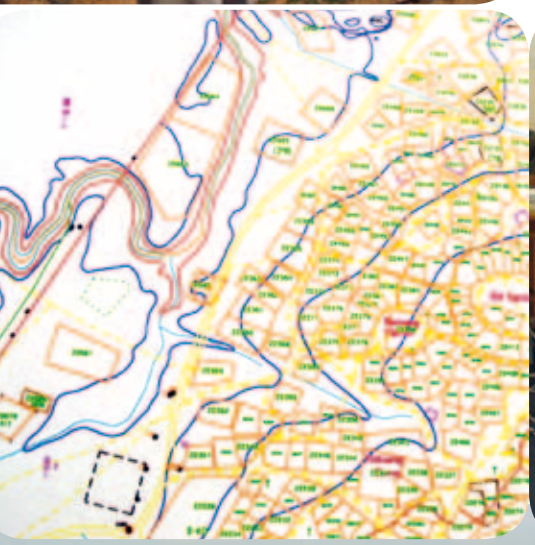
Land Inventory in Botswana:

Processes and Lessons



UN HABITAT

GLOBAL LAND TOOL NETWORK

Land Inventory in Botswana: Processes and Lessons

HS: 1248/09E
ISBN: 978-92-1-132245-3

Disclaimer

United Nations Human Settlements Programme (UN-HABITAT)
P.O. Box 30030, Nairobi 00100, Kenya
Tel: +254 20 762 3120
Fax: +254 20 762 3477
www.unhabitat.org

All photos by Boipuso Nkwae, except on page 48, by Remy Sietchiping / UN-HABITAT

Principal author: Remy Sietchiping with substantive inputs from Chukwudozie Ezigbalike, United Nations

Economic Commission for Africa. Dr. Boipuso Nkwae prepared the background paper for this publication

Contributors: Clarissa Augustinus and Guglielma da Passano of UN-HABITAT

Editors: Robert Wagner, Britta Uhlig and Roman Rollnick

Sponsors: Norwegian Government, Swedish International Development Cooperation Agency

Printing: UNON, Publishing Services Section, Nairobi, ISO 14001:2004-certified

Land Inventory in Botswana: Processes and Lessons

UN-HABITAT

GLOBAL LAND TOOL NETWORK

Foreword

Land is a scare resource involving a wide range of rights and responsibilities. When poorly managed, it can become very contentious often leading to disputes, conflict, degradation and other problems, all of them drivers of slum development and poverty in urban areas.

One of the best remedies is for countries to map out their land portfolio so as to get a better understanding of the situation. This combined with new communications and information tools enables public authorities to improve land management and administration.

Indeed, equitable land management is an extremely complex problem around the world, and developing countries face immense challenges in land management and administration. Subject to countless legal, administrative, cultural and religious practices, it is something that has to be addressed by taking a number of factors into account simultaneously.

These include land policy, land tenure (including tenancy), land use planning, land information, gender issues, valuation, state land and private land, governance and land taxation.

I am delighted that the report here on the Botswana Tribal Land Information and Management Systems shows us an exemplary practice using modern digital technology. It teaches us too that the decentralization of land administration can bring benefits for the poor. In fact, the system in place pays particular attention to local land boards in the development of strategic ideas in pro-poor land management and administration.

At UN-Habitat, we recognize that successful land policy formulation and implementation depend on a complete and up-to-date inventory of land holdings. These inform land policy choices and implementation priorities. A well functioning land inventory is an integral element of; land administration, land development, urban planning, urban management, land use planning, land transactions and natural resources management.

This publication documents challenges, opportunities, processes and lessons learned for implementing a successful land inventory.

I have every confidence that the Botswana land story told here will be of considerable use as our World Urban Campaign for better, smarter and more sustainable cities gathers.

Anna Tibaijuka
Executive Director
UN-HABITAT

Contents

Abbreviations

BHC	Botswana Housing Corporation
BLIS	Botswana Land Information System
CIS	Cadastral Information System
DC	Data Collector
DGS	Department of Geological Surveys
DoL	Department of Lands
DTRP	Department of Town and Regional Planning
DSM	Department of Surveys & Mapping
ICT	Information and Communication Technologies
IT	Information Technology
IS	Information System
GIS	Geographic Information System
GPS	Global Positioning System
LAITSU	Local Authorities Information Technology Support Unit
LB	Land Board
LDC	Least Developed Countries
LIM	Land Information Management
LINSYS	Land Inventory System
LIS	Land Information System
LMRG	Land Management Reference Group
LRIS	Land Registration and Information Service
MOA	Ministry of Agriculture
MLB	Main Land Board
MLH	Ministry of Lands and Housing
ODBC	Open Database Connectivity
PMC	Project Management Consultant
PMS	Performance Management System
MFDP	Ministry of Finance and Development Planning
MLGL&H	Ministry of Local Government, Lands & Housing
RDP	Rural Development Policy
SDI	Spatial Data Infrastructure
SOUR	Statement of User Requirements
SQL	Structured Query Language
SLIMS	State Land Integrated Management System
TLIMS	Tribal Land Integrated Management System

1. Executive summary

Project description

The objective of the Tribal Land Integrated Management System (TLIMS) study was to document the process, the steps and key features of land inventorying in Botswana's tribal (customary) land. At the same time, the program was evaluated using such criteria as pro poor, gender sensitiveness, and improved security of tenure, recording of a wide range of rights, sustainability and scalability.

The other study objective was to develop guidelines for implementing a land inventory based on the experience of designing and implementing TLIMS in Botswana. The report in particular highlights good practices of what worked and why it was successful, what did not work and why it did not succeed. A list of 'dos and don'ts' for a successful land inventory and land information management system is provided at the end of the guideline.

The research approach

The researcher visited a number of organizations, two main Land Boards and two sub Land Boards plus two government departments - the Department of Lands (DoL) and the Department of Surveys and Mapping. Meetings were also held with the consultantcy Geoflux who developed TLIMS and consultants that were involved in data capture, namely MNO Surveying Consultants and Geosolutions (see Appendix 2 for complete list of people and organizations consulted). The researcher also consulted widely with academia at the University of Botswan and several documents provided background to this study.

The researcher also attended a workshop on 16 May 2008 on Challenges and Opportunities for Land Administration in Botswana organized by the Ministry of Lands and Housing and met with different stakeholders from the various government departments, parastatals, representatives from Swedish SIDA, private sector, financial institutions, the Land Boards, and members of the academia. The use of new technology, computerized Land Information System (LIS) such as Cadastral Information System (CIS), TLIMS and State Land Integrated Management System (SLIMS) were identified as opportunities for land administration in Botswana. The issuing of a certificate of customary land grant was cited as the biggest innovation in Botswanan land administration history.

Main findings from the study

One of the key findings of the study is that Botswana's experience of a land inventory cannot be transferred to other jurisdictions without major modifications due to differences in political, economic, socio-cultural and institutional arrangements. However, other jurisdictions can learn

from the good practices adopted during TLIMS implementation as well as by avoiding some costly mistakes which Botswana made.

Based on Botswana's experience of TLIMS, guidelines for implementing a land inventory were developed. Similarly, another set of guidelines for implementing a land information management system (LIMS) were also developed. These were informed by good practices on land information systems from around the world was used.

The guidelines on LIMS highlight good practice examples from South Australia; the Canadian Provinces of New Brunswick, Prince Edward Island (PEI), British Columbia and Alberta in the 1970s up to the 1990s and the Swedish Land Data Bank. The two guidelines are expected to be of great value to decision-makers, researchers, donor agencies, and all others in the public and private sectors charged with developing or implementing national land policies and technocrats entrusted to develop either land inventories or land management information systems in various countries.

The report points out unique challenges which were encountered during TLIMS development and implementation as:

1. The data capture tool developed by the system developer, was too complicated to use as some Land Boards have developed their own systems to capture transactional (textual) data.

2. One of the major challenges has been absence of data, even for testing; hence dummy data was used to test the system during the pilot stage. However, data collection has been ongoing at various Land Boards and sub-Land Boards.

   Generally, for data that has been collected and converted so far, just above 10% of the datasets can be accurately linked, i.e. linking application to certificate/lease and to plot on site. This is partly attributed to unavailability of plot holders and tenants' absenteeism, undeveloped/abandoned plots, and non-registration of plots. A higher percentage of linkage has been achieved between applications and certificates.

3. TLIMS was designed to be a decentralized solution, with each Land Board and sub-Land Board having its own server, and with the DoL being a repository site. This was changed in 2005 because the setup was too costly to maintain. The DoL adopted a centralized cluster platform. This platform was also found to be difficult for the system developer to configure. The major constraint facing DoL is inadequate skilled personnel to meet this demand.

4. The IT infrastructure in Botswana is still not ready to support web-enabled Geographic Information System (GIS) applications in TLIMS. The exchange and dissemination of land administration information in digital systems is currently under developed. There are significant differences between the departments in respect to IT development, and capacity to provide or receive digital information from other organizations **is** inadequate. Many sub Land Boards are still not connected to the Government Data Network. Considering

the current state IT infrastructure in place, it would be difficult to replace the paper records completely. Computers and internet technology penetration is very limited in the villages and officials have indicated that this would necessitate the continued use of manual records.

5. Most LIS systems that are under development (e.g. TLIMS, SLIMS, CIS) within the Ministry of Land and Housing (MLH) are generally compliant with future demands on infrastructure requirements from a SDI architectural point of view (see Appendix 3 for details). However, there will be a need for further development of the current systems, especially of the interface of business/logic layers of the applications, in order to comply with international standards for future national SDI initiatives.
6. The Internet infrastructure must be improved in order to fulfil the system requirements on a national perspective. The ambition to develop Internet based systems for handling land information, especially if they should be GIS-enabled, is dependent on reliable and sufficient performance access (bandwidth) over Intranet/Internet.
7. User needs analysis seems to have been overlooked; only the main Land Boards have connection to the Government Data Network which has a very small bandwidth, making it difficult to transfer data over the network; most sub-land boards are not networked and have very few computers, two to three at most; in addition, most staff at the Land Boards lack basic computer skills and find the TLIMS data capture tools difficult to use.
8. There appears to be significant project management issues relating to the planning, implementation, system design and documentation of the roll-out of TLIMS. The general feeling among staff at the Land Boards is that TLIMS has been implemented in a rush. Depending on the officials spoken to in the Ministry of Lands and Housing, there appears to be either some guarded optimism or outright skepticism that the system would ever meet its goals and objectives.

This report considers both pro-poor and gender sensitive issues, as well as the ability to record a wide range of rights in assessing a land inventory system or land management information system. It also recognizes that land is a scarce resource that requires prudent management.

This therefore, calls upon the land sector to use whatever tools are available including the current technologies to better manage information about land to protect and secure the land rights and interests of the poor including women.

The report does not imply that land information can only be managed better using computer technology as a good paper based system can also be developed to achieve the same goals. However, where manual systems are to be developed due to limited resources, they should be organized in a manner that, when resources become available, it is easy to migrate to a computer-based system.

The report highlights the unique situation of Botswana in regard to the application of technology and computerized land inventory systems. Its large foreign currency reserves compared to most African countries makes it easier for them to acquire Western technologies. Even then, Botswana is still faced with immense challenges such as a lack of electricity in the rural areas, low bandwidth, and limited technology skill base and attitude barriers.

Conclusions and recommendations

Developing countries face immense challenges in land management and administration, and inefficient delivery of land information services. These countries face the daunting task of organizing land information in support of pro-poor, gender sensitive, sustainable and good governance in land administration. Low-cost approaches as evidenced in the Botswana TLIMS study is best undertaken with the use of digital technology.

The land administration bodies in Botswana have difficulty focusing on strategic land management issues when they must mainly deal with daily problems experienced in service delivery. However, with the development of TLIMS, we should be seeing more focus by the Land Boards in the development of strategic issues in pro-poor land management and administration.

In this study, the report makes several recommendations on possible ways forward in implementing a successful land inventory.

It points out the need to encourage plot owners to have IDs by making possession of an ID mandatory for accessing or performing any transaction; that Land Boards should start issuing unique plot numbers to all plots allocated; that all personnel should be allowed to complete their assigned tasks before being transferred and that plot owners should be encouraged to update their personal details such as address, telephone, email and surnames.

Plot mapping and numbering - an important stage in the land inventory process

©UN-HABITAT/B. Nkwae

The report suggests measures for dealing with institutional and capacity issues such as TLIMS should not preclude addressing land issues at a more fundamental level i.e. problems that related to policy and the legal framework; during TLIMS implementation, training was not given the emphasis it deserved and there is a need for a staged process of TLIMS development, a "one-step at a time" system development process that recognizes the importance of learning by doing and maintaining flexibility as opposed to the "big bang approach".

2. Land administration in Botswana

2.1 Brief background on the country

The Republic of Botswana has a total area of approximately 582,000 square kilometers and a population of 1.68 million (2001 census). The country is bounded by South Africa, Zimbabwe, Namibia, and Zambia.

About 47% of the population live in rural areas. Many of the urban dwellers also have land rights (residential, ploughing fields, and cattle posts/water rights) in the tribal areas. The agricultural rights are to supplement their income, mainly at subsistence level. Most people live in villages, towns and cities in the eastern part of the country, where soils are relatively fertile and have good potable water sources. Citizens of Botswana are Batswana (singular: Motswana), regardless of ethnicity.

In June 1964, Britain accepted proposals for democratic self-government in Botswana. The 1965 constitution led to the first general election and to independence on 30 September 1966.

Botswana is governed by a democratic multi-party parliamentary system. Executive power is exercised by the Cabinet. Legislative power is vested in the Parliament. The judiciary is independent of the executive and the legislature.

Botswana is geographically divided into 12 districts and eighty town councils, all governed by elected councils. Districts can have many villages, some as big as towns.

The economy, closely tied to South Africa's, is dominated by mining (especially diamonds), tourism and cattle industry. Since independence, Botswana has had one of the fastest growth rates in per capita income in the world. The country has transformed itself from one of the poorest countries in the world to a middle-income country with a per capita GDP of U$16,450 in 2007.

The government owns 51% of Debswana, the largest diamond mining company operating in Botswana and it generates about half of all government revenues.

Several international mining corporations have prospected in Botswana for diamonds, gold, uranium, copper, nickel, soda ash, and even oil and gas, many coming back with positive results. However, economic development spending was cut by 10% in 2002-2003 as a result of recurring budget deficits and rising expenditure on healthcare services. With its proven record of good economic governance, Botswana was ranked as Africa's least corrupt country by Transparency International in 2004 andahead of many European and Asian countries.

2.2 Botswana's system of land tenure

About 71% of the country is tribal land, followed by state land at 25% and freehold land at 4%. These three categories of land were inherited at independence from Britain in 1966.The systems of land tenure prevalent in Botswana are freehold, a relic of the country's colonial past; fixed period state grant derived from state land; customary tenure derived from tribal land and leasehold, which can be derived from freehold land, state land and tribal land.

State land includes land for state use such as cities and townships, national parks, game reserves and forest reserves. Up to 95% of land in cities and townships is state land. Individuals gain access to land through the instrument of fixed period state grant (FPSG), a form of a lease that is fully paid up front. FPSGs are transferable in the open market if the conditions for development are complied with.

The 1990 New Allocation Policy[1] stipulates the general terms and conditions of FPSGs as:

1. The allottee shall not sell the undeveloped plot without first offering it back to the State, which would only reimburse the purchaser 80% of the original purchase price.
2. The allottee shall erect on the plot a building(s) of a prescribed minimum cost within a period of two years.
3. State is entitled to repossess the plot if either of the first two conditions is breached.
4. The allottee or successor in title shall maintain the building(s) in good condition throughout the period of the grant, 50 years for a commercial plot and 99 years for a residential plot.
5. The allottee shall be responsible for on-plot connections to water mains, main sewerage and electricity in accordance with the approved standards.
6. The allottee shall be responsible for all rates, insurances, maintenance and utility expenses during the period of the grant.
7. The allottee shall comply with all statutory requirements concerning the use and development of the plotWhen FPSGs are transferred, the new owner serves out the balance of the term of the old tenant.

Freehold land gives perpetual ownership rights that are saleable and transferable without development conditions. However, the *Land Control Act* regulates the transfer to non-citizens. For the transfer of freehold land to be effected, title should have been registered under the *Deeds Registry Act.*

1 Based on the Ministry of Local Government and Lands (1990) Allocation of State Land: New Policy; and Allocation State Land: Notes for Applicants for Purchase of State Land in Urban Areas.

Customary tenure is the dominant tenure regime in Botswana. Some of its characteristics are:

- Every person at the age of majority (18) is entitled to be allocated land for residential, cultivation and grazing by virtue of being a citizen;
- Individuals have security of tenure as long as the land is used;
- Land rights are inheritable;
- Land rights cannot be sold or mortgaged.

For more details on customary tenure refer to Box 2.1.

Box 2.1 Botswana's customary land rights

The holders of customary rights for residential and ploughing purposes enjoy a variety of rights which are exclusive and inheritable and guaranteed by a customary land grant certificate. Those granted customary rights are entitled to a certificate of customary land grant. According to the Tribal Land Act, once these rights are acquired they cannot be cancelled without just cause.

(Adams *et al*, 1999)

2.2.1 Historical context of the Land Boards

Tribal land encompasses the vast majority of Botswana's land mass. Up to 1970, tribal land was vested in the chiefs of various tribes, to be held in trust for the members of that tribe. Land was allocated by the chiefs' representatives – the ward head and the sub ward heads – upon application by the tribesmen. Women were only allowed access to land through their male relatives. Membership in a given tribe ensured an individual's access to tribal land for his use. Land administration under the chiefs took the form of land allocation with limited traditional land use zoning and record keeping.

The 1968 *Tribal Land Act* transferred the authority of land administration to the Land Boards. The tribal land is allocated according to customary and common law procedures as stipulated in the Act (see Appendix 4 on land allocation procedures). Land Boards are 'body corporate' meaning that they are entitled to sue for damages or be sued. Land Boards are autonomous bodies that administer land in Botswana and are responsible for all matters related to the allocation of land in all tribal areas. In total, there are 12 main Land Boards and 42 subordinate Land Boards. The functional structure of the main Land Board is presented in Appendix 5.

Major challenges have arisen in the evolution of the Land Boards as land administration institutions; principally in the management of land records. The problem of inadequate land records has seriously undermined the Land Boards efforts towards achieving an effective and efficient land administration. Botswana has experimented with numerous land inventory projects as early as 1975 such as. the Barolong Farms Land Inventory Project of 1975 in southern Botswana. However, almost all the land inventory projects failed to achieve their intended results.

2.2.2 Composition of the Land Boards

The composition of the Land Boards has been criticized for not being sufficiently democratic or locally accountable (White, 1999). The election of board members is not carried out by secret ballot, but by a meeting of people actually present at the *kgotla*.

Box 2.2 Composition of the Land Boards

Originally, each Main Land Board had six members representing the District Council (Councillors), the Tribal Administration (Chief) and the Ministry of Local Government, Lands, and Housing. The composition of membership has varied over the years and the numbers have increased.

In 1989, both chiefs and councillors were removed from membership under an amendment to the Tribal Land Act in order to make the Boards have twelve members while Subordinate Land Boards have had ten. Five are democratically elected by the people at the Kgotla (traditional assembly or meeting place). Another five members are nominated by the Minister of Local Government, Lands and Housing. The members elect the chairperson amongst themselves on a yearly basis.

The two additional members on the Main Land Boards are ex officio members who represent the Minister of Commerce and Industry and the Minister of Agriculture. Their role is to advise Board members on matters related to their respective Ministries.

The Minister of Lands is responsible for the overall operation of the Boards, and is answerable to Parliament. As the Minister nominates five of the Board members, so can he dismiss them.

(from Mathuba, 1999)

During the meeting, ten candidates are selected. The Minister of Lands and Housing then appoints five from the ten candidates. Five further members are appointed by the Minister, and two members are appointed by the Minister of Agriculture and the Ministry of Commerce and Industry (see Box 2.2).

2.2.3 Structure and function of the Land Boards

The structure and functioning of the Land Boards has improved over recent years (see Box 2.3 below). The developments in information and communication technologies (ICT) and the setting up of technical units have greatly improved the quality of services and products offered by the Land Boards. The technical units are staffed with qualified professionals such as land surveyors, land records archivists and computer managers.

Box 2.3 Structure and function of the Land Boards (Mathuba, 1999)

The Land Boards were established in 1970 as local institutions, but governed by broader national land policies. There are 12 Main Land Boards and 37 (now 38) Subordinate Land Boards. The latter were created in 1973 to assist the Main Land Boards.

Land Boards are one of the four local government bodies in Botswana – the others being local Councils, the Tribal Administration and the District Administration. While the Land Boards have sole authority over land, they work closely with other local authorities and relevant departments. The Land Boards fall under the Ministry of Local Government (and have recently been relocated to the relevant Ministry of Lands and Housing), which controls and coordinates their activities and other parts of the local administration. The Ministry provides them with financial support, in the form of grants, and provides logistical and technical support.

With the aim of improving land administration, the Tribal Land Act of 1968 vested in the Land Boards all former powers of the chiefs in relation to land. The powers of the Main Land Boards include the following:

a) granting rights to use land;
b) cancellation of rights to use land, including grants made prior to the Tribal Land Act;
c) imposing restrictions on the use of tribal land;
d) authorizing any transfer and change of use of tribal land;
e) determining land use zones;
f) hearing appeals from Subordinate Land Boards, and
g) maintenance of land records.

The Subordinate Land Boards are empowered under customary law to hear, grant or refuse applications to use land for:

a) building residences or extensions thereto;
b) ploughing fields and extensions thereto;
c) grazing cattle or other stock;
d) communal uses in the village;
e) receiving and making recommendations to the Main Land Board in respect to applications for water points and common law leases;
f) hearing and adjudicating on land disputes.

2.2.4 Customary land tenure reforms

Botswana has experimented with customary land tenure reforms since independence in 1966 (see Box 2.4). Key changes have been spear-headed into customary tenure such as:

- The replacement of chiefs by the Land Boards in land allocation and administration;
- The replacement of the word 'tribesmen' by 'citizen' in the Tribal Land Act which meant nobody could be denied access to land based on tribal affiliation; and
- The introduction of common law leases in tribal land to facilitate access to bank loans and mortgages

2.3 Tribal Land Integrated Management System

It has been recognized that government agencies including the Land Boards cannot fulfill their respective roles of effective land management and administration without use of good information systems (Ministry of Local Government, 2001).

To that end, in 1996 an Information Technology Strategy was developed and agreed within the Ministry of Local Government (the Land Boards' parent Ministry then) and funding was approved for its implementation. A Local Authorities Steering Committee was later set up to spearhead the proposed Local Authorities Computerization Project and to establish priorities for the implementation of the Ministry of Local Government's IT strategy.

The Steering Committee recommended three specific application areas for computerization:

- Financial management
- Human resources management, and
- Land management.

The Ministry's computerization project was part of an initiative aimed at decentralizing service delivery from central government to local government. This decentralization strategy by the government included revenue generation, accounting procedures, budgeting procedures, personnel administration, and land administration.

Financial management and human resources management were the first to be implemented in 2001. Land management was the last to be implemented in 2005 due to its complexity. Information systems that tend to be easily implementable are those that deal with routine administrative and management tasks such as accounting and payroll. The Steering Committee decided that any proposed land management system should interface with the already existing systems at the local kevel.

Box 2.4 Customary Land Tenure Reforms

The Tribal Land Act of 1968 provided for the establishment of representative Land Boards and transferred all the land-related powers of chiefs to these. The functions of the boards include the allocation of land, imposing restrictions on the use of land, authorising change of use and transfer and the resolution of land disputes.

Tribal land belongs to the people. Individuals are granted rights to use some parts of the land. It may be held by the Land Boards, or by individuals or groups as customary grants, or under leasehold. The land may also be allocated to the state for public purposes.

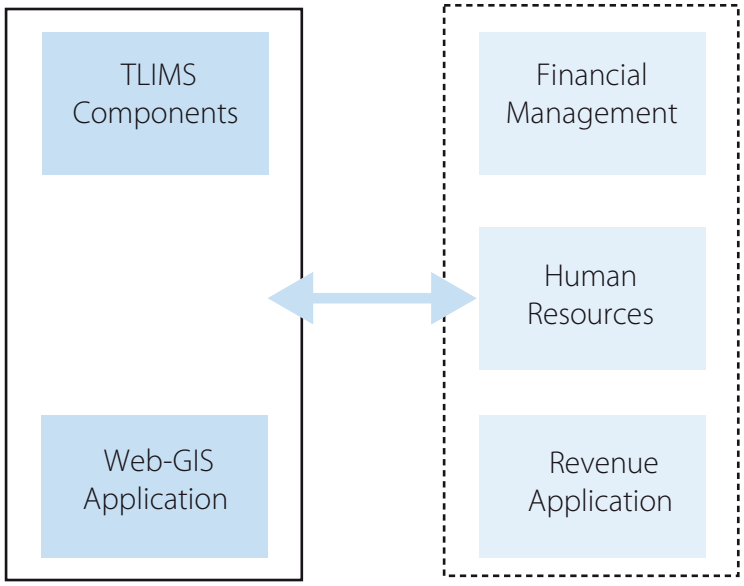
Although land holders do not 'own' land, they have exclusive rights to their holdings which can be fenced to exclude others. Grazing land and land not yet allocated are used communally. The Land Boards grant land rights under both customary and common law

Key changes which have been introduced since 1970 include the exclusion of other people's animals after harvesting and the fencing of arable lands, relaxation of the restrictions on land allocation to allow independent allocations of land to all adults, the replacement of the word 'tribesmen' with 'citizen' in the Act, the charging of a price (agreed between seller and buyer) for transfer of developed land, the introduction of common law residential leases for citizens, foreign investors (50 years), commercial grazing, and for commercial arable farming (15+15 years).

(Adams *et al.* , 1999)

A Land Management Reference Group was then established to agree on the requirements for computerizing land allocation records and procedures and to oversee the implementation of the proposed solution in all the Land Boards. The proposed solution was referred to as the Tribal Land Integrated Management System (TLIMS) for the Land Boards of Botswana (see Figure 2.1).

Figure 2.1 Overview of the proposed integrated business solution



According to the TLIMS Project Manager, the system was developed at a cost of five million Botswana *pula*, and from 2005 the Department of Lands (DoL) has been allocating ten million Botswana *pula* every financial year from 2005/06, 2006/07 and 2007/08 for data capture, system maintenance, software licensing and procurement (Personal communication, 8 December 2008).

2.3.1 The purpose and objectives of TLIMS

The purpose of TLIMS is to computerize all the land management functions in the Land Boards. The objectives of TLIMS are to:[2]

- Assist the Land Boards in the equitable distribution of land.
- Assist the Land Boards to manage efficiently land related data.
- Capture, convert, process, analyze, evaluate, verify, validate, update and provide easy access to spatial data to all Land Boards such as information on allocations, plot applications and minutes of Land Board meetings.
- Generate meaningful reports to help Land Boards in decision making processes.
- Interface TLIMS database with government databases such Civil registration, State Land Information Management Systems, Birth

2 Extracted from Invitation to Tender: Software Solution for Tribal Land Integrated Management System for the Land Boards of Botswana. Gaborone: Ministry of Local Government, 2001.

and Deaths, Aquilium billing, Botswana Housing Corporation, Deeds Registry, Lands Tribunal, Department of Surveys and Mapping, Department of Town and Regional Planning, Department of Geological Surveys, Department of Water Affairs, Ministry of Agriculture, High Court and Court of Appeal.

- Allow secure access to the Land Board users and other stakeholders.
- Give public access to download the necessary information and application forms from the web.

The 2001 Statement of User Requirements (SOUR) by Local Authorities Information Technology Support Unit (LAITSU) and Price Waterhouse identified the Land Board functions and processes as land use planning, process applications, plot allocations, issuance of certificates, change of land use, transfer of land title, plot registration in the Land Board Registries, managing lease records, land sub-divisions, sub-leasing, development monitoring and repossessions, land acquisition for public purposes and compensation, dispute resolution and prevention.

These functions and processes of Land Board and sub-land boards require integrating with other business applications such as payroll and billing. In addition, interfaces would be required with the following key stakeholders: Department of Lands (DoL), Department of Surveys and Mapping (DSM), Town and Country Planning Board (TCPB), Deeds Registry, Land Tribunals, High Court and the Court of Appeal.

The functions and processes were later validated by a Requirements and Analysis Team, comprised of senior land staff from Kweneng, Kgatleng, Malete and Ngwato Land Boards. According to LAITSU and Price Waterhouse, the sample (from the four Boards) was considered representative of all the Land Boards in Botswana in terms of size (area) and population.

The team identified the need to reform the routine administration and land management functions, particularly the allocation and administration of land tenure purposes in the Land Boards. The use of manual records for operational purposes in the Land Boards had proved costly, inefficient and inappropriate for the land information needs of the Land Boards and society at large.

A situational analysis undertaken for the TLIMS pilot sites identified that "there is poor maintenance of land allocation records and that currently the Tribal Land Authorities of Botswana are not able to effectively manage and account [all] tribal land" (Republic of Botswana, 2001). This is not surprising given the fact that in almost all the Land Boards there is:

- Lack of easily accessible land information.
- Poor maintenance of land records making information retrieval difficult.
- Limited base mapping coverage.

Box 2.5 Opportunities and benefits for computerization (Republic of Botswana, 2001):

- Improved management of Botswana's land resources
- Improved reliability of land information
- Improved record keeping Improved monitoring of land use
- Improved land disputes resolution and prevention
- Improved service delivery
- Increased collection of lease payments
- Reduced costs in land allocation
- Reduced lease arrears

- No unique parcel identifiers making linking or cross-referencing of attribute and spatial data extremely difficult. For instance, there is difficulty in matching land certificates, leases, application records and files with their spatial counterparts because there are no reference or serial numbers on the certificates.
- Incomplete or unavailable data or information especially for plots allocated by chiefs.
- Time consuming process of searching through applications and records.
- Numerous land queries as a result of inaccurate information on land allocations.

This scenario makes it almost impossible to trace the history of plot transfers or ownership history. The above issues presented themselves as an easy sell for the Ministry's computerization project.

Computerization of land records has many benefits

3. Land issues addressed by TLIMS

3.1 TLIMS as tool for good governance

The desirable features of good governance have been described in the literature (see for example FAO, 2007 p.9) and may include:

- Efficient, effective and competent: formulates policy and implements it efficiently by delivering services of a high quality.
- Responsive: delivers the services that citizens want and need.
- Legitimate: those in power have earned the right to govern, have been endorsed by society through democratic processes and can be replaced if the citizens are dissatisfied with them.
- Transparent: open
- Consistent, predictable and impartial: outcomes from the governance processes are predictable and in accordance with published laws, rules and regulations. There is legal redress and enforcement of law by an impartial judiciary in the event of inconsistency.
- Accountable: demonstrates stewardship by responding to questioning, explaining its actions and providing evidence of how it functions.
- Equitable: deals fairly and impartially with individuals and groups providing non-discriminatory access to records and services.
- Sustainable: balances the economic, social, and environmental needs of present and future generations.
- Locally responsive: locates service provision at the closest level to citizens, consistent with efficient and cost-effective delivery.
- Participatory: enables citizens to participate fully in governance through consensus-building and engages with civil society without curbs on the media or on freedom of expression or association.
- Provision of security and stability: provides security of livelihoods, freedom from crime and intolerance, security from human conflicts and natural disasters and security of tenure.
- Dedicated to integrity: officials perform their duties diligently and objectively without seeking bribes and give independent advice and judgments, and the government respects confidentiality. There is a clear separation between the private interests of officials and politicians and the affairs of government

There is no consensus of what constitutes good governance, but the above principles can act as a guide towards achieving good governance in land administration.

The role of an integrated, accurate and complete land information system in fostering good governance has received attention during the past two decades (Palmer and McLaughlin, 1996). Efficient and effective

management of tribal land rights and the provision of accurate, precise, complete, easily accessible and appropriate information about land are important elements of good governance. They create the basis for sound decision-making by land administrators and policymakers, and help to streamline the land administration processes, which indirectly contributes towards poverty reduction and sustainable economic growth.

The successful creation of an integrated land records system is one of the key challenges of governance facing land allocation today. The Report of the Judicial Commission of Enquiry into State Land Allocations in Gaborone of 2004 stated that:

> *"Land allocation is a very sensitive and emotive issue as it deals with a finite resource which is close to the hearts of the majority of people; as a place one can call home and from which one can make a living. It therefore needs to be handled in an open, fair and equitable manner, and requires structures which can engender confidence not only in the eyes of those who seek it, but in the public eye. ...The need to enhance transparency is necessary so that people involved in seeking allocation and planning permission and the public at large should have confidence in the fairness of the structures" (p.150-151).*

The Presidential Commission of Land Problems around the Periurban Villages of 1992 in Botswana identified a number of governance related problems such as:

- Illicit "sale" of tribal land;
- Self-allocation of land or squatting leading to a proliferation of informal settlements;
- Unlawful land sub-divisions and change of land use;
- Haphazard and unregulated land development giving rise to structures in defiance of the approved land use plans;
- Land speculation;
- Misuse and poor land management
- Claims to unused or undeveloped land

TLIMS would assist the Land Boards in curbing illegal land transactions, land speculation by identifying speculators, enforcing development compliance, resolving and preventing land disputes, and identifying undeveloped residential land and idle or vacant land.

The Report of the Second Presidential Commission on the Structure of the Local Government in Botswana of 2001 highlights a number governance issues facing the tribal Land Boards as:

- Lack of transparency and consistency in the Land Board operations and unfair practices witregard to compensation for land acquired for reallocation to the public; and
- Corrupt and non-transparent procedures in the election of the Board members.

The Commission further continues:

> *"Batswana, who cannot afford to pay for land and who are subjected to Land Board practices that are not sensitive to home ownership for citizens, may be denied the right to land. This problem is* ***compounded by poor recordkeeping*** *and the lack of data networks among Land Boards since they are not able to check any records to decide whether applicants have plots elsewhere or not."*

3.2 Allocating and monitoring land use rights

The challenges of good governance especially around peri-urban areas are exacerbated by the inadequate land record keeping as stated in the Report on the Review of the Tribal Land Act, Land Policies and Related Issues of 1989 (see Box 3.1).

The Report of the Second Presidential Commission on the Structure of the Local Government in Botswana of 2001 further stated:

> *"Submissions were received from members of the public about the deplorable state of record keeping in the Land Boards. It was submitted that land inventories and the keeping of minutes by the Land Board was not up to the required standard. It was also submitted that in order to manage land in contemporary society, adequate information was required on the location, size and use of land to be managed. That maps and associated information (ownership, use, servitudes to which the land is subject) is increasingly used in computer format thus facilitating more informed decisionmaking in the Land Boards. The Commission concluded that Land Boards should be encouraged to* ***develop and train personnel in record keeping and computerization of records.***"

As part of the Commission recommendations, "all Land Boards should as a matter of urgency establish comprehensive databases on land ownership and establish countrywide networking to curb the problem of land speculation." Other record keeping problems raised included criticism of the land overseers or ward heads who sometimes sign application forms without verifying the situation about land occupation or visiting the site. At the same time MFDP (2001, p.106) came up with a similar recommendation that "Land Boards establish comprehensive land and borehole records that will be aggregated to a national land record system for tribal land and borehole rights." They argued that this would "facilitate screening of new applications, and provide insight into the distribution of tribal land and borehole rights. [A]nd this will facilitate coordination and discourage abuse" (p.106).

Box 3.1 Record keeping in Land Board offices

There is a serious problem with record keeping in Land Boards. In some cases records are not available at all while in other cases available records are inadequate and unreliable. Proper land records are essential for efficient administration and management of land; they are necessary for land use purposes and they serve both administrators and the public with a source of reliable and easily accessible information. Land records are essential too for the implementation of some of the recommendations in this Report. Improved record keeping system will also reduce disputes which will in turn reduce friction among people.

Land Boards do not have easily accessible information showing what piece of land has been allocated to whom and for what purpose. They do not know how much of their land has been allocated and how much is still available for allocation. Of the allocated land, they do not know how much is being utilized and how much is idling. As a result of all this, both custodians of land and government cannot get an overview of the land situation for planning purposes.

Again, the lack of local inventory maps makes it necessary for the Land Boards to visit every plot identified and applied for, which is both very expensive and time consuming. This is a very unhealthy situation for Land Boards to operate in. [my emphasis]

(MLG&L 1989, p.71)

TLIMS is expected to solve the following problems, if and when the system is fully implemented:

- Multiple allocation which occurs due to lack of information or proper record keeping or not being able to check which individuals have already been allocated land;
- Overlapping plots or allocation of many plots to one person as a result of lack of records that show who owns what and where; applicants take advantage and apply for several plots at various places with an intention to speculate;
- Lack of land information to support land use planning and decision making;
- With easy access and proper use of information on the computer, there will be no need for costly site visits during land allocation;
- Land Boards will curb misuse and poor management of grazing land by ensuring that land will be managed effectively with adequate land records;
- Slow land delivery process and long transaction time in the cases when land rights are transferred;
- As individuals are free to be allocated land anywhere in the country, there is a change in emphasis from the Land Board being a locally based structure to a national body. This expanded role and responsibility of Land Boards calls for a new integrated approach of land allocation and management. "It is of great importance that each Land Board keeps proper land records and that the records are aggregated into a national land record system. In this way, multiple land holdings spread over the country can be discovered" (MFDP, 2001, p.103).

From the field visits, the most common complaints from the public are that:

- Plot allocation takes too long
- The allocation process is complicated, and
- The process of land allocation is not transparent

Lack of information, pressure from those in power, fronting[3], etc., results in a situation where some opportunistic people have many plots of freely (or inexpensively) allocated tribal or state land, while some have none and are kept in waiting lists for decades.

The population growth and urbanization has put great pressure on customary land close to urban centres. While land in peri-urban

3 Fronting or 'dummying' has several definitions but it can be used in land allocations to refer to the application for a plot by a person who has neither the intention nor the resources to develop/buy the piece of real estate, but is fronting for somebody who does not qualify due to land allocation policy restrictions but has the capital to purchase the plot. The practice is detrimental to access to land by women and the poor.

4 "Squatters will not be pardoned – Khama", Botswana Daily News, Monday March 2, 2009 No, 40.

5 Based on the 2001 Population and Housing Census of Towns, Villages and Associated Localities. Gaborone: Government Printer.

areas is getting scarce, most citizens seem to think that they have the right to a "free" plot on customary land. As an example, the Kweneng Land Board has 200,000 applications for land in their waiting list. About 137,000 of these are for the Mogoditshane sub-Land Board that borders Gaborone City.[4] The population of Mogoditshane and associated villages according to the 2001 census was about 40,753.[5] Since the applications are greater than the adult population of Mogoditshane, it is likely that a large part of the applications are from Gaborone, a nearby city.

Poor record keeping is prevalent at Land Boards in general. Rights are issued, but records are not kept in good order. In the process of data capturing for the TLIMS, the contractors were only able to reconcile about 10% of all records (application, certificate and location on the ground) of the land parcels that had been allocated. Registers of the type that Cadastre and Land Register organizations normally keep have not been in use, at least in the Land Boards that were visited. A land register book would have a page per plot, stating date of allocation, name(s) of right holder(s), size of plot, location or reference to map.

There is poor monitoring of development covenants for both tribal and state land. It is government policy that if land is not used according to terms and conditions of the grant, it should be repossessed and re-allocated.[6] This is a delicate task compounded by lack of proper records, cumbersome and expensive repossession procedures.

> *These programmes were justified on the basis of three major goals: the delineation of field boundaries; to identify land which has been allocated and which has not been allocated; and of that allocated, to determine which land is being used and which land is not being used and could be reallocated.*
>
> (Marquardt, 1980, p.37)

Building IT capacity is vital for any land information management system.
©UN-HABITAT/B. Nkwae

6 See for example, Ministry of Local Government and Lands (1990) New Land Allocation Policy

4. Resource requirements and capacity building for TLIMS

Past land inventory projects were never successfully implemented because the technical, human resources and organizational issues were not adequately addressed. As stated by the 1995 Final Report on Land Inventory for Tribal Areas of Botswana,

> *"Problems of implementation were encountered as a result of lack of appropriate staff in the Land Boards at the time or in some cases where the pilot schemes were seen as to be too costly. There were also problems of inadequate consultation between and among relevant institutions resulting in apparent duplication of effort. For instance, in spite of certain Land Boards consulting with each other, each Land Board virtually developed its own land management system." (Ministry of Local Government Lands & Housing, 1995, p.2)*

The above statement highlights the importance of co-ordination for successful implementation and maintenance of any land inventory system. The same issues which beset the pilot land inventory projects were also inherent during the implementation of TLIMS.

In August 2008, there were only two staff members at the Department of Lands, the project coordinator and the system analyst, giving TLIMS support to all 12 Main Land Boards and 42 subordinate Land Boards.

For TLIMS to run smoothly, the TLIMS Project Manager suggested that it would require more staff such as one Project Coordinator, a GIS system manager, a database manager, two system analysts/ programmers and several data entry personnel/clerks. The Land Board surveyors at Tlokweng Main Land Board and Mochudi Sub-Land Board decried the TLIMS staffing situation, noting that the technological skills are low especially in GIS and database management systems.

4.1 TLIMS development

TLIMS system was developed by a consortium composed of Geoflux, RPC Data, and GIMMS/FFM at a cost of Pula 5 million. The system development started in mid 2002 and was completed towards the end of 2004 (see Table 4.1). TLIMS was initially developed on a client server platform as distributed system (cost of server was over P2 million). The original plan was to centralize TLIMS with a server based at the Department of Lands.

Each Land Board unit consists of the main Land Board (MLB) and subordinate land boards (SLB) connecting to the servers at the MLB over the Wide Area Network (WAN) except those without SLB. Essentially there should be no difference between users at the MLB and the SLB.

Table 4.1 Time-line for the development of TLIMS

1996 - 1999	Adoption of an Information Technology Strategy (ITS) by Local Authorities in 1996; followed by Feasibility Study and the Requirements Analysis and Definition
December 1999	Adoption of Recommendations by the Land Management Reference Group
2000	TLIMS Statement of User Requirements Study by LAITSU and Price Waterhouse & Coopers
2001	TLIMS Invitation to Tender Document Released
2002 - 2004	TLIMS System Development & Testing
2005	TLIMS pilot sites at Serowe & Palapye by MNO Surveying Consultants followed by TLIMS roll-out to other Land Boards since 2006

TLIMS provides for the required computerized processes for the following business functions: land use planning, change of land use, process applications, plot allocations, plot transfers, plot sub-divisions, plot registration, plot transfers, consolidations, sub-leasing/sub-letting, development compliance and control, acquisition and compensation, adjudication of disputes and Land Board revenue.

The processes consists of data capture including validations, processing functions, reports generation, performing queries, external interfaces and GIS based spatial queries and analysis. All Land Board decision making is done at Board Meetings and thus there is a common overall process flow for many types of applications. TLIMS operational modules were created based on common flow of the Land Board operations.

The Land Boards will log on remotely through the Internet. The system was developed using Microsoft SQL 2000 as the back end and visual basic as the front end. The client accesses TLIMS using Microsoft Internet Explorer. To guard against the possibility of system failure, there is a move towards server cluster architecture which offers a zero failure environment for applications and services.

Tembo and Simela (2004) have described the implementation of TLIMS as a “big bang” as opposed to an incremental approach. The Ministry of Lands and Housing wants to cover the entire country within the shortest possible time. Even before the two pilots were completed, evaluated and tested, the TLIMS project was rolled out to the entire country. A total of 10 out of 12 main Land Boards and 8 out of 42 sub Land Boards have so far been completed. What would happen if a technical glitch or an oversight is spotted later on during the implementation phase?

During the conceptualization stage of TLIMS system, there was an assumption that data for TLIMS would be readily available. Consultants would collect that data which is missing or unavailable. This had a serious impact on budgeting. Survey companies and IT consultants were engaged by the Department of Lands to collect spatial and attribute data to populate the TLIMS database.

4.1.1 TLIMS application design and development

After all the data has been captured it is fed into the main TLIMS applications. In order to have an appreciation of the TLIMS applications, the Land Board functions are presented in Appendix 4. Considerations in designing and developing the TLIMS applications were:

- To integrate the functions of the technical, accounts, supplies and the administration sections;
- Be user friendlyAbility to automatically link spatial data and its transactional counterpart by matching common fields such as names, location and land use;
- Ability to automatically link documents to their applications by matching common attributes;
- Have access levels that tend to restrict certain individuals/persons on editing functions for maintaining data integrity and restrict unauthorized access;
- Have a set or system of validation rules that restrict the entry of certain data such as if a national id is less than 9 digits or does not have a 1 or 2 as a middle number then the system should reject such data. This ensures data entry accuracy; and
- To interface with the Botswana Land Information System for updating of national id numbers

4.1.2 TLIMS application modules

The TLIMS is divided into the following operational modules, is designed as a web-based application and is centralized at MLH. The access will be via the Internet Explorer browser and the reports will be in PDF format. All the TLIMS modules are yet to be fully tested. The following description is from the TLIMS system documentation and describes the different modules of the application.

The Planning desk: This function is used by the Land Board to effectively use and manage land. The process involves queries and map analysis using the planning desk function of the TLIMS application.

Front Desk: Land Boards interact with the community around them for a variety of reasons. Among these are the correspondence register and application enquiries.

Generally these are captured at the data collection exercise as correspondences. To be effective this application should:

- Make application forms available online and allow submission over the Internet
- Allow tracking of application online without necessarily going directly to the Land Board

- Enable querying by parcel identifier, application number, first name, surname, Omang (id), address and geographical area.

Application desk: This is a desk is for all applications pertaining to land and the rights associated with it. Examples of these are:

- Customary and common law applications
- Applications from Ministries and other government departments
- Change of land use
- Title transfers
- Conversions customary rights to common law leases

To be effective, this functionality should:

- Be able to monitor outstanding applicants. Preferably a report should be issued on a quarterly basis listing all the outstanding applicants.
- Be able to track multiple applicants. Ideally the system should prompt the data capturer at the instance of entry that the entry is a duplicate.
- Be able to list on a quarterly basis a list of successful applicants so as to monitor the Land Board's performance

Processing desk: This application is one which mainly deals with land board meetings and schedules. This involves vetting of the applications to ensure that they meet the necessary requirements for further processing of plot allocations and scheduling of board meetings. This application should:

- Have a mechanism of reminding the land board on all outstanding matters and action items to be followed up.
- Where allocations are made in meetings, the system should not accept an allocation without a plot number and must reject duplicate plot numbers in the same locality.

Investigation desk: This application assists Land Boards to make follow-ups on development control and compliance, inspection notices, investigation reports, rectification notices, repossession notices, issuing of compliance certificates, acquisition notifications, assessment reports, compensation offers and acceptance, and compensation payments. The system should:

- Update the Land Board on all outstanding matters.
- Geographically display the plots where plot holders are not in compliance and so on.

Revenue Desk: This is the source of the Land Board revenue. The desk calculates and updates lease rentals and interfaces with the accounting software. The revenue desk should:

- Be integrated to all the desks for the sake of revenue generation. The Land Board gets revenue mostly through leases, hence it is essential that the revenue desk have a facility of geographically identifying all leased properties. A follow up can then be done on all properties with outstanding lease amounts.
- Due to the increase in costs the revenue desk should have a mechanism of automatically adjusting lease amounts into its own database.

Report Desk: The system records and generates reports for the Land Board such as correspondence letters, schedules and notices, leases and certificates and management information system reports. This application should:

- Be interfaced with all the desks so that all the major issues are documented.
- Be able to produce charts and pictorial graphs as a means of displaying statistical information.
- Be geographically capable of displaying plots with different status.

This is generally a desk where the system administrators set up the business rules for TLIMS system. To avoid tempering with information the system should have different access levels to different individuals. Table 4.1 gives a summary of those functionalities.

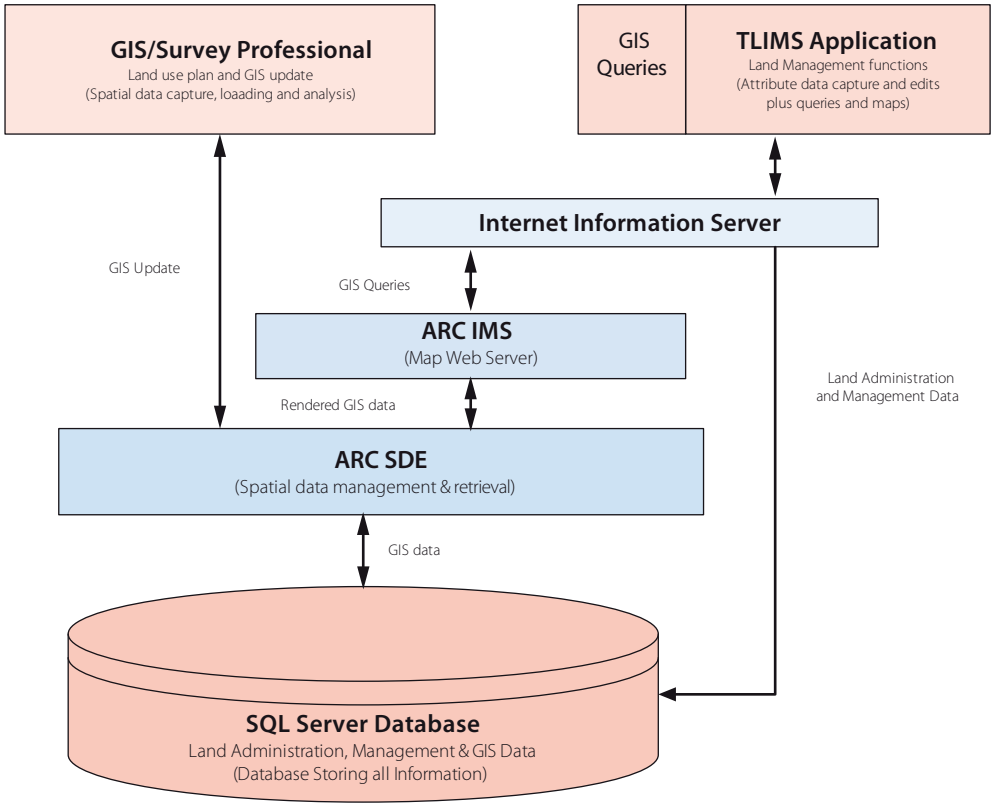
Table 4.2 TLIMS functionalities

TLIMS Requirements Description	Dept of Lands	Main Land Board	Sub Land Board
1. Planning Desk			
Land use planning		□	□
2. Front Desk			
Correspondence register		□	□
3. Application Desk			
Application entry for new allocations for:	□	□	□
a. Plots		□	□
b. Water points		□	□
c. Surface rights		□	□
4. Application for modifications to land rights , i. e :			
Title Transfers		□	□
Change in Land Use		□	
Conversions to common Law		□	
Sub-Divisions & Sub-Leasing		□	□
Plot Consolidation, Extensions, Registrations & Reversions		□	□
Renewal of lease		□	
5. Processing Desk			
Vetting of Applications.		□	□
Plot Allocation		□	
Board meetings: Scheduling, Production of minutes & action sheets, & follow up Action Items		□	□
6. Investigation Desk			
Inspection Notices & Investigation Reports		□	□
Rectification/Warning Notices		□	□
Repossession Notification		□	□
Compliance Certificates		□	
Acquisition Notification		□	
Assessment Reports		□	
Compensation Offer and acceptance		□	
Compensation Payments		□	
7. Revenue desk			
Calculation of Lease Rentals	□		
Billing Through Aquilium system	□		
8. Report Desk			
Correspondence Letters			
Schedules and Notices			
Leases/Certificates		□	Certificates only
Management Information Systems Report	□	□	□
9. Set Up Desk			
Reference Items & System Administration options		□	□

4.1.3 Global architecture

Figure 4.1 shows the implementation architecture for the TLIMS system. TLIMS was designed to be a decentralized solution, with each Land Board and sub Land Board having its own server, and DoL being a repository site.[7]

Figure 4.1 Architecture of TLIMS (from the system documentation by Geoflux)



At predetermined intervals agreed between the MLB and the DoL, system administrators from the Land Boards will replicate their data (with the necessary permission) into the Central Repository. All other TLIMS users will have read-only access to the Central Repository.

This design was, however, abandoned in 2005 as the set up was found to be too costly to maintain. The DoL then adopted a centralized cluster platform. This platform was difficult for the system developer to configure.

Realizing this problem, DoL reverted to centralized non-cluster environment in 2008, which has now been successfully configured and is being implemented. The DoL is responsible for implementation, support and maintenance of the system. The major constraint is inadequate and skilled personnel to meet this demand.

7 Ministry of Local Government, Invitation to Tender: Software Solution for Tribal Land Integrated Management System for the Land Boards of Botswana, April 2001.

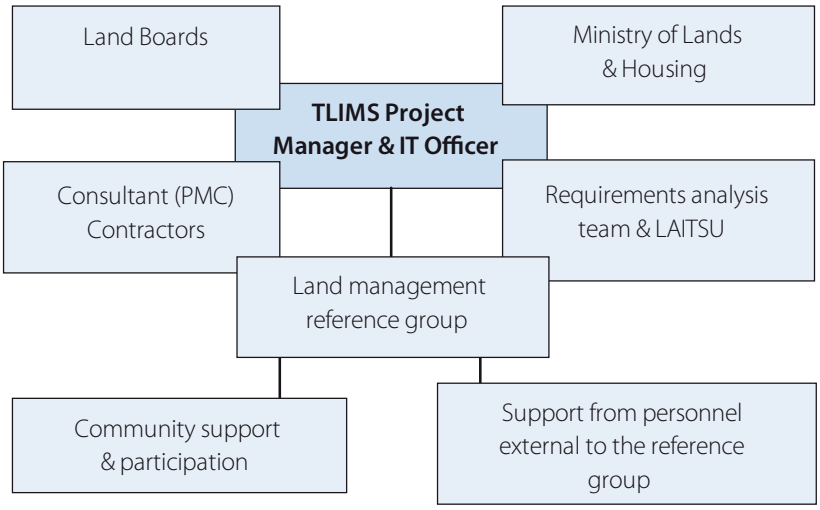
4.1.4 TLIMS administrative arrangements

The administrative arrangements of TLIMS are shown in Figure 4.2. The TLIMS operational tasks are mainly performed by two officers at the Department of Lands; the TLIMS Project Manager who is assisted by an IT officer.

The tasks performed by the Project Manager include coordinating meetings between the consultants and representatives of the Ministry of Lands and Housing and the Land Boards; ensuring consistency in data capture, conversion and input into the TLIMS database and providing support for the Land Boards during TLIMS implementation.

The Land Management Reference Group consists of key stakeholders from the Department of Lands, Department of Information Technology, the Land Boards and the Department of Surveys of Mapping.

Figure 4.2 Administrative arrangements of TLIMS



4.2 Field procedures at the village level

Step 1: Before TLIMS project can start, a task force must be formed which includes representatives from the Department of Lands, the Land Board of that area and members of the consultant team that has been awarded the project.

This task force first consults the village chief and chairperson of the Village Development Committee to inform them that the government is in the process of collecting data about plots in their respective areas, and asks them to call a *kgotla*[8] meeting to brief the community about the project. During the *kgotla* meeting the community is asked to cooperate with people who will be visiting their plots to collect information, and the project's importance and benefits are explained.

Step 2: After the *kgotla* meeting, the consultant that has been awarded the project employs locals (village residents) who have certain

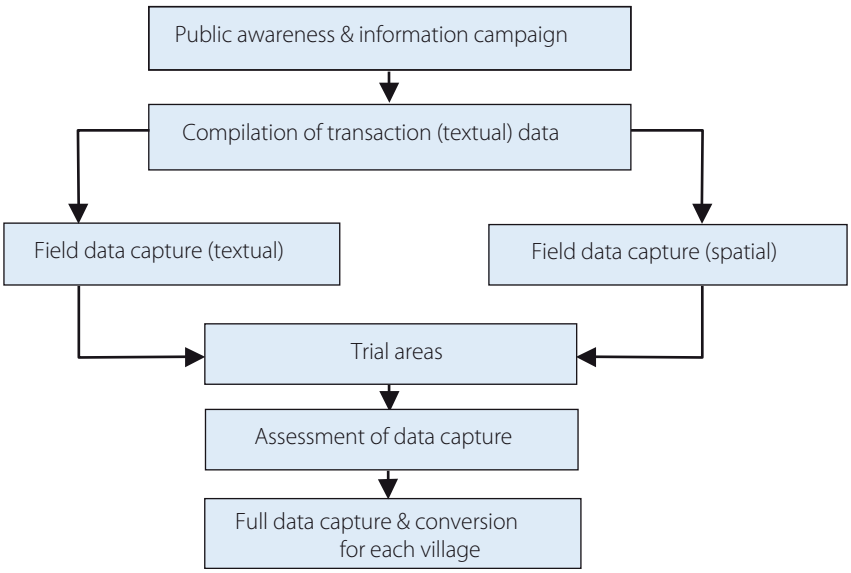
8 Traditional or tribal meeting place usually located at the chief's residence where issues affecting the tribe or community are raised, probed and deliberated upon; it is also used for dispensing justice.

qualifications (usually a high school certificate) and divides them into two groups. One group is trained on how to capture information from Land Board files (mainly textual data) into the TLIMS system and the other group is trained on how to collect information from plots owners.[9] The group designated to collect plot information is trained on how they should handle themselves and how they should ask questions especially sensitive questions like plot owner's marital status. In general they are advised to handle themselves in a manner that is culturally acceptable while talking to the community members.

Upon completion of classroom training, the groups that will be moving from plot to plot collecting information are taken to the field for final training such as to demonstrate practically that they fully understand their roles and responsibilities and that they must be accountable for their actions all times.

Step 3: After training, data collectors are now ready to start work fully equipped and they are checked on a regular basis to ensure that they fulfill the quality requirements of the project. Figure 4.3 summarizes the data capture process.

Figure 4.3 Data capture process



4.2.1 Plot inventorying procedures

Instructions to data collectors (textual data only[10]

Data collectors (DCs) were given some precautions before they went to the field. Such precautionary measures included:

- Ensuring that the DCs are familiar with the areas that they have been assigned to.

9 Such information includes owner name, national ID, birth date, gender, marital status, land use, development status, plot registration, name on certificate, plot size, title type, allocating body, allocation date, previous owner.

10 Transactional (textual) data and spatial data were captured separately.

- Setting targets for DCs, which are measurable, achievable and agreeable with DCs on the finishing dates and milestones.
- Giving DCs adequate training on how the job is to be done, e.g. how to read maps, how to fill the forms.
- Ensuring that the DCs demonstrate practically that they fully understand their roles and responsibilities and must be accountable to the actions at all times.
- Allocating enough resources for them such as clipboards, field forms data or capturing forms, bags to protect these items from bad weather.
- Making sure the DCs understand the quality requirements of the TLIMS project and they must work towards fulfilling those requirements.
- Ensuring that they know how to ask questions in a culturally appropriate manner.
- Giving DCs IDs and introductory letters so that they are easily identifiable by the community. Where possible, t-shirts specially designed for the project were provided to the DCs for ease of identification.
- Ensuring that DCs are aware of safety precautions to be observed.

Fieldwork: mapping property boundaries (spatial data)

Before plot inventory can take place, public consultation must be done. In case of field mapping of property boundaries the following procedures should be followed:

- Make sure the maps are current to avoid the challenges of doing many updates
- The current map of the area must be sub-divided per number of Data collectors (DCs). The subdivision must be guided by the topographic features like rivers, roads, and footpaths, which the DCs must clearly understand to avoid duplication of effort in data collection.
- Label each subdivision by DC's name or national identity number

Fieldwork: questionnaire surveys

- Give the DCs a checklist[11] of all the things they need in order to complete their work, so they can check that they have everything they need before they go to the field.
- Assess all the possible risks involved in their work and have mitigations for those risks such as plot access issues, distances to be covered, weather, safety, hostile or unfriendly plot owners.
- DCs must ask questions and fill the forms as they have been taught.

11 The checklist included clipboards, maps, data capturing forms, field letter, field letter registers, pens, sunhat, and protective bags.

- Having filled the forms, the DCs must ensure that all plot owner's belongings are returned to the owner including national identity card.
- Having filled the forms, the DCs must ensure that they obtained all plot and ownership details they need to capture; otherwise they must arrange a revisit.
- At the end of the fieldwork, the DCs must be courteous and thank the plot owners for their valuable time and cooperation.
- Special situations or circumstances concerning the plot must be captured on the comments sections

Unavailable plot owners

Some people may not be home at the time of the data collection exercise. This could happen because some people are working far away from their home villages or may be living abroad. When plot owners are unavailable, the data collectors must:

- Ask neighbours about the plot owner's whereabouts and arrange for an appointment.
- If the DCs cannot find the owner, by all means, they must fill a form and indicate on the comments section that the plot owner is not available. The DCs then prepares a letter that must be sent to the owner by registered mail, which asks the owner to come to the Land Board office. A note must be entered in the Land Board letter register indicating that a 'field letter' has been sent to the plot owner to forward.
- The above-mentioned forms, which are filled when the plot owners are not available, must be kept in a special file, labeled adequately for easy retrieval.
- When the plot owners come to the Land Board office, their file has to be retrieved from the special file to be filled.
- It must be indicated on the comments section that indeed the plot owners came and their details have been captured

End of the fieldwork

At the end of the fieldwork, the following activities were performed:

- All forms were returned to the office, checked, filed properly for easy retrieval and later entered into the computer by data entry clerks.
- The progress of the plots covered was shown spatially.
- The number of plots that each DC has captured were noted for payment processing, record keeping, productivity analysis and so on.
- Once plot inventory project had commenced there was always a DC at the Land Board office to assist plot owners responding to 'field letters'.

4.3 Quality management

4.3.1 Quality control and quality assurance[12]

It is critical that quality control checks are performed to ensure good and reliable data is entered into TLIMS, especially if the data has been collected by external organizations. The information system will only be as good as the data available within it. Therefore it is critical that data is collected accurately and to the required standards at the beginning of the exercise. TLIMS developed a series of quality control tests to check that the data they receive is of a good standard. The following checks were applied before data was accepted:

- Check the projection, datum and spheroid match the standard by overlaying the data with a known existing sourceCheck the digital information matches the original paper documents by doing check plots and overlaying them with the originals
- Check all polygon boundaries are snapped together to form a closed areaCheck all lines are connected/snapped together correctly where they should be
- Zoom in and check for duplicate lines and sliver polygonsCheck table names and attribute names and data types match standard
- Select areas randomly and visually check that these are correct
- Select features where names or descriptions are missing, and then visually check whether the data needs to be added or is genuinely missing or not available
- Check meta-data has been provided.
- Check whether each plot has a unique identifier and similarly each attribute table should contain a unique identifier for every row in the attribute table.

Where transactional (textual) data needed to be converted from paper format the following steps were followed:

- **Data from the physical files needs were written down on to the data capture forms. The Data capture forms provided the necessary guidelines which assisted the user in identifying the source of data for the specific item. Since this process involves looking at various documents and various sections for the necessary values it is advisable to use knowledgeable users for data extraction. It is also advisable to verify the data prior to data entry.**
- **Data was captured electronically into an interim database from the forms. Data capture screens that closely mimic the forms were used.**
- As a quality control measure, a representative sample of data was checked against the original data source for correctness. The quality of the attribute data collected was circulated to key personnel for further verification. In cases where there were discrepancies, data

12 Extracted from Department of Lands Data Conversion Strategy, December 2003 and the TLIMS Data Capture Manual

correction was undertaken following the stipulated guidelines.

- Conversion routines were written which revalidated the data completely before the data gets uploaded into the final MS SQL Server Tables.
- Data entry forms were developed in Microsoft Access or MS Excel spreadsheet as suitable and once the data is entered and corrected, the data could be uploaded into the MS SQL Server tables.
- The electronic data available in the various databases were mapped against the equivalent TLIMS data tables. The compatibility and completeness of the data was assessed and a list of problems and issues created. In cases of incompatibility, check the existing electronic data against available paper based data.

So that the existing data was mapped successfully against the TLIMS data structure the validation rules were tested against the existing data. Thus some data clean up activity was done on the existing data. Data was imported to an interim database where they were processed. A data conversion program was written to deal with each different set of electronic data. Once it is ascertained that the data is compatible it can be imported into the TLIMS data tables.

4.3.2 Role of TLIMS project managing consultant

The client (the Government of Botswana was represented by the Ministry of Lands and Housing) appointed a system developer as a project managing consultant to oversee the data collection and conversion phase of the project. The main responsibility of the consultant is to ensure that the data collected and converted meets the specified requirements of TLIMS. In doing so, the consultant:

- Reviews the monthly work done through the agreed quality check listsAdvises the contractor and the client on issues of common interest.
- Checks and advises the contractor on a regular basis where necessary.
- Uploads the data into the system once it meets has met the TLIMS requirements.
- Presents reports to the Land Management Reference Group (LMRG) and the respective Land Board members at those regular meetings. Regular meetings contribute towards quality checks and controls. These meetings also provide a mechanism for monitoring progress, resolving project challenges and charting the way forward.

4.3.3 Role of TLIMS contractor

The main responsibility of the contractor in the TLIMS project is data collection and conversion. In carrying out this task, the contractor is supervised by the managing consultant.

The TLIMS contractor:

- Generates village, ward and other non-monitoring boundaries through the mesh block concept
- Generates Land Board boundaries based on the boundary descriptions in the regulations and land use plans
- Produces metadata for spatial data collected/generated
- Submits data in ArcGIS specified format
- Collects and verifies all existing Land Board data for data integrity
- Derives topographic and thematic data from existing data where possible
- Surveys all plots to sub-metre accuracy that do not exist in the Land Board database
- Conducts attribute data field survey and verifies existing attribute data in the Land Boards records
- Verifies national identity numbers.
- Produces monthly progress reports for review by the client

GPS technology can help survey plots to sub-metre accuracy

5. Findings from the TLIMS study

According to the 2005 United Nations Human Report for Botswana, most government business processes are still done manually (UNDP, 2005). There is a weak infrastructure and internet connection to the government data network. Skill development especially in the IT related sector is seen as a priority due to inadequate skills in government. Mathuba (2003) criticized the inefficient record keeping in the Land Boards. Botswana has no e-government strategy despite many computerization projects in the public sector.

One of the issues that TLIMS aimed to address was the continuing difficulties with the paper-based records. In line with the Report of the Second Presidential Commission on the Structure of the Local Government of 2001, Chigiinge (2006) noted that "the paper based system had its own problems, mostly to do with filing and reconciliation of records, which was a bottleneck to effective land delivery." Chigiinge further states:

> *"The accelerated generation of spatial information due to high growth rate of urban areas and peri-urban areas has led to the churning out of volumes of land records and associated documents. Registries at land board and sub-land board levels are now highly dynamic and require efficient and better methods/ means of land records delivery, storage, retrieval and archiving."*

The advantage of TLIMS over paper based systems is its ability to interface with manual records such as applications, certificates, lease documents and correspondence files. Such interface is done through the use of unique parcel identifiers and national IDs. TLIMS provides information on when an application was made as well as where the application is filed, who has made the application, what the application is for and tracking the status of the application such as whether it is accepted, rejected or deferred. TLIMS has the ability to generate agendas for meetings, produce minutes, when applications for land were made, details of applications, as well as printing land certificates. It has the ability to track an application by name of applicant, geographical area, application number, and national identity.

5.1 Benefits of TLIMS

A number of anticipated benefits from TLIMS may include:

- **Social stability:** accurate tribal land records may prevent some disputes from arising, and help to resolve others more quickly since land parcels can be unambiguously identified;
- **Indexing and cross-referencing:** the main purpose of TLIMS is to provide for indexing and cross-referencing between the plot (ground location) and the documents (such as certificates, leases, applications) relating to the plot;
- **Multipurpose land records:** not only is boundary and ownership information collected but also information about existing land use, development status, topography, road centerlines and road reserves, railway lines, water, sewer, power and telephone lines, buildings on plots, hydrology, hydrogeology, vegetation, forestry data, archeological sites and village boundaries. Such information is required to support land use planning and decision making, and for resource development and exploitation.

5.2 Security of tenure and land certificates

Land certificates issued by the Land Boards are the only legal protection in case of disputes over title. As Mathuba (1989) stated: "Batswana should be made aware that the certificates are essential and should be kept safely, because they are the only legal protection in case of disputes of title." According to Dale's 1976 observation of Uganda, a paper title does not *per se* increase the perceived as well as the practical tenure security. Dale (1976, p.43) asserts that: "In many parts of Kigezi in southern Uganda… the local cultivators were offered certificate of title … [if] they would pay a subsidized survey fee. The majority declined to make this extra payment as they were satisfied to know that their boundaries were clearly determined." A similar scenario was observed by Firmin-Sellers (1999) in Cameroon. The same is true in Botswana's case. After allocation of plots and being shown corner beacons (points) the beneficiaries do not bother to collect their land certificates as they generally feel secure. But for an individual to gain access to agricultural subsidies, connect water, sewer, electricity or telephone, the utility companies insist on seeing the land certificate as proof of ownership. In addition, for the Land Board to issue a beneficiary a lease, a land certificate is a requirement.

Land disputes in Botswana fall into four categories as follows: disputes over land use that occur between the beneficiary and the Land Board; disputes between the Land Board and beneficiary over land occupied not corresponding with the certificate details; disputes arising among the heirs of the deceased (since many people do not write wills) and disputes between neighbours due to encroachment into neighbouring property, because the land certificates are not geo-referenced.

According to fieldwork undertaken in Mogoditshane sub-Land Board, there can be as many as 10 disputes per month mainly due to encroaching neighbouring property. Usually most of these disputes get resolved by the Land Board. Those that do not get resolved are passed to the Lands Tribunal. In a similar field study at the Mochudi sub-Land Board, a high incidence of land disputes was reported before TLIMS implementation. Now with easy access to information, especially boundary information, the Land Board addresses about one dispute every month. Most of these disputes arise over ownership, because people die without leaving wills. This calls for raising people's awareness on the importance of wills, to avoid many claimants to the estate leading to protracted legal disputes.

As part of her recommendations for improving security of tenure, Mathuba (1989, p. xxvii) suggested the following items to be incorporated in a land certificate:

- The land right is perpetual.
- The land rights is inheritable.
- Conditions under which rights can be transferred to be explicitly stated.
- That rights be geo-referenced – leads to certainty of where the plot is actually located.
- That conditions of use be explicitly stated, such as no sale allowed and development covenants to be clearly specified.
- Signatures - of both husband and wife - to appear on the certificate.
- Parcel-based – parcel identifiers or serial numbers to allow for cross-referencing with other documents

Except for the first two, none of the above was ever implemented.[13] TLIMS is a tool to assist in decision making and land documentation. However, it would be difficult to prove whether TLIMS has indeed contributed to tenure security given the fact that security of tenure depends on people's perception (Doebele 1983, p. 349; Ezigbalike and Selebalo, 1999).

It has helped in resolving as well as preventing land ownership disputes by insisting on the use of national IDs throughout the land allocation process. In that way, non-deserving applicants are screened out and squatters identified.

13 Contents of the certificate are name of beneficiary, ID, Address of beneficiary, type of land use allocated i.e. residential, ploughing field or business, size of plot, boundary description, name of plot location i.e. name of village/ward and conditions for use of the grant.

5.3 TLIMS and the poor[14]

TLIMS does not benefit the poor directly but they benefit indirectly just like any member of the public through improved service delivery, quicker land allocation process, speedier resolution of disputes since information is easier to access and so on. The poor interact with TLIMS only in terms of giving land information to populate the database. This means the public have little incentive to participate in the process. TLIMS is only meant for the government/Land Board to offer service more efficiently and effectively. The system is yet to be open to the public.

5.4 Relationship between TLIMS and customary tenure

TLIMS is not meant to change or alter the nature and pattern of customary tenure, the land tenure basis stays the same. The system has basically improved the operations and the delivery of services in the Land Boards. As a result of the implementation of TLIMS, there is no unnecessary and costly site visits. There is improved efficiency in the processing of plot applications and better customer support. The system has contributed immensely in the resolution of disputes as evidenced by Box 5.1. Record keeping in those Land Boards that have implemented the system has also improved.

As of now, applicants for plots in tribal land do not have direct access to TLIMS. It is expected that as the system matures, and the IT infrastructure in the country improves, the land inventory system would be made available via Internet. With the public having access to the system, this would remove the need for people to travel long distances to check on the status of their applications.

5.5 Recording a range of land rights

Rights in land are of many kinds such as customary, communal and 'informal' rights. During a land inventory project, the rights of the land occupier are the ones being recorded as opposed to other public rights such as the right of access to harvest fruits, firewood, medicinal plants, or the right of a woman to return to her father's land in case of divorce. A land inventory should capture all these rights but in reality such complete registers do not exist.

There exists no formal relationship between TLIMS land records to the Deeds Registry and Department of Surveys & Mapping records. TLIMS parcels are not surveyed to cadastral standards except that such information that a plot is surveyed and registered is captured by TLIMS as an attribute only.

Box 5.1 Interview with staff from Mochudi Sub-Land Board (16 June 2008)

With TLIMS in place, there is no longer a need for costly site visits during land transfers. TLIMS would make land use planning much easier. For instance, it would help in the production of land use plans, layout plans, data plans, sketch plans as well as providing details of new plots.

Before TLIMS, the Kgatleng Land Board used to be inundated with land disputes, mainly ownership disputes. Now the frequency of disputes has reduced to almost just one dispute every month.

14 The citizens are allocated customary land certificates free of charge. The costs computed there are the costs borne by the government. This is equivalent to a 100% subsidy to all citizens of Botswana.

15 Survey Regulations section.11 stipulates the accuracy of point positioning in terms of accuracy classes of a traverse.

TLIMS is mainly concerned with the topological relationship of plots such as contiguity and that information is used to support land use planning and land administration. Although not based on empirical study, during the conceptualization of TLIMS, it was felt that surveying all plots to cadastral standards would be too slow and costly especially the examination of surveys at the Department of Surveys and Mapping. Some people have argued that the difference in cost between a field survey of sub-metre and centimeter accuracy (1-3cm is the standard cadastral practice) in terms of time taken by the surveyor in the field is negligible.[15] This then leaves the major cost of cadastral survey as the examination process. However, the effect of a slow examination process could be minimized by examining a representative sample of plans that are submitted to the Department of Surveys and Mapping. More research is required to clarify these issues. Research is also required to investigate the appropriate and cost-effective methods for demarcating customary tenure.

5.6 Gender issues

The Married Persons Property Act (1971) and the Deeds Registry Act (1960) deprived women who married into community of property the capacity to register property in their own names (Mathuba, 1989; Government of the Republic of Botswana, 1992). The Presidential Commission on Land Problems in Mogoditshane and other Peri-urban Areas of 1992 has reported that some Land Boards in Botswana continue to deny access to land by both married and unmarried women. According to the report, the Kgatleng Land Board and other Land Boards rejected applications for lease from married women because of the provisions of the two acts that perceive women who are married in community of property as minors. In addition, Land Boards also denied married women customary grants even though they are not registrable, and instead ask women to seek consent from their husbands. Worse still, some western banking institutions deny married women access to loans if they don't have the consent of their husbands.

Botswana is a traditional patriarchal society and it also has the heritage of the Roman-Dutch law, which does not treat women as fully equal to men. During the past three decades, the Attorney General's Chambers has been combing through all the country's legislation and constitution in an effort to change and remove all discriminatory provisions on the basis of gender (Masire, 2006, p.141). In addition, under customary law, women are discriminated against in the acquisition of property, inheritance, and other laws. Married women also stand to lose access to their homes and properties when their husbands die. Masire (2006) further stated: "Since customary law must be compatible with the constitution and other statute law, amending the statutes had the effect of eliminating gender discrimination that existed in Tswana customary law as well" p141-142). The 2004 *Abolition of Marital Power Act* has abolished the common law rule that gave the husband marital power over the person and property of his wife. This act has removed the restrictions placed

on the legal capacity of a wife married in community of property and the husband is no longer the head of the family. The Botswana National Land Policy Review of 2003 (Final Report) also emphasized the need for opportunities of both women and men in owning and exercise control over associated rights to land by stating:

- Women's access to land will improve both their own and their household's income, improve household food security and child nutrition.
- Securing stronger land rights for women increases productivity because women will invest in their land.
- Recognizing that women should have equal rights in land will enhance tenure security for them.

The current legal position is that men and women have equal opportunities to land and its resources and TLIMS will help in advancing this government policy by enhancing:

- equity and transparent land allocation procedures;
- operational efficiency of Land Board;
- sefficient resolution of land use conflicts as there is easy access to information

5.7 Lessons learnt from TLIMS

The results of the design, development and testing of TLIMS derived from the Botswana case study have relevance in many other contexts involving GIS or land management information system (LMIS) implementation in developing countries. It would be difficult to transplant Botswana's experience of TLIMS to other jurisdictions due to differences in political, socio-economic and cultural setups. Botswana's land tenure system is unique and therefore TLIMS cannot be exported to other locations without modifications. Other governments might not have the financial capacity to carry out such an expensive national project but there is an option of step-by-step implementation strategy. The investment in developing such a system is very high, including the maintenance costs. Where resources do not permit a full-scale computerized system, a paper-based system can be designed such that when resources become available, it would easier to migrate to a computerized database system. However, Botswana's experience in implementing TLIMS offers lessons for countries planning similar projects. Countries contemplating similar a project can learn from and avoid mistakes that were made during the design and implementation of TLIMS in Botswana.

Furthermore, future LMIS implementation in similar jurisdictions should go beyond the traditional concerns of the management of data and information by examining some of the fundamental attitudes, perceptions, and institutional structures that provide the context for IS implementation. In addressing some of the challenges faced by TLIMS, it will be necessary to go beyond traditional prescriptions concerning consultation and participation in design or good user

training toward higher level interventions in areas such as educational processes, administrative structures and changing people's mindsets. The local university has a major role to play in changing the mindset of people with regard to how they perceive and handle land information management. In designing and implementing TLIMS the role of the local university in capacity building and in changing people's mindset was ignored. During the design and implementation of the Land Registration and Information Service (LRIS) programme in the Maritime Provinces of Canada, the University of New Brunswick's Department of Geodesy and Geomatics played a key role in capacity building and continues to play that role.

In addition to the above observations, eight mistakes/challenges were identified in the TLIMS design and implementation:

1. The data capture tool developed by the system developer was found to be complicated to use.Some Land Boards have developed their own systems to capture transactional (textual) data.This demonstrates that sometimes a "one size fits all" approach does not always work.

2. One of the major challenges has been absence of data, even for testing; hence dummy datwas used to test the system during the pilot stage. However, data collection has been ongoing at various Land Boards and sub-Land Boards. Generally, for data that has been collected and converted so far, just above 10% of the datasets can be accurately linked, such as linking application filed for land to certificate/lease and to plot on site. This is partly attributed to unavailability of plot holders and absentee tenants, undeveloped/abandoned plots, non-registration of plots. A higher percentage of linkage has been achieved between applications filed for land and certificates.

3. TLIMS was designed to be a decentralized solution, with each Land Board and sub-Land Board having its own server, and with DoL being a repository site. This was changed in 2005 because the set up was found to be too costly to maintain. The DoL adopted a centralized cluster platform. This platform was also found to be difficult for the system developer to configure. DoL is faced with a major challenge of inadequate and skilled personnel to meet technological demand.

4. The IT infrastructure in Botswana is still not ready to support web-enabled GIS applications in TLIMS. The exchange and dissemination of land administration information in digital systems is currently not well developed. There are significant differences between the departments in respect to IT-development, and capacity to provide or receive digital information from other organizations is inadequate. Many sub Land Boards are still not connected to the Government Data Network. In discussions with officials from the Mogoditshane and Mochudi sub-land boards, it seems clear that with the current state IT infrastructure in place, it would be difficult to completely replace the paper records. Computers and Internet penetration is very limited in the villages, which necessitates the continued use of manual records.

5. Most LIS systems that are under development (e.g. TLIMS, SLIMS, CIS) within the Ministry of Land and Housing (MLH) are generally compliant with future demands on infrastructure requirements from a SDI architectural point of view (see Appendix 3 for details). However, there will be a need for further development of the current systems, especially of the interface of business/logic layers of the applications, in order to comply with future national SDI standards.

6. The Internet infrastructure must be improved in order to fulfil the system requirements on a national perspective. The ambition to develop Internet based systems for handling land information, (especially if GIS-enabled), is dependent on reliable and sufficient performance access (bandwidth) over Intranet/Internet.

7. User needs analysis seems to have been overlooked; only the main Land Boards have connection to the Government Data Network which has a very small bandwidth making it difficult to transfer data over the network; most sub-Land Boards are not networked and have very few computers, 2 to 3 at most; in addition, most staff at the Land Boards lack basic computer skills and find the TLIMS data capture tools difficult to use.

8. There appear to be significant project management issues relating to the planning, implementation, system design and documentation relating to the roll-out of TLIMS. The general feeling among staff at the Land Boards is that TLIMS has been implemented in a rush. Depending on the officials spoken to in the Ministry of Lands and Housing, there appears to be either some guarded optimism or outright skepticism that the system would ever meet its goals and objectives.

Table 5.1 presents data collection challenges and the mitigating factors.

Data collection, storage and management presents major challenges in TLIMS implementation

Table 5.1 Data collection and conversion challenges

Challenge	Mitigation
Missing Omang/ID numbers from certain documentation of plot holders	This can be resolved by updating using BLIS or connecting to the National Civil Registration Database.
Plot holders not knowing which wards they belong to.	Ward boundaries should be defined and delineated.
The Land Board uncertain about the ward boundaries.	Clustering and grouping (thematic) mapping has been employed to identify ward boundaries.
Conflicting information from manual records. e.g. multiple allocations to the same plot on the same date.	Use of minutes has been very helpful in identifying conflicting information.
Different plots in a layout exhibiting the same parcel ID or the same plot having different parcel ID.	Verification using dates of surveys assists in identifying the current status of a plot in terms of consolidation or subdivision.
Layouts from Land Board and DSM surveyed plots showing different numbers for same plots as shown next.	In the case of duplicate plot numbers in layouts and DSM maps one has to liaise with the respective authorities. For layouts one has to verify with the Land Board using allocation registers and minutes. With the DSM one has to resort to general plans as well as diagrams.
Plots consolidations not reflected on maps from either the Land Board or DSM.	Develop quality control/ assurance procedures to ensure all spatial information is captured.
It is observed that in allocations register, very few plots have unique identifiers making it difficult to link the document with the plot on the ground.	The introduction of unique parcel identifiers should be a priority and one of the first tasks in any land management information exercise. The Swedish real property computerization program started with a property identity reform in each county. A similar approach was also followed in the province of New Brunswick in Canada.
It is a common scenario to discover undeveloped plots having roads going over them since no fence or any physical barrier hinders people from crossing over. This creates a false impression on the map as no road is to pass over a plot.	There is poor monitoring of development covenants in both tribal and state land. If land is not used according to the terms and conditions of the grant, it should be repossessed and re-allocated. But this delicate task is made worse by poor land records, cumbersome and expensive repossession procedures.
It was observed that training in data capture at the various Land Boards visited was generally not successful. This may be due to: (1) survey technicians once trained in data capture were frequently transferred to other Land Boards which tends to destabilize any local TLIMS database being established as the new replacement would require training resulting in serious delay in data capture; (2) the data capture tool was found to be complicated resulting in Land Board staff developing their own data capture tools	1) There is need for action at a higher level of the political and administrative system, either to change the system of transfers, which is difficult, or to change the mindset of decision makers so that TLIMS is perceived as relevant to their interests. But changes in the system of transfers for the civil service would require high-level political support and policy changes. 2) Design data capture tools that are easy to use and user-friendly. This task could be made easier by involving the stakeholders in the design process.
Few plot numbers existing in the allocations register and other documents.	Verify during field surveys of plot numbers available as given by the land board. These are later populated into the TLIMS data capture tool. Additionally the DSM maps exhibit plot numbers which will then be populated to the database from the maps.
There is a general difficulty associated with grouping land parcels according to wards. However the feeling is that the use of mesh blocks is not a standardised method. Although there is a general rule that each mesh block should follow natural or man made features, different surveyors can come up with different mesh blocks for the same locality.	Adopt mesh blocks already defined by the Central Statistics Office in their national housing census as opposed to individual surveyors designing their own mesh blocks.

6. Conclusions and recommendations

6.1 Conclusions

Developing countries face immense challenges in land management and administration, and inefficient delivery of land information services. These countries face the daunting task of organizing land information in support of good governance in land administration. Low-cost approaches as evidenced in the Botswana TLIMS study are best undertaken with the use of advanced technology.

The land administration bodies in Botswana and elsewhere are kept away from focusing on strategic issues by the daily problems experienced in service delivery as well as land allocation issues. However, with the development of TLIMS, the Land Boards should focus more on the development of strategic issues in pro-poor land management and administration.

In this study, certain weaknesses of TLIMS have been identified and the feeling is that the following recommendations will enable the Land Boards and Department of Lands to improve the system. The Land Board is also encouraged to hear the people's views so that the issue of land management is adequately addressed. Since TLIMS is still a work in progress, most of the weaknesses and challenges identified in this report can still be rectified.

6.2 Recommendations

The problems and challenges documented are common to all Land Boards, therefore these recommendations apply nationwide.

6.2.1 Transactional (textual) data

The following are the transactional data recommendations:

1. Some means of incentives should be offered to encourage the plot holders to have *Omang* (for those without IDs). *Omang* should be made mandatory for one to access all government assisted schemes. It should be also made mandatory for one to indulge in any formal business transactions. With unemployment benefits coming, there will possibly be some positive improvements in this regard.
2. With regards to few plot numbers existing in the allocations and documents, the Land Boards are encouraged to give plot numbers as they allocate. It is strongly recommended that the plot number should be regarded as a primary key hence should not be duplicated. The use of software applications such as Microsoft Access in recording these numbers will aid in ensuring that each plot number is a unique.

3. The Land Boards should ensure that assignments and tasks given to the respective personnel should be completed. The general view is that due to transfers of technical staff, assignments are left uncompleted. Moreover there is no proper hand over of duties. It is therefore recommended that should a transfer be urgent a detailed and proper handover of outstanding and pending work should be done.

6.2.2 Plot inventorying

The following are the plot inventory data recommendations:

1. Plot holders are urged to update their personal details, e.g. address, telephone, surname, etc. In the case of marriage, women should be strongly encouraged to come forward and update their details at their respective Land Boards. This is necessary as proof of identity when accessing government services and loans.
2. The introduction of unique parcel identifiers should be made a priority and one of the major tasks of TLIMS.
3. Plot holders are urged to mark their plot boundaries to make physical identification of plots easy. *Masimos* (fields) can also be fenced to ease the location of field boundaries. This serves the purpose of providing physical notice of the limits and the extent of the plots or fields. If financial resources are inadequate for fencing, one recommendation is to seek support from the Ministry of Agriculture through the 1991 Agricultural Fencing Policy.
4. Whenever it is difficult to follow the village ward boundaries, mesh blocks as defined by the Central Statistical Office during household censuses should be adopted.
5. Since there is no department or office charged with the responsibility for defining and maintaining village/ward boundaries, it is recommended that as part of the comprehensive land inventory strategy, DSM in conjunction with the Land Boards and chiefs should clearly define and delineate village/ward boundaries.

6.2.3 Institutional and capacity issues

The following are institutional recommendations:

1. TLIMS should not preclude addressing land issues at a more fundamental level i.e. problems that related to policy and legal framework of the country. As McLaughlin and Nichols (1989) stated: "Technical solutions should be designed to complement and support an overall (land information) management strategy."
2. During TLIMS implementation, training was not given the emphasis it deserved. Project managers should remember that training is an essential component of IS implementation. There should be training programs organized for major groups of users such as: policy-makers, managers of the system, land

administrators, land surveyors, planners, technicians and other government officials. These training programs should be adaptable to the future demands of the users of the system. The following subject areas in land administration have been identified as lacking the appropriate competence:[16]

- Property law
- Land administration and registration systems
- Information and records management
- Principles of land economy
- Database management
- Information technology
- Standards and data exchange
- Principles of environmental planning
- GIS applications in land use and environmental planning
- GIS algorithms, data structures and models
- Datums, projections and coordinate systems
- GPS and GIS for land information systems

The Department of Lands, which is tasked with managing TLIMS, lacks competence in IT in general and in geographic information system (GIS) specifically. The department is responsible for the land information management systems TLIMS and SLIMS, which are also used by other stakeholders in land administration such as the Land Boards and urban councils. These systems need to be performing at optimum all the time, but currently there is not enough specialized personnel to maintain the systems, nor to support the many users that will eventually be using the systems to perform their tasks. The department currently outsources these services.

On the development and implementation of the system, there is need for a staged process of TLIMS development, a "one step at a time" system development process that recognizes the importance of learning by doing and maintaining flexibility as opposed to the "big bang approach". The system model consists of four parts working on an interoperability basis and communicating by means of specified file formats based on international standards:

- The Data Capture System that is used exclusively for initial data capture purposes.
- The Updating/Management system that may include any system owned by an organization responsible for data in the Register System.
- The core is the Register System that is optimized for data storage of all the registered information.
- The Dissemination System that is the main source for publication of information to customers and other users.

16 Based on Draft Project Description for Improvement of Land Administration Procedures, Capacity and Systems in Botswana,2008 -- 2013 Ministry of Lands and Housing (Botswana) and Lantmateriet (Sweden).

When TLIMS was designed it was assumed that data would be available to test and populate the database. It was realized after the completing the system design that even data for testing the system was not available, thus dummy data was used to test the system during the pilot stage. Under normal circumstances, the system should have been tested with the field data. However, TLIMS was rolled out to other Land Boards before the system was tested. Of the data that has been collected and converted so far, slightly more than 10% of the datasets can be accurately linked, that is by . linking application to certificate/lease and to the plot on the ground.

It was also assumed that the IT infrastructure was adequate for a web-enabled GIS database but unfortunately, many sub-Land Boards are not connected to the Government Data Network. Even for those that are connected, the bandwidth is very small. The data capture tool developed by the consultant was found to be too complicated for the Land Boards staff and this resulted in data collection exercise for populating the database being abandoned.

3. Organizational support for TLIMS is extremely limited. This was exacerbated by the frequent transfers of the Land Board technical staff. The transfer of technical staff to other Land Boards defeats the objective of continuity which is essential for accumulating the operational experience needed to operate the system. Organizational support of TLIMS (or IS) has been correctly identified as "perhaps the most important single factor in determining its success or failure" (Aronoff, 1989, p.44).

4. Traditional land authorities such as chiefs, sub-chiefs, ward heads and local community leaders - such as a village development chairperson, chair of burial societies or a chair of farmers' association - who closely interact with local people need to be involved in TLIMS data collection phase. This is necessary in order to efficiently and authoritatively collect the data required to populate the TLIMS database.

5. There is still compartmentalization of interests in the TLIMS implementation. First of all the Department of Surveys and Mapping (DSM) were uncomfortable with the way TLIMS project was being handled. The Department of Lands saw their role as providing spatial data but DSM saw this as encroaching into their national mandate. At the same time, various Land Boards seem to be too individualistic. This calls for strong coordinating arrangements to be put in place. Because there is no absolute guarantee that TLIMS would be able to meet its objectives, there seems to be reluctance to take responsibility, especially at top management level, just in case the system fails.

6. There was the need for TLIMS to be co-ordinated at the highest level. The role of TLIMS project manager should have been someone of high authority such as Deputy Permanent Secretary or higher. This has the advantage of making sure things are done speedily.

7. The Land Boards seem to be comfortable with a role of a data supplier and not as a primary user. Occasional system demonstrations mainly on the use of the data capture tool were given to the Land Boards, but these were inadequate to achieve the necessary translation so that all Land Board staff would align their interests with the TLIMS project. Resistance to change may become one of biggest obstacles of project implementation, especially at the operational level.

8. As a part of quality assurance check, a review of the link between spatial data and the TLIMS attribute database should be performed, to identify parcels without a match in the attribute database, TLIMS database records without a matching graphical parcel and records referencing more than one parcel graphically.

Land information management systems capture the many different uses for land.

References

Adams M., Sibanda, S. and S. Turner (1999). "Land tenure reform and rural livelihoods in southern Africa". *Natural Resources Perspectives*, No. 39, Overseas Development Institute, London.

Aronoff, S. (1995). *Geographic Information Systems: A Management Perspective*. Ottawa: WDL Publications.

Chigiinge, F. (2006). "TLIMS as a Vehicle for Long Term Sustainable Development and Land Management in Botswana". Shaping the Change, XXIII FIG Congress, Munich Germany, October 8-13, 2006.

Eade, D. and J. Hodgson eds. (1981). "Final Report of Working Group 6". *Proceedings of an International Seminar on Information Systems in Public Administration and their Role in Economic and Social Development.* Chamrouse, France, 17-23 June 1979. pp. 371-386.

Ezigbalike, I. C. (1996). "Land Information Management for Rural Africa". Rome: Food and Agriculture Organization for the United Nations.

Ezigbalike, I. C. (1996). "Integrated 'cadastre' for rural Africa". South African Journal of Surveying and Mapping, vol. 23, Part 6, December 1996.

Ezigbalike, C. and Q. C. Selebalo (1999). African experiences of tenure reform and cadastres: a place in the global sun. UN-FIG Conference on Land Tenure and Cadastral Infrastructures for Sustainable Development, Melbourne, Australia, pp.46-62.

FAO (2007). *Good governance in land tenure and administration.* Rome: Food and Agriculture Organization of the United Nations.

Government of Botswana (1992). *Land Problems in Mogoditshane and other Periurban Villages*. Gaborone: Government Printer.

Kasanga, K. R. (1996). Land markets and legal contradictions in the peri-urban area of Accra, Ghana. Madison, Wis: University of Wisconsin- Madison.

Manisa, M.B. and L. Maphale (1999). "Spatial Information Management for Sustainable Rural Development". Paper presented at the FIG Survey '99, Sun City, South Africa

Masire, Q.K.J. (2006). Very Brave or Very Foolish: Memoirs of an African Democrat. Gaborone: Macmillan Botswana Publishing Co (Pty) Ltd.

Mathuba, B. (1989). *Report on the Review of the Tribal Land Act, Land Policies and Related Issues.* Gaborone: Ministry of Local Government and Lands.

Mathuba, B. M. (1999). "Land boards and customary land administration in Botswana". Paper presented at the DFID Workshop on *Land Rights and Sustainable Development in Sub-Saharan Africa: Lessons and Way Forward in Land Tenure Policy*, Sunningdale, UK, 16-19 February.

Mathuba, B.M. (2003). "Botswana Land Policy". Paper Presented at an International Workshop on Land Policies in Southern Africa, Berlin Germany, May 26-27, 2003.

Marquardt, M. A. (Undated). Research on Access to Land in Communal Areas, Unpublished Report, 38 pages.

McLauglin J. D. and S. E. Nichols (1989). "Resource Management: the land administration and cadastral component." Surveying and Mapping, 49(2), pp.77-85.

Ministry of Local Government and Lands (1989). *Report on the Review of the Tribal Land Act, Land Policies and Related Issues.* Gaborone: Government Printer.

Ministry of Local Government, Lands and Housing (1995). *Land Inventory for Tribal Areas of Botswana.* Final Report Prepared by the Ministry Task Force on Land Inventory.

Ministry of Land and Housing (2003). *Report on the Review of Botswana National Land Policy.* Gaborone: Natural Resources Services (Pty Ltd.

Ministry of Finance and Development Planning (2004). *Report on the Review of the Rural Development Policy Volume 2: Analysis and Recommendations*. Gaborone: Botswana Institute for Development Policy Analysis.

Economic Commission for Africa (2007). *Land Management Information Systems in the Knowledge Economy: Discussion and Guiding Principles for Africa*. Addis Ababa: United Nations Economic Commission for Africa.

Palmer, D. and J. MacLaughlin (1996). "Integrated Land Administration: Institutional and Technical Challenges". Special Issue for ITC Journal for the Habitat II Conference.

Republic of Botswana (1992). *Report of the Presidential Commission of Inquiry into Land Problems in Mogoditshane and other Peri-Urban Villages*. Gaborone: Government Printer.

Republic of Botswana (2001). *Report of the Second Presidential Commission on the Structure of the Local Government in Botswana*. Gaborone: Government Printer.

Republic of Botswana (2001). *Invitation to Tender: Software Solution for Tribal Land Integrated Management System for the Land Boards of Botswana*. Gaborone: Ministry of Local Government

Republic of Botswana (2004). *Report of the Judicial Commission of Inquiry into State Land Allocations in Gaborone*. Gaborone: Government Printer.

Tembo, E. and J.V. Simela (2004). "Improving Land Management in Tribal Areas of Botswana". Expert Group Meeting on Secure Land Tenure: New Legal Frameworks and Tools. UN Gigiri in Nairobi, Kenya 10-12 November 2004.

UNDP (2005). Botswana Human Development Report 2005 – Harnessing Science and Technology for Human Development. Accessed in July 2008 from http://www.sarpn.org.za/documents/d0001252/Botswana_HDR_2005.pdf

Walsham, G. and S. Sahay (1999). "GIS for District-Level Administration in India: Problems and Opportunities". MIS Quarterly 23(1):39-66.

Acts cited

Abolition of Marital Power Act, 2004

Married Persons Property Act, 1971

Deeds Registry Act, 1960

Land Survey Act, 1959

Tribal Land Act, 1968

Annex 1. Time-line for the development of Botswana Land Administration

Year	Subject/Event	Remark
1966	State Land Act turned crown land into state land	The President was given the power to dispose of state land.
1968	Tribal Land Act - establishment of Land Boards (LB)	All tribal land hitherto under the jurisdiction of chiefs was vested on the Land Boards.
1973	Rural Development Policy – managed by MFDP	Notably, the Accelerated Rural Development and Major Village Infrastructure programmes.
1973	Self Help Housing Agency (SHHA)	Initially in all towns in State land except Sowa Township. Provides assistance in terms of parcels of land, building material loans and technical advice to low income homeowners. Currently extended to land board areas.
1975	Tribal Grazing Land Policy	Policy marking the beginning of formalized land use zoning in the communal grazing land in Botswana.
1979-85	National Settlement Policy	Strategy for development of human settlements and promotion of planned use of land and preservation of arable land.
1983	Presidential Commission on Land Tenure	In 1985 a National Policy on Land Tenure was launched based on the findings of the Commission.
1987-92	Accelerated Land Servicing Programme	Addressed critical shortage of serviced urban land for residential, commercial and industrial purposes.
1990	National Policy on Agricultural Development – Fencing Component	Farmers were to fence grazing areas as a way of managing livestock better and hopefully decrease overgrazing.
1990	National Policy on Natural Resources Conservation and Development	The National Conservation Strategy.
1990	State Land Allocation Policy (SLAP)	In 1991 the Botswana Land Information System (BLIS) was developed to implement SLAP – a policy to allocate land equitably in a transparent manner.
1991	The Water Point Survey - a national survey of boreholes	Essential information for the Land Boards in managing land for grazing.
1991	Establishment of Land Survey Units simultaneously in all the twelve Land Boards	As a result of rural development policy Government provided loan guarantees in all tenures for development. Surveyors were required to assist in the implementation of the policy.
1991	Presidential commission on land problems in Mogoditshane and other peri-urban villages	Rapid urbanization and influx of people into Gaborone and its periphery led to grabbing of land, prompting an investigation.
1992	The Wildlife Conservation and National Parks Act	Inter alia, provides for the establishment, control and management of national parks and game reserves.
1993	Tribal Land Act review Land Tribunal (LT) Transfers Replacing tribesmen with citizen.	Land Tribunal started operating 1997 to resolve land disputes lodged, on appeal, by those aggrieved by the decisions of Land Boards. Initially only one in Gaborone but later one additional in Palapye. Recently two ad-hoc tribunals have been established to deal with backlog.
1994	The then Department of Surveys and Lands is restructured, resulting in the formation of three new departments	Departments of: Surveys and Mapping (DSM), Lands (DoL) & Housing (DH)
1999	Ministry of Lands and Housing is established. This resulted from restructuring of the then Ministry of Local Government, Lands and Housing.	Departments are: Department of Surveys & Mapping, Department of Lands, Department of Housing, Land Tribunal and Department of Town & Regional Planning.

Year	Subject/Event	Remark
2000	National Policy on Housing in Botswana	To facilitate home ownership and ensure provision of shelter especially for the low income groups.
2000	Privatisation Policy for Botswana	Private sector regarded as the engine of development and to the extent possible public institutions that could be efficiently and effectively operated by the private sector are to be privatized.
2001	Development of SLIMS starts Development of TLIMS starts	State and Tribal Land Management Systems, developments are ongoing.
2001	Botswana National Atlas is published	The book version launched.
2002	Poverty Reduction Strategy decided	Strategy proposals on best ways to reduce poverty. Some of the proposed activities implemented within MLH.
2003	Botswana PC Atlas Launched	Launching of the electronic versions.
2003	The Botswana Land Policy Review is launched	In depth consultations resulted in the drafting of a Land Policy which is still to be tabled before Parliament for approval.
2003	Botswana National Spatial Data Infrastructure (BNSDI)	BNSDI was launched together with: Botswana National Geodetic Reference System & the Botswana 1:50,000 mapping of entire country.
2004	Lesetedi Commission	The Commission found some discrepancies in land allocation in state land, especially in Gaborone. Some cases of alleged corruption have been taken to Court. Amendment of State Land Act.
2006	Physical Planning Portal	Project to computerize planning documentation commenced in DTRP.
2006	Creation of departments of Ministry Management, Land Board Services and Deeds Registry	Twelve Land Boards were transferred from DLGSM to DLBS.
2007	Botswana Integrated Geographic Information Systems launched (ten year DSM project that commenced in 1997)	Components: Cadastral Information system (CIS) Topographic Information system Geodetic Information System Dissemination System
2007	Remote Sensing Facility	Project to acquire and use satellite imagery for revision and updating of the map series produced, as well as for production of land use maps/ land cover for national development and planning.
2008	Project for Land Administration Procedures, Capacity and Systems in Botswana	Components: -- National systems for unique referencing of land parcels and location addresses -- Improvement of land administration processes. -- Deeds Register computerization -- Systematic adjudication of rights in tribal land -- Development of IT procedures and organization. -- Exchange and dissemination of land administration data -- Training and study trips

Annex 2. People consulted

Department of Lands

Ms K. Mothibi, Senior Land Officer, TLIMS Project Manager SLIMS/TLIMS

Mr Bojong, Systems Analyst, SLIMS/TLIMS

Department of Surveys and Mapping

Mr Godfrey Habana, Acting-Director of DSM

Mr Bryson Morebodi, Former Director of DSM

Land Boards

Mr Tabengwa, Senior Land Surveyor, Tlokweng Land Board

Mr Placid Lombala, Land Surveyor, Mochudi Sub Land Board

Mr Boitumelo, Senior Land Surveyor, Malete Land Board

Mr M. Selabe, Technical Officer, Mogoditshane Sub Land Board

Mr Chris Malatsi, Board Secretary, Kweneng Land Board

Private Survey Consultants

Mr Jack Ngwaru, Land Surveyor, Geosolutions (Pty) Ltd, Data Collection

Mr Michael Mogopa, Director of Geoflux (Pty) Ltd, Project Consultants

Ms Mogolo, Landflow Solutions

University of Botswana

Mr Michael Manisa, Lecturer in Geomatics

Mr Lopang Maphale, Tutor in Geomatics

Mr Francis Chigiinge, Senior Tutor in Geomatics

Annex 3. Customary allocation procedures

There are two forms of land tenure allocations under customary tenure, namely customary land rights, common law land rights (a form of long-term leasehold) and freehold. One of the concerns that were raised during the Ministry of Lands and Housing Stakeholder Workshop April 2008 was that it can take up 10 years for one to be allocated a plot. This is still far much better than the prevailing situation in state land.

A3.1 Customary allocations

Step 1. Preparation by Applicant

The applicant finds an empty space of land in the village, checks with neighbours and land overseer that it is not occupied, completes the application form, and gets it signed by the headman or land overseer. Where a couple is married in community of property, applicants must get a letter from their spouse giving permission to apply for the plot. For divorcees, they need to produce the Decree Absolute showing that the previous property was given to the spouse and therefore the applicant now has no plot. Any possibilities of n having joint application and title are yet to be investigated in Botswana.

Step 2. Filing and Verification of the Application

The applicant submits the application form to the Land Board. The national id should be presented at this time as a form of identification. The Land Board staff puts the application in a FILE FOR PENDING ALLOCATIONS. The Land Board staff then checks the application based on plot location and plot size, i.e. checks if the identified plot fits within the stipulated plot sizes.

Step 3. Public Advertisement for 21 Days

To ensure transparency in the land allocation process, the application must be displayed for at least 21 days on the Land Board public notice board. This ensures that anyone who objects to the allocation can attend the Land Board meeting and state their objection.

Step 4. Land Board Interviews the Applicant

The applicants or their representative must appear for an interview.[1] The criteria used to assess each applicant include:

- Is the plot unoccupied?
- Is the applicant a citizen?
- Does the applicant have another residential/commercial/field plot?
- Is the land available for the use proposed?

1 Neighbours and witnesses are not invited to the meeting/interview. However, the interview is publicized and is done in public anyone is free to witness the interview.

If there is any objection to the application, the allocation is postponed so that the case can be investigated. If the Land Board is satisfied that the applicant should be granted the land, then a resolution is passed and recorded in the minutes. At this interview/meeting, an itinerary is made to visit the site. The applicant is asked to bring 4 corner poles and should be accompanied by a witness during the site visit.

Step 5. Plot Allocation

The applicant is asked to produce a national id and shows the Land Board staff the empty space applied for. The Land Board consults with neighbours about the empty space, the witnesses as the land overseer confirm that the space is unoccupied and the decision now rests with the Land Board to proceed with the allocation.

The plot is then measured and corner poles erected. The Land Board tells the applicant the following conditions of the allocation:

- Permanent corner stakes should be erected within 6 weeks of allocation.
- There is a 5 year limit to develop the plot.
- The certificate shall be collected at the Land Board office.

Step 6. Land Board Allocation Register

The Land Board staff records the allocation in a register and opens a file which contains all paper work related to the plot, completed application form, allocation formalities, and copy of certificate. Ideally each plot should be given a unique parcel identifier. The information is filed alphabetically by surname of the owner. Some Land Boards use individual files for their clients, while others file all the customary applications in a single general file leading to information retrieval problems.

Step 7. Application for a Land Certificate

Once the permanent corner poles have been installed, the owner is now ready to apply for a land certificate which is free. It is possible to obtain a certificate within a period of 1 week. Certificates are typed in duplicate and signed by the Land Board Chairperson or Secretary.

A3.2 Common law allocations

Step 1. Preparation by Applicant

The applicant finds an empty space of land in the village, checks with neighbours and land overseer that it is not occupied, completes the application form together a payment of P10 ($1.50) application fee, and gets it signed by the headman or land overseer. The applicant attaches a sketch plan of the land concerned to the application. Preparation of a sketch plan costs around P150 (about $22)

Step 2. Filing and Verification of Application

The applicant submits the application form to the Land Board. The national id should be presented at this time as a form of identification. If the plot is more than one hectare, the applicant must produce a Project Proposal describing the project with supporting assessment letters from relevant government department. The Land Staff puts the application in a FILE FOR PENDING ALLOCATIONS. The Land Board staff determines what terms and conditions including lease fees will be applied against the grant. Staff also checks the application based on plot location, plot size, i.e. checks if the identified plot fits within the stipulated plot sizes, suitability for proposed use and makes that the land is unoccupied.

Step 3. Public Advertisement for 21 Days

To ensure transparency in the land allocation process, the application must be displayed for at least 21 days on the Land Board public notice board. This ensures that anyone who objects to the allocation can attend the Land Board meeting and state their objection.

Step 4. Land Board Interviews the Applicant

The applicants or their representative must appear for an interview. The criteria used to assess each applicant include:

- Is the plot unoccupied?
- Is the applicant a citizen?
- Does the applicant have another residential/commercial/field plot?
- Is the land available for the use proposed?

If there is any objection to the application, the allocation is postponed so that the case can be investigated. If the Land Board is satisfied that the applicant should be granted the land, then a resolution is passed and recorded in the minutes.

Step 5. Ministerial Review if Applicant is Non-Citizen

Ministerial approval is required if applicant is non-citizen. Land Board submits application and draft agreement of the grant including the proposed terms and conditions together with the sketch.

Step 6. Preparation of Lease Agreement

Land Board prepares 5 copies of Lease Agreement to be signed by the applicant.

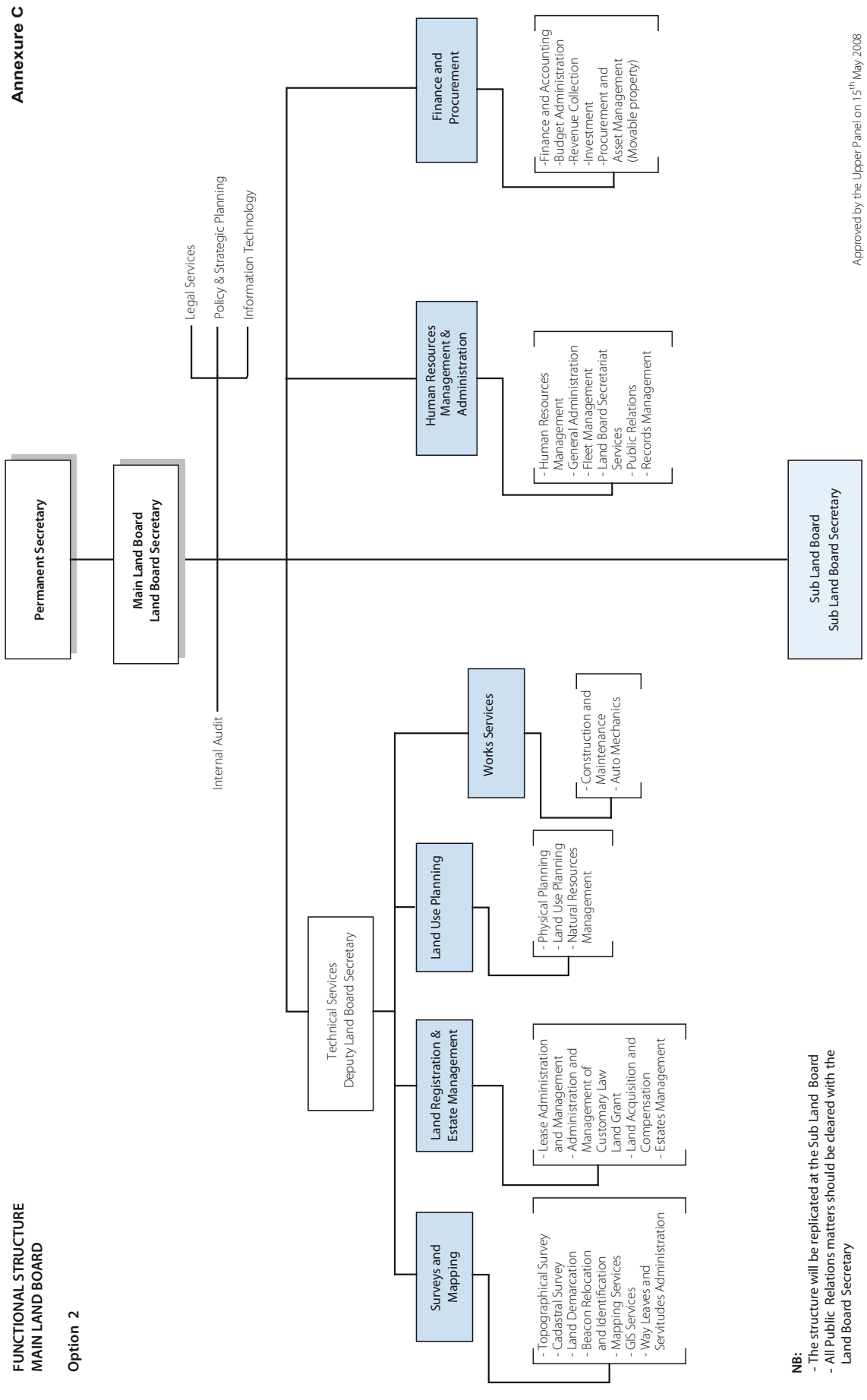
Step 7. Signing of Lease Agreement

The applicant signs the lease agreement. The Land Board retains one copy for filing; applicant gets one copy and sends 3 to the Department of Lands. For a 99-year residential lease, citizens pay a one-off fee of P60, where non-citizens who are only eligible for a 50-year lease pay rental of P250 per annum and government institutions pay only P100 per annum.

Step 8. Surveying and Title Registration (Optional)

To register the plot at Deeds Registry, a cadastral survey is required. The cost of surveying and registration is paid for by the applicant. This is necessary to be able to use land as security for a bank loan. If one does not need a bank loan, step 8 is not necessary. Bank loans can only be accessed if one has a title deed, and to obtain a title deed, a plot has to be surveyed first and then registered with the Deeds Registry.

Annex 4. Functional structure of the main Land Board



The Global Land Tool Network

The main objective of the Global Land Tool Network (GLTN) is to contribute to poverty alleviation and the Millennium Development Goals through land reform, improved land management and security of tenure.

The Network has developed a global land partnership. Its members include international civil society organizations, international finance institutions, international research and training institutions, donors and professional bodies. It aims to take a more holistic approach to land issues and improve global land coordination in various ways. These include the establishment of a continuum of land rights, rather than a narrow focus on individual land titling, the improvement and development of pro-poor land management, as well as land tenure tools. The new approach also entails unblocking existing initiatives, helping strengthen existing land networks, assisting in the development of affordable gendered land tools useful to poverty-stricken communities, and spreading knowledge on how to implement security of tenure.

The GLTN partners, in their quest to attain the goals of poverty alleviation, better land management and security of tenure through land reform, have identified and agreed on 18 key land tools to deal with poverty and land issues at the country level across all regions. The Network partners argue that the existing lack of these tools, as well as land governance problems, are the main cause of failed implementation at scale of land policies world wide.

The GLTN is a demand driven network where many individuals and groups have come together to address this global problem. For further information, and registration, visit the GLTN web site at www.gltn.net.

About this publication

Successful land policy formulation and implementation depend on a complete and up-to-date inventory of land holdings. Such reliable land inventory informs land policy choices and implementation priorities.

Tribal land management constitutes the largest of the three main tenure types that prevail in Botswana (tribal, State, and freehold). The land inventory is a means to support land administration, land development, land use planning, land transactions and natural resources management in Botswana. The land inventory is currently web based and GIS-enabled through the Tribal Land Information Management Systems and the State Land Information Management System. These systems now play a key role in land-related policy and management decisions.

This publication documents challenges, opportunities, processes and lessons learnt for implementing a successful land inventory. This publication recommends that countries planning to embark on a land inventory process should adapt Botswana's experience to their respective jurisdictions, while taking into account the political, economic, technological, socio-cultural and institutional arrangements.

HS: 1248/09E
ISBN: 978-92-1-132245-3

UN-HABITAT

UNITED NATIONS HUMAN SETTLEMENTS PROGRAMME
Shelter and Sustainable Human Settlements Development Division
Shelter Branch (UN-HABITAT)
P. O. Box 30030, Nairobi 00100, Kenya
Tel: +254 207623120; Fax: +254 207624266 Website: www.unhabitat.org

GLOBAL LAND TOOL NETWORK

GLTN contributes to the implementation of
pro-poor land policies to achieve
secure land rights for all
www.gltn.net