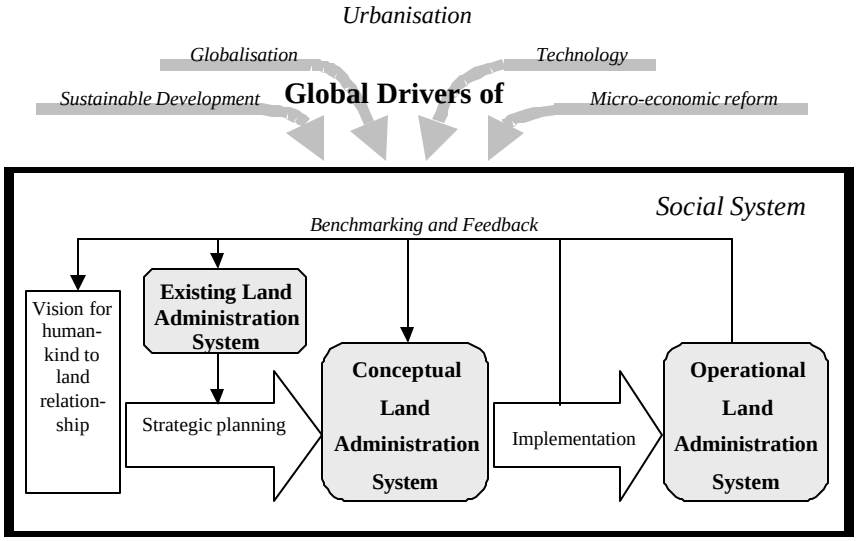

Figure 7. Framework for Re-engineering Land Administration

32) Outsourcing in a LAS is possible and in many cases is highly desirable. It appears that opportunities are greater in developed countries than developing countries for outsourcing. The key components for outsourcing are a well established legal and regulatory environment, well established professions and the availability of trained personnel. For an extensive review of outsourcing see Holstein (1996b).

33) A common problem in land administration projects is underestimating the magnitude of the task. This relates to the number of parcels in the country, the requirement for trained personnel and the necessity for institutional and statutory reform.

34) The importance of developing and maintaining benchmarking processes and performance indicators cannot be over emphasised for the successful completion of a LAS project.

35) There is benefit in developing hypothetical frameworks and pilot (research) projects for LAS, which may have relevance for specific countries. This allows lateral thinking and the testing of alternative options and strategies.

36) The success of a land administration, land registration or cadastral system is not dependent on its legal or technical sophistication, but whether it protects land rights adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at low cost. However if the resources are not available to keep the cadastral system up-to-date then there is little justification for its establishment.

37) Systematic adjudication of land rights which are legally insecure or are of only marginal value, result in a poor or weak land administration system, which may have little impact on the economic development, social stability and environmental management of a country.

38) One of the arguments in favour of title registration in a developed country context is not only how effectively it supports the operation of the land market and protects the rights of land owners or occupiers, but how it supports a national land information system. In this context title registration is an efficient way of recording primary interests in ***all*** land parcels in a state, jurisdiction or country. At the same time title insurance, due to private sector ownership of data, does not usually support the establishment of national LIS and is consequently not encouraged. While such a vision is often seen as long term in developing countries, it will become increasingly important in support of sustainable development objectives and good governance.

39) Irrespective of how good is a land registration system, unless it operates in an environment of professionalism, accountability and good governance, and in an environment which is accepted by the wider populace, it will not be successful. On the other hand if government officials are personally liable for errors, then they can become over cautious, with the result that the whole system can slow down dramatically. What is required is an environment of "risk management". As a result, while government officials need to be well trained and an environment of accountability developed, they should not be personally responsible. However if private licensed surveyors undertake cadastral surveys as an example, then they should be legally responsible for their surveys, not the government. Importantly if the professionals who operate the system, both within government and in the private sector, are not well educated and trained, ethical and professional, the system will struggle.

40) In many jurisdictions legal cadastres utilise or evolve from land valuation or land tax data and associated maps. It is desirable that land

administration systems should have these two data bases integrated. Over time the legal cadastre can then provide the integrity for the land tax cadastre. Increasingly the valuation responsibilities and legal cadastre are being amalgamated into the one organisation.

