Report prepared for the Global Land Tool Network (GLTN)

Costing and Financing of Land Administration Services (CoFLAS) in Developing Countries

Land Equity International

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DISCLAIMER: Data contained in this report is indicative only and is provided to demonstrate and provide the foundation for the development of the CoFLAS methodology. Data should not be taken out of context. It must be acknowledged that data has been included 'opportunistically' – that is, the availability of data is severely constrained and whilst it is possible to see generic trends, data should not be used to make bilateral comparisons. There are a number of factors that contribute to costs and revenue in the land sector, including but not limited to: donor support, country context and historical influences, level of development, country population and geographic size, topography etc. This document draws on a number of sources, and these sources should be used to determine the accuracy of data and relevancy to future contexts. No responsibility is taken for inaccurate data or assumptions made from data provided.

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Abbreviations and Acronyms

B2B	Business to business
BPR	Business process reengineering
C2B	Customer to business
CD	Capacity development
CoFLAS	Costing and Financing Land Administration Services
CORS	Continuously operating reference station
DGNSS	Differential GNSS
ECA	Europe and Central Asia
FAO	Food and Agriculture Organisation
FIG	International Federation of Surveyors
ft	Foot (unit of measure equivalent to 0.3048 m)
FTE	Full-time equivalent
GLTN	Global Land Tool Network
GNSS	Global navigation satellite system
GPS	Global positioning system
GRN	Geodetic reference network
HQ	Headquarters
ICT	Information and Communications Technology

IT	Information technology
ITREF	International Terrestrial Reference Frame
km	kilometre
LAS	Land administration system
LINZ	Land Information New Zealand
LGAF	Land Governance Assessment Framework
LTPR	Land Tenure and Property Rights
M	Million
m	metre
M&E	Monitoring and evaluation
MLHHSD	Ministry of Lands, Housing and Human Settlement Development (Tanzania)
NSDI	National spatial data infrastructure
NSW	New South Wales
PPP	Purchasing power parity
RTK	Real time kinematic
SEG	Spatially enabled government
UAV	Unmanned aerial vehicle
UK	United Kingdom
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
US	United States of America
USAID	US Agency for International Development
WB	World Bank
WDI	World Bank Development Institute
WGS84	World Geodetic System 1984, the geodetic reference system used by GPS
WPLA	Working Party on Land Administration (UNECE)

Costing and Financing of Land Administration Services (CoFLAS) in Developing Countries

Executive Summary

The Global Land Tool Network, with its Secretariat situated within UN-Habitat, is committed to the development of pro-poor, gender-responsive land policies, legislative processes, land administration systems and procedures. GLTN and its partners have agreed that these can be achieved by establishing a continuum of land rights rather than exclusively focusing on individual land titling; developing pro-poor and gendered land tools; promoting and disseminating existing innovative land initiatives; supporting grassroots participation in land matters; and improving the general dissemination of knowledge on how to improve access to land and implement security of tenure.

The GLTN partners have identified and agreed upon 18 key land tools that are deemed necessary to address poverty and land issues at country level. The Costing and Financing of Land Administration Services (CoFLAS) is one of these tools, originally referred to as 'modernising the land agencies budgetary approach'. This document sets out the development and initial formulation of CoFLAS, providing a decision-support tool and methodology across the process of costing and financing of land administration services (LAS) in developing countries. The underlying assumption of the tool is that without modernizing the way services are provided in land offices and making them effective, cost efficient, affordable and sustainable, developing countries will find it difficult to ensure secure access to land and property to all including the poor and the vulnerable.

CoFLAS focusses on the cost of developing and maintaining a LAS and the likely return from LAS. A key initiative that underpins the approach adopted in developing CoFLAS is the concept of the "Fit-For-Purpose" Land Administration system (FIG/World Bank, 2014). CoFLAS focusses on land administration and concentrates on the formal end of the continuum of rights, but does look at steps that can be taken to ensure that the formal land administration system is affordable and accessible by all in society. The tool is targeted at the requirements for land administration reform in less well-developed systems and the tool identifies the key decisions that have major cost implications for land administration reform.

CoFLAS is intended as a tool to support:

(a) Land sector staff in preparing proposals for LAS reform;
(b) Policy makers in the land sector in assessing such proposals and in making a case for support within government and from development partners; and
(c) Key government agencies such as finance and development partners in reviewing LAS reform proposals and ensuring that such proposals provide value for money.

CoFLAS is not intended as a tool to decide on why or how to undertake land administration reform, nor has it been designed to identify and quantify the benefits of undertaking LAS reform. CoFLAS does, however, need to recognize that there are different approaches under different circumstances and that key decisions on aspects such as approach, legal provisions, survey/mapping methodology and technology can have serious implications on the cost and viability of land administration reform. In many cases these key decisions are not explicitly set out in proposals for land administration reform and in many cases there is little or no analysis of options or alternative strategies or approaches.

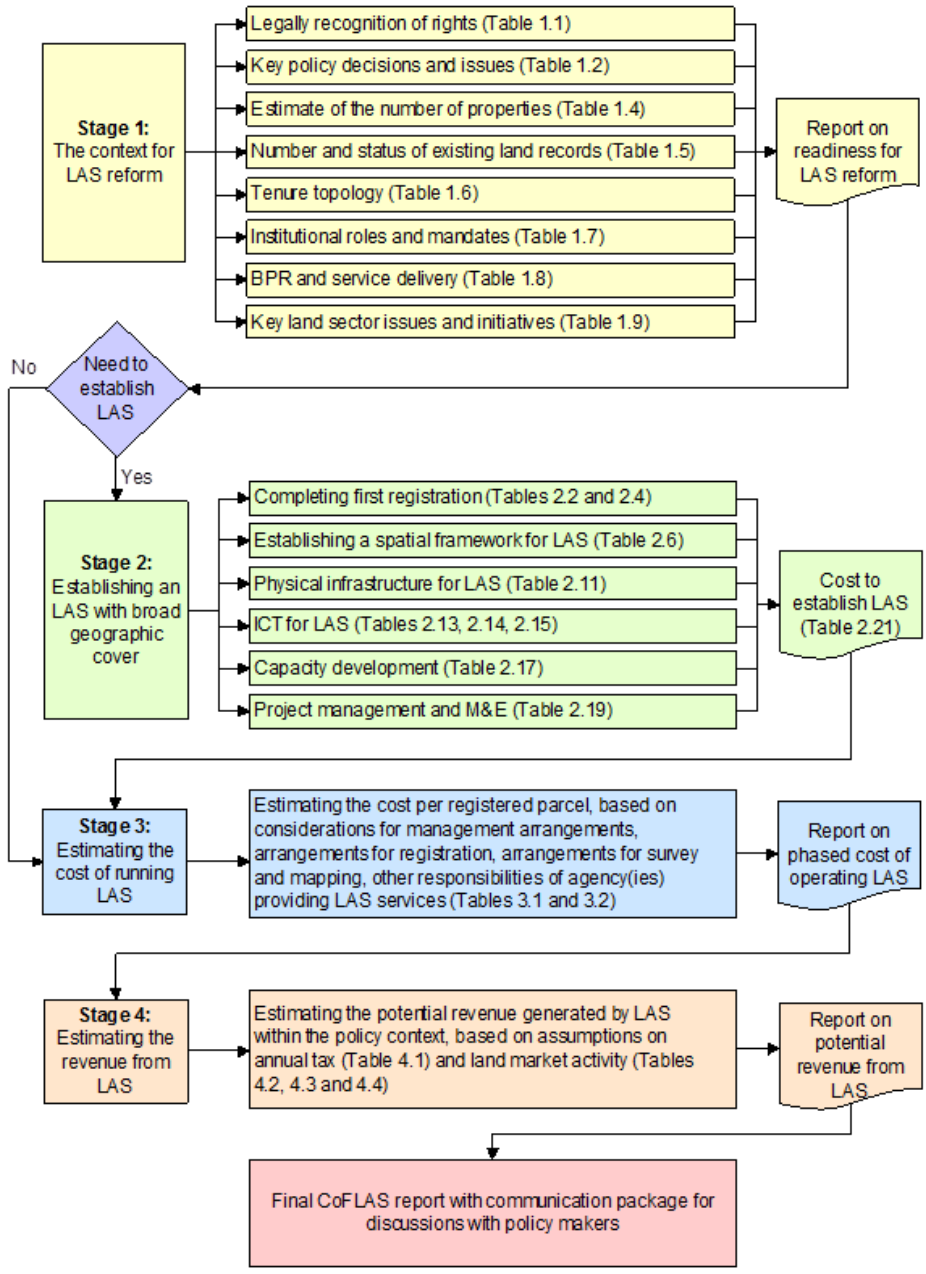
There are four stages in the application of CoFLAS:

1. Stage 1, the initial investigation of:

- the policy, legal and institutional context for the LAS,
- the number of land parcels/properties and the scope of any LAS reform initiative,
- the status of existing land records
- the land tenures in the jurisdiction and the clear presentation of these tenures in a typology
- the current LAS processes with proposals for business process reengineering (BPR)
- key land sector issues and other initiatives by government and development partners in the land sector.

This investigation provides the basic information to support the design and costing of a major LAS reform.

Figure 1 - Schematic of the Process in Completing CoFLAS



2. Stage 2, the review of the resource requirements and capital costs in establishing an appropriate LAS.
3. Stage 3, a review of the options and likely costs of running a LAS.
4. Stage 4, an estimation of the likely revenue that can be generated by a LAS.

These four stages are illustrated in the schematic set out in

Figure 3 above.

CoFLAS sets out a process to assess the readiness of the country and the agencies responsible for the provision of LAS services for significant investment in LAS reform. This assessment includes:

- a detailed, systemic analysis of land governance;
- the preparation of a tenure typology and the legal and institutional frameworks that support this tenure topologies; and
- the essential requirement that LAS services are provided in a cost-effective manner that focusses on service delivery for all sectors in society, particularly the poor and disadvantaged.

CoFLAS concentrates on the formal end of the continuum of rights, but does look at steps that can be taken to ensure that the formal LAS is affordable and accessible by all in society. These steps include:

- possible changes in the policy and legal frameworks to ensure that the formal LAS services the needs of all sectors in society, and
- the consideration of options to cross-subsidize LAS services to the poor and/or consider the funding of LAS services to the poor as a public good and separate from any policy that LAS services operate under a self-financing arrangement.

The approach adopted in CoFLAS looks at the following generic costs in establishing an LAS with broad geographic cover, including:

1. Completing first registration
2. Establishing a spatial framework for land administration
3. Establishing the physical infrastructure to support LAS
4. Implementing ICT to support LAS
5. Capacity development
6. Project management.

These topics generally cover the activities that typically require a major investment in resources and funds in undertaking LAS reform. The requirements in each country will vary. In some countries there may be complete first registration. In others there may be a recent investment in ICT, perhaps as part of a broad eGovernance initiative. The implementation of this stage of CoFLAS needs to be adapted to the local context.

The annual cost of running a LAS will depend upon a number of factors, including the scope of services provided by the LAS, the approach adopted in key legal and technical areas, the role of the various actors, particularly central government, local government and the private sector, and the extent that LAS service delivery is decentralised. Decisions on many of these factors will have been made explicitly or implicitly as the LAS is established. CoFLAS provides a framework to assess the options for providing LAS services and the cost implications of key decisions.

The tables and information used in formulating CoFLAS draw recent experience and current costs under a variety of situations. Many examples are provided in this document. As technology and practices change there will be changes in costs and CoFLAS will need to be updated to recognize these changes.

In most developed countries land-related taxes, fees and charges can be a significant source of government revenue, particularly for local governments. In many countries with well-developed LASs, the schedule of fees and charges for the provision of land administration services such as the first registration of rights, the transfer of registered rights, and the registration of survey plans etc. are structured in a manner that recovers from users the cost of providing LAS services.

There are a range of strategies that can be adopted in financing LAS. Some of these strategies and options are presented in this document, including:

(a) Full funding by government as a public service.

(b) Setting fees and charges to fully or partially recover the cost of providing LAS services and therefore transferring the cost of providing LAS services from government to users of LAS services.
(c) Transferring core parts of LAS delivery to others such as local government or private sector service providers (lawyers, notaries, private surveyors) that have the ability to recover costs through user charges.
(d) Separating the regulatory and service provision LAS functions and outsourcing the service provision function to the private sector under some form of public-private-partnership.

There is a major cost in establishing a LAS and there are limited opportunities to cover this major cost with user fees and charges. In the context of a developing country, the cost of developing an LAS with broad geographic cover is really an investment in public infrastructure that needs to be funded by government with the possible support by development partners. However government needs to ensure that there is appropriate funding in place to maintain the LAS and provide on-going LAS services.

Where a government is considering options for financing LAS reform, particularly the options of having part of LAS services provided by private sector suppliers or entering some sort of public-private partnership, government needs to ensure that there is little if any restriction on the use of LAS data as a fundamental dataset for existing a future needs as part of NSDI and SEG. This would seem best implemented with the government maintaining ownership of the data and having the right to distribute the data.

Chapter 1. Introduction

UN-Habitat facilitated the establishment of the Global Land Tool Network (GLTN) in 2006. GLTN is a partnership of bilateral donors, intergovernmental organizations, civil society organizations, academia and research and international professional organizations. The GLTN is committed to creating favourable conditions whereby land policies, legislative processes, land administration systems and procedures would be put to the service of the poor. The GLTN and its partners have agreed that these can be achieved by establishing a continuum of land rights rather than exclusively focusing on individual land titling; developing pro-poor and gendered land tools; promoting and disseminating existing innovative land initiatives; supporting grassroots participation in land matters; and improving the general dissemination of knowledge on how to improve access to land and implement security of tenure. More information on these and other relevant themes is available at: www.gltn.net.

The GLTN partners have identified and agreed upon 18 key land tools that are deemed necessary to address poverty and land issues at country level. One of these tools is referred to as "modernising the land agencies budgetary approach." Costing and Financing of Land Administration Services (CoFLAS) is this tool and this document sets out the initial formulation of the tool. Underlying CoFLAS is the assumption that without modernizing the way services are provided in land offices and making them effective, cost efficient, affordable and sustainable, developing countries will find it difficult to ensure secure access to land and property to all including the poor and the vulnerable.

