

The Future Cadastres – Cadastres after 2014

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SUMMARY

Significant differences are currently exhibited by the cadastral arrangements of the world's some 30 to 50 countries which either possess, or will shortly possess land administration systems with an appropriate performance, and the other 140-160 that will not have implemented appropriate systems within the near future.

When it is assumed that the world's community is sincerely of the opinion that appropriate land administration systems are required for the eradication of poverty, sustainable development and economic development then it will be evident that attention should be devoted primarily to the *future cadastres* of developing countries. These countries' land administration systems will not necessarily 'Cadastré 2014' compliant; they will probably be very simple systems designed to make the appropriate contribution to the basic security of land tenure, basic land markets, and basic government land policy. So there is a great deal of work to be done before the challenges laid down in 'Cadastré 2014' can be met, although it is recommendable to adopt its propositions as guiding principles.

ABRÉGÉ

Les aménagements cadastraux des quelques 30 à 50 pays au monde qui disposeront bientôt d'un système de gestion foncière convenablement performant diffèrent significativement de ceux des autres 140 à 160 pays qui ne mettront pas un tel système en application dans un avenir proche.

Lorsque l'on suppose que la communauté universelle est vraiment d'avis que des systèmes appropriés de gestion foncière sont nécessaires à l'éradication de la pauvreté, au développement durable et au développement économique, il est alors évident que l'attention doit essentiellement se concentrer sur les *cadastres futurs* des pays en voie de développement. Les systèmes de gestion foncière de ces pays ne seront pas nécessairement conformes à « Cadastre 2014 » ; ce seront probablement des systèmes très simples, destinés à apporter une contribution appropriée à la sûreté des modes de faire-valoir, aux marchés fonciers de base et à la politique foncière de base des gouvernements. Un travail important doit donc encore être réalisé avant de pouvoir faire face aux défis fixés dans « Cadastre 2014 », bien qu'il soit recommandé d'adopter les propositions que contient ce rapport comme des principes directeurs.

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1. INTRODUCTION

When FIG Commission 7 requested Jürg Kaufmann and Daniel Steudler to set up a Working Group to review cadastral trends and developments in 1994 it could not have anticipated that this assignment would result in such an impressive vision of the future – a vision which has since generally become known as ‘Cadastre 2014’ (Kaufmann & Steudler, 1998). The report of the Working Group’s findings has since been translated into 21 languages, and workshops and seminars have been organized to assess whether local developments were consistent with the vision (such as in Bregenz, 2000).

On the occasion of the meeting to celebrate the 125th anniversary of the FIG, held in Paris in 2003, the Council proposed that attention should not be restricted solely to the history and the present status of cadastres, but should also extend to their future preferably even beyond 2014!

Before I discuss the future of cadastres I would like to begin by defining a suitable starting point for a review of future cadastral developments (Sections 2,3,4)). This starting point is primarily based on the current cadastral situation (I give preference to the use of the term *land administration*, since this includes land registry; a more detailed explanation is given in Section 3) (UN/ECE, 1996).

Significant differences are currently exhibited by the cadastral arrangements of the world’s some 30 to 50 countries which either possess, or will shortly possess land administration systems with an appropriate performance, and the other 140-160 that will not have implemented appropriate systems within the near future (Section 4). Many countries still have a great deal of work to do before they can meet the challenges laid down in ‘Cadastre 2014’, although they could adopt its propositions as guiding principles.

An enlightened view of the current situation would be to perceive the land administration systems of all countries as being in a phase of development; the only difference between them is that they are not all in the same phase of development. However the inventory of the status quo in land administration systems reveals significant differences between two categories of countries, i.e. those in which land administration systems could develop as an integral element in the continual evolution of their country’s institutions, and those countries in which this was either not possible, or did not take place. The first category have implemented land administration systems with a national coverage and within an accepted structure of public administration and legal frameworks; the second category is confronted with legal pluralism (von Benda-Beckmann, 1991)), and their governments are currently fully occupied with their endeavours to provide for nation building, governance, and the enforcement of their legislation. The different situations confronting the countries in these

two categories gives cause to the expectation that their perceptions of ‘Cadastre 2014’ will also be dissimilar.

I shall devote due attention to this difference by summarizing the conclusions reached in ‘Cadastre 2014’ (Section 5), followed by a review as to whether any trends and developments which have become apparent since its publication in 1998 could have an impact on the validity of the six statements made in ‘Cadastre 2014’. This Section (6) assesses the situation from the perspective of countries in the first category.

However when it is assumed that the world’s community is sincerely of the opinion that appropriate land administration systems are required for the eradication of poverty (Worldbank land policy workshops, 2002), sustainable development (Bathurst, 1999)(FIG, 2001) and economic development (de Soto, 2000) then it will be evident that attention should be devoted primarily to the *future cadastres* of countries in the second category. These countries’ land administration systems will not necessarily ‘Cadastre 2014’ compliant; they will probably be very simple systems designed to make the appropriate contribution to the basic security of land tenure, basic land markets, and basic government land policy (section 7).

The degree of simplicity of these land administration systems will be determined by the purposes for which they are intended. Consequently the following sections begin with a brief analysis of their potential purposes (Section 8) and continue with an outline description of a potential migration path that would allow for the incremental development of systems in response to society’s needs and which takes due account of the availability of the necessary funds (Section 9).

2. A GENERAL STARTING POINT: THE NEED FOR AN IMPROVED THEORETICAL BASIS

The information contained in a variety of documents (such as, for example, the publications of the International Federation of Surveyors FIG, the Working Party on Land Administration of the UN-Economic Commission for Europe, and the World Bank (web-sites www.fig.net ; www.unece.org/env/hs/wpla ; www.worldbank.org/landpolicy;) reveals that land registration and cadastral systems are prerequisites for sustainable development, and consequently recommend the implementation and maintenance of an appropriate system. However at the same time it has also been established that only a few of the world’s countries are in the possession of the requisite systems; many other countries are seen to be encountering serious difficulties with the development of an appropriate system (*see Section 4*). Case studies reveal that failures and/or delays in the implementation of appropriate land administrations are due to a wide variety of causes (the www.oicrf.org documentation centre includes reports and papers pertaining to the land registry and cadastral systems of almost all the world’s countries). The reasons for these problems include:

- flimsy institutional frameworks;
- ineffectual enforcement of the national legislation;
- legal concepts of land ownership which are incompatible with the local land tenure;
- excessively complex legal and technical procedures;
- the lack of sufficient funds for investments in capacity, structures, and tools.

Many country reports and papers are of an anecdotal nature, i.e. they contain facts, personal observations and opinions about land registration and cadastral issues. These reports can be regarded as empirical material for the development of land-administration theory. However the development of a *land registry and cadastre theory* is still in its infancy. Nevertheless promising elements suitable for the development of this theory are published on occasion, such as Berry (1999) and Zevenbergen (2002), both of whom make use of systems theory in reviews of land registration and cadastral issues. (Williamson, 2000) published on best practices.

However a great deal remains to be done, especially with respect to the integration of informal and informal land tenure in formal systems in Africa (Fourie & Nino-Fluck, 2001), (Toulmin & Quan, 2000) and Latin America (Zoomers, 2000). Notwithstanding the current problems, major international institutions such as the United Nations and the World Bank continue to emphasise the importance of land registration and cadastre (Feder, 2001), (Cobett, 2000), (Deiniger, 2002), (Tibaijuka, 2002). Consequently the international community of scientists and practitioners are confronted with the challenge of proposing new ideas and solutions.

3. THE NATURE OF LAND ADMINISTRATION

A review of the nature of land administration needs to begin with a suitable definition of the term. Within the context of this paper *land administration* is understood as the process of determining, recording and disseminating information on ownership, value and use of land, when implementing land management policies (UN/ECE/WPLA, 1996). Although a number of alternative definitions of *land administration* are in use these are primarily based on a *different comprehension of the meaning of 'administration'*. Consequently *land administration* is on occasion understood as the administration (management) of land, such as 'the processes of regulating land and property development and the use and conservation of the land, the gathering of revenues from the land through sales, leasing, and taxation, and the resolving of conflicts concerning the ownership and use of land' (Dale & McLaughlin 1999). When viewed from this perspective the UN definition used in this paper (UN/ECE/WPLA, 1996) should be regarded as a working definition of an essentially operational nature (i.e. the bookkeeping), although within a land-management context.

The concept of *Ownership* should be understood in a broad sense – i.e. land tenure as the mode in which the title to land is held, and based on *statutory law, common law, and customary traditions*. *Value* should be understood as all the values that could be assigned to land, depending on the purpose of the value, the use of the land, and the method of valuation. *Land use* should be understood as all the uses to which the land can be put, depending on the purpose and use of the land, the classification, and the methodology. Finally, *land* should be

understood as the surface of the earth, the materials beneath the surface, the air above the surface, and everything attached to the surface – i.e. it should be perceived as more than just the ‘land’ as such.

When giving consideration to the nature of land administration it is important to appreciate that land administration is *not an end, but a means to an end*. Land administration is intended to benefit society by the implementation of land policy using land-management tools. Irrespective of the phase of its development, the governments of all countries might conduct a policy defining their approach to land (which could possibly be extended to encompass *civil society*). The national land policy is a tangible expression of the relevant government’s socio-economic and legal decision-making pertaining to the allocation of the land and the benefits derived from the land; consequently the policy addresses economic development, equality, social justice, environmental preservation, and sustainable land use (UN/ECE/WPLA, 1996).

Land policy is an extremely sensitive issue, since it will largely be based on the government’s *ideology*. A country’s land policy will exhibit major differences which reflect the nature of its government, i.e. a capitalist or communist, socialist or liberal government; this will determine whether the land and the benefits of the land are to be allocated to the rich or the poor, to largeholders or smallholders, or to individuals or to the state. It is increasingly being appreciated that the ideology, history and attitudes of a country’s society are parameters of great significance to an understanding of the role and the organisation of its land administration.

The ICT architecture will be implemented in the form of a *geospatial data infrastructure (GSDI)*, ultimately providing for a digital environment (Groot & MacLaughlin 1999) in the creation of a network of distributed data sources. From the perspective of the users (the functionality) land administration provides a *land information service*.

Land administration systems can adopt a variety of forms within the institutional framework (public administration, good governance, and the legal framework). Land tenure can encompass deed or title registration systems, positive or negative systems of legal evidence, general or fixed boundaries, a legal status in accordance with private or public law, centralised or decentralised systems, etc., and *all intermediate forms*. The implementation of the country’s land policy (such as by means of the land management activities) is a shared responsibility of the private and public parties; however the government’s duty is to lay down a binding framework, i.e. *the rules of the game*.

This places an emphasis on *institutional* issues such as the introduction and enforcement of legislation and the organization of the public sector, preferably based on the concepts of the *rule of law* and *good governance*.

Most governments have a considerable number of tools available for the implementation of land policy, of which the most important tools include (Kirk, 1998):

- the provision of security of land tenure and security of credit
- the regulation of the land market
- the development and maintenance of urban and rural planning
- the taxation of land

Consequently the contribution land administration makes to society can be defined in terms of its promotion of the use of these specific land-policy tools. Countries need to assign a priority to their intentions.

4. AN INVENTORY OF THE WORLDWIDE STATUS QUO OF LAND ADMINISTRATION SYSTEMS

An inventory of the status quo will be conducive to an understanding of the development of land administration systems. This inventory must necessarily be 'quick and fast' in nature, a restriction which is due both to the abundance of information about land administration and to the poor quality – or at the very least non-systematic nature – of the statistical documentation that is available. Although FIG is endeavouring to develop specific benchmarks, this programme is still somewhat premature (Steudler & Kaufmann, 2002).

4.1 Industrialised countries

Industrialised countries (such as the countries in Western Europe and Canada, Australia, New Zealand, Korea) possess land administration systems encompassing the entire country (UN/ECE/WPLA 2001a). These countries are confronted with problems in the registration of public land rights. The public-law rights and interests in land are becoming increasingly important, and of almost equal importance as private rights to land. In addition, they encounter difficulties with the incorporation of native titles (Maori, Aboriginal, Inuit, Indian, etc.) and, from a more technical perspective, the re-engineering of their legacy systems (Williamson, 2001) (FIG, 1999).

4.2 Central and Eastern Europe

Countries in Central Europe and the former Soviet countries possess land tenure forms based on longstanding traditions (civil-code families) which are generally accepted by their societies. They do encounter some problems with the tenure rights of minorities (such as members of their populations of Roma origin); they are also confronted with challenges in the enforcement of their legislation on land issues and the completion of their land registers and cadastral systems. However many of these countries have now made excellent progress in the implementation of their systems. The differences exhibited between the various countries largely reflect the extent to which their traditional land registers and cadastres were maintained during the Communist era (Ossko & Hopfer, 1999):

- were present *and* maintained: Hungary, the Czech Republic, Slovakia, Poland (to some extent), and the former Yugoslavian states
- were present but *not* maintained: Rumania, Baltic states, Bulgaria
- were not present: the former states of the Soviet Union

For example, Hungary has almost completed the implementation (scheduled for 2005) (Ossko & Niklazz, 1998), as has the Czech Republic (scheduled for 2006) (Šima, 2000), whilst Armenia has already issued 2.5 million what are referred to as *temporary titles* for all agricultural land and all urban apartments (Vardanyan, 2001), and Albania has issued what are referred to as *cadastral certificates* for 3 million properties (Dubali, 2000).

4.3 Latin America

Countries in Latin America are making continued efforts to implement land reform (efforts which date from the beginning of the 20th century, and were first initiated in Mexico, in 1917) that are intended to provide the poor and landless members of their societies with some form of secure property (Zoomers, 2000). These land-reform measures have not always proven successful, since problems have frequently been encountered with:

- the excessively slow issue of titles
- land records which bear little resemblance to the current situation
- registration of the land which often exacerbates uncertainty and conflicts with respect to titles
- registration which threatens the security of many holders of customary rights
- the issue of land titles which do not result in the reallocation of land to the most efficient users

For example, during the years between 1990 and 1996 only 80,000 of Brazil's 4.8 million landless families were issued with titles; moreover some 45% of the country's total agricultural land is still comprised of ranches with an area in excess of 1000 hectares (Osava, 1999). Extreme forms of land concentration are still encountered all over Latin America. IMF and the WB perceive the redistribution of land as possessing the highest priority in the region. Most countries have adopted what is referred to as a *neo-liberal land policy* that entails a preference for the privatization and individualisation of property. However analyses have revealed that, depending on the local conditions, communal tenure systems could constitute a more cost-effective solution to the problem as compared to the abandonment of these systems in favour of freehold titles and the subdivision of common land (Zoomers, 2000).

The Ecuadorian cadastre encompasses only 50% of the country (Salazar, 2001), although the country is making excellent progress.

Guatemala could be representative of the post-conflict countries (Nicaragua 1989-1990, San Salvador 1992); 95% of the rural parcels have not been registered. Consequently one section of the 1996 Peace Treaty (Par. 38) stipulates the objective of arriving at a multi-user land registry and cadastral system (Godinez, 2001).

4.4 Africa

Africa's land administration systems are still essentially of the nature of what is referred to as a *dual system of land tenure*, i.e. their systems encompass a variety of types of land tenure concepts within one specific country. These countries combine Western-style ownership based on an individual relationship between man and land (although often based on feudal

relationships) with customary concepts of tenure based on the ownership of land by communities – a village, family, tribe or clan – of which each individual is a member. In the customary concept the relationship between an individual and the group to which they belong dominates their relationship with the land. Although the majority of African countries have adopted western-style legislation, experience has revealed that this does not exert an influence on the conduct of their populations with respect to their existing normative system – i.e. what is referred to as *legal pluralism* (von Benda-Beckmann, 1991). It has been established that 31 of 44 African countries have implemented individual ownership as the official form of land tenure and at least 9 possess a combination of individual and customary forms of land tenure, whilst customary tenure is the de facto form in 36 countries (Bruce, 1998). It is an interesting question as to whether people in these non-registered areas perceive themselves as possessing security of tenure. Bruce & Migot-Adholla (1993) studied land tenure security in Africa in collaboration with the World Bank, the International Crop Research Institute, and the Land Tenure Centre of the University of Wisconsin (USA). Their study revealed that people governed by customary rights to land possess a feeling of security with respect to the strength and duration of the tenure of their land, as well as with respect to the assurance provided for their title. These people are cognizant of the unwritten traditional rules, and they can anticipate and predict the impact of their conduct. The unwritten customary-tenure rules can provide for a normative system that is sufficiently transparent, reliable, predictable and practicable. The study cited the example of Burkina Faso, where the problems began on the government's introduction of new land-tenure legislation that was vague with respect to the relevant definitions; as a result of the debates on and discussions about these definitions the legislation was not implemented. However the proclamation of this legislation did immediately result in uncertainty. In Ghana the flimsiness of the existing cadastral system resulted in an increased amount of litigation about overlapping rights to land. In Uganda the land law transformed landowners into holders of leases issued by the government, in turn exposing them to new risks of losing their land (new legislation has since been introduced, although there are problems with enforcement) (Worldbank, 2002).

For example, in Ghana 80% of the land is governed by customary tenure, whilst the remainder is government land and private land. Registration pertains primarily to urban land, whilst work has now begun on the registration of rural land (Abu, 2001). In Zimbabwe 42 % of the land is communal land, whilst the rest is freehold (large farms) (Chimhamhiwa, 2000).

Africa has adopted an extremely innovative approach to the creation of new forms of land tenure that are intended to speed the land-registration process. Well-known examples of these forms include village titles (Tanzania, Zimbabwe) (Lugoe, 1996), certificates of occupancy or rights of occupancy (Tanzania, Nigeria) (Sule, 2000), group ranches (Kenya) (Waiganjo, 2001), flexible titles (Namibia) (Juma, 2001)(de Vries, 2000), customary rights issued by Land Boards (Botswana, Uganda, Namibia) (Toulmin, 2000), co-ownership (Mozambique) (Worldbank, 2002), communal titles for Community Property Associations (South Africa, which will probably be replaced by the customary commonhold system) (van den Berg, 2000) (Cousins, 2002)(Durand-Lasserve & Royston, 2002).

4.5 Asia and Australia

Countries in Asia, and Australia, possess a variety of forms of land tenure. Turkey possesses a western-style land tenure system, and is making good progress in its registration of built parcels of land: all the urban land and 64% of the rural lands have now been registered (Erdogan & Sahin, 1998). Arabic countries employ a form of land tenure based on the Islamic faith (Mulk, Miri, Waqf, and Musha). Little information is available about their land registry and cadastral systems (Mouyen Sayegh, 2002). Land ownership in China is vested in the State (the people), whereby members of the public are entitled to land-user rights. Many other countries, in analogy with Africa, possess dual tenure systems. In Fiji 84% of the country is under customary tenure, i.e. what are referred to as *native leases* (Rakai, 1995). In Tonga all land owned by the King (the feudal system), whereby all male Tongans are entitled to the allocation of one plot of land for a house – a title which, however, cannot be bought or sold (Vi, 2001). In the years following the overthrow of the Khmer Rouge in Cambodia 10% of the country has been registered; it was decided to grant occupiers of land a certain title provided that they could furnish some evidence of occupancy during the last 5 years. A total of 4.5 million claims to land were submitted in 1992, of which – as mentioned above – 10% have been granted to date. Consequently in practice the country's population perceive a claim stamped for approval as a title to land – land which can even be mortgaged (Thörhönen, 2001). Thailand does not possess a form of customary tenure, since the occupancy rights of farmers are no longer recognized and are replaced by ownership (the Land Code, 1954). Land users in Vietnam are entitled to exchange, transfer, lease, inherit, and mortgage land use rights allocated to them by the State (Land Law Amendment 1998). At present there is no registration of land rights. The Philippines possesses some customary tenure (*ancestral domains* totalling about 2 million hectares) in combination with land reform (4 million hectares) and a Torrens system (coverage unknown; in 1996 this pertained to about 800 of the 1500 municipalities) (Guillermo, 2000).

4.6 The situation with respect to informal settlements

The tour d' horizon reveals that extensive areas of countries are not registered in land administration systems; in total, these areas amount to a large part of the Earth's surface. This unregistered land can be either state land or customary-tenure land, or land governed by another form of indigenous tenure. However substantial areas of this unregistered land are occupied by informal settlements (unless these settlers occupy private land, in which case they occupy registered land), in particular in urban and peri-urban regions. Rural land is also occupied informally. The informal occupancy of land is a problem in most countries; this problem is due to the inability of governments to implement land policies capable of accommodating the rapid and large-scale migration of the rural population to the cities and to enforce adequate land-redistribution mechanisms of benefit to the poor and landless persons in rural areas. In fact, this confronts them with a dilemma; registered landowners feel insecure in view of the threat of the invasion of their land, whilst the government simultaneously implements anti-eviction regulations in an endeavour to afford informal settlers a certain measure of protection. Irrespective of the specific situation, informal settlements and illegal occupancy will always be issues of relevance to land administration

systems, although the introduction of land administration may be assigned a lower priority than the provision of services (Durand-Lasserve & Royston, 2002).

4.7 Some conclusions from the tour d' horizon

At present there is no systematic worldwide monitoring of land administration activities, although Commission 7 is making some endeavours to provide for monitoring of this nature (benchmarking symposium Gävle 2001, benchmarking booklet, standardised country reports). Nevertheless the findings reviewed in the above sections do provide a basis for some cautious conclusions.

Land administration is almost always restricted to land tenure based on traditional common law and civil codes (*statutory land tenure*); land administration systems would appear to have difficulties with catering for other forms of land tenure. The legal significance of the registration of land and the concomitant benefits (if any, since their nature depends on the institutional context) is not always apparent to the population of the country concerned.

Land tenure arrangements are both complex and locally determined, and they cannot readily be replaced by statutory forms of land tenure. Many examples are known of populations which continue to exhibit their traditional conduct even after their government has introduced new statutory forms of land tenure and the registration of land (von Benda-Beckmann, 1991) (Bruce & Migot -Adholla, 1993). In other words, these new forms of land tenure are alien to the population, probably because they are not compatible with the country's traditional societal structure. Consequently the reform of land tenure needs to take more account of the prevailing standards and values in the country's society.

The allocation of duties, responsibilities and competences in public administration (inclusive of land registration and cadastral systems) is not always commensurate with the public's understanding of the structure of their society, as a result of which they do not always feel an affinity with the organization of their government. Consequently land administration agencies need to take more account of the population's perception of their governance structure.

Some governments fail to enforce their (land) legislation with the appropriate stringency, which in turn results in uncertainty and insecurity in society with respect to their rights to and interests in land. Careful consideration should be given to new forms of land tenure, since they will need to be maintained for a long period of time. Land-tenure reforms that are carried out without due caution can have a devastating effect on the confidence of the population. Consequently land-tenure reform is not without risks, and it is imperative that new systems can be implemented without a need to make subsequent amendments to correct errors in the system.

Some governments immediately endeavour to achieve the ideal objective of a land administration system, i.e. individual state-guaranteed titles to land together with accurate demarcations of the boundaries of the parcels of lands. However an endeavour to achieve such an objective will impose a heavy and long-term burden on the government's policy and

budgets. An approach based on the introduction of a simple system followed by a gradual migration to the more complex ultimate system will probably be more manageable.

Governments underestimate the importance of communal land tenure, and their recognition of common ownership patterns and implementation of a commensurate system of registration may well be at least as cost effective – and possibly even more cost effective.

5. CADASTRE 2014

The ‘Cadastré 2014’ Vision (Kaufmann & Steudler, 1998) defines the characteristics of cadastral systems in 2014 by means of six statements:

- One: ‘Cadastré 2014’ will show the complete legal situation of [all] land! Private and public rights and restrictions on land will be systematically documented!
- Second: The separation between *maps* and *registers* will be abolished!
- Third: Cadastral mapping will be dead! Long live modelling!
- Fourth: ‘Paper and pencil – cadastré’ will be gone.
- Fifth: ‘Cadastré 2014’ will be highly privatised. Public and private sector[s] are working closely together!
- Sixth: ‘Cadastré 2014’ will be cost recovering!

The report was compiled on the basis of questionnaires distributed to the Commission 7 countries, together with discussions. Consequently many of the countries involved in the study possess a ‘modern’ land administration system (and belong to the first category of 30-50 countries mentioned in Sections 1 and 4). The ‘Cadastré 2014’ Vision certainly constitutes a challenge for these systems. Section 6 reviews whether any trends or developments that became apparent subsequent to the publication of the report in 1998 need to be taken into account.

6. DEVELOPMENTS IN MODERN LAND ADMINISTRATION SYSTEMS

In my opinion ‘Cadastré 2014’ lays down some very significant guidelines.

The first pertains to the statement that modern cadastres should encompass the entire legal status of the land.

A serious omission in current land administration systems is the absence of records of encumbrances and restrictions pursuant to public law. Government measures can restrict the right of disposal by the rightful claimant (the main element in private-property rights) to a certain and on occasion substantial degree. These restrictions can vary from a very mild form (such as the obligation to accept the presence of a lamppost on the land, or a slight financial burden) to a very severe form (such as a mandatory use of the land and, in the most extreme form, expropriation). Since many of these public-law restrictions also govern third parties (such as a buyer) it is important that members of the public be aware of any relevant restrictions on land. Consequently land administration systems should not only incorporate land information about the legal status pursuant to private law, but also pursuant to public law. Records of some public-law restrictions are maintained in all (West) European countries (Koert, 1988). The United Kingdom has incorporated a *charges register* in its land

registration system which contains information about some national and local charges; France's *Certificat d' Urbanisme* contains information on the public-law status, and a similar sort of system is employed in Belgium; in Germany some public encumbrances are recorded in the *Grundbuch* or the *Liegenschaftskataster*. In Sweden most regulations of importance to third parties are listed in the land registry.

Countries in Central and Eastern Europe have traditionally exhibited a more pronounced focus on the maintenance of records of government restrictions, a situation which is due to the original intention of the cadastral system as a means of providing for the central planning of the use of the land use and the recording of land-use rights. It is important that attention should be devoted to the retention of up-to-date records of this information.

The second statement, which states that the separation (or distinction) between land registers and maps will be abolished, is gaining a continually increasing amount of support. Good examples of this approach (such as the best practices employed by Hungary, the Netherlands, and the Baltic States) indicate that it is probably beneficial to the efficiency and effectiveness. World Bank research (Worldbank, 2001) recently recognized these benefits, and may adopt this approach in its Policy Research Paper on Land Policy (Deininger, 2002). The abolition of the distinction simplifies matters for the population, provides for efficient flows of information - and is economical. The WPLA's third inventory of land administration systems (UN/ECE/WPLA, 2001) identifies 20 of 42 countries which have already implemented land registry and cadastral mapping in some form of integral or unified system. Other countries still have segregated systems in which the Ministry of Justice (such as the courts) is responsible for land registration, whilst another ministry (Finance, Environment, Agriculture, or Home Affairs) or the municipalities are responsible for the cadastral system.

The third and fourth statements (pertaining to cadastral modelling and the abolition of paper and pencil respectively) are of even greater importance.

Of the 42 countries reviewed in (UN/ECE/WPLA, 2001) 20 countries have entirely digital land registers and 15 have entirely digital cadastral maps; the other countries are making progress in the introduction of digital systems.

Customers' needs for reliable information, the rapid completion of procedures, up-to-date information, ready access (using the Internet technology) and supplementary statistical products (purchase prices) can be met solely with a digital environment. Advanced developments such as e-conveyance and endeavours to achieve rapid and error-free submissions and processing of transfer deeds or other official documents are database driven, as is also the case with the developments in national (on-line access to data) and international access employing a single window (Ollèn, 2001)

In many countries the digital land administration databases constitute the primary large-scale suppliers of core data (FIG, 2002). There will be virtually no incentive to implement GSDIs when the core datasets are not available and accessible in digital form.

With respect to the fifth and sixth statements (privatisation and cost recovery respectively) two developments currently becoming apparent may shed a different light on the issues. The first pertains to the trend to promote accessibility to geo-information without charge, a move supported by policymakers in the US (Zevenbergen, 1998). This is based on the principle that

it is incorrect to charge taxpayers, in their role as users of the information, for information they have already paid for during the data capture. This principle is gaining support all over the world (Zevenbergen, 1998) – even though it does exhibit advantages and disadvantages (ref. David Rhind, in Groot's book). At the inauguration meeting of the Workshop for the newly-established Centre of Excellence for Land Rights and Land Markets in Budapest (Centre, 2003) the cost recovery issue was still high on the agenda of many Central and Eastern European countries; however in Slovenia the discussions have already begun. In the Netherlands the government has adopted the free-accessibility principle, although excluding agencies with a mandatory cost-recovery requirement (such as the Cadastre and Land Registry Agency) for the time being? Some countries are giving consideration to the supply of government data for the cost of distribution rather than the cost price (Zevenbergen, 1998).

The second development pertains to the growing awareness of the role of datasets in SDIs. According to (Groot & Mac Laughlin, 1999) infrastructures of this nature encompass the networked geospatial databases and data-handling facilities and the complex of institutional, organisational, technological, human, and economic resources that interact with each other and support the design, implementation, and maintenance of mechanisms promoting the sharing of, access to, and responsible use of geospatial data at affordable costs for a specific application domain or enterprise. The basis of GSDI is comprised of the framework data, including the foundation data, which form the core data for the application domains. Many countries have adopted the perception that the government has the responsibility of guaranteeing the appropriate availability and accessibility of framework data (GINIE, 2002). In the Netherlands this is resulting in the development of government policy (Parliament, 2001) with respect to the compilation what are referred to as *authentic registers* that comply with the following requirements:

- the government guarantees their availability
- the government guarantees their quality
- the government supplies them at no charge, or at only marginal costs
- the government does not supply funds in the event of the duplication of data
- the government encourages data-sharing facilities

I conclude that operating land administration systems will continue to be regarded as a public duty, since this will ensure for the provision of framework data (inclusive of foundation data such as the national coordinates system) at no charge, or at only marginal costs. Consequently the government provides the funds, as a result of which cost recovery is no longer an issue.

7. DEVELOPMENTS THE EVOLUTION OF LAND ADMINISTRATION

As has already been discussed in Sections 1 and 4 the implementation of land administration concepts imported from other countries has often proven to be unsuccessful. In many countries (between 140 and 160) problems are encountered with the incompatibility of these concepts with forms of land tenure based on the country's history and cultural developments, an incompatibility which results in a land administration system that is totally inadequate for the community's needs (Section 1 and 4). This sometimes leads to the assumption that it would be preferable for governments to begin with the introduction of land information systems that do not include a cadastral system (Fourie, 2001). Although 'Cadastre 2014'

offers these countries significant guidelines, they are still far from the achievement of the vision as phrased in this document. The following sections begin with a discussion which endeavours to improve the understanding of the concepts, continue with a review of the need to adapt them, and conclude with an assessment as to whether and how land administration systems adapted from an umbrella concept could evolve, whereby the concomitant investments need to be justified on the basis of the priorities set by the countries.

7.1 Basic concepts of traditional land administration

Land administration systems are based on the immovable nature of land, where *land* should be understood as the surface inclusive of all the space above the surface, all the layers below the surface, all groundwater, and all fixtures. The concept of *land ownership* employed by the various groups of Western legislation is also based on this broad understanding of *land*. Since the origins of land administration lie in Western legislative systems this paper refers to these concepts as *traditional* concepts.

The key is the traditional concept of *ownership*; for example, the Netherlands' Civil Code (Articles 5:20 and 5:21) defines *ownership of land* as ownership of the 'ground' including 'ownership of all space above surface, all earth layers below, all groundwater, and all fixtures'. Similar definitions are employed in Germany, in the *Bürgerliches Gesetzbuch* (§ 905), in the UK, in France, and in Belgium (RAVI 2000).

Consequently *ownership* constitutes the most comprehensive right a person can possess with respect to an object, being comprised of the following characteristics (UN/ECE/Trade, 1995):

- the owner is free to use the object, whilst observing the rights of other persons and the restrictions pursuant to the law or the rules of unwritten law,
- ownership is an exclusive right, i.e. no other person may exercise any right over the object unless pursuant to legal or contractual grounds,
- in principle the owner is entitled to all his property.

However ownership may be subject to the following restrictions:

- the rights of other persons with respect to the object, both in terms of real rights and personal rights,
- restrictions pursuant to the applicable legislation,
- restrictions pursuant to unwritten law.

This concept of *ownership* largely determines the nature of the land administration system: the right of ownership is exercised by an individual person – although the person could be a legal entity, i.e. an owner comprised of more than one natural person whereby those persons possess a specified mutual relationship with each other. The broad concept of ownership is often perceived as a *bundle of rights* that can be sub-divided into separate rights: other persons can possess parts of the bundle of rights when these rights can be separated from the broad *ownership* of land. Examples of these subdivided rights are rights of superficies, accession, mineral rights, rights of apartment, and rights of condominium, all of which exert an influence on the traditional concept of ownership.

The right of superficies pertains to the segregation of the ownership of a building from the ownership of the ground on which it is built by means of a separate title. This right is the exception to the rule in much jurisprudence, pursuant to which buildings and other structures become the property of the owner of the land on which they have been built or erected.

Accession within the context of the law pertains to the increase of or addition to an object, whereby the term refers to a method of acquiring ownership in which an object becomes the property of a second person since it accedes to a more principal object of the second person. Accession can be both horizontal and vertical in nature. This right – applied to tunnels, for example – also exerts an influence on the above rule.

Mineral rights exist when the ownership of minerals is segregated from the ownership of land by means of a separate title to the mineral rights. Mineral rights exert an influence on the rule that ownership of the land extends to the layers below the surface.

(UN/ECE/Trade, 1995) regards the right of apartment as an element of civil-law jurisdiction constituting a restricted right of use which provides the holder a share in a joint right of ownership, together with the exclusive use of specific sections of the building.

The UN regards the right of condominium as an element of common-law jurisdiction constituting a special form of ownership which gives the holder a *fee simple* title to individual units within a building, together with an undivided interest in the communal areas.

Consequently the first basic concept of traditional land administration pertains to the unambiguous identification of persons exercising real rights, either as individuals or as members of a specified and legally-recognised entity.

Since the objective of land administration systems is to register real rights within the statutory system of real rights (the Roman-law family actually incorporates a *numerus clausus*, a limited number of real rights) the registration will be limited to those rights, as will the mapping of boundaries on the cadastral map. It should be realised that the cadastre endeavours to record or register rights to and interests in land because the law recognises these rights and interests as a legitimate relationship between a rightful claimant and a specific parcel of land. Consequently this relationship has a legal significance, i.e. a legal definition has been drawn up of the relationship that is legally binding on other persons (*third parties*). This is due to the fact that although land rights refer to the relationship between man and land, society perceives this as a man-man relationship with respect to land. As a result other people will need to have access to information about the legal status of land so as to determine their approach to the purchase of land, creation of derived rights, etc. In the absence of a legal definition of property rights and legally-defined mechanisms for their acquisition, transfer, protection, restriction or creation the recording or registration of these rights and interests would be meaningless.

Consequently the second basic concept of land administration pertains to the unambiguous definition of the rights to land, either pursuant to statutory law (in the French and German-law families) or pursuant to common law (in the English-law family).

Traditional jurisprudence employs a legal concept whereby the object on which rights are exercised, the land, is a spatial unit subject to real rights. So as to render this spatial unit unambiguous to both the owner and third parties it is required to possess an explicit definition, and to be specified by geometric determination based on measurements of the boundaries determined by either approximate (*general boundaries*) or accurate (*fixed boundaries*) means. This is also applicable to elements of the bundle of rights that are segregated and assigned to other title holders, when the specific object on which these title holders exercise their rights are also established by geometric means.

Consequently the third basic concept of land administration pertains to the object on which rights are exercised being provided with an explicit definition *and* being capable of determination by geometric means, segregation from other objects, and mapping.

Henssen (Henssen, 1996) summarised these basic concepts, as elaborated by Kaufmann & Steudler (Kaufmann & Steudler, 1998), in the diagram shown in Figure 1.

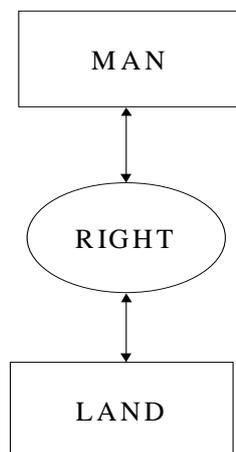


Fig. 1 Traditional (Western) concept

This diagram can be further elaborated on the basis of the above discussion of the substance of *man*, *right*, and *land*. So as to render the content more specific *man* – as the exerciser of rights – is defined as either an individual or a group of specific members comprised of a legally-recognized number of individual and personal members. *Right* is defined as a real right (*right in rem*) that is provided with a strict legal definition. *Land* is perceived as a defined parcel of land, i.e. a parcel of land which possesses demarcated boundaries established either by an approximate or accurate determination, but always with specified boundaries. The modified diagram is shown in Figure 2.

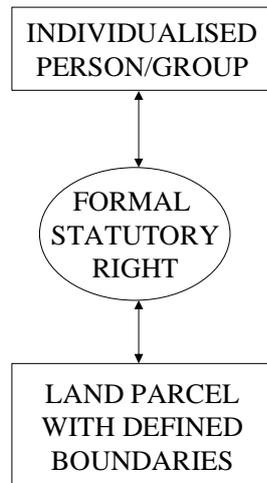


Fig. 2 Modified diagram of traditional 'Western' basic concepts of land registry and

7.2 New insights into the man-land relationship:

Although the rigidity of the 'Western' approach is often challenged (e.g. Bruce & Migot-Adholla, 1993) the four World Bank seminars on Land Policy recently held in Budapest (3-6 April), Kampala (April 29-May 2), Pachuca (19-22 May) and Phnom Penh (4-6 June) exhibit, in my opinion, a major breakthrough with respect to the recognition of what have been referred to as *indigenous systems of land tenure*, i.e. customary tenure and other forms of non-formal tenure. The World Bank states that 'it now is widely recognised that the universal provision of secure land rights within a country does not require uniformity of the legal arrangements, and that there is some form of consensus on the desirability of having legal recognition for customary forms of tenure and land right for the indigenous people. The Bank recently devoted greater attention to the sustainable management and evolution of customary tenure systems. Communities should be allowed to choose between different types of tenure' (Worldbank, 2001).

Experience reveals that some countries develop land legislation which endeavours to integrate customary tenure within the formal system. Bosworth (2002) reports on Uganda, where the Land Act enacted in 1998 provides for methods to adjudicate on customary rights and the issue of certificates of customary ownership and occupation certificates for tenants on *mailo* land, as well as the establishment of a Land Fund to assist in the market-based transfer of rights between tenants and landowners. These certificates will be mortgage able. Consequently the Act recognizes group rights to land by means of the registration of communal land associations with elected management committees. Quadros (2002) reports on Mozambique, where the new Land Act, 1998, recognises customary rights in the form of co-titling and the need to consult with the local communities as part of the authorization process for new investments. In Namibia a new Land Law is pending that will address the

broad issues of communal land reform by means of the creation of regional land boards (Pohamba, 2002); van den Berg (2000) states that under a new Act in South Africa communal titles can be granted to Communal Property Associations. In Bolivia the INRA Act (1996) (Ley Instituto Nacional Reforma Agraria) provides for the recognition of *Tierras Comunitarias de Origen* (TCOs), i.e. land belonging to indigenous groups (Zoomers, 2000).

The recognition of customary rights also devotes attention to rights of sheep and cattle farmers. In many countries there are serious conflicts between traditional nomadic sheep or cattle farmers and arable farmers about grazing and farming lands (such as Kenya, Tanzania, Rwanda). Tanzania's new village Land Act provides for the sharing of pastoral and agricultural land by sheep and cattle farmers and arable farmers on the basis of adjudication and mutual agreements (Mutakyamilwa, 2002). In analogy with pastoral rights, the problem of overlapping rights has yet to be resolved in many countries.

This brings us to the issue of the nature of the spatial unit which forms the basis for registration. Objects on which customary rights are exercised are not always accurately defined (Neate, 1999). Within this context Österberg (2002) advocates a flexible and non-traditional approach to the spatial component. Fourie (2002a, 2002b) notes that non-cadastral information should be integrated in spatial information systems since 'the high accuracies and expensive professional expertise associated with the cadastre has meant that there is too little cadastral coverage in Africa'.

The conclusion to be drawn from this Section is that the traditional basic concepts are affected in three ways:

- the subject: group ownership with non-defined membership
- the rights: the recognition of types of non-formal and informal rights
- the object: units other than accurate and established units

7.3 The impact on the basic concepts of land administration

Do governments bear the sole responsibility for the definition of the subjects, objects and rights that are to be recorded? The answer is obviously 'No', since the government is not the only party involved in the definition of the relationship between man and land. In addition to their foundations based on statutory and common law these relationships can also be based on the country's customary traditions or its informal use (which are consequently of a more comprehensive nature than the traditional Western approach to ownership, which is often referred to as *Colonial*). As such land administration possesses a direct relationship with the prevailing standards and values in the country's society or community.

In the absence of an in-depth understanding of land tenure arrangements it will prove difficult, if not impossible, to identify the processes involved in the determination, recording and dissemination of information about tenure arrangements required for the provision of the services needed to ensure for the requisite security of tenure, markets, planning, taxation and management of resources.

When viewed from a land-tenure perspective land administration systems entail the registration of the existing land tenure in a manner which imparts a given added value – i.e. the certainty offered to the persons possessing registered rights that those rights will remain in force until such time as they might be revoked in a legal and comprehensible manner. In my opinion the meaning of the term *legal* within this context should be understood as any system of standards and values that offers transparency, reliability and predictability to the relevant community. This in turn implies that customary rights or indigenous standards should be regarded as being fully eligible for land registration and cadastral purposes. In fact this also needs to extend to what are referred to as *informal settlements* (irrespective of their precise nature); these should also be eligible for the purposes of registration of titles to land, subject to the proviso that the land relationships are generally accepted and perceived as being legitimate within society – i.e. provided that the relevant society regards the rights to land as being legitimate, and provided that the population is familiar with the rules pertaining to the allocation, acquisition and transfer of land. This once again demonstrates that in essence it is possible to register or maintain records of relationships between man and land irrespective of the nature of the country's jurisprudence; this ability offers opportunities for the integration of statutory, customary and informal arrangements within land administration systems. In fact the converse is actually true; the registration and recording of relationships between man and land will be meaningless when those relationships are not accepted and the standards and values pertaining to those arrangements lack transparency, reliability, and predictability. In such situations the system is comprised of nothing more than the maintenance of records of the persons who make use of the land, i.e. records of a form of pseudo-physical attribute of specific parcels of land. The land administration system will then contain solely factual information without a legal basis.

Governments are, irrespective of the situation in the relevant country, exhibiting an increasing tendency to incorporate some form of recognition of customary land tenure in their land legislation. These measures provide for the registration of these rights to land in their existing land administration system or, in some cases, in separate 'official' registers (such as native title registers) (Neate, 1999). This would appear to be preferable to the imposition of a foreign land tenure system on a society with its own land standards and values, as is also apparent from Bruce & Migot Adholla's discussion of the *replacement paradigm* or *adaptation paradigm* (1993). However in some situations it may well be necessary to replace these rights, i.e. in the event of the collapse of customary structures as a result of:

- population pressures resulting in the implementation of personal forms of land tenure;
- the scarcity of land, thereby rendering the traditional allocation of land impossible;
- the need for credit for smallholders
- the growth in land-market initiatives
- the increasing migration of the population
- the development of conflicts between the customary groups at the periphery of their lands
- the need for the deployment of land management tools (planning & development, taxation)
- the need for effective land and water-resource management

In such situations preference is given to an inter-disciplinary approach to the formulation of land administration policy in which land surveyors, for example, cooperate closely with sociologists, anthropologists and lawyers (Fourie, 2002a).

These new insights can now be incorporated in a further modification of the Henssen diagram of the three basic concepts of land registry and cadastral systems. The modified diagram is shown in Figure 3.

The entity exercising the land rights is now defined as community, i.e. a specified group of persons. However in this situation the individual members of that group are not specified (i.e. in terms of their membership of a tribe, a family, stool, skin etc.). Their rights pertain to a relationship with the land that is in accordance with the standards and values of the relevant community, although these rights will need to be defined if it is to be possible to provide third

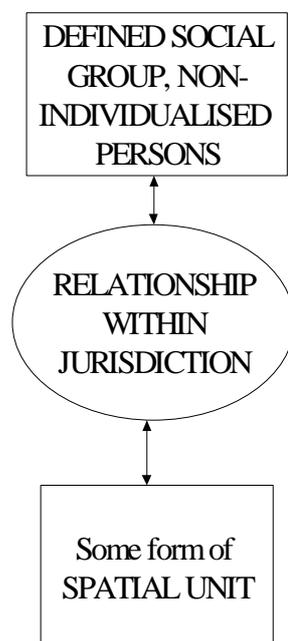


Fig.3 The basic concepts of land registry and cadastre expanded to include non-formal and informal rights

parties with meaningful information. In these situations the parcel of land, i.e. the object on which the rights are exercised, may be defined in a manner other than accurate land surveys and geometrical measurements. Österberg (2002) shows pro's and con's of various perspectives.

7.4 Conclusions

Recent developments give cause to the need to redefine the traditional 'Western' basic concepts of land administration. An expansion of these concepts to encompass non-formal and informal rights will offer opportunities to land-policy analysts, land registrars and land surveyors to improve the incorporation of the world's large tracts of land in those countries in which the implementation of land administration systems is proceeding at an excessively slow pace. The current situation whereby so many countries are unable to profit from the

benefits from land administration in the same manner as ‘Western’ countries (UN/ECE/WPLA, 1998) cannot be allowed to continue, and consequently the mobilization of all possible resources is required.

The achievement of this objective will require the development of institutions and operations that are able to provide for:

- the maintenance of records or registration of social groups with non-individualised membership;
- the maintenance of records or registration of the various forms of non-formal and informal rights;
- the maintenance of records or registration of parcels of land which are not defined using geometrics, and which possess flexible boundaries;

Particular attention will need to be devoted to the relationship between non-formal and informal rights and the formal system, since these systems should not be designed in isolation from each other (Fourie, 2002a, 2002b). I am in full agreement with Fourie on this issue, since a failure to adopt this approach will render the registers and records meaningless (and consequently not legally binding!) to third parties acting in either good or bad faith.

8. THE PURPOSES OF LAND ADMINISTRATION

A question frequently raised pertains to the funds that need to be available for the implementation and maintenance of land administration systems. In my opinion the requisite investments need to be provided with justification on the basis of the intended purpose(s) of the land administration system. The functionality of the system should meet the requirements of its users; consequently the design of the land administration system will be influenced by its intended use(s), such as the security of land tenure, the appropriate performance of the land market, the achievement of the required control of the use of land (i.e. suitable planning and development, inclusive of the management of resources) or the taxation of land (inclusive of the buildings on the land), or a combination of these uses. In the absence of a thorough analysis of the intended roles to be played by a land administration system it will be difficult to furnish an adequate justification for the allocation of the necessary funds.

8.1 Improving the security of land tenure

Land administration systems differ from other geo-information systems in the sense that they specify more than solely the physical attributes of spatial objects; they also lay down the relationship between man and land in the form of the rights and interests to and responsibilities for the land. These relationships can be based on statutory or common law, customary traditions, or informal use. As such, land administration has a direct association with the prevailing standards and values in the country’s society..

The tools employed in the implementation of a land administration system are adjudication and mapping. These tools are focused on the creation of records of existing land tenure arrangements, i.e. the status quo. Consequently both adjudication and mapping are of an intrinsically static nature. It should be realized that adjudication entails the definitive and

authoritative specification of the existing rights to a given parcel of land (Lawrance, 1985). Land adjudication does not create rights; it merely establishes the existing rights.

Mapping, in the sense of the determination of some form of geo-reference for the object on which the land rights are exercised, also intrinsically reflects the status quo. The mapping element of land administration needs to provide a sufficiently-detailed specification of the location of the object. *It would be incorrect to assume that this specification can be obtained solely by drawing up a definition of the cadastral parcel and carrying out an accurate survey of the boundaries.* In fact any form of geo-reference that is recognised by the community will be adequate for the purposes of the specification of the object. Conversely, it would also be incorrect to presume that a specification of an object that does not make any reference to the surface of the earth would provide sufficient evidence of the location of a legally-recognized object. Endeavours to employ information such as addresses are doomed to failure (not to mention the use of house numbers when addresses along the street constitute the legal basis for some form of legal status).

Consequently in their initial phase land administration systems reflect the prevailing relationship between man and land. However this relationship is subject to change, change which can be manifested in a variety of forms.

First, the relationship will be subject to *autonomous* change over the course of time which reflects shifts in the public's conduct. In an overall review of these developments (Ting, 1999) perceives the relationship between man and land as a dynamic relationship that has evolved over the centuries in line with the changing opinions of the role of land in the society, an evolution which she refers to in terms of the effects of term *global drivers*. The evolution of this relationship also has consequences for the scope of land administration. In an analysis of the development of land tenure from ancient times to the present day Powelson (Powelson, 1987) demonstrates how the development varies from region to region as a result of the differences in the history, attitudes and cultures of the requisite societies. *Political ideology also plays a significant role.* Both analyses reveal that the nature of land tenure changes over the course of time, and that this is accompanied by the emergence of new and hitherto-unknown forms of land rights. Although these changes only become apparent over a long period of time, it is important that the legal and operational frameworks of the land administration system possess sufficient flexibility to accommodate these changes.

However a greater challenge is posed by the *spontaneous changes* in forms of land tenure on the implementation of short and medium-term measures designed to accommodate the needs of society. In my opinion three drivers are responsible for the emergence of new and noteworthy forms of land rights during the past decades, i.e.:

- the need to provide secure access to land
- the need for the public acquisition of land
- the recognition of indigenous land rights

8.1.1 Secure Access to Land

In many countries the provision of *secure access to land* has been assigned a high priority as a result of the recommendations enclosed in the global plans of action drawn up by Agenda21 (1992), Habitat (1996) and Johannesburg Summit (2002), as well as the current UNCHS Global Campaign for secure tenure. The drivers responsible for the endeavours to improve the security of land tenure are primarily based on the worldwide attempts to eradicate poverty. Consequently measures implemented to encourage the security of tenure focus largely on the urban and rural poor, and on vulnerable groups (the indigenous population and women). The use of traditional forms of tenure forms to provide security of tenure (freehold, leasehold, etc.) has proven to be a cumbersome approach that ultimately results in lengthy procedures which offer totally inadequate access to the poor (Worldbank, 2001) (de Soto 2000). Consequently governments are adopting an innovative approach in experiments with *new forms of land tenure* and simplified land rights that can be assigned with relative ease. Examples of these new forms are certificates of right, occupancy licenses, permission to occupy, land sharing constructions, corporate land banks, community land trusts, and anti-eviction laws. All these forms of land tenure share, to a greater or lesser extent, a common characteristic; they all *provide basic de facto security rather than sophisticated de jure security*. Adverse possession constitutes a special situation case; adverse possession refers to the peaceful occupation of land without a formal legal agreement. National legislation that does not recognise adverse possession (in presuming a precise knowledge of the relevant boundaries, which is in practice an impossible requirement) whilst the country's society perceives adverse possession as an acceptable form of land tenure will impose a burden on the land market. However problems will also be encountered when the legislation recognizes adverse possession but the land administration system is unable to cater for this form of land tenure.

8.1.2 Public Acquisition of Land

The *public acquisition of land* can be achieved by the use of a variety of methods available to the government for direct intervention in the land market. It will be self-evident that the government can compete with other buyers in the purchase land on the free market. However the purchase of large amounts of land will result in excessive activity on the market, and in turn result in increased prices. For this reason governments give preference to the use of other tools. One of these tools involves the use of *pre-emptive rights* that assign the government first right of refusal in the event that landowners sell their land, a right that has become popular with governments. Pre-emptive rights are legally binding on third parties, and consequently the land administration system will need to maintain records of these public rights. The right of *expropriation*, which constitutes the government's ultimate weapon, involves the government's revocation of private land rights in favour of the state. Normally the instrument of expropriation usually involves a weighty and incremental legal procedure which commences with the issue of an official intention of expropriation. Land administration systems need to be able to maintain records of any legal forces imposed on third parties as soon as they are imposed by the relevant legislation.

8.1.3 Recognition of indigenous rights

The *recognition of indigenous rights to land* is reflected in the evolution of new forms of land tenure, i.e. native titles and common properties. Native titles have been introduced in countries such as Australia (the Native Title Act, 1993), the USA and Canada (where native groups have been able to register their rights since 1960), New Zealand (subsequent to the Waitangi Tribunal of 1975) and Fiji (the Native Land Trust Act, 1940). These native titles reveal an increasing awareness of the existence of land rights of indigenous populations, a development which is also reflected in the nature of these titles. For example, in Australia the Crown is entrusted with the issue of freehold and leasehold titles; however it has no jurisdiction over native titles, since these titles are perceived as already being in the possession of indigenous Australians. Communal properties are evolving in South Africa, where an Act is submitted that permits groups of people to own communal property (Communal Property Associations) (Cousins, 2002). In view of the fact that some West-European land administration systems (primarily in Scandinavia) are confronted with problems in making records of *common property* (i.e. property jointly owned by, for example, adjacent owners pursuant to the law) the challenge confronting land administration systems is to accommodate these new forms of tenure.

The aforementioned autonomous development of forms of land tenure positions the relationship between man and land at the centre of the development of *standards and values*. However another form of change reflects changes in the relationship between man and land within the existing framework of land legislation and tradition. Or, in other words, the nature of the land tenure does not change; the changes occur in the manner in which the concomitant rights are exercised. This second form of change is caused by five drivers, namely:

- the transfer of land rights in the market environment
- the planning of the use of urban and rural land
- the collapse of local indigenous land rights systems
- the integration of indigenous land tenure within the statutory framework
- the implementation of a variety of types of land reform

8.1.4 Land Markets

The *transfer of land rights in the market environment* is based on the concept that land is a commodity which can be bought and sold – and, from a legal perspective, the land rights can be transferred from one person to another. The extent to which land administrations are maintained in an up-to-date condition depends largely on the nature of the procedures involved in the transfer of land. The aforementioned global plans of action severely criticise the manner in which land administrators design and organise their procedures. For example, in a paper given to the 1994 Congress of the International Federation of Surveyors Barnes (Barnes, 1994) stated that the issue of land titles in Ecuador could take as long as between nine months and five years, whilst the procedure in Bolivia involved 23 steps stretching over many years, and in Peru the issue involved a procedure comprised of more than 200 steps that required about 43 months to complete (de Soto, 2000). Fourie (1999) is of the opinion that cadastral and land information systems constitute one of the most significant impediments to the transfer of land. The systems are centralized to an excessive degree, are too expensive, are

not tailored to the urban poor – the majority of the population – since they cannot afford them, are too frequently based on a Colonial approach, are excessively complex, and lack transparency. Van der Molen & Österberg (1999) demonstrate how specific decision-making pertaining to land administration concepts and procedures can result in significant *imperfections* in land administration systems that exert a detrimental influence on the value of the land administration system for the country's society.

Governments can exert a significant influence on the normal operation of market by means of their endeavours to regulate the market. Governments regulate the market on the basis of their perception of land as more than solely a commodity, i.e. a scarce communal resource which is in need of careful management. The regulation of the market needs to be implemented in a balanced manner, since an excessive number of restrictions and unnecessary regulations will immediately result in the development of an informal market.

The land administration system will – irrespective of the nature and causes of any changes – need to be able to accommodate all changes in the relationship between man and land.

8.1.5 Land use planning

The *planning of the use of urban and rural land* involves the stipulation of a specific use for land by means of the implementation of appropriate measures by the government (usually the local authorities) pertaining to the private right of disposal. This can result in voluntary or compulsory changes in rights to and interests in land as a result of either voluntary action by the owners and users, or compulsory action by the government. This is most apparent in situations which governments acquire or expropriate land rights, and subsequent to the development of the region issue land rights to new target groups (such as urban residents instead of rural farmers).

8.1.6 Collapse of indigenous structures

The *collapse of indigenous structures* involves a complex evolutionary process. Indigenous land tenure is of a dynamic nature, although in certain circumstances it provides sufficient security of land tenure. However experience has revealed that a spontaneous simplification and individualisation of land rights can occur whereby households acquire increasingly broader rights of exclusion and transfer as a result of increasing population pressures and levels of commercialisation (Bruce & Migot-Adholla, 1993). Should this process continue towards a further individualization of land rights, an evolution of the right of use towards property rights, the marginalization of ethnic groups and a reduction in the local resolution of land conflicts then the government may respond these developments by the implementation of a transformation from indigenous rights towards statutory rights. A *prudent migration path* will be essential if the system is to be able to accommodate the pace of these societal changes. The initial design of land administration system should take account of the accommodation of future processes of this nature.

8.1.7 Integration

The *integration of indigenous land tenure within the statutory system* may be implemented for a number of reasons, of which at least two are:

- the introduction of a policy designed to protect indigenous lands rights
- the need for land management

A policy designed to protect indigenous land rights may be implemented as a result of the increasing scarcity of land and the concomitant conflict this causes between customary groups. A scarcity of land will result in customary communities requesting the government to provide for the identification of and supply of guarantees for the periphery of their land and their jurisdiction. In situations of this nature the land legislation may provide for the legal recognition of indigenous group titles or common properties and for the facilities required to survey the outer perimeter of these properties. When there is little need for further individualisation within the community (for example, in view of low land mobility, and the absence of land disputes) the government may decide to restrict its operations to the outer perimeter; this may also be sufficient for the management of the land. Governments are confronted with problems in the implementation of land-policy tools when they are unaware of the identity of the owners or of the location of the land. This information offers governments an opportunity to contact these groups and negotiate on the land management measures from inventories of the outer perimeter of the territory of indigenous groups with their own customary jurisdiction, an indication of the identity of the persons with the authority over the groups (the chiefs), and the attribution of a legal significance to the rights pursuant to the relevant land legislation and accordance with their administrative structure. Land title and forms of demarcation that are developing in these kinds of situations are native titles, village titles (Tanzania, Guinea Bissau), the allocation of rights within the Land Boards system (Botswana), and a variety of forms of communal tenure reviewed earlier in this paper (Section 4). The incorporation of indigenous rights within the legal framework results in a substantial extension of the land administration system, which will consequently need to accommodate this expansion of the records.

8.1.8 Land Reform

Land reform is characterized by a continuum of land-reform activity. Subsequent to the fall of the Iron Curtain in 1989 the countries in Central and Eastern Europe have been engaged in the continuous restitution of land in programmes designed to restore the *property rights* prevailing prior to the Communist era, i.e. the return of land from State and rural collectives to the original owners or their heirs. Land restitution is being implemented in a wide variety of forms, such as the restitution of former land rights by means of some form of official credit note for use in the purchase of land or a share in a collective farm (such as the in Czech Republic and Hungary), or even the return of exactly the same land that was surrendered under Communist rule (such as in Bulgaria). These forms are all based on political choices. Many countries have completed their restitution programmes (such as Slovakia, Armenia and Hungary) and are now confronted with the excess fragmentation of the land, a situation which is resulting in an increasing need for a mechanism capable of improving the structure of agricultural land.

8.1.9 Land Redistribution

Is a form of land reform that is designed to break down large landholdings into smaller parcels for the benefit of the poor; within this context the fragmentation of land is actually encouraged. Land redistribution is currently in progress in countries such as South Africa, Namibia and Zimbabwe (FIG, 2003), and in almost all Latin American countries (such as Argentina and Bolivia).

8.1.10 Land Consolidation

Land consolidation is intended to provide for the creation of large parcels of agricultural land by means of a process of re-allocation. In principle this process does not affect on the farmer's property rights as such; the only change is with respect to the location of the land, which is re-allocated in a manner which ensures that the farmers retain the original production value of their land and gain an increased economic benefit from their land (FAO, GTZ and FIG, 2002).

8.1.11 Land readjustment

Land re-adjustment is a special situation (employed in countries such as Germany and Japan), in which the re-allocation process is also intended to make public land available for urban development, although in a manner which ensures for a suitable structure of the remaining agricultural sector.

The land administration systems of countries implementing land-reform policies need to be capable of accommodating these reforms.

8.2 The regulation of land markets

The global summits mentioned earlier in this paper are of the expectation that free land markets will result in the shift of the key economic resource, land, towards the most appropriate and efficient economic use. Consequently governments are confronted with the challenge of creating efficient and accessible land markets capable of meeting the needs of their populations by means of the improvement of cadastral systems and the streamlining of land-transaction procedures. The World Bank Land and Real Estate Initiative advocates the re-engineering of cadastral systems, the development of regulatory infrastructures, and access for the poor. The World Bank states that access to land and access to credit, especially for the poor, should be promoted by the implementation of simple, rapid and explicit clear procedures, cheap and accessible information about land, and explicit definitions of land tenure and property rights. In view of the unequal distribution of income around the world it is a moot point as to whether the tools possessed by governments can regulate the markets in a manner that is not beneficial solely to the rich. Some East European countries are beginning to give consideration to the imposition of restrictions in the new open land market so as to avoid a situation in which a few privatisation-oligarchs would rapidly possess the majority of the country's land. It should be realized that a true free open market can have *disastrous* effects. There is no doubt that the abolition of moratoria on land transactions, the elimination

of restrictions on the size of ownership, the elimination of price restrictions, the elimination of land use restrictions and the minimization of preferential rights for the government will be to the benefit of the rich. In our opinion governments should endeavour to implement a balanced set of regulations capable of managing the land market in a manner such that the poor can gain access to land and credit (Dale & Baldwin 2000) – an opinion based on our belief that land should be regarded as not just a commodity, but also a scarce communal resource in need of careful management. We are also of the opinion that governments should give consideration to the implementation of regulations that impose restrictions on both the maximum size of land holdings so as to promote the subdivision of large landholdings *and* on the minimum size so as to avoid excessively small farms. They should also review the implementation of pre-emptive rights for the acquisition of public land and measures requiring the approval of land transfers so as to prevent undesirable changes in land use, as well as anti-speculation orders to avoid speculation, moratoria on land transfers to avoid undesirable land transfers, price restrictions to promote access to land by the poor, and ceilings on credit obtained with land as the collateral to avoid an increase in foreclosures. As was noted above this package of measures will need to be carefully balanced; an excessive number of restrictions and unnecessary regulations will immediately result in the development of an informal market.

8.3 Panning and development of the use of urban and rural land

In our opinion the planning and development in involved in the third element to be promoted by land administration, i.e. the planning and development of the use of urban and rural land, should be perceived as a government intervention in existing proprietary structures. The FAO Guidelines for Land Use Planning (1983) recognize legal and traditional ownership and usage rights to land, trees, and grazing areas as one of the important basic elements of the information about an area involved in the development of land-use plans. In its study of the role of legislation in land-use planning of 1985 the FAO emphasized the influence existing land tenure patterns exert on the decision-making process by the formulation of questions such as who is the legal owner of the land and who actually controls the land, as well as to the manner in which customary rights are incorporated in statutory law.

Although the attention of international organizations is increasingly being drawn to urbanisation they should not neglect the *rural areas*, since the complex of food, water and land constitutes a major prerequisite for the resolution of the problem of the world's 600 million people who do not have enough food (Bathurst, 1999).

However in mentioning *urbanisation* it cannot be denied that the growth of urban and peri-urban regions also constitutes a major problem. The world's urban population continues to increase at a rapid rate; whereas in 1950 just 30% of the world's population lived in urban areas the United Nations estimates that this figure will have increased to 60% by 2030. Experience has also revealed that the governments of non-Western countries are totally unable to cope with the migration of the rural population to the cities, in turn resulting in an increasing number of informal settlements. It is estimated that as much as 80% of the growth in the urban regions may be of the form of informal settlements. This causes the rapid exacerbation of problems with the urban fabric, and results in a lack of services, the absence

of an infrastructure, poor housing and – and above all – insecurity of land tenure. The World Bank estimates that 25% of all urban dwellers live in poverty. The HABITAT Global Plan of Action 1996 regards security of tenure as one of the most essential elements of a successful shelter strategy; consequently it is hardly surprising that the Global Campaign for Secure Tenure has assigned top priority to its opposition to forced eviction – especially since forced eviction is always associated with the worst housing conditions, always has the greatest impact on the poor, is often violent in nature, and ultimately results in victims who are worse off than they were before. More and more governments are introducing *anti-eviction legislation*, legislation which when viewed from a cadastral perspective introduces an innovative form of land rights – i.e. the right not to be kicked off the land you actually live on. Consequently this constitutes a new form of right that needs to be incorporated in the records of land administration systems! A major duty of cadastral systems is to provide governments with information about the identity of those with specific land rights, the location of the land, and the size of the relevant parcel. This duty is of even greater significance to governments intending to implement land-use plans; the implementation of these plans will be virtually impossible in the absence of information about the private land rights that will be affected by them.

It is debatable whether non-Western countries can maintain control of urban growth in the absence of this basic land administration data. Governments that are unable to manage their land resources are not necessarily weak as such – they may well be confronted with the unmanageability of their land. In my opinion countries denied the land-administration information usually available to Western countries will simply be unable to manage their land. Consequently the only land-management option available to their governments is the imposition of developments that do not take account of the prevailing land rights – i.e. they ignore the local population and proceed to forced eviction.

8.4 The taxation of land

This paper will devote only brief attention to land taxation. Land administration systems have traditionally served for land taxation purposes; an international survey revealed that the 14 countries from all over the world examined in the study had all implemented some form of immovable property taxation (Youngman & Malme, 1994). All the countries bar one employed information obtained from cadastres, land registers and land title offices; the exception was Israël, which uses information acquired from building permits. Land tax is usually a *local tax* imposed by local authorities to obtain their revenue. In an inventory carried out by the UN/ECE it transpired of the 40 ECE member countries 95% were operating a land-valuation system for the purposes of the assessment of land values for taxation (UN/ECE 2001b). In fact even in the Netherlands the Land Taxation Act constituted the legal basis for the Cadastre until 1973, when the Act was repealed and replaced by a municipal land tax. The present multi-purpose character of the Dutch cadastre was provided with a legal basis in the new Land Registry Act, 1992, along with the new version of the Civil Code.

In 1999 the Association of Netherlands Municipalities calculated that taxes based on the value of the land generate € 2 billion for the municipalities, € 1.6 billion for the national

government and € 0.2 billion for the water-control authorities – whilst the costs of the monitoring amount to no more than € 100 million. The € 2 billion the municipalities receive from land tax is equivalent to 47% of their income from taxes.

Countries in transition also introduce land taxation, a move which constitutes a combined challenge to their efforts in achieving privatisation, the decentralisation of state power, and market development. For example, in the Republic of Estonia revenues from local land tax account for 3% of the local budget; in the Czech Republic the figure is also 3%, whilst in Slovakia the figure is 11%, and in Poland no less than 13%. The Lincoln Institute of Land Policy states that a political debate currently in progress in Columbia, and in analogy with many other countries in Latin America, is highlighting the problems encountered in the assessment of the land tax base using the present obsolete cadastral information. El Salvador, which is recovering from a civil war, is reviewing the introduction of a municipal land tax for the city of San Salvador initially based on a simple tax rate and later evolving into a more sophisticated system.

An up-to-date land administration system is an essential source of information for land taxation. The country's taxation authorities will be virtually unable to enforce a system of land taxation in the absence of information about the persons liable to pay tax, the taxable objects, and the market values. Subsequent to signing the Dayton Peace Treaty the Federation of Bosnia Herzegovina, for example, is now endeavouring to develop a local land tax on the basis of the existing cadastral records in combination with local public-housing records and information from the public utility companies. The city of Mexicali invested large amounts in a municipal cadastre, as a result of which it succeeded in increasing the revenue from land taxation from mxn 5 million in 1990 to the current level of mxn 70 million.

The demand for urban services usually exceeds the financial capacity of the local authorities, thereby rendering land taxation a very popular means of generating revenue. However the government can also regulate the land market using *fiscal measures*. Well-known examples are a tax on the potential value (which promotes the optimal use of land), penalty tax on fallow land (which encourages the use of vacant land), progressive tax (to avoid speculation) and tax-deduction measures for mortgage interest rates so as to promote private house ownership. The Netherlands has the most favourable tax-relief policy of all European countries – and probably anywhere in the world; the country offers 100% tax relief on mortgage interest rates for a maximum of 30 years on the principal residence. This has resulted in extremely high real-estate prices, since supply has adapted to demand.

9. THE MIGRATION PATH FOR LAND ADMINISTRATION (THE REGISTRY ELEMENT)

9.1 Land tenure (What should be registered)

Since land tenure is comprised of some form of *bundle of rights and interests* it is necessary to decide which elements of that *bundle* should at least be registered for the purposes to be fulfilled by the land administration system.

For example if the system is intended for the purposes of land taxation and the tax legislation stipulates that tax shall be levied solely on ownership, then it will serve no purpose to maintain records of leases, derived rights and actual land use.

However if the purpose is to facilitate credit mechanisms and the legislation defines mortgages as personal rights rather than rights *in rem*, then the registration of mortgages might be irrelevant.

Should the purpose be to promote the land market and the parties involved (sellers, buyers, conveyancers, etc.) are not interested in encumbrances and servitudes, then there will be no need for records of this information.

Should the purpose be land management then government may consider information about ownership, group ownership, communal ownership, village ownership and the name of the chief, the village headman, to be sufficient for its purposes.

However when the government imposes restrictions on land use and the legislation stipulates that these restrictions are imposed on the owner rather than the parcel of land, then there will be no need for records. Conversely records of the restrictions could be beneficial when specific restrictions are imposed on parcels of land (thereby imparting them with a legal force on third parties such as buyers).

The information from the tour d' horizon in Section 4 reveals a number of potential scenarios. It is assumed that the country is at least of the intention to improve its land management capability (planning, development, maintenance of land use, and resource management). Since land-management policy is usually formulated on the basis of the country's general social and economic developments the policy can be drawn up without a detailed knowledge of land tenure patterns. However the implementation of land management policy is greatly dependent on knowledge of this nature, since the government will need to intervene in the existing land tenure patterns. The government will need to have access to the names of persons to contact for the negotiation of planned developments and, where relevant, for the acquisition of the land. In such a situation a simple land administration system will be sufficient, which need not contain more than elementary records of the combination of the names of the persons in authority (village heads, chiefs, family heads, residents, and company names) together with some form of definition of the units based on the location of the land (such as the address, or the map coordinates). Consequently large investments are not involved for a system of this nature. Since much land development is carried out in the form of projects (such as housing, transport and energy infrastructures, and nature conservation) the government can, where relevant, give consideration to the implementation of a project-oriented land administration system (for example, when problems are encountered in the public acquisition of land).

A government intending to levy land tax will require a more sophisticated land administration system which at least contains information on the parameters used for the assessment of the land tax (such as ownership, and possibly the use of the land and the surface area of the parcels of land). The collection of data can be restricted to the information the tax legislation

stipulates as the base for taxation; this is usually comprised of ownership and/or use, and not derived rights and interests. Should the tax legislation regard group ownership as being subject to taxation and the surface area of the land as a taxable object (inclusive of land in common ownership) then the register could include the names of owners (individuals, companies and groups) together with an identifier and an indication of the surface area of the land.

Substantial investments are not needed for either very precise land tenure registration or for very accurate boundary surveys.

In principle a land administration system with the above content is, subject to certain conditions, suited to the improvement of the land market. Additional regulations will be required to protect parties in the market (particularly the buyers) since the system contains little information about the legal status of land. These regulations should remedy the imperfections in the system and could, for example, stipulate that sellers are under the statutory obligation to furnish complete and truthful information about the legal status (the rights, derived rights, restrictions, public encumbrances and boundaries) of their land, such subject to pain of claims in court in the event of the wilful provision of incorrect information.

However should the presence of these rights and interests exert a great influence on the market prices and values then the operation of the market will be impeded in the event that the public is not provided with ready access to reliable and complete information. One measure of the extent of this problem could be the volume of litigation. Consequently the land administration system will need to collect and provide information about the legal status of land that is as comprehensive as possible, a need which will give cause to substantial investments in the system. However it will be possible to pass on the costs of these investments to the market transactions, since the market will probably possess a strength and wealth sufficient to bear the additional transaction costs. Detailed information about the land will offer sufficient value to the relevant parties as compared with the benefit the parties gain from the wealth of information available to them.

A government which incorporates a specific legal recognition of titles in its records of rights and interests (for example, in the form of guarantees for the information, or the acceptance liability with respect to its correctness) will provide for the legal security of land tenure.

From the above it will be apparent that, depending on the purposes for which they are intended, land administration systems collect, process, and disseminate information about land tenure in systems ranging from extremely simple (solely the land use status quo) to comprehensive (all rights and interests) registers.

9.2 Land Administration Authorities (Who makes the records)

Many countries perceive land administration to be a public duty to be performed within the mandate of the state. This is also applicable to the allocation of land to the public (such as a Ministry of Land, Commissioner of Land). Consequently both duties are performed by organizations at a state level. These organizations often adopt a decentralized approach to the

performance of their duties; for example, the registration is effected by the courts, which report to the Ministry of Justice, whilst the cadastral duties are performed by the local or regional branches of another Ministry (such as Housing, Environment, Home Affairs, etc.) , In some countries (such as France) the municipalities are responsible for the cadastre. Decentralized land registration systems (i.e. outside of the competence of the state) are not common.

However it is also necessary to view the division of duties, responsibilities and competences between the various layers of government from a perspective of the efficiency and effectiveness – requirements which would appear to be in mutually contradiction with each other. Although it might be extremely efficient to concentrate the time-consuming maintenance of registers and maps at one location, thereby needing the minimum number of staff, this would nevertheless not be very efficient; this is because land policy tools (land markets, land use planning, management of resources, etc.) are primarily measures of a marked local and regional importance, which consequently should be implemented in the proximity of and in interaction with the public (Fourie & Nino-Fluck, 2001).

This dilemma can be resolved by means of ICT. Financial calculations reveal that central databases are more economic than decentralized databases, since this obviates the need for ICT staff at all the local offices (for systems management and maintenance, helpdesks, etc.). However the implementation of data communications simultaneously provides for the adoption of local responsibility for information management. This combination provides for the delegation of duties that need to be linked closely to persons at the appropriate local or regional level, whilst at the same time keeping the costs as low as possible by means of the centralised processing and storage of the data.

Consequently ICT developments have rendered local operations feasible. In view of this there is no objection to the introduction of a land administration system at a local level – and especially in an analogue environment – since at some point in the future the local registers and maps can be made available to all the relevant levels of government, and can serve as the input for a subsequent central database. As a result the migration path begins at a local level, and gradually evolves into a system of centrally-stored data and remote information management with the commensurate responsibilities.

9.3 Registration (How the records are made)

Governments that intend to provide titles to land guaranteed by the state are aware that this is a costly operation. The concomitant precise adjudication processes, in-depth investigations of the legality of land transfers, and accurate boundary surveys are all capital-intensive operations. The simplest land register is a comprised of a shoebox containing simple transfer documents approved by the seller and buyer and endorsed by witnesses, together with a reference to a description of the object. It will be self-evident that a simple system of this nature will exhibit a large number of imperfections with respect to its comprehensiveness, validity, accessibility, etc. Nevertheless it does fulfil the *publicity* and *specialty* needs, albeit in a very rudimentary way – and the system could work.

An improvement to the above system would be the assignment of a certain legal status to the documents by having them drawn up by a licensed conveyancer, lawyer or civil-law notary. The costs incurred in maintaining the records can remain low, since the duties of the keeper of the shoebox (the box will evolve in the direction of a register) are restricted to filing the documents and keeping them available for consultation. The keeper does not investigate the legal impact of the documents; in essence this is a simple form of deed registration.

However once the keeper of this simple register also investigates the validity and the legal impact of transfer documents, and has the power to approve or to endorse them, then he becomes a kind of registrar; his approval imparts an added value to the records, i.e. the transfer of right deemed to be valid and is recognised. In essence this is a simple form of title registration. However the costs incurred in the registration of the documents will increase in view of the keeper's additional duties.

The additional need for some form of identification of the relevant object on a map in the registration process in effect constitutes the beginnings of a simple cadastral system.

Consequently the migration path for land registration can begin with a simple and rudimentary form of deed registration, evolving over the years into a system incorporating the issue of approval for land transfers; at the same time the keeper evolves into a registrar.

9.4 Implementation (When records should be made)

On the introduction of the system it will immediately be necessary to devote attention to the updating of the records. The best method to guarantee up-to-date registers and maps is to stipulate that in the absence of records land transfers will not be valid, i.e. the buyer will not become the owner or acquire rights to the land. However this is a fairly stern approach; in practice the updating requirements will depend on the intended purpose(s) of the system. A system employed for taxation purposes could require less frequent updating than a system employed in connection with the land market; for fiscal purposes the submission of transfer documents by no later than a specific fiscal reference date would appear to be adequate, whilst for land-market purposes the daily updating of the records would be more appropriate.

Consequently a suitable migration path could begin with less-frequent updating and evolve to frequent day-to-day updating.

10. THE MIGRATION PATH FOR LAND ADMINISTRATION (THE CADASTRAL ELEMENT)

10.1 The identification of title holders

The *spécialité* principle stipulates that persons with access to the registers must be certain of the identity of the title holders listed in the records. The ultimate form of identification is comprised of records of ID cards and the relevant ID numbers as verified by the registrar or civil-law notary. The simplest form entails the identification of title holders by witnesses so as to impart the names in the records with a certain degree of validity. An intermediate form

is comprised of a declaration from, for example, a conveyancer verifying that the persons cited in the transfer document are indeed the persons they say they are.

10.2 The identification of objects

The accuracy with which the boundaries of the parcels of land are surveyed depends on the purpose(s) of the land administration system. Since boundary surveys and boundary mapping are expensive operations which involve a given amount of time it could be preferable to opt for an alternative.

When the land administration system is intended to provide for land management then the government could consider information restricted to the outer boundaries of the customary areas and the name of the chief or the village boundary with the name of the village headman to be adequate for its purposes. In this instance it will not be necessary to record accurate information about individual parcel boundaries. When individualised forms of land tenure are an issue addresses or single midpoint coordinates could be appropriate (GPS or map coordinates). In situations in which information about the approximate boundaries is required the general boundary rule could be employed, resulting in the visualisation of the boundaries on a topographic map or orthophoto.

When the system is intended for land taxation purposes and the tax is not assessed on the basis of the surface area of ownership (the m²) then it will serve no purpose to endeavour to make accurate surveys of the boundaries, and once again an address (if available) or midpoint coordinates may be sufficient for the needs. In such situations it is not necessary to draw up cadastral parcels.

Nor will accurate surveys of the boundaries be required when the system is intended for credit purposes, and the banks require solely the value of the building in reaching their decision as to issue a mortgage.

Consequently from a surveying perspective a suitable migration path could begin with a simple indication of the location of the land and then evolve via records of general boundaries towards accurate surveys of the boundaries.

11. CONCLUSIONS AND RECOMMENDATIONS FOR MIGRATION

In view of the challenge confronting many countries in increasing the speed of the registration of information about ownership, etc., it would appear to be preferable to implement simple systems that can evolve into more complex systems over the course of the years. Governments could adopt the following incremental approach to the implementation of their land administration systems:

- develop a long-term scenario specifying the land-policy tools ultimately to be supported by the land administration system
- assign priorities: in which sequence should tools be provided with support.
- decide on the minimum contents of the registers and maps
- design simple processes, and accept imperfections

- design systems which are scalable
- develop a migration path for the evolution towards the intended long-term use of the system
- anticipate ICT resources that can be introduced in the course of the years
- avoid accurate surveys of boundaries whenever possible during the initial phase
- avoid intensive investigations for the guarantee of titles, and accept the imperfections inherent in the recording of transfer documents (deeds).

Since countries exhibit differences – as do their attitudes, histories and societal cultures – it is not possible to draw up a general specification of the best migration path. However the adoption of the incremental approach as discussed above could provide a suitable framework for the successful implementation and development of a land administration system.

12. CONCLUSIONS

I conclude that the statements in ‘Cadastre 2014’ remain valid and continue to constitute suitable targets for the countries with ‘modern cadastres ’ (between 30 and 50 countries), although the statements pertaining towards privatization and cost recovery cited in the Vision may well be amended.

In other countries it will be necessary to adopt new concepts so as to provide for a suitable approach to issues such as the eradication of poverty, sustainable development, and economic growth.

Moreover the design of land administration systems will need to take more account of the dynamism of land tenure, the land market, and government intervention in private property rights.

The adoption of an evolutionary approach to the implementation and development of land administration systems should guarantee the viability of these systems in developing societies.

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