Institutional Principles

41) Experience shows that successful land administration systems have all the land administration functions within ***one government organisation***. There should be one government department responsible for the land administration ***infrastructure*** in a country. This does not mean that such a department controls the use of the land across the country but it does control the land administration infrastructure or the recording of "what is where" and "who owns what". This means that at the very least the administration of cadastral surveying and mapping, land registration and valuation, are all in the one organisation. However global trends indicate that the most successful systems also include all topographic mapping in the same organisation. As stated by the UN-FIG Bathurst Declaration: "***Encourage*** all those involved in land administration to recognise the relationships and inter-dependence between different aspects of land and property. In particular there is need for functional cooperation and coordination between surveying and mapping, the cadastre, the valuation, the physical planning and the land registration institutions."

42) State, government, forestry or reserve lands should be administered or at least recorded in the same system as private or freehold lands. Simply 100% of all lands should be included in the land administration system. In a simple sense a land registry should become a national inventory of landed interests.

43) Devolution of responsibility of operations and record keeping to the local level is essential as long as there is central guidance, policy direction and quality control. As stated in the ***recommendation*** from the UN-FIG Bathurst Declaration "…Whilst access to data, its collection, custody and updating should be facilitated at a local level, the overall land information infrastructure should be recognised as belonging to a national uniform service, to promote sharing within and between nations".

44) One of the key challenges in land administration reform, which has been identified in many forums, is the strategy to bring together the national mapping agency and the national cadastral agency in a cooperative relationship, and ideally within the same organisation.

45) One of the major weaknesses in establishing land administration projects is that they focus on establishing land administration ***institutions,*** not land administration ***processes.*** The focus should be on the key cadastral processes of land adjudication, land transfer and mutation (subdivision and consolidation). All institutional and legal arrangements should be focussed on these ***processes.***

Spatial Data Infrastructure (SDI) Principles

46) Spatial data infrastructures are a critical component of land administration infrastructures. Importantly the cadastral, property or land tenure layer must be integrated with all other layers such as the topographic layer. These can be hard copy maps in developing countries while they are

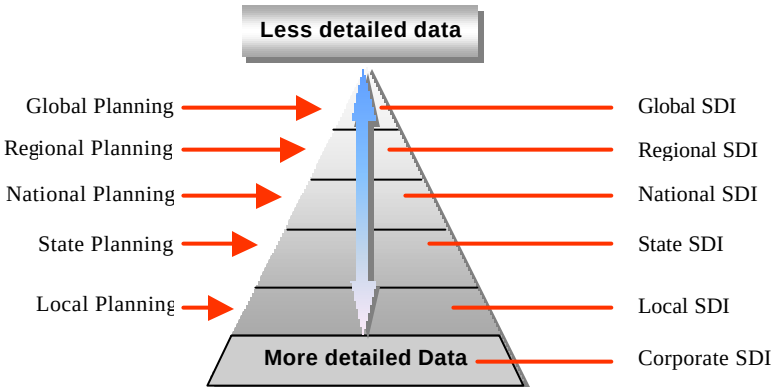

Figure 8
Relationships between data detail, different levels of SDIs, and level of planning

becoming computerised systems in developed countries.

47) SDIs are dynamic and both inter- and intra-jurisdictional systems which are based on partnerships between all levels and institutions (Figure 8). An understanding of the importance of partnerships in sharing land information and spatial data is just as important for developed as developing countries.

48) A spatial data infrastructure is seen as basic ***infrastructure***, like roads, railways and electricity distribution, which supports sustainable development, and in particular economic development, environmental management and social stability. Importantly it must be users or business

systems which drive the development of SDIs (Figure 9). In turn the business systems which rely on the infrastructure in turn become infrastructure for successive business systems. As a result a complex arrangement of partnerships develops as the SDI develops. Increasingly governments are accepting that sustainable development is not possible without this basic ***land information infrastructure***.

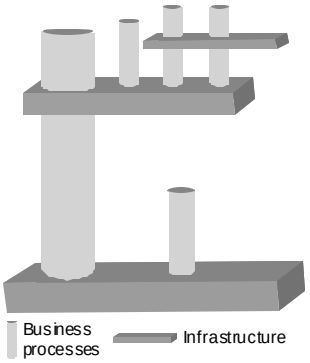

Figure 9.

Technical Principles

49) The introduction of IT and computerisation of land administration records is difficult. It requires long term political, financial and institutional commitment. Computerisation of alpha-numeric data is easier than computerisation of spatial data.

50) In countries which were colonised at some stage in their recent history, there is inevitably a residual influence of the colonial land registration and cadastral surveying and mapping systems. These systems were usually put in place to support the interests of the expatriate colonists, ***not*** the local or indigenous peoples. These "colonial" systems have been continued, usually in urban areas where fledgling land markets are operating and in high value rural lands such as for Palm Oil or rubber plantations. Typically these systems are not in sympathy or have difficulty being modified for national application in a country. Such developing countries cannot afford the relatively expensive systems which the colonists introduced, yet for vested interests, government officials are often adverse to making these systems more flexible and lower cost. What usually results is the development of ***parallel*** cadastres. This results in a relatively expensive, slow and administratively bureaucratic system which is still influenced by the colonial heritage and a parallel informal system used by the wider community. ***Merging these two systems is without doubt one of the biggest challenges facing many developing countries.***

51) Computerisation is one of the most difficult components of land administration reform in developing countries. In one sense it is essential and inevitable, but care needs to be taken in the introduction of IT. The introduction of IT into large government departments in developing countries requires a major IT strategic plan and a long term commitment.

A decade is not a long time to introduce basic IT in an administrative sense for mainstream land administration record keeping. Training is critical. However one of the biggest problems are often the vendors of IT, and particularly for GIS software, who peddle their wares and show examples of what the technology can do. The reality is very different. The introduction of GIS in a mainstream land administration sense is very difficult. While it is inevitable, it is difficult, requires a long term vision, requires extensive education and training, requires a simple IT implementation program, requires long term political support, leadership at the highest levels in government, and requires a long term commitment to human and financial resources. Experience from developed countries suggests that the best way to introduce IT is through the use of the private sector. But be prepared – the introduction of IT, and especially GIS, is expensive and requires significant on-going financial and human resources. Simple, manual systems are often much easier to introduce, especially where labor costs are low.

52) An important principle in choosing the most appropriate cadastral surveying and mapping strategy is to remember that these technologies and methodologies are not ends in themselves. The primary role of cadastral surveying and mapping is to support the establishment of the spatial cadastre and in turn support the manner in which the population relates to land. Another principle is that cadastral surveying has the primary role of supporting the creation of the cadastral map in a land administration system. Unfortunately in many systems the cadastral map is subservient to the isolated or sporadic cadastral survey.

53) The choice of which forms and associated accuracies of cadastral surveying, cadastral mapping, monumentation and boundary identification are used, should be driven by the specific requirements of the area being titled. The most controversial aspect of surveying and mapping with regard to land administration reform is often the form of cadastral surveying adopted. The "toolbox" approach is very applicable to cadastral surveying and mapping. There is a vast array of survey techniques and boundary marking approaches that can be used, all resulting in an equally efficient land market. From a simple perspective systematic adjudication is high cost to government initially, but leads to graphical cadastres which can be maintained by low cost cadastral surveys. Overall it is a more efficient and effective approach delivering many more benefits to a country, especially from a national perspective. On the other hand sporadic adjudication is low cost to government initially, only really serves the interests of the

relatively wealthy land owner, and requires ongoing high cost cadastral surveys (which are usually affordable to those who request them, but are too expensive to the poor land owner).

54) Cadastral surveying and mapping ***are not*** geographic information systems (GIS). In fact cadastral systems have little to do with GIS.

Human Resource Development (HRD) Principles

55) The key to sustainability of land administration infrastructures is ***human resource development***, and particularly education and training, both in country and overseas.

56) One of the weaknesses in the design of land administration projects is often the commitment to human resource development (and particularly formal education and training, both in-country and overseas, short courses and study tours). Without doubt, this is one of the most important factors, if not the most important factor in the sustainability of projects. As a "rule of thumb" at least 10% of the overall budget for a project should be committed to human resource development (this does not include consultant input). For example the Swedish aid agency SIDA tries to adopt 30%.

57) There is a major world deficiency in higher education and associated research in land administration. Experience shows that programs cannot be grafted on to existing surveying or geomatic engineering programs with a strong "measurement science" focus. For a successful higher education program in land administration and cadastral systems, it is essential that university departments have a number of active land administration academics to coordinate and drive it, and undertake research in the area. A major commitment needs to be made by such organisations as the World Bank and other international aid organisations, if the higher education needs of land administration are to be met globally. Each LAS project should invest considerable resources in the establishment of such education and research programs. Often governments and consultants have a vested interest in minimising a commitment to education and HRD in general.

58) Training at a technical level both in technical institutes and at departmental training institutes in-country, are equally important to higher education in land administration.

59) Institutional support in land administration projects which require the establishment or significant growth of an efficient and ethical private sector, and particularly in the professions, is not a "nice to have" but should be seen as mainstream and essential in a LAS project. Refer to Holstein (1996b) for a comprehensive review of the roles of the public and private sectors in land titling and registration projects.

Conclusion

This paper has outlined the factors which affect the development of a land administration reform strategy in a country and suggest a number of "best practices" for land administration.

In summary there are two key components in developing the strategy. First the documentation and wide acceptance of why the reform is being undertaken. For example is it to promote an active land market or is it to support sustainable development or is it to promote social stability? It is important to remember that land administration and cadastral systems:

> "… are not ends in themselves. They support effective land markets, increased agricultural productivity, sustainable economic development, environmental management, political stability and social justice." (UN-FIG, 1996)

As a result land administration systems and their technical components must be driven by the needs of the users as shown in Figure 10.

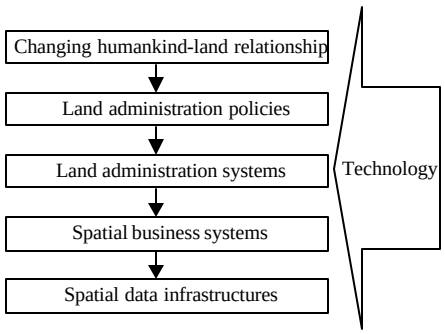

FIGURE 10.
Developing spatial information management strategies

Second is the development of a vision for a future land administration system for the country. Land administration reform by its very nature is long term and as such there is a need for a clear road map to ensure that all developments and changes contribute to the overall vision for the land administration system for the country. Due to the complexity of land administration systems there is a strong argument for such projects to comprise "bite size" sub-projects which have a clear focus, however it is essential that these sub-projects are undertaken as part of an agreed vision and global land administration strategy for the country.

Finally, as stated by the UN-FIG Bogor Declaration on Cadastral Reform:

> "The success of a cadastral system is not dependent on its legal or technical sophistication, but whether it protects land rights adequately and permits those rights to be traded (where appropriate) efficiently, simply, quickly, securely and at low cost. However if the resources are not available to keep the cadastral system up-to-date then there is little justification for its establishment."

Glossary of Terms

FIG	International Federation of Surveyors
GIS	Geographic Information System
HRD	Human Resource Development
IBRD	International Bank for Reconstruction and Development ("The World Bank")
ILAP	Indonesian Land Administration Project funded jointly by the World Bank, AusAID and the Government of Indonesia
IT	Information Technology
LAP	Land Administration Project (see ILAP)
LAS	Land administration system
LIS	Land Information System
MOLA	Meeting of Land Administrators (now the constituted under the UN Economic Commission for Europe (UNECE)
NSDI	National Spatial Data Infrastructure
QT	Qualified Title
SDI	Spatial Data Infrastructure
SIDA	Swedish Aid Agency
UN	United Nations

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