There is a clear need to look at the cost implications of key decisions in establishing and operating a land administration system. Many of these decisions are often left to key legal or technical staff that frequently have a vested personal or professional interest in a particular approach and this approach will often lead to higher costs for government and users of the LAS. Many proposals for land administration reform do not explicitly highlight key decisions and many do not adequately explore alternative strategies and approaches. There is no existing tool to support policy makers to assess the soundness and appropriateness of proposals for land administration reform.

The annual cost of running a LAS will depend upon a number of factors, including the scope of services provided by the LAS, the approach adopted in key legal and technical areas, the role of the various actors, particularly central government, local government and the private sector, and the extent that LAS service delivery is decentralised. Decisions on many of these factors will have been made explicitly or implicitly as the LAS is established.

The World Bank/FIG *Declaration on Fit-for-Purpose Land Administration* provides a framework for getting the right data and information, the right processes and technologies, all for the right purposes recognizing that there is an urgent need to build cost-effective and sustainable systems that identify the way land is occupied and used, and accordingly provide for secure land rights. When considering the resources and capacities required, assessing technology and investment choices for building up lesser-developed LAS, the focus should be on a "fit-for-purpose" approach that will meet the needs of society today and that can be incrementally improved over time. A fit-for-purpose approach includes the elements of flexibility in the approaches for spatial data capture; inclusivity in scope to cover all tenure and all land; participatory focus to ensue community support; affordability for government to establish and operate and for society to use; reliability in terms of information and services provided; attainable within a shorter time frame and within available resources and upgradeable with incremental improvement over time in response to the evolving needs of society and the economy. CoFLAS seeks to fill this void.

In all countries land is a fundamental resource that needs to be managed and administered in a manner that addresses typically broad political, economic, social and environmental objectives for the current population and for the benefit of future generations. An important tool in ensuring that land

addresses these broad objectives is a land administration system (LAS), a system that typically includes "the administration of land rights, land use regulations, and land valuation and taxation."[1]

Countries with less well-developed LASs face the cost of first establishing an LAS with broad geographic cover and the records and procedures to support it, in addition to the direct cost of providing LAS services to those requesting services. All the well-established land administration systems have evolved over long periods of time, typically over a century or more, and typically started from relatively simple systems with limited geographic cover that have addressed some immediate needs. These systems have over time expanded in sophistication and geographic cover as needs developed and capacity and funding improved. Many less well-developed systems are seeking to implement systems modeled on these well-developed systems without the history and timeframe that is the foundation for the current capacity and capability in these systems.

Governments and development partners have funded land administration reform projects throughout the world in countries with a wide variety of political, economic and social contexts. Many of these projects have involved investments of a lot of money over long timeframes. The Thailand Land Titling Project, which was implemented with support from the World Bank and the Australian government in a series of projects over a 20-year period from 1984, involved an investment of about $500 million. A strategy has just been developed to complete first registration in Romania over a 20 year period at a cost of just over 800 million euro. These land administration reform initiatives typically seek both to broaden the nature and geographic cover of the land administration system as well as to develop capacity and capability in providing LAS services.

In all developing countries there are many needs and many areas where investment is required, but there are also limited funds and resources available. Governments must prioritize the investment of their limited finances and the areas where they seek support from development partners. The Costing and Financing of Land Administration Services (CoFLAS) tool has been developed to support senior land sector staff prepare sound proposals to improve LAS service delivery and for policy makers to better assess the soundness and appropriateness of the proposals being presented for government support.

The CoFLAS initiative is being undertaken as a partnership between FIG and GLTN partners. It is addressing a need for better equipping land administrators with information and options to effectively manage services and ensure land is prioritized adequately within the political space. This initiative is both a process and a partnership towards an outcome in the way of a GLTN 'tool'. The initiative responds to the Voluntary Guidelines which suggests there is "urgency and an immediate challenge in the building of an up-to-date, credible, comprehensive and authoritative inventory of land (and the seas) that include information on tenure, custodianship and ownership." The initiative also responds to the Framework and Guidelines for Land Policy in Africa[2] which has the vision of a "peaceful and prosperous Africa realized through equitable access, efficient and sustainable utilization of land."

[1] From the definition of 'land administration' in the FAO Land Glossary.
[2] http://www.uneca.org/lpi00

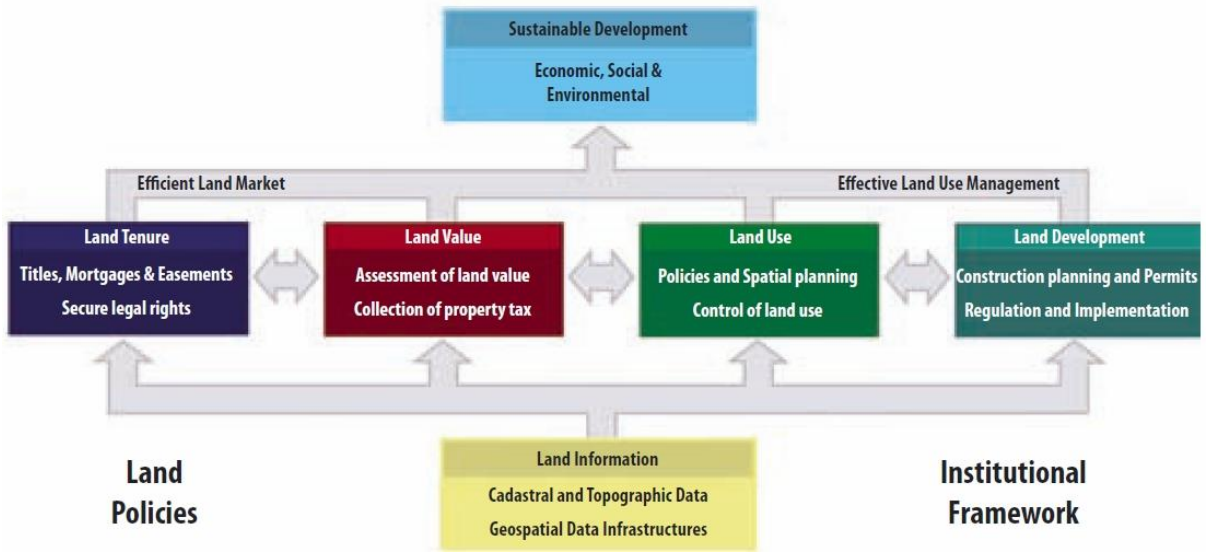
Chapter 2. Scope of the Tool

Land is a core resource in any society but the manner of managing, allocating and using this essential resource varies greatly, as does the terminology used for key concepts. Despite this variety, it is useful to set out some common definitions. These common definitions are included in the Glossary and Definitions set out from page 48. CoFLAS is specifically focussing on land administration systems and it is useful to restate this definition, recognised by the UN-HABITAT Global Land Tool Network and International Federation of Surveyors:

> **Land Administration:** the processes of determining, recording and disseminating information about tenure, value and use of land when implementing land management policies'[3] (UNECE, 1996).

A useful diagram depicting these processes is shown in Figure 2, including the four key commodities of Land Tenure, Land Value, Land Use and Land Development that together support a sustainable land administration system.

Figure 2 - Land Administration (Enemark, 2004)



An important part of land administration pertains to the recognition of informality – particularly during reform processes. A key aspect of GLTN's work is the continuum of land rights, a land tool under the GLTN Theme 1 of Access to Land and Tenure Security,[4] where rights to land are considered as lying on a continuum. At one end of the continuum are formal land rights, which typically are individual rights of ownership/use with rights, responsibilities and obligations clearly set out in law and formally recorded by government in official registers and maps. At the other extreme of the continuum are informal rights, which typically lack any formal recognition of rights and may include a group of individuals with traditional claims over land or individuals who have informally occupied land for long periods of time, often generations. The informal rights may not be officially recorded and the extent of the land claimed may not be clear. In between these two extremes there is a wide range of tenure typologies, many of which typically overlap and evolve over time.

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[3] UNECE 1996 Land Administration Guidelines. Geneva: United Nations Economic Commission for Europe. http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/land.administration.guidelines.e.pdf

[4] http://www.gltn.net/index.php/land-tools/themes/access-to-land-and-tenure-security

Tenure can take a variety of forms, and systems to register and map individual rights[5] at the formal end of the continuum should not be seen as the preferred or ultimate form of land rights, but as one of a number of appropriate and legitimate forms. These systems typically require a sophisticated and costly administration system, a clear spatial definition of the land parcels over which rights are registered and good land governance. The most appropriate form depends on the particular situation: customary rights, for example may be superior to registered individual rights in certain situations. Land tools have to take this continuum into account. This idea is gaining increasing acceptance internationally.

The continuum of rights is a very useful concept in discussing land administration reform with policy makers. In too many cases land administration reform is seen as a purely technical process to scale up the formal land administration system, which is often needed, but in so doing overlooking the requirement to see if the "rules of the game" need to be changed so that the benefits of the formal system are enjoyed by most if not all in society.

CoFLAS does not focus on land value, land use or land development, but does assess the readiness of the country and the agencies responsible for the provision of LAS services for significant investment in LAS reform. This assessment includes:

- a detailed, systemic analysis of land governance;
- the preparation of a tenure typology and the legal and institutional frameworks that support this tenure topologies; and
- the essential requirement that LAS services are provided in a cost-effective manner that focusses on service delivery for all sectors in society, particularly the poor and disadvantaged.

CoFLAS is a tool that is intended for those considering significant LAS reform. CoFLAS concentrates on the formal end of the continuum of rights, but does look at steps that can be taken to ensure that the formal LAS is affordable and accessible by all in society. These steps include:

- possible changes in the policy and legal frameworks to ensure that the formal LAS services the needs of all sectors in society, and
- the consideration of options to cross-subsidize LAS services to the poor and/or consider the funding of LAS services to the poor as a public good and separate from any policy that LAS services operate under a self-financing arrangement.

CoFLAS is also targets the specific needs and context of developing countries. CoFLAS thus needs to consider that existing LAS are likely to be incomplete and that significant effort may be required to get the system to have broad geographic cover in the country so that it might provide a cost-effective, efficient, sustainable and affordable service to government and society in general. CoFLAS draws on the experience and lessons from countries with well-developed LASs but CoFLAS needs to focus on the needs and priorities of countries with less well-developed systems. As noted previously, policy makers in less well-developed countries are seeking to move to improved systems without the long timeframes, typically over a century, that the well-developed systems have taken to realise a successful system. CoFLAS needs to accommodate this policy objective.

CoFLAS has been prepared to support the costing and financing of appropriate land administration reform initiatives and does not seek to explain why land administration reform is needed nor does it attempt to identify the benefits of undertaking reform. There are texts that provide information on why countries might undertake land administration reform and the benefits that might be expected from such reform efforts. Deininger (2003) provides a detailed analysis of the importance of good land

[5] Which by law will typically define the tenure as ownership or use with clearly defined rights of access, exclusion, use and the ability to transfer and encumber the subject land over a term that may be perpetual or a defined period typically with defined rights of renewal. The systems to register individual rights may also include specific obligations on the right holder such as the obligation to comply with planning schemes and the requirement and to pay assessed taxes and charges.

policies, clear and enforceable property rights, functioning land markets, and fostering socially desirable land use. Williamson, Enemark, Wallace and Rajabifard (2009) set out the following traditional benefits of land administration systems:

(a) Support for governance and rule of law;
(b) Alleviation of poverty;
(c) Security of tenure;
(d) Support for formal land markets;
(e) Security for credit;
(f) Support for land and property taxation;
(g) Protection of state land;
(h) Management of land disputes;
(i) Improvement of land planning;
(j) Development of Infrastructure;
(k) Management of resources and environment;
(l) Management of information and statistical data.

The actual benefits that might be expected from undertaking land administration reform will vary from country to country and from context to context. Land administration reform can also be formulated to focus on specific areas and specific target populations.

CoFLAS is also not intended as a tool for identifying core land administration issues or for prioritizing steps or activities to address the identified problems. There are tools available that are intended to understand the current situation and context and to identify key issues, and include:

(a) Dale and McLaughlan (1988) provide a check-list for evaluating a cadastral system. This checklist is a detailed series of 83 questions under the key themes of: (i) institutional matters; (ii) land tenure and land registration; (iii) land survey; (iv) maps and plans; (v) fiscal matters and land valuation; and (vi) planning and development. This checklist is suitable for an expert team to answer, however expertise is required to identify the key issues and possible interventions.
(b) USAID has developed a Land Tenure and Property Rights (LTPR) Situation Assessment and Intervention Planning Tool.[6] This tool uses a LTPR constraints analysis and intervention matrix as a prime reference. Six LTPR constraints are identified: (i) resource conflict and displacement; (ii) weak governance; (iii) insecure tenure and property rights; (iv) inequitable access to land and natural resources; (v) poorly performing land markets; and (vi) unsustainable natural resources management and biodiversity loss. Three cross-cutting constraints are also identified; (i) gender and female vulnerability; (ii) ethnic and socially marginalised populations; and (iii) lack of government and community capacity. Seven generic LTPR interventions are set out in the following areas: (i) institutions and governance; (ii) legal and regulatory framework; (iii) rights awareness and empowerment; (iv) conflict and dispute resolution; (v) restitution, redistribution and consolidation; (vi) rights delivery and administration; and (vii) resource use management. This basic matrix is used to prepare five overlays under the domains of: (i) land tenure and property rights; (ii) freshwater lakes, rivers and groundwater; (iii) minerals; (iv) trees and forests; and (v) women, land and resources. The USAID LTPR Situation Assessment and intervention Planning Tool is designed to be applied by an expert team over a period of some months.
(c) The Land Governance Assessment Framework (LGAF) was developed by the World Bank as a tool to assess land governance (Deininger, Selod and Burns (2012)). The core LGAF is structured to cover 5 thematic areas: (i) legal and institutional framework; (ii) land use

6 http://usaidlandtenure.net/sites/default/files/USAID_Land_Tenure_Situation_Assessment_and_Intervention_Planning_Tool.pdf

planning, management and taxation; (iii) management of public land; (iv) public provision of land information; and (v) dispute resolution and conflict management. Other modules have been developed for large-scale land acquisition and forests. LGAF is designed to be implemented in a country by a team of local experts and expert panels under the oversight of a country coordinator. The process of implementing LGAF involves: (i) preliminary discussions with government and planning; (ii) preparation of expert reports; (iii) convening of expert panels to rank specific issues (dimensions) into pre-coded statements; (iv) the preparation of a draft LGAF report drawn from the expert reports and deliberations of the expert panels and setting out a draft policy matrix to address the key issues identified; (v) the technical validation of the draft LGAF report in a workshop with senior technical staff; and (vi) the presentation of the LGAF report to policy makers in a policy dialogue. LGAF has been designed to look at the whole land sector, cutting across the traditional technical silos (survey/mapping, legal/registration, land use planning, public land management and dispute resolution) and is typically completed by in-country experts in 4-6 months.

CoFLAS is also not intended as a tool to decide how to undertake land administration reform. Again there are detailed references that cover this aspect, including:

(a) R S Simpson, Land Law and Registration (1976) provides a very thorough analysis, though dated in parts, of the various options available in undertaking LAS reform in varying circumstances. Much of this analysis, particularly the key legal and technical options and the various strategies to compile the land register, remains relevant today.
(b) Dale and McLaughlan (1999), Land Administration, looks at the various aspects in land administration and the main options for LAS reform as well as identifying overarching issues in areas such as land information management, managing the land administration process; policy issues; economic issues; human resource issues; and new directions in land administration.
(c) Toulmin and Quan (2000), Evolving Land Rights in Africa, specifically look at the experience in Africa and relevant issues such as formal and customary land tenure, common property, women's rights, land boards, decentralisation and land policy.
(d) Williamson, Enemark, Wallace and Rajabifard (2009), Land Administration for Sustainable Development, look broadly at land administration, develop a new theory for land administration, provide insight into building modern systems, set out key implementation issues and look at future trends.
(e) Byamugisha (2013), Securing Africa's Land for Shared Prosperity, looks specifically at Africa and after reviewing experience in documenting rights, undertaking land reforms and improving land governance, looks at options for modernizing infrastructure and selecting appropriate technology, modernizing systems and capacities and implications for scaling up.

Although CoFLAS has not been designed as a tool to decide on how to undertake land administration reform, CoFLAS does need to recognize that there are different approaches under different circumstances and that key decisions on aspects such as approach, legal provisions, survey/mapping methodology and technology can have serious implications on the cost and viability of land administration reform. In many cases these key decisions are not explicitly set out in proposals for land administration reform and in many cases there is little or no analysis of options or alternative strategies or approaches. A key objective of CoFLAS is highlighting these key decisions and the potential cost and financing implications of the decisions. Five key decisions and the implications of these decisions are set out in Table 1 on page 12 and options that might be adopted to reduce costs are set out in Table 2 below. The first stage in CoFLAS includes a check-list which is intended to assess the readiness for land administration reform and to identify key issues.

In summary, CoFLAS:

(a) Is focussed on land administration which includes the processes of determining, recording and disseminating information about the rights, value and use of land when implementing land management policies;
(b) Concentrates on the formal end of the continuum of rights, but does look at steps that can be taken to ensure that the formal land administration system is affordable and accessible by all in society;
(c) Is focussed on the requirements for land administration reform in less well-developed systems;
(d) Identifies the key decisions that have major cost implications for land administration reform; and
(e) Is fit-for-purpose.

However, CoFLAS **does not**:

(a) Seek to explain why land administration reform is needed nor does it attempt to identify the benefits of undertaking land administration reform;
(b) Identify core land administration issues or prioritize steps or activities to address the identified issues;
(c) Provide the basis for deciding on how to undertake land administration reform.

Table 1 - Strategic Decisions that have Cost Implications for Establishing and Running a LAS

		Simple / Low Cost	Complex/High Cost
Strategic Approach to building LAS with broad geographic cover	***Approach***	Sporadic approach, relying on individual requests	Systematic registration on a village-by-village approach
	Implications	• There are costs in responding to sporadic requests (need staff, maps etc.) • Can create issues with data (gaps, overlaps) • Lack of transparency • Can take a long time – +100 years	• Large initial investment • Shortest time frame (although some areas need wait) • Strong community engagement • High transparency
Resourcing for LAS reform	***Approach***	Large involvement by community and/or local government	Mobilise central government and/or outsource some/all SR activity
	Implications	• Essential to motivate local leaders – may need to pay fee • Need to ensure activity is a priority • Need to build capacity • Can build community support	• Large cost • Must manage interface between government/ contractor • Need to ensure community engaged • Need strong PM skills
Survey methodology	***Approach***	Use of photomaps with a general boundary approach	Full ground survey with professional surveyors
	Implications	• Lowest cost • Limited requirement for capacity development • Will need process to settle boundary disputes	• High cost • Risk of limited resources • No country has been able to scale this approach
Boundary marks (fixed or general boundaries)	***Approach***	General boundaries (using image maps)	Fixed boundary marks or beacons
	Implications	• Lowest cost • Lack of mark can lead to disputes – but marks can be moved • Higher cost for resurveys	• High cost – both for mark and logistics/transport • Permanent reference – but can be moved • Difficulties where boundaries are occupied
Delivery of LAS services	***Approach***	Establish central LAS office(s)	Establish network of LAS offices linked to administrative area
	Implications	• Can create difficulty and cost to access • Need to develop access strategies (local front office, intermediaries, ICT)	• Significant investment • Need establish oversight, M&E • Difficult to balance resources

Table 2 - Strategic Decisions - Options to Reduce Costs

	Options to Reduce Costs
Strategic Approach to building LAS with broad geographic cover	• Convert existing documents where possible • Can reduce cost by undertaking systematic registration in priority areas.
Resourcing for LAS reform	• Establish voluntary committees in community • Link to existing local institutions/processes
Survey methodology	• Can adopt a mixed approach • Accuracy can be improved over time
Boundary marks (fixed or general boundaries)	• Use low cost marks • Participatory or community supported boundary delineation procedures that where necessary, emplace appropriate boundary markers
Delivery of LAS services	• Phase opening new offices • Create front/ back/office

Chapter 3. Process for Developing CoFLAS

Land Equity International was contracted by GLTN to develop the CoFLAS tool with support from FIG, Kadaster (the Netherlands), Statkart (Norway) and Lantmäteriet (Sweden), all GLTN partners, and has been supported by the Danish Geodata Agency and LINZ (New Zealand). Information and data was collected with support from the agencies providing LAS services in Albania, Botswana, Denmark, Georgia, Lesotho, the Netherlands, New Zealand, Norway, Perú, Rwanda, Sweden and Thailand.

Preliminary development and conception of CoFLAS started in 2011, involving the following key steps and partners:

(a) A review, investigation and preliminary report by Lantmäteriet that was prepared in late 2011.
(b) A desk review of the literature and the preparation of an inception report by Land Equity in early 2013.
(c) Preliminary discussions at the DG/SG Sessions at the FIG Working Week in Abuja in May 2013
(d) Presentation of the Lantmäteriet and Land Equity reports, the development of detailed questionnaires and agreement on country case studies at an GLTN/FIG Expert Group Meeting in Rotterdam in May 2013 (hosted by Kadaster International)
(e) The establishment of a reference group to provide advice and support to Land Equity in the completing the study.
(f) Piloting of the questionnaire in Europe in Denmark, Netherlands, Norway and Sweden
(g) Refinement of questionnaire, including the removal of the land use planning aspects
(h) Questionnaires completed in Albania, Georgia and Lesotho
(i) Questionnaire completed in New Zealand
(j) Presentation of preliminary analysis of questionnaires at GLTN/FIG Expert Group Meeting in Gävle, Sweden in October 2013 (hosted by Lantmäteriet)
(k) Questionnaires completed in Peru, Rwanda and Botswana.
(l) Simplified questionnaire completed in Thailand
(m) Preparation of draft CoFLAS tool and report in May 2014
(n) Review of the draft report by FIG and the GLTN Secretariat
(o) Presentation of the report at the FIG Congress in Kuala Lumpur in June 2014.

The literature review undertaken by Land Equity was wide-ranging and drew upon the previous information prepared by Lantmäteriet, recent and on-going work being undertaken by Land Equity, consultation and data gathering from agencies providing LAS services and key counter-parts in the World Bank and interaction with the reference group established for the study. Extensive discussions on the draft findings and analytical framework were undertaken in the two Expert Group Meetings and the report has been enriched by the critical review of the inception and draft reports.

The revised questionnaire that was prepared to gather data to support the development of CoFLAS is set out in Annex 5. Although this questionnaire is an interim product in developing CoFLAS the questionnaire is a useful tool in gathering data on the costing and financing of LAS. A table of summary information drawn from the completed questionnaires is set out in Annex 6. Key parameters that have been derived from this summary information are set out in Annex 7.

This information has been a prime reference in the development of CoFLAS.

Chapter 4. Tool Description

CoFLAS focusses on the cost of developing and maintaining a LAS and the likely return from LAS. A key initiative that underpins the approach adopted in developing CoFLAS is the concept of the "Fit-For-Purpose" Land Administration system (FIG/World Bank, 2014). CoFLAS is intended as a tool to support:

(a) Land sector staff in preparing proposals for LAS reform;
(b) Policy makers in the land sector in assessing such proposals and in making a case for support within government and from development partners; and
(c) Key government agencies such as finance and development partners in reviewing LAS reform proposals and ensuring that such proposals provide value for money.

There is great variety in land administration arrangements and systems globally. Even with the qualifications on the scope of CoFLAS as set out in Chapter 2, CoFLAS, in attempting to be a tool applicable to many developing countries, must be fairly generic in its formulation. As with other GLTN tools, the first stage is generic tool development followed by piloting which should then document lessons as a basis for guidelines to support adaptation at the country level.

There are four stages in the application of CoFLAS:

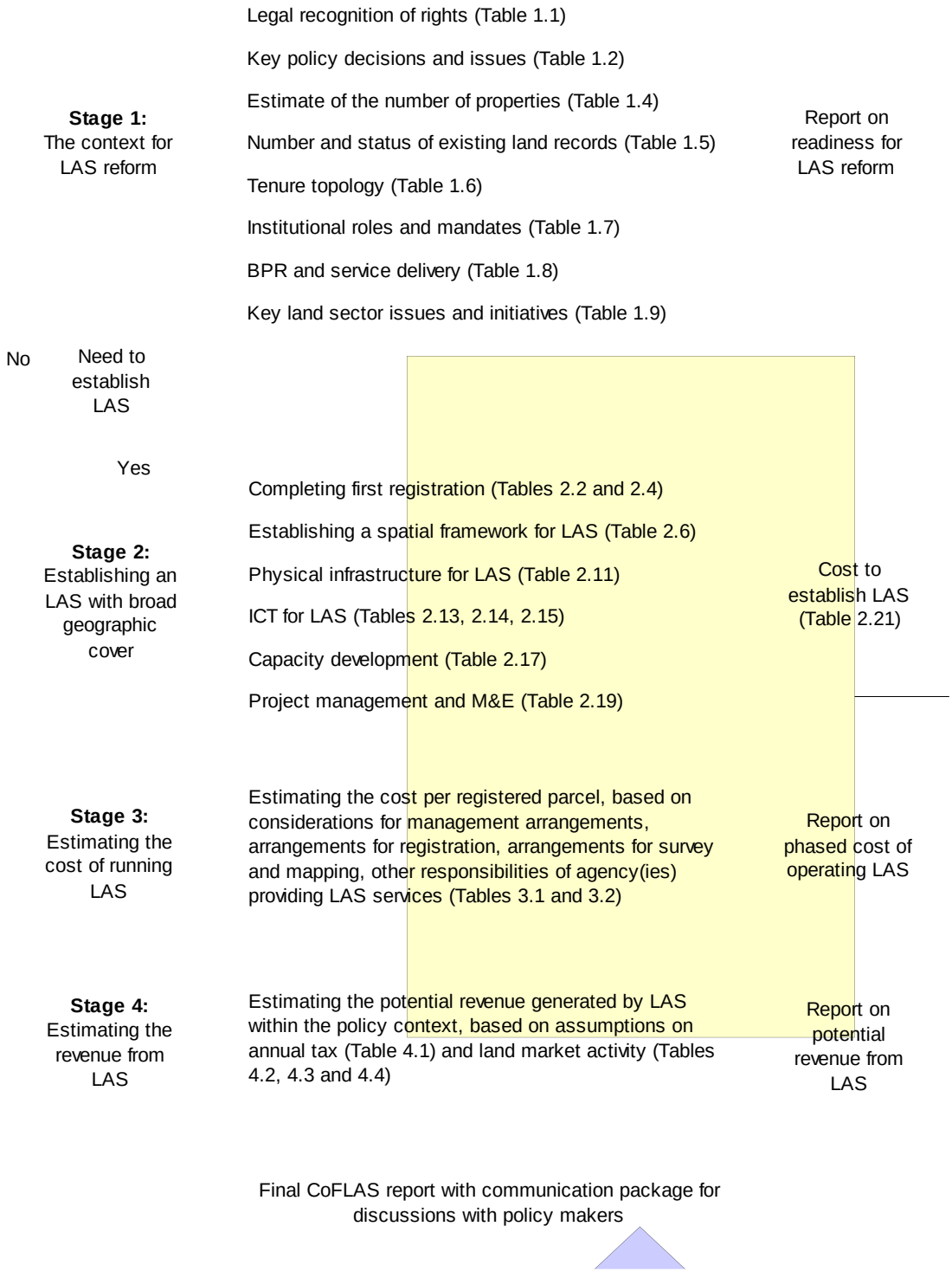
1. Stage 1, the initial investigation of:
    - the policy, legal and institutional context for the LAS,
    - the number of land parcels/properties and the scope of any LAS reform initiative,
    - the status of existing land records
    - the land tenures in the jurisdiction and the clear presentation of these tenures in a typology
    - the current LAS processes with proposals for business process reengineering (BPR)
    - key land sector issues and other initiatives by government and development partners in the land sector.

    This investigation provides the basic information to support the design and costing of a major LAS reform.
2. Stage 2, the review of the resource requirements and capital costs in establishing an appropriate LAS.
3. Stage 3, a review of the options and likely costs of running a LAS.
4. Stage 4, an estimation of the likely revenue that can be generated by a LAS.

These four stages are illustrated in the schematic set out in

Figure 3 on page 16. These stages are described in the following sections.

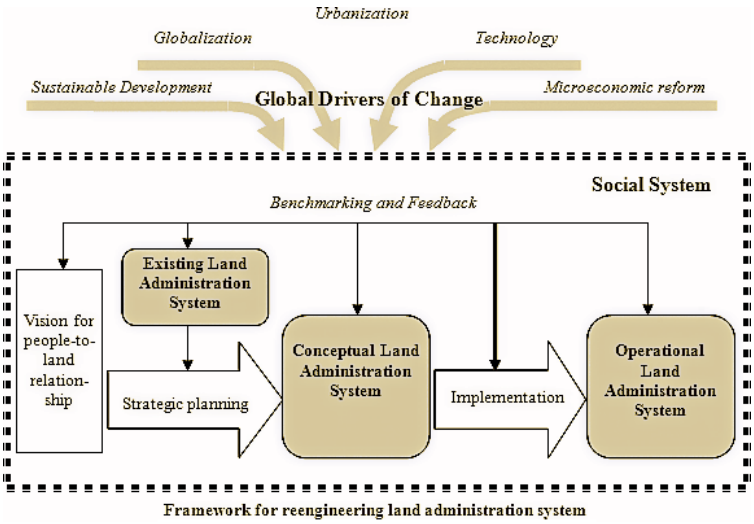
Figure 3 - Schematic of the Process in Completing CoFLAS



4.1 Assessing the Readiness for LAS Reform

Land administration reform typically requires a large investment over a long timeframe with successful reform largely dependent on the strong support of key stakeholders. Land is a complex area and many key stakeholders have differing views on the key issues or problems and the possible strategies to address them. As noted in Chapter 2, CoFLAS is not a tool to identify and agree on the key issues and possible solutions. There are other tools such LGAF that can be used for such purposes. Once there is agreement on the key issues, a significant strategic planning is required to prepare for and implement the reform. One conceptualization of this process is illustrated in Figure 4 below.

Figure 4 - Re-Engineering LAS (from Williamson et al (2009))



Although CoFLAS is not a tool to undertake the design and implement land administration reform, users of CoFLAS need to look at some key issues, understand the existing LAS and prepare an indicative scope so that decision-makers can readily understand some of the key cost implications of the approaches to LAS reform that are being proposed and possible alternative approaches that may or may not be discussed.

The first stage of CoFLAS gathers the following information:

1. Key policy issues that impact on establishing a LAS in the country;
2. Information to estimate the number of properties;
3. Analysis of existing records of rights in land
4. Preparation of a tenure typology for the country and an estimate of the properties that could be registered;
5. Preparation of an Institutional Matrix to identify key institutional actors and potential overlaps
6. A review of the major LAS processes with proposals for reengineering
7. Demonstration of knowledge of:
    - the key issues,
    - the status of stakeholder consultation,
    - other government initiatives and
    - existing development partner support.

The first stage of CoFLAS and the forms needed for this stage are set out in Annex 1.

4.2 Establishing an LAS with Broad Geographic Cover

CoFLAS has been designed to look not only at the costs of running a LAS but also at the costs of establishing a LAS that has broad geographic cover in the country. This is particularly important as some of the decisions made in establishing a LAS – in areas such as decisions on the level of administration providing services to the public, whether land parcels are defined by ground survey or by charting on maps, etc. – have cost implementations for both the cost of establishing the LAS as well as the on-going cost of operating and maintaining the LAS.

The approach adopted in CoFLAS looks at the following generic costs in establishing an LAS with broad geographic cover:

1. Completing first registration
2. Establishing a spatial framework for land administration
3. Establishing the physical infrastructure to support LAS
4. Implementing ICT to support LAS
5. Capacity development
6. Project management.

These topics generally cover the activities that require a major investment in resources and funds in undertaking LAS reform. The requirements in each country will vary. In some countries there may be complete first registration. In others there may be a recent investment in ICT, perhaps as part of a broad e-Governance initiative. The implementation of this stage of CoFLAS needs to be adapted to the local context. The generic process and forms to compile the costs of establishing a LAS with broad geographic cover is set out in Annex 2.

4.2.1 Completing First Registration

Adapting the diagram prepared by Simpson (1976: page 219) for the compilation of a title register, Figure 5 sets out the various options and considerations for the completion of first registration.[7]

A number of issues arise in the definition of the land parcel. Key decisions that have a major impact on costs relate to the type of boundaries, the type of monumentation and the survey methodology.

(a) Where the land is long occupied with well established, community accepted occupation on land parcel boundaries such as walls, hedges, fences, ditches etc. there may be little value in going to the expense of adopting a system with fixed boundaries. This approach relies on adopting the concept of general boundaries. Perhaps the best example of systems that are based on general boundaries are those in the UK and the Republic of Ireland where the spatial framework for the land registries are large scale plans based on topographic mapping produced by a government mapping agency (Ordinance Survey in the case of the UK). With advances in mapping technology including digital cameras, high-resolution satellite imagery, global digital elevation models and improved software, preparing large-scale image maps to chart general boundaries is efficient and cost-effective. Where there is no clear occupation of boundaries that can be mapped, there is a less convincing argument for a system of general boundaries. It should however be noted that no system is restricted to one type of boundaries. There are fixed boundaries in the UK, and in Australia, where most boundaries are fixed, there are general boundaries.

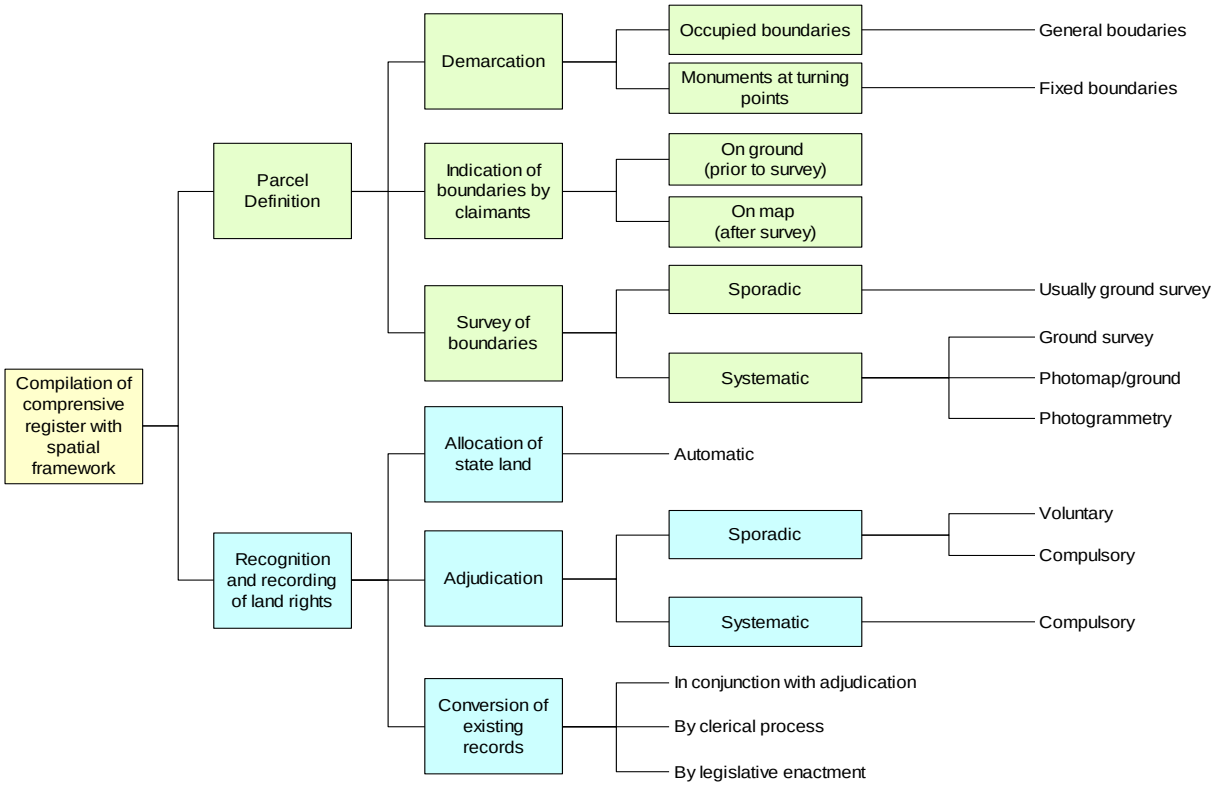
(b) In many countries in Africa the formal system requires that concrete beacons be placed on boundary turning points. This can add considerably to the effort and cost involved in first

[7] As Simpson notes there are various terms used for the initial recognition of rights and the recording of these rights in official registers and maps. Terms used in various countries include, 'first registration', 'settlement surveys', 'adjudication', 'systematic registration', 'bringing under the Act', etc. In CoFLAS the term adopted is 'first registration'.

registration and the cost-benefit of this should be questioned by decision makers in any major program to complete first registration.

(c) The approach and methodology to survey parcel boundaries is a major factor in determining the cost of any program to complete first registration. There are three main approaches that may be adopted: ground survey, the most accurate but the most costly; the use of large-scale image maps in the field to chart parcel boundaries, supported by ground survey where boundaries are not visible on the maps; and photogrammetric mapping where the boundary information is visible on the aerial photographs/imagery or boundaries are pre-marked prior to acquiring the imagery. Where first registration is being undertaken in a sporadic approach in response to individual requests for registration, it is usually not cost effective to provide accurate, up-to-date image maps or maps, so the survey method is usually a ground survey method. Most successful systematic registration programs have adopted the image map/ground survey approach. This was the approach adopted in Rwanda which has recently completed a program to demarcate and adjudicate 10.3 million land parcels covering the whole country.

Figure 5 - Different Approaches to First Registration (Burns adapting Simpson, 1976:219)



In summary, the most cost-effective and efficient process for defining land parcels in a major program for first registration, as set out in the recent FIG/World Bank publication on Fit-For-Purpose Land Administration (FIG/World Bank 2014), is based on the following four principles:

- General boundaries rather than fixed boundaries
- Aerial imagery rather than field survey
- Accuracy relates to purpose rather than technical standards; and
- Opportunities for updating, upgrading and improvement can be implemented over time.

There are three main approaches in the recognition of rights:

(a) The granting of rights by allocating land considered state land. This is a relatively simple process but not an opportunity available to many countries.
(b) The adjudication of existing rights. Here there are two main approaches, a sporadic approach, which rights are determined on a case-by case basis, and a systematic approach where the adjudication is usually undertaken on an area-by-area basis with the close involvement of community leaders, the community and those claiming rights. Sporadic registration can be voluntary, at the specific request of the applicant, or compulsory in that registration is made in response to a request for another service such as the registration of a deed.
(c) The conversion of existing records into records in a new register with broad geographic cover. This can be undertaken in conjunction with adjudication, as an administrative process or by the passage of a law.

The sporadic adjudication process is often implemented with the direct cost levied on the individual applicants. There is however a cost to government in having staff and other resources such as maps available to be able to respond to sporadic requests for registration. Sporadic registration can also take a long time to result in a complete or near complete registration system. In the UK and Australia where a sporadic approach was adopted in moving from deeds to title registration it took over 100 years to get the systems in a near complete form. A sporadic approach is also less transparent and thus more prone to corrupt practices, and tends to exclude the poor and less well-off.

Most programs for mass first registration have adopted a systematic approach. Systematic first registration is a cost-effective, transparent process to implement a new system to record rights. There has been extensive investigation over recent years of the unit cost of systematic registration. The cost will depend on a range of factors, including the survey approach, the effort and evidence required to prove rights and the level of engagement with the community. Byamugisha et al (2012) lists the following unit cost of recent systematic registration efforts in Africa.

Table 3 - Systematic Registration Costs in Africa (from Byamugisha et al (2012))

Country	Cost/parcel (US$)
Ethiopia	1
Rwanda – rural	9-11
Rwanda – urban	9-10
Namibia	11
Madagascar	7-28
Tanzania	45
Uganda	40
Ghana	45
Cote d'Ivoire	7-10

In Ethiopia first registration was based on previous land allocation records, was undertaken with significant input by voluntary village Land Adjudication Committees and did not have a map or spatial framework. GLTN has developed a participatory enumeration tool that can support local data capture processes.[8] In Rwanda systematic registration was undertaken with locally hired staff using orthophotomaps as a spatial framework. In Uganda and Ghana surveys were undertaken by ground survey. A previous study of systematic first registration in a range of countries (Burns, 2007) looked at the detailed cost-breakdown of the activity. A summary of this is set out in the table below.

[8] http://www.gltn.net/jdownloads/GLTN%20Documents/2993_alt.pdf

Table 4 - Unit Cost of Systematic Registration (from Burns (2007))

Country	Costs (US$/parcel)		
	Survey Costs (incl. GRN)	Non-Survey Costs	Total Costs
Armenia	6.11	7.24	13.35
Kyrgyzstan	3.22	7.33	10.55
Moldova	27.66	18.75	46.41
Thailand	~10	~14.21	24.21
El Salvador	19.46	10.28	29.74
Peru (urban)	4.61	8.07	12.68
Peru (rural)	23.44	32.25	55.69

The low cost for survey in Kyrgyzstan was due to extensive use of existing data rather than investing in new surveys and in Peru (urban) due to the use of local surveys without connection to geodetic control. The relatively high cost of survey in Moldova was due to an investment in the geodetic network and base mapping. The high cost of survey in El Salvador and Peru (rural) was due to an investment in base mapping and in high survey costs (about $10/parcel).

Based on this analysis it is possible to draw some conclusions of likely unit costs for systematic registration under various conditions:

- Adjudication can be undertaken with substantial work by local volunteers and with no spatial framework for $1/parcel
- If there is not significant investment in base mapping and the geodetic network, systematic registration can be undertaken for about $9-10/parcel
- If significant investment is required in the geodetic network or base mapping, systematic registration can be undertaken for about $15-20/parcel
- If all survey is undertaken by ground survey methodology then the cost is likely to be $50/parcel or more.

The above information only looks at the cost of systematic registration. There is a significant labour input into systematic registration by government and/or contractors hired by government. In Thailand, where systematic registration is undertaken by government officials supported by locally hired labourers, in the major Land Titling Project implemented from 1984 to 2004, a field party of about 40 staff and local labour spent 10 months in the field and produced about 18,000 titles per field season. This is equivalent to about 45 titles/person month. In Romania, where systematic registration is contracted out to the private sector with government oversight and checking, it takes a private company about a year to complete systematic registration in a rural commune of about 10,000 properties. The staff inputs vary, but on average the contractors have the equivalent of about 12 staff working full-time on the contract for a year and the government has the equivalent of 4 government staff working full-time for the year providing advice, helping with community consultation, checking the documentation produced by the contractors, assisting in the resolution of disputes and requests for changes to publicly displayed data and providing general oversight. This works out at about 52 registered properties/person month. Any proposal for systematic registration needs to ensure that sufficient resources are available, even where substantial parts of the work are contracted out.

Where there are existing records it can be very cost-effective to implement a conversion program. The approach to conversion will depend on the nature of the records and the options available under the law to convert these records into new entries in an LAS with broad geographic cover. Often some effort is required to sort and collate the existing records and it is often useful to scan the records and create a database at least of the key data entries. Burns (2007) lists the unit cost of compiling existing records for a range of countries: Armenia - $0.02/record; Kyrgyzstan $0.03/record; Moldova $1.53/record; and El Salvador $1.30/record. These costs are included in the cost of systematic registration in the table above. Malawi recently had 80,000 deeds and 150,000 titles scanned and a

database created of key data at a unit cost of about $0.66/record. South Africa has spent about R168 million (about $15.8 million) to scan the documents to for about 8 million land parcels. This works out at about $2/parcel, but the work involved the scanning of about 40 million deeds to generate the 8 million 'live titles' as the documents were archived without any distinction between live and superseded deeds. The cost of scanning, data entry and converting old records in Romania was recently estimated at 4 euro/record (about $5.55). If the cost of conversion is high, particularly in comparison to the cost of systematic registration there is decreasing value in converting existing records. On the other hand if the cost of conversion is relatively low, one needs to question the value of undertaking systematic registration in areas covered by existing records.

These conclusions are used to prepare the forms in Annex 2 for estimating the cost of first registration.

4.2.2 Spatial Framework

A reliable LAS requires that there is clear definition of the spatial extent over which rights are recorded. A key means of providing an unambiguous definition of the spatial extent of recorded rights is to geo-reference the existing spatial framework by surveying or mapping demarcated boundaries with reference to a geodetic reference frame. In many developing countries there is often a weak geodetic reference frame. The recent development of GNSS has significantly reduced the cost and effort required to establish either a geodetic reference frame or a geodetic datum that is not mathematically connected to the ITRF (International Terrestrial Reference Frame). However few countries looking at major LAS reform invest in the geo-spatial framework or generation and modernisation or update of a full geodetic reference frame. Often countries focus on changing the reference system by using a GNSS campaign (in a permanent, semi-permanent or static approach) and normally also by introducing network-RTK in parts of the country. Tanzania is one of the few countries that has invested in the geodetic reference frame and the country is finalising the adjustment of GNSS observations over several epochs on concrete pillars at about 70 primary stations and about 600 secondary stations supported with a comprehensive airborne gravity survey. This was completed at a total cost of about $6.1 million (equivalent to about $6.1/km^2 as the area of Tanzania is about 1 million km^2). Given the reluctance of many countries to invest as Tanzania has in the geodetic reference frame this cost/km^2 is likely to be at the higher extreme of likely investment in this area.

The technology and possible sources of services and products to provide the spatial framework for LAS are evolving rapidly. CoFLAS in considering the requirements for a spatial framework looks at the two key technologies that were reviewed by Byamugisha (2013):

1. continuously operating GNSS reference stations (CORS)
2. large scale image maps produced from geo-referenced, ortho-rectified high resolution satellite imagery or aerial photography.

Both these technologies play a key role in the fit-for-purpose approach to land administration that has been advocated by the FIG and World Bank (FIG/World Bank 2014). Technology will continue to be developed as will new often cheaper means of providing the spatial framework for LAS. An example of a new technology that has relevance, particularly in defined localities such as informal settlements, is mapping from digital cameras in unmanned aerial vehicles (UAVs). CoFLAS will have to be updated as these new technologies and approaches become more available.

Many countries are investing in CORS to support surveyors generally, but in particular supporting surveys for systematic registration. Byamugisha (2013) notes that the average capital cost of purchasing and installing a CORS station is $30,000 to $40,000, based on an analysis of costs of recent purchases in 3 African countries and three emerging countries in Europe. These costs include the basic equipment needed for a CORS station. There can be additional costs, perhaps double the basic costs, if substantial work is required to build offices for the CORS equipment and to connect the equipment to power and the internet.

CORS networks can be operated in a range of configurations and with a range of accuracies. To realise an accuracy of about 0.5 metres a smoothed DGNSS network is required with spacing between CORS stations of about 300 kilometres and to realise a reliable accuracy of 1-2 centimetres a Phase DGNSS network is required with spacing between CORS stations of 20-50 kilometres (Schwieger et al (2009:8)). This somewhat arbitrary division in the accuracies of CORS implementations to realise centimetre-level "survey" accuracy and sub-metre "augmented mapping" accuracy is used by CoFLAS in estimating the cost of establishing a spatial framework for LAS.

CORS networks are typically implemented in a tiered or hierarchical approach with a limited number of prime CORS stations established with concrete pillars and state-of-the art CORS receivers to provide the geodetic backbone of the country. These prime stations might be separated by 300 to 500 kilometres and be used to link the national datum to the ITRF and allow transformation parameters to be determined between the national geodetic datum and ITREF or WGS84. The other CORS stations might not have the same pillar stability or quality of CORS receivers, but would fill-in the CORS network to provide a denser spacing (about 50-70 kilometres between CORS stations) which will allow survey accuracy using either RTK or post-processing. These "fill-in" CORS stations might be established with antenna on the roofs of schools, hospitals, police stations or other government buildings with connections to power and communications. Typically there might be 10 to 20 "fill-in" CORS stations for every prime CORS station in a national CORS network. If the region has significant local deformation due to tectonic faults, the density of CORS stations must be increased so that all coordinates do reflect the actual ground motion with respect to the datum.

As noted above, GNSS technology is developing rapidly. Technology that will improve the cost-effectiveness and accuracy of GNSS includes new GNSS constellations and triple-frequency signals. Simulation studies indicate that with this technology the separation between CORS stations could increase to some hundreds of kilometres with little reduction in productivity other than the requirement that the communications link would have to be via a cellular communication network rather than radio communications for a RTK solution. This advance in technology would in effect remove the requirement for "fill-in" CORS stations. Another new technology that is likely to impact on the cost-effectiveness of GNSS solutions is the development of Precise Point Positioning which will greatly reduce or perhaps eliminate the requirements for local CORS infrastructure. Current Precise Point Positioning solutions produce sub-decimetre accuracy with observations taken over a period of 30-60 minutes per point but with new technology and services provided by commercial operators this approach may evolve into a GNSS-RTK type performance. CoFLAS will have to be updated as these technologies become available.

In addition to the cost of procuring and installing CORS stations there is an on-going cost in operating and maintaining the stations, including the cost of ensuring that each CORS station has access to the internet. The annual operating costs will vary according to the local circumstances, but should be in the range of $500 to $1,000 per month/CORS station. These costs are current costs and will change over time. There is also the cost of setting up the software to make the CORS data accessible to users. This software also typically includes an ePayment system to charge users for data access or positioning. This software may cost about $100,000 to develop or purchase.

Large-scale mapping can be used to support land administration reform. The following table from Byamugisha (2013) summarizes the unit cost of various approaches to large-scale mapping in support of LAS reform in four localities.

Table 5 - Unit Cost of Large Scale Mapping (from Byamugisha (2013))

Source of Large-Scale Maps	Image Scale and Resolution	Unit Costs ($/km^2)			
		Europe	Ethiopia	Ghana	Tanzania
Satellite imagery, ortho-rectified (new, at least 30km^2)	GeoEye (0.5m)	30	30	30	30
Aerial photography (250km^2)	1/45,000 (0.5 pixels)	31.5		150	
Line mapping (analogue method)	1/2,000	1,643			

The unit rates for systematic registration listed in the previous section include the cost of base mapping. There is thus no direct requirement for the purchase of additional large scale mapping or image maps. Where maps are required for systematic registration it seems clear that the best option is image maps rather than line maps.

There have been significant improvements in the resolution of satellite imagery and the broadening market and increased competition has reduced the unit cost of imagery. Improved global digital elevation models and improved software have also reduced the cost of ortho-rectification of the imagery. Satellite imagery with sub 0.5 metre pixels can be purchased in reasonable quantities with ortho-rectification and geo-referencing for about $15/km^2. In Africa where there are few direct receiving stations the cost can be higher, approaching the $30/km^2 listed in the table above. With an average parcel size of 1 ha the cost of the purchase of processed high resolution imagery works out at between $0.15 and $0.30/parcel. These figures can be accommodated in the unit rates for systematic registration set out in the previous section.

The possible cost of CORS is included in the process and forms in Annex 2. Provision is also made for satellite imagery, even though this should be covered in any proposal for systematic registration.

4.2.3 Physical Infrastructure and Staff Requirements

The requirements for office space to support LAS reform will be very country specific and can even vary within a country for a variety of reasons. CoFLAS can provide a guide for what is likely to be required under a range of assumptions about the way LAS services are provided, however any detailed costing of the requirements for office renovation and/or new construction will require a careful analysis of the current situation.

The requirements for offices will depend to a large extent on decisions made on how LAS services are to be delivered. In many countries, LAS service delivery is linked to a level of local government. In some countries there is a separation in the registration and survey/mapping (cadastre) functions, and in these countries there is a variety of arrangements for how LAS services are provided. In some the registry is linked to the court system and a central agency supports the cadastre (for example Bulgaria), and in others a central agency provides the registry and cadastre services are supplied by local government (for example Norway). There are many other variations that cannot be modelled in CoFLAS.

Regardless, there is a decision required on how LAS services are to be provided and this decision may be different for the registry and cadastre function. There will be challenges in establishing a new LAS in ensuring that the opening of offices is linked to a range of factors including, available funds, the availability of first registration data and ICT systems and the availability of staff. A phased installation plan will almost certainly be needed. This plan may involve aspects such as separating the front-office, or interface with clients, from the back-office or the processing of applications for services and activities such as record management and ICT. In some countries some LAS services are provided in mobile offices. It is important that this be considered as part of any plan for major LAS reform. This key decision and the plan for phasing of new offices is often not explicitly made in proposals for LAS reform and is an important consideration in CoFLAS.

Another factor that influences how LAS services are provided is ICT. Good ICT infrastructure enables a radical change in how LAS services are provided. A good example of this is New Zealand where a sophisticated ICT system enables all LAS services in New Zealand to be processed in one national queue with applications processed seamlessly by two back-office processing centres. ICT is enabling many of the well-developed LAS to reduce the number of offices required to provide improved services. This is happening with many LAS including those in England and Wales and in the Netherlands. ICT is considered below in CoFLAS and there are issues that need to be addressed in successfully implementing ICT in many emerging countries. For this reason CoFLAS in estimating the cost of establishing offices makes no assumptions about the availability of ICT.

The decision on how LAS services are provided will not only influence the requirements for offices but also the staff requirements. The staff requirements for LAS service delivery will depend on a number of factors which may include:

(a) the decision on how LAS services are to be delivered and the role and responsibilities of the various actors including the central agencies, local government, the private sector and even the local community. In some countries front-office staff are local volunteers either appointed or elected by the local community. This is the case in most of the regions in Ethiopia for the Land Adjudication Committees which are established at kebele (village) level;
(b) the nature and complexity of the LAS processes and procedures and the tasks that are expected of staff assigned to LAS service delivery, which may include tasks typically not directly related to LAS service delivery such as agriculture extension, dispute resolution, relief efforts, etc.;
(c) the level of completeness and comprehensiveness of the LAS records;
(d) the level of land market activity, which in turn is influenced by policy decisions that limit the market, the status of the economy and the status and activity of institutions providing credit secured against real property; and
(e) productivity which among other things is a function of capacity, competence and systems. Where people are well trained and systems are enabling then more work can be undertaken with less staff.

CoFLAS provides an estimate for the total number of staff, but how these staff are assigned and managed will vary from country to country. The estimate produced by CoFLAS is a likely maximum level of staffing which provides a basis for estimating the office space requirements but is likely only to be realised as the LAS system becomes more complete. CoFLAS estimates the number of staff in each LAS office using the estimated number of properties covered by the office. This estimate is derived for three categories of staff (management/administration/other, registration, and cadastre/survey) based on the data from the country case studies as set out in Annex 7.

Table 6 - Basis for Estimating the Total Staff Requirements under CoFLAS

Number of staff in the office	High Level of Staffing/Office	Medium Level of Staffing per Office	Low level of staffing per office	
Number of management/ administration/other non-technical staff relative to total registration and survey/ cadastre staff	About the same as the number of registration and survey/cadastre staff	About half the number of registration and survey/cadastre staff	About 10% of the number of registration and survey/cadastre staff	
Registration staff per 100,000 properties covered by the office	Manual records, complicated registration process, limited role for private sector	Efficient registration process, possibly computerised, limited role for private sector	Computerised records, efficient registration process, substantial role for private sector	
	10	5	3	
Survey/cadastre per 100,000 properties covered by the office	Survey/cadastre not automated, limited role for private sector	Survey/cadastre automated, limited role for private sector	Survey/cadastre automated, limited role by government	LAS services provided without cadastre
	10	5	3	0

There are no global standards for the allocation of office space. Most governments publish standards for office design.[9] Many of these standards set out guidelines for office space. In NSW Australia the government guidelines specify a range of "workpoints" ranging from 4.5 m^2 for a single surface workpoint in a call centre to 12-15 m^2 for an enclosed office for senior bureaucrats. The Government of Canada Workplace 2.0 Fit-Up Standards specifies 4 worker profiles ranging from free address at 1.5 m^2 to leadership with 10 m^2. In the UK the standard specified in the Workplace (Health, Safety and Welfare) Regulations of 1992 is specified as 11 m^3 per person.

The total office space required is more than the sum of individual workspaces. Some agencies specify an overall policy for office space based on staff numbers. In South Australia the government has a policy for government agencies not to exceed 14 m^2/per person, excluding any special agency offices.[10] In Northwest Territories in Canada a standard space allocation for an agencies is specified with the an allocation of 22.9 m^2 of useable space for each of the first five full-time equivalent (FTE) staff, 18.1 m^2 assigned to each of the next 5 FTE staff and 17.2 m^2 assigned for any additional staff plus an allowance for any justified special purpose space. The US General Service Administration published a workspace utilization and allocation benchmark in 2012.[11] This report reviewed a range of government and private organisations and found that the average useable space per person in the Federal government was 190 ft^2 (17.65 m^2) based on a rentable space per person of 218 ft^2 (20.25 m^2).

CoFLAS estimates the office space required for the LAS based on the estimated staff in each office, an allowance for a visitor/customer area plus an allowance for a record storage area:

(a) General working space at the specified government standard if it is available or if not standard is available at 10 m^2/estimated staff in the office, plus
(b) a front office for visitor/customer traffic and waiting areas, information/assistance areas based on 20 m^2 and

[9] Examples of detailed specifications include the NSW Government in Australia: http://www.psa.asn.au/Oldsite/nsw_gov_policies/files/Office%20Design%20Requirements%2006_10.pdf, or the Government of Canada Workplace 2.0 Fit-Up Standards: https://buyandsell.gc.ca/cds/public/2013/07/24/eca34fffc77113b8f3f89360169bfa75/workplace_2_0_manual.pdf; a specification that specifically focusses on office space, the Office Space Standards and guidelines for the Northwest Territories in Canada: http://www.pws.gov.nt.ca/pdf/publications/officest.pdf

[10] http://www.bpims.sa.gov.au/bpims/library/downloadResource.do?id=1430

[11] http://www.gsa.gov/graphics/ogp/Workspace_Utilization_Banchmark_July_2012.pdf

(c) a record storage area based on the expected records kept in the office from 100 to 10,000 properties/m^2 based on the estimate for the number of properties in the area covered by the office.[12]

A table is prepared to estimate the cost/office of vehicles, furniture, and equipment other than ICT. This table is set out in Annex 2.

The process and tables used to specify the physical infrastructure and staffing required to support LAS service delivery are set out in Annex 2. These tables include:

(a) The specification of the number of offices providing registration and/or survey/cadastre services (there may be separate offices for each type of service) and the estimated number of properties covered by each office
(b) The estimated maximum number of staff in each office based on an assessment of the: (i) the number of registration staff required to support 100,000 properties; (ii) the number of survey/cadastre staff required to support 100,000 properties; and (iii) the level of management/administration/other non-technical staff required to oversight and support the registration and survey/cadastre staff
(c) The office space required to support the proposed offices making provision for: (i) office space for staff; (ii) a front office for customers; and (iii) a records archive area.
(d) An estimate for the cost of vehicles, furniture and non-ICT equipment necessary to support the offices in providing LAS services.

4.2.4 ICT

Investment in ICT as part of LAS reform has significant potential for LAS service delivery, particularly in terms of improved transparency, efficiency and accessibility of LAS data for decision makers so that policy and government programs can better be targeted to address social and economic objectives for growth and poverty alleviation. There is substantial recent experience in investing in ICT as part of LAS reform. There are a number of different approaches that have been adopted in developing ICT systems, including:

(a) The initial development of a project-based LAS ICT software developed by staff in the agency providing LAS services and/or technical advisers to the agency and/or local ICT companies (using proprietary or open source software);
(b) The specification of comprehensive LAS ICT software to be developed and implemented by a government ICT organisation (using proprietary or open source software);
(c) The specification of comprehensive LAS ICT software to be developed and implemented by a large private ICT company under contract (using proprietary or open source software);
(d) The specification of comprehensive LAS ICT software to be developed and implemented by a team of ICT specialists (including software developers) recruited individually for tasks associated with the development and implementation (using proprietary or open source software);
(e) The customisation and extension of open-source LAS ICT software to support LAS processes and functions in a specific LA organisation or jurisdiction[13];
(f) A combination of the above approaches adopted over time in a phased approach that often evolves over time rather than in a planned manner from the start.

[12] If it is assumed that there is a single file for each property that is about A4 size and 2 centimetres thick, which is stacked in a simple shelving system with 5 shelves then allowing for passageway between two shelves, then the two shelves, which might cover a floor area of 1.2 m^2 could hold 480 files or about 400 files/m^2. CoFLAS estimates the storage area based on an assessment of the average size of the documents held for each property.
[13] In such an approach, this may involve making new software features (resulting from extensions to the available open source LAS ICT software) available to the wider LAS ICT open source software community

The application of ICT in the provision of LAS services has a long history. Williamson et al (2009:238) identify 5 stages in the deployment of ICT in well-developed LAS, from manual systems (hard-copy maps and indices) in the 1970s, computerisation (digital maps and indices) in the 1980s, online land administration (web enablement) from the 1990s, e-land administration (interoperability) in about 2005 and i-land (spatially enabled government and private sector) in 2010. Many developing LAS are struggling to get good manual systems in place. These countries do not need to progress through all stages. LAS reform projects often link to country wide programs to develop and implement wide-area networks with greatly improved internet access and to support a range of electronic government services or e-Government. In implementing systems to provide LAS services as part of an e-Government program, the generation of good manual records and the computerisation of these records are typically seen as necessary preliminary steps rather than long-term stages in the provision of LAS services.

The cost of developing sophisticated LAS software is getting increasingly high. New Zealand invested about NZ$140 million (about $110 M) in the early 2000s in developing Landonline, a comprehensive land administration system that supported both the electronic lodgement of land dealings and survey plans (Bevin, 2002). In 2002 South Australia awarded a contract of about A$40 million (about $36 M) to upgrade its LAS software. The cost of software for a developing LAS is less than these amounts and more recently with the availability of LAS ICT open source software LAS ICT implementations in smaller countries and jurisdictions software costs are in the order of US$200,000.[14] Regardless it is still a large investment that needs to be considered carefully.

However in many developing countries ICT resources are in short supply and governments have trouble in attracting and keeping the necessary ICT staff to prepare and implement ICT strategy and even in adequately budgeting and procuring key resources for ICT such as, internet access, maintenance of hardware and software, computer consumables such as paper and ink cartridges, etc. The increasing development of ICT does however provide new options such as cloud storage and software as a service (SaaS).

The countries in Europe and Central Asia (ECA) provide some good examples of the benefits in investing in ICT as part of the major LAS reform across the region in moving over a relatively short period from communist to market economies. The World Bank funded LAS reform projects in ECA worth $1.4 billion, with about 56% of the investment in ICT development and implementation (Tonchovska et al 2012:3). The LAS ICT systems were developed in the region under a range of strategies (Tonchovska et al 2012:4-5):

(a) Locally developed systems by state enterprises in Russia and Turkey
(b) Large international contracts in Azerbaijan, Bulgaria, Croatia, Kazakhstan, Romania, Serbia and Ukraine
(c) Small contracts or in-house development in Albania, Armenia, Bosnia and Herzegovina, Estonia, Georgia, Kosovo, Kyrgyz Republic, Latvia, Macedonia, Moldova, Montenegro and Slovenia.

These projects have typically been implemented in a phased approach over a number of years. The LAS services provided by the ECA countries rate highly in the annual Doing Business report, with 11 of the 20 highest ranked countries in registering property coming from ECA.[15] The following table of LAS ICT investments in ECA has been prepared based on the contract data available on the World Bank

[14] The SOLA pilots in Ghana, Nepal and Samoa cost about US$250K including about $50K of hardware improvements. The Tonga SOLA customisation cost about $150K for software customisation. Lesotho which included significant software extension to include lease management functionality cost about $300K.

[15] http://www.doingbusiness.org/data/exploretopics/registering-property – accessed 5 May 2014, ranking Georgia 1, Belarus 3, Armenia 5, Lithuania 6, Kyrgyz Republic 9, Slovak Republic 11, Azerbaijan 13, Estonia 15, Russian Federation 17, Kazakhstan 18 and Moldova 19.

web page. In preparing the list, only contracts that clearly were related to ICT were included and these contracts were classified as hardware, software, data conversion and other, with contracts listing both hardware and software split 70/30. The investment in LAS ICT totals nearly $237 million on 21 projects in 17 countries. The list does not include the investment in base mapping such as ortho-photomaps or in systematic registration. It should also be noted that the sum total of the ICT contracts funded by the World Bank in these countries is not the total ICT investment as in many projects governments and other development partners have funded ICT investments as part of LAS reform. About 63% the investment using World Bank funds in these projects has been on hardware, a 25% on software and about 10% on data conversion.

As noted above, the investments the countries in ECA have invested in LAS ICT in a phased manner. The investment cost in software listed in the table below is a sum of these investments. The following contracts provide some insight of the investments in software:

- **Azerbaijan** signed a contract for $1.95 M for registration and cadastral management software in May 2012.
- **Bulgaria** signed contracts for:
    - $0.34 M to develop web services in June 2006,
    - $2.78 M for the development software for the cadastre and registry in August 2006, and
    - $1.3 M for GIS licences in September 2007.
- **Croatia** signed contracts for:
    - $2.55 M for the development of cadastre and registry software in May 2007, and
    - $2.45 M for hardware and software to support a joint information system in September 2008.
- **Romania** signed contracts for:
    - $3.58 M for an integrated cadastre and land book registration system in March 2002, and
    - $3.28 M for updated licenses and support in November 2011.
- **Serbia** signed contracts for:
    - $0.25 M for software licenses in June 2006, and
    - $3.6 M for software to support the Real Estate Cadastre in December 2007.
- **Ukraine** signed contracts for:
    - $6.68 M for the development of a cadastral system (hardware/software) in June 2010, and
    - $1.39 M for the development of an integrated security system for cadastral information in February 2012.

Table 7 - LAS ICT Expenditure on Recent World Bank Projects in ECA

Country	Project	Contract Cost (US$ M)				
		Hardware	Software	Data Conv.	Other	Total
Albania	Land Administration and Management	2.10	0.00	0.02	0.00	**2.12**
Armenia	Title Registration	0.90	0.23	0.00	0.00	**1.14**
Azerbaijan	Real Estate Registration	5.18	3.79	1.29	0.05	**10.31**
Bosnia and Herzegovina	Land Registration	2.11	1.24	2.85	0.20	**6.40**
	Real Estate Registration	0.04	0.00	0.00	0.00	**0.05**
Bulgaria	Registration and Cadastre	5.30	4.56	0.39	0.06	**10.31**
Croatia	Integrated Land Administration System	0.77	0.35	0.35	0.00	**1.47**
	Real Property Registration and Cadastre	4.81	3.44	0.00	0.51	**8.76**
FYR Macedonia	Real Estate Cadastre and Registration	0.36	0.71	0.88	0.00	**1.95**
Kosovo	Real Estate Cadastre and Registration	0.04	0.00	1.66	0.00	**1.70**
Kyrygyz Republic	Second Land and Real Estate Registration	0.29	0.05	1.32	0.25	**1.91**
Moldova	First Cadastre	0.54	0.04	0.00	0.11	**0.69**
Montenegro	Land Administration and Management	0.41	0.79	0.24	0.00	**1.44**
Romania	Complementing EU Support for Agricultural Restructuring	0.00	3.28	3.04	0.00	**6.31**
	General Cadastre and Land Registration	0.00	3.58	7.72	0.00	**11.30**
Russia	Cadastre Development	74.55	18.93	0.00	0.00	**93.48**
	Registration	22.19	4.81	1.33	0.00	**28.33**
Serbia	Real Estate Cadastre and Registration	2.47	4.92	0.22	0.05	**7.67**
Slovenia	Real Estate Registration	0.00	1.96	1.33	0.00	**3.29**
Tajikistan	Land Registration and Cadastre System for Sustainable Agriculture	0.24	0.45	0.00	0.00	**0.68**
Ukraine	Rural Land Titling and Cadastre Development	26.32	6.59	5.22	0.02	**38.16**
Total		**148.60**	**59.71**	**27.87**	**1.25**	**237.43**
Percent		62.6%	25.1%	11.7%	0.5%	100.0%

Source: Contract information downloaded from the World Bank project web site on 20 May 2014. Note that the analysis is constrained by the quality of the information that is available. In Albania there has been significant effort in scanning registration documents and software has been developed by individually contracted staff.

Software upgrades can also be costly. Slovenia signed a contract for $1.96 M to upgrade its software in October 2003.

The countries in ECA typically had a good basis for investing in ICT. The countries had strong local capacity and in many cases had existing records and maps or were linked to activities that produced new records and maps. Nonetheless, many difficulties arose in developing the ICT systems. Tonchovska et al (2012:17-18) after reviewing the experience in ECA, list the following key lessons:

- Start with the development of an ICT strategy
- Plan a small 6-8 month project for business process reengineering
- Hardware supply should be separate from the software development
- Funds for the technical assistance for project and contract management, quality assurance and capacity building should be included in the project design
- Clear management and reporting mechanisms should be established with senior managers
- International and national standards have to be used to ensure interoperability with external systems
- Data quality improvement is a long process and should start prior to or in parallel to ICT development
- The period for using two parallel IT systems and the period of maintaining both manual and digital systems should be planned well and kept as short as possible
- Sustainability should be a top priority in the design and implementation of the IT system.

These lessons are particularly important in Africa which is building from a lower technical base and where too often policy makers look at ICT investment as the 'silver bullet' that will solve all problems.

The task in estimating the cost of ICT in CoFLAS looks only at the initial investment in the software and hardware. Data generation and digitization is covered above. In order to ensure the sustainability of LAS ICT systems there are very real requirements for capacity development. As a minimum, there needs to be in-house users and system support and ideally in-country intermediate software and system support with only the most complex support issues being dealt with externally. The generic

costing of capacity building is covered below. There is a major cost in maintaining an ICT system but this is considered later in CoFLAS.

A CoFLAS process and tables to determine the software and hardware investment in ICT are set out in Annex 2.

4.2.5 Capacity Development

Developing a comprehensive capacity development proposal to support LAS reform is beyond the scope of CoFLAS. "Capacity can be defined as the ability of individuals and organizations or organizational units to perform functions effectively, efficiently and sustainably" UNDP (1998). Williamson et al (2009:295-312) provide a detailed analysis of capacity development in the context of LAS reform. They broaden the traditional approach to capacity development, observing that it needs be undertaken at three levels:

(a) at the broader system/societal level;
(b) at the entity or organizational level; and
(c) at the social group or individual level.

These three levels are summarised in the table below.

Table 8 - Capacity Development in Land Administration (from Williamson et al (2009:301)

Level	Capacity Assessment Need	Capacity Development Options
Societal level	Policy dimension Social and institutional dimension System dimension Legal and regulatory dimension	Land policy issues Land administration vision LAS Land tenure principles Legal principles
Organizational level	Cultural issues Managerial and resource issues Institutional issues and processes	Institutional infrastructure Spatial data infrastructure Professional institutions
Individual level	Professional competence Human resource needs Educational resources	Educational and training programs Continuing professional development Virtual programs Education and research centre

FIG (2008) provides a process to assess capacity in land administration. This methodology develops a capacity development plan by iteratively addressing the following hierarchy of considerations; political objectives; land policy; policy instruments; legal framework; mandates/tasks; business objectives; work processes/IT support; needed human resources; and training programs. This analysis is very context and situation specific. CoFLAS is not the tool to undertake this assessment.

The GLTN Capacity Development Strategy (GLTN, 2014) notes that in a sensitive area such as land it is important to consider capacity at both the vertical levels in organisations and social groups as well as the horizontal levels that link groups, institutions and communities. Capacity building also needs to cover not only 'hard' technical skills and organisational functions such as HR, finance and planning, but also the 'soft' skills in topics such as culture and values, leadership, ethics and negotiation.

The following table summarizes the provisions for capacity development in a selection of the largest active LAS reform projects that are being supported by the World Bank. These projects cover all key regions and cover projects looking at different aspects of LAS reform and have estimated budgets of between $62.3 million and $210.1 million. The capacity development activity funded under these projects ranges from about 1% to over 15% of the estimated project cost. Where the LAS reform project is scaling up a proven process in a country with good capacity, the estimated cost of capacity development is low (1-3%) as is the case for the projects in Turkey and Vietnam. Where the process is

less proven and/or the existing capacity is less strong an investment of 10% or more in capacity development is necessary.

Table 9 - Analysis of Major Active World Bank LAS Reform Projects

	Turkey	Kenya	DRC	Vietnam	Pakistan	Guatemala
Project	Land Registry and Cadastre Modernization Project	Informal Settlements Improvement Project	Urban Development Project	Land Administration Project	Punjab Land Records Management and Information Systems Project (additional credit and restructuring)	Land Administration II Project
Project cost	$210.1 M	$100 M	$100 M	$100 M	$127.9 M (original plus additional)	$62.3 M
Date Approved	1 May 2008	24 March 2011	9 May 2013	27 March 2008	11 September 2012	14 December 2006
Project Structure	1. Cadastre and land registry renovation and updating ($175.39 M)	1. Strengthen-ing institutions and program management ($10.0 M)	1. Primary infrastructure ($50 M)	1. Modernisation of the land registration system ($85.32 M)	1. Business process improvement and capacity enhancement ($1.9 M)	1. Cadastral and land regularization ($31.95 M)

	Turkey	Kenya	DRC	Vietnam	Pakistan	Guatemala
	2. Improved service delivery ($19.35 M)	2. Enhanced tenure security ($8.0 M)	2. Urban governance ($48 M)	2. Improvement of land registration service delivery ($7.41 M)	2. Development and deployment of the LRMIS ($92.0 M)	2. Maintenance of cadastral information and municipal services ($.13.32 M)
	3. Human resources and institutional development ($6.02 M)	3. Investing in infrastructure and service delivery ($70.3 M)		3. Project management and M&E ($7.28 M)	3. Service delivery and information campaigns ($27.6 M)	3. Legal reforms and institutional strengthening for land administration ($7.76 M)
	4. Property valuation ($4.96 M)	4. Planning for urban growth ($4.0 M)			4. Project management and M&E ($5.4 M)	4. Project management and M&E (8.82 M)
	5. Project management ($2.2 M)					
Capacity Development	Component 3 all CD and includes NRD strategy, strategic planning, training and study visits. Component 4 includes capacity building. Total about $6.5 M.	Much of component 1 and other CD activity in other components. Total about $10 M.	The urban governance component includes funds for local government capacity support ($12.8 M) and measures at the national level mitigating capacity short-comings ($2.5 M)	Component 2 includes a public awareness and communication activity ($1.0 M)	All of component 1 and a reasonable part of component 3. Possible total about $10 M.	Much of component 3 with some capacity building in components 1 and 2.
Approx. % budget for CD	3.1%	10.0%	15.3%	1.0%	7.8%	~12%
Approx. % PM and M&E	1.0%	~2-3%	2.2%	7.8%	5.4%	13.8%

Source: World Bank Project Appraisal Documents (PADs). Note that the actual expenditure on the project activities may differ from that set out in the PAD.

CoFLAS provides a simple table to assess the relative cost of capacity development based on factors such as the processes being implemented under the LAS reform and a quick assessment of current capacity. The process and a table to assess the cost of capacity building are set out in Annex 2.

4.2.6 Project Management

The last cost component considered by CoFLAS in establishing an LAS with broad geographic cover is project management and monitoring and evaluation (M&E). The requirement for project management and M&E will vary depending upon factors such as the specific LAS reform that is proposed, the proposed management arrangements and the resources and experience available for project management. It is beyond the scope of CoFLAS to design and cost the project management and M&E requirements for a specific LAS reform project.

Table 9 above sets out the budget for project management and M&E in a range of large, active World Bank-funded LAS reform projects. The requirements for project management and M&E range from 1% to over 13% of the estimated project cost.

CoFLAS provides a simple table to assess the relative cost of project management and M&E based on factors such as the processes being implemented under the LAS reform and a quick assessment of current project management capacity. The process and a table to assess the cost of project management and M&E are set out in Annex 2.

4.3 Running a LAS

4.3.1 Background and Information Gathered in Preparing CoFLAS

The annual cost of running a LAS will depend upon a number of factors, including the scope of services provided by the LAS, the approach adopted in key legal and technical areas, the role of the various actors, particularly central government, local government and the private sector, and the extent that LAS service delivery is decentralised. Decisions on many of these factors will have been made explicitly or implicitly as the LAS is established. The cost implications of these decisions in establishing a LAS were reviewed in the previous section of CoFLAS. There will also be cost implications in these decisions in the on-going operations of the LAS.

The cost of running a LAS was investigated by gathering detailed information from a number of country case studies. The questionnaire used was initially developed in an expert group meeting, piloted and refined during the study. The final questionnaire is set out in Annex 5. The questionnaire concentrates on the key LAS activities of land registration, cadastral surveying and valuation. Initially an attempt was made to gather data for land use planning and taxation, but it became clear as the questionnaire was tested that there was too great a variety in how these services were implemented across central/state/local government authorities to be able to draw useful information in a generic tool such as CoFLAS. Data was gathered using the questionnaires from 5 countries with well-developed LAS (Denmark, the Netherlands, New Zealand, Norway and Sweden) and from a number of countries where the LAS has been developed more recently or is still being developed (Albania, Georgia, Lesotho, Peru and Rwanda). Summary data from the responses to the questionnaires is set out in Annex 6, which indicates that there are gaps in information. Key parameters drawn from the information and other data are set out in Annex 7.

4.3.2 Conversion of Currencies to a Common Benchmark

As CoFLAS is intended to be a generic tool, it is necessary that the financial information collected in the questionnaires is converted to a common measure. In preparing the tool a decision was made to adopt US dollars adjusted for purchasing power parity (PPP). The PPP factor used to convert both the exchange rate to US$ and to make the PPP adjustment is the 2011 PPP conversion factor published by the World Bank (http://wdi.worldbank.org/table/4.16). These factors are listed in the table below.

Table 10 - PPP Conversion Factors (2011, WB WDI)

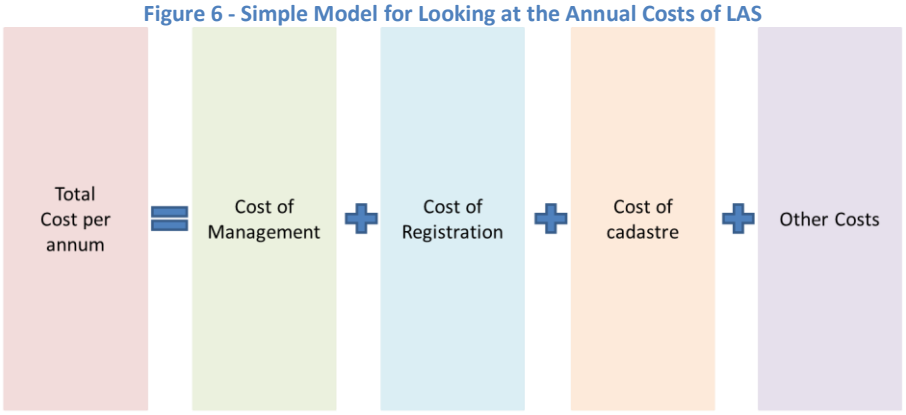
Country	PPP Conversion Factor
Albania	45.9
Denmark	7.9
Georgia	1.0
Lesotho	4.8
Netherlands	0.8
New Zealand	1.5
Norway	9.1
Peru	1.6
Rwanda	271.7
Sweden	8.9
Thailand	17.5

4.3.3 Analysis of Information on the Cost of LAS

Based on the information available from the questionnaires, the information on expenditure in the country case studies is only available as salary costs and other others. Several of the countries have broken down the 'other' category, however this information is not available for all countries and looking at other cost elements will add complexity into the model. Information is available on the number of staff in each country that are required to deliver LAS. Again several countries break this staff into a range of different categories, but generically, staff can be broken down into three categories: (1) registration staff; (2) survey/cadastre staff; and (3) management, administration and other staff. This breakdown of staff can be used to break the salary costs down into the three categories. There will be issues in this assumption as for example a surveyor does not get paid the same as a manager, but grouping managers with administrative and other staff will go some way to address this distortion. However, it has to be accepted that the assumption is likely to understate the cost of management and administration.

This assumption then leaves four categories of costs: (1) management/administration/other salary costs; (2) registration salary costs; (3) survey salary costs, and (4) non-salary costs. The 'other' costs include a very broad range of items including costs that are directly attributable to core tasks such as registration or the cadastre (IT and computing costs and occupation costs and the hiring of temporary staff, for example) and will also include other costs that may be country specific, such as the costs of undertaking specific tasks that have been assigned by government to the agency than may not be directly related to the provision of LAS.

Figure 6 - Simple Model for Looking at the Annual Costs of LAS



Total Cost pa/ Registered Parcel	Management	Registration	Cadastre	Other
Represented by	Salary costs excluding estimates for registration and survey staff/ Registered parcels	Estimated salary costs of Registration Staff/ Registered parcels	Estimated salary costs of survey staff/ Registered parcels	All other costs/ Registered parcels
All country case studies (USD PPP)	0.97 to 6.10 (excl. Lesotho & Rwanda)	1.10 to 5.02	0 to 4.64	0.66 to 21.85 (Lesotho 103.15 Rwanda 0.15)
Established systems (USD PPP)	0.97 to 6.10	1.10 to 4.06	0.75 to 4.64	1.59 to 15.81

These four cost categories sum to the annual cost of providing LAS services. This annual cost needs to be broken down into a unit cost that can be applied in a broad range of jurisdictions. Based on the analysis of the data the unit that has been adopted is 'registered property'. The annual cost/registered property for the four cost categories is set out in the table in Annex 7 and is summarised in Figure 6 above. The information for both Lesotho and Rwanda has not been considered in the table. In the case of Lesotho this is as the system was very much in the early development stage with the costs of a new agency being carried by the government with a very low level of registered properties. Rwanda has

recently completed a major Land Tenure Regularization program that covered the whole country and gathered information for about 10.3 million properties, with about 9.3 million registered at the time the questionnaires were complete. There was however no transaction information gathered for Rwanda and the expenditure information gathered was for RNRA only and not the 30 district Land Bureaux.

4.3.4 Estimation of the Annual Cost of Providing LAS Services

The ranges in the cost of the four expenditure categories were investigated as a basis in preparing the CoFLAS tool to estimate the annual cost of providing LAS services. The analysis for the four well developed LAS systems is undertaken in the table below. The matrix below is a first estimate as derived from details in the questionnaire. This is to be confirmed during the workshop to ensure there has accurate and comparative reporting against all variables.

Table 11 - Unit Costs for Denmark, Netherlands, New Zealand and Sweden

	Salary Expenditure (US$ PPP)			Other Costs (US$ PPP)
	Management/Admin/ Other	**Registration**	**Cadastre**	
Denmark	1.05	1.81	0.75	6.07
	Central agencies without branch offices.	Single registry. Data in digital form available online.	Cadastral surveys by private sector. Partial self-financing.	Includes contract IT, housing expenses and operational costs.
Netherlands	6.10	4.06	4.64	15.81
	Single agency, with 6 regional offices. Significant investment in computer systems.	Computerised system. Rationalising offices. Strong unions.	Cadastral surveys undertaken by Kadaster.	ICT is undertaken in-house; other responsibilities such as land consolidation, reference system, GIS products, other registers, Kadaster International
New Zealand	0.97	1.10	1.03	1.59
	LINZ single agency, regulatory role. HQ plus two data centres. Significant investment in cadastre, computer systems.	All dealings registered online by private lawyers. LINZ maintains database.	All surveys lodged online by private surveyors. LINZ maintains data base.	Substantial work out-sourced – conveyancing, geodetic surveys, cadastral surveys, valuation. Supported with a strong online IT system.
Sweden	1.28	6.42	10.70	8.97
	LAS provided through 7 registration offices and 70 cadastral offices operated by Lantmäteriet and cadastral services in 38 of the 290 municipalities.	Registry information is digital and is available online. Registration is available in 77 offices nationally.	Cadastral data is digital and available in the offices. Cadastral surveys undertaken by Lantmäteriet and 38 of the 290 municipalities.	Major non-salary expenditure is on consumables and materials with some development costs as well.
Thailand	1.90	2.22	1.55	3.31
	Single agency with LAS provided through 77 Provincial Land Offices, 383 Branch/Sub-Branch land offices and 372 district land offices.	Registration system is very efficient manual records system linked to national identify system. Registration data computerised in ~500 offices, and cadastral/registration data in a further 70 offices.	Cadastral data is computerised in about 70 offices, but not available outside DOL. There are 1,167 private surveyors, but most cadastral surveys are undertaken by DOL surveyors.	Extensive office network at Province and district levels throughout Thailand, supported by a large Head Office.

Based on this analysis the following scales have been prepared for CoFLAS in estimating the annual cost/property of providing LAS services.

Table 12 - Table of Annual Cost/Property for LAS

USD (PPP)/ Property	Management	Registration	Cadastre	Other
1	Single agency, central back-office. Flat organisation structure. Significant investment in IT system with on-line registration capability.	Central back office. Agency adopts regulatory role with data entry/update by private parties.	All cadastre digitized. Surveys undertaken by private surveyors. Survey plans lodged electronically.	Agency solely focussed on LAS. Valuation, tax collection, planning undertaken by LGAs or private sector.
2	Single agency with limited branch offices (<10). Flat organisation structure. Significant investment in IT.	Central back office. Registration updates undertaken by the agency.	Cadastral surveys undertaken by private surveyors. Survey plans lodged manually.	Agency focussed on LAS and providing most LAS services in-house.
5	Multiple agencies, and/or significant regional network (~50 offices). Limited attempt to flatten organisational hierarchy.	Multiple offices, traditional processing of registration without optimising resources (no back office/front office). IT used for processing (no B2B or C2B interface).	Cadastral surveys undertaken by government surveyors. Significant investment on support of reference frame, NDSI, etc.	Agency largely provides LAS in-house. Agency also responsible for other tasks not directly associated with LAS.
10	Multiple agencies, regional network (~100 offices). Traditional bureaucratic structure.	Multiple offices, traditional processing of registration without optimising resources, emphasis on paper lodgement and processing.	Cadastral surveys undertaken by government surveyors. High survey standards, requirement for extensive mapping (buildings, land use, etc.) Significant mapping program.	Agency responsible for a broad range of tasks.

The above framework provides the elements to cost the annual operating costs of a land administration system based on an estimate of the number of properties. This annual cost applies to a system where the registration is complete. Fewer resources would be required to provide LAS in a jurisdiction where registration is incomplete. The estimate thus provides an upper bound for the annual operating costs having made a set of decisions on how LAS are to be provided.

Although the process above will provide a global estimate of the annual cost of providing LAS services, including salary and other recurrent expenditure, major costs may arise for items such as the cost of operating a CORS network, updating mapping, ICT hardware and software maintenance, survey equipment maintenance, etc. A table to list an estimate of the annual maintenance cost for the LAS is provided in CoFLAS, recognizing that some of these costs may be covered by the global estimated annual cost of providing LAS services.

The process and Tables to estimate the annual costs of providing LAS and major annual maintenance costs are set out in Annex 2.

4.4 Revenue Generated by LAS

In most developed countries land-related taxes, fees and charges can be a significant source of government revenue, particularly for local governments. In many countries with well-developed LASs, the schedule of fees and charges for the provision of land administration services such as the first registration of rights, the transfer of registered rights, and the registration of survey plans etc. are structured in a manner that recovers from users the cost of providing LAS services. Often this arrangement recovers not only the direct cost of providing the services but also the provision of essential infrastructure such as regulatory oversight, the development and maintenance of ICT systems, record management systems, physical occupation and operational costs, administration support services such as finance and HR, the establishment and maintenance of a geodetic reference frame and the compilation of large scale base mapping. Under this arrangement the users of land services or those who benefit from the services, are bearing all or most of cost of the system, rather

than having all taxpayers carry the cost of land sector services as they do for many public services such as law enforcement, public health and education. Increasingly, however, costs can be recovered from the licensing of data access and data services to third parties – including companies and individuals.

Even with well-developed LASs there is a tension between the objective of recovering the cost of providing services and the 'public good' - the need to ensure that land services are accessible and affordable for all sectors in society. In less well-developed land administration systems, the systems to record rights are often very incomplete in terms of geographic cover and the nature of the information recorded. In many African countries less than 5 percent of properties are registered in the formal LAS. This lack of a complete set of records makes it impossible to consider recovering the cost of land services from user fees and charges in a manner that is not a major barrier for participation in the formal system, particularly for the poor and vulnerable. As a result, in many countries land services are funded by direct budget allocation and/or development partner support. Typically the land sector, like most government sectors in developing countries, is under-funded and lacks the ability to implement the systems and provide the services as specified by policy and legislation. This creates further difficulties for those providing services and those seeking services as there is a clear gap between what is required by policy and law and what is physically available or possible. This gap is insurmountable for most, but especially for the poor and disadvantaged.

The information from the questionnaires (see Annex 7) provides the following information about registration in the well-developed LAS (Denmark, Netherlands, New Zealand, Peru and Sweden):

(a) The annual property turnover (registered transfer as a percentage of total registered properties) ranged from 3.0% in the Netherlands to 6.1% in Sweden and was 4.9% in Thailand with a register of over 34 million properties)
(b) The revenue from registered transfer as a percentage of total revenue (excluding survey and other revenue in the Netherlands, survey and other revenue in New Zealand and survey, capital gain/stamp duty and other in Sweden, survey, capital gains tax, stamp duty and other in Thailand) ranged from 52.2 to 100% of revenue (67.6% in the Netherlands, 100% in New Zealand, 52.2% in Peru, 54.0% in Sweden, 66.7% in Thailand).
(c) The revenue from registered mortgages as a percentage of total revenue was 30.9% in the Netherlands (excluding survey and other revenue), 32.9% in Peru, 37.4% in Sweden (excluding capital gain/stamp duty and other revenue) and 33.2% in Thailand (excluding survey, capital gain/stamp duty and other revenue).

Burns (2007:48) reported on the property turnover in a range of countries:[16] Philippines 3.7%, Peru 3.9%, Scotland 6.4%, 7.1 to 10.2% in Australia, 9.2% in Hong Kong, 12.1% in England and Wales and 13.1% in Thailand. Burns (2007:54) also noted the average cost of registering a transfer as a percentage of property value for the same group of countries: 0,5% in Indonesia; 0.4-4% in Latvia, 1.5% in Armenia and Moldova; 3.2-4.2% in Australia; 4.5% in Thailand; 5% in Kyrgyzstan; 8.2% in the Philippines; and 13% in Karnataka in India.

In Romania data from the Cadastre and Land Registration agency shows that the revenue from registered transfers in 2012 was 39.6% of the total revenue from registration services (145.8 million lei of the 368.1 million lei revenue) and revenue from mortgages in 2012 was 11.3% of revenue (41,4 million lei) (World Bank 2014). In data compiled for Thailand by Burns (2007) in the year ending 30 September 2001 the revenue from transfers and mortgages was 43.0% and 33.2% of total revenue for the Department of Lands.

This information provides the basis for making a fairly simple projection of the likely revenue from LAS. This process and table is set out in Annex 4.

[16] Generally for the financial year ending in the period of 2000 to 2001.

Chapter 5. Financing LAS Reform

5.1 Raising Revenue or a Public Service?

The provision of LAS is typically a public service provided by government. Like most public sector institutions in developing and developed countries, land agencies are facing a multitude of challenges. Arguably, chief among these challenges is the ability to provide affordable, cost effective, efficient and sustainable services to the majority of potential clients. The service provision challenges that land agencies face are attributed to a number of factors including:

- out-dated service delivery and reliance on expensive and time consuming processes and systems
- lack of adequate funding to produce and deliver services, to develop and maintain the fundamental systems necessary to provide services (land records management systems, ICT systems, geodetic reference frames, etc.), and to develop the human resources and capacity to provide services, etc.

Traditionally land agencies in developing countries get funding from the Treasury (Ministries of Finance) and these funds are largely allocated to recurrent expenditures (salaries and consumables). Most capital expenditures for the land sector in developing countries have been financed from international development resources made available either through grants or concessional loans. Governments in many developing countries do make funds available to the land sector as it is a sector that can generate revenue. However land related fees and charges can impact on participation in the land sector and general compliance with land policies, legislation and procedures and processes. The level of the fee or charge can be a critical element in fostering participation in a formal LAS. This chapter looks at the financing options for LAS reform.

In deciding on policy related to land related taxes, fees and charges a number of factors need to be considered, including deciding on the appropriate mix of annual taxes and/or transaction/service based taxes, fees and charges.

5.1.1 Annual Taxes

Annual taxes have the advantage of being more predictable, but to be equitable and effective the implementation of a system of annual land taxes requires an investment in the preparation of valuation rolls, the development of procedures and processes to assess property taxes based on specified tax rates and efficient and effective procedures to collect the assessed taxes. Land tax can be assessed based on the income derived from the property, the area and use of the property, or on site, capital or annual rental values. In many cases governments have difficulty in assessing values and often simple procedures are developed to assess taxes based on key characteristics such as property area, location and land use. There are international standards for valuation, but these are often difficult to implement in a developing country. Bird and Slack (2003) document a comparative study of land and property tax in 25 countries and note that land and property tax is an important source of revenue at the sub-national level, but in the case of developing countries the contribution of property tax to sub-national revenue had been decreasing in the period from 1970 to 1990.

Table 13 - Sub-National Property Tax as Share of Sub-National Revenue (%)

	1970s	1980s	1990s
OECD Countries (number of countries)	17.4 (16)	17.0 (17)	17.9 (16)
Developing Countries (number of countries)	27.6 (21)	24.3 (27)	19.1 (24)
Transition Countries (number of countries)	6.7 (1)	8.51 (4)	8.8 (20)
All Countries (number of countries)	22.8 (38)	20.4 (48)	15.6 (59)

Source: Bird and Slack (2003:6)

In some developing countries governments have adopted policies for the agencies providing LAS services to retain some or all the land taxes collected from land holders. In Tanzania, for example, the Ministry of Lands, Housing and Human Settlement Development (MLHHSD) has had the ability to retain the collected land rent since 1995/96, with the District Councils collecting land rent on behalf of the Ministry and the Ministry passing some of the funds back to the Districts with this money intended to fund land-related expenditure in the districts. Although there have been difficulties with this arrangement due to factors such as limited information to support the collection of ground rent and delays for both MLHHSD and the district councils in receiving funds, the process has provided funds for the land sector in an environment where there is limited available public budget. The arrangements have varied over time.

This sort of arrangement is very rare in countries with well-developed LAS and annual land taxes in these countries are typically a major source of revenue for local governments. In these countries it is more common to find self-financing policies where the agency providing LAS services is able to retain all or some of the fees and charges paid of users of the LAS.

5.1.2 Transaction Taxes, Fees and Charges

Situations vary, but based on international experience people are willing to accept transaction fees and charges up to about 5% of property value. In the 2013 Doing Business report, 96 of the 185 countries ranked for property registration are recorded with a transfer cost of 5% of property value or less.[17] There are a few countries with rates higher than 5% that have LAS that are well developed with good public participation. Germany ranked 81 has a rate of 5.7%, Japan ranked 66 has a rate of 5.8%, Netherlands ranked 47 has a rate of 6.1%, South Africa ranked 99 has a rate of 6.1% and Hong Kong ranked 89 has a rate of 7.7%. Where the cost of registering a transfer is substantially higher than 5-8% of property values there can be problems with participation in the formal LAS and/or the under-declaration of property values which erodes the reliability of data held in the LAS due to both non-participation and under-declared values. Doing Business (2006) reported examples of governments substantially reducing transfer fees and collecting more revenue. One example quoted was the state of Maharashtra in India which in July 2004 reduced transfer fees and stamp duty from 12% to 6% and collected 20% more revenue the following year.

Fees and charges for the delivery of LAS services can be specified in a number of ways, including: by law; by estimated cost of providing services; or under a policy of cost-recovery. There are in some circumstances provision for reduced or waivered fees and charges for the poor and disadvantaged, although this is less common in developed countries and more common in developing countries. In the local government system in Columbia, neighbourhoods are mapped in social status and wealthy

[17] http://www.doingbusiness.org/data/exploretopics/registering-property.

neighbourhoods pay higher fees for local government services which are used to subsidize the fees for services in less well-off neighbourhoods.

5.2 Financing Options

There are a range of strategies that can be adopted in financing LAS. The options include:

(a) Full funding by government as a public service
(b) Setting fees and charges to fully or partially recover the cost of providing LAS services and therefore transferring the cost of providing LAS services from government to users of LAS services
(c) Transferring core parts of LAS delivery to others such as local government or private sector service providers (lawyers, notaries, private surveyors) that have the ability to recover costs through user charges
(d) Separating the regulatory and service provision LAS functions and outsourcing the service provision function to the private sector under some form of public-private-partnership.

There is a major cost in establishing a LAS and there are limited opportunities to cover this major cost with user fees and charges. In the context of a developing country, the cost of developing an LAS with broad geographic cover is really an investment in public infrastructure. A systematic approach in establishing a LAS that typically involves the mobilisation of teams to the field with extensive community consultation has proved cost-effective and transparent. Charging fees can create barriers to participation in a systematic process and as a result many governments underwrite the cost of establishing LAS under a systematic process, often with development partner support, and seek to recover this initial investment through fees and charges on subsequent dealings and services.

5.2.1 Funded by Government

The full funding by government of LAS services is the traditional approach that has been adopted in many countries, particularly in developing countries. This approach does not encourage innovation or the adoption of more efficient approaches. In developing countries the reliance on often unpredictable government budget allocation can make provision of effective and reliable LAS difficult or impossible.

5.2.2 Full or Partial Self Financing

A policy on land-related taxes, fees and charges is important, particularly where the policy of full or partial cost-recovery is adopted. High fees and charges, or a perception of high fees and charges for LAS services can have a significant impact on participation in the formal LAS.

Policies of cost-recovery are typically set to recover cost overall based on some forward predication of the level of services to be provided. The level of services to be provided will vary depending on a range of factors including, the general status of the economy, land market activity and in rural areas seasonal variations in the demand for services. There are some services that are in high demand, such as the registration of changes in rights, and others that are in less demand such as the sale of survey plans and maps. Some land offices can be very busy, particularly those in capital cities and others less busy. Cost-recovery policy is therefore often structured to recover costs over a specified period, with the agency able to accumulate some additional revenue to cover possible loss of revenue due to factors such as decreased land market activity. There is also built into many cost-recovery policies some degree of cross-subsidisation between some services that attract significant revenue and other services that do not and between some offices that provide a lot of services and others that do not. In some countries with policies of cost-recovery for LAS service delivery there is an acceptance that some LAS services such as state land management, maintenance of the geodetic network and the provision of mapping or core datasets constitute a public good. In these countries a certain level of government

funding is provided to support these public good activities with the expectation that the fees and charges on other LAS services recover costs for these services. This is a policy of partial cost-recovery.

5.2.3 Private Sector Service Suppliers

In many countries government has reduced its cost in providing LAS services by delegating some of the requirements to private sector service supplies such as notaries and private surveyors. While this can reduce the cost to government, it can mean significant additional costs to the person seeking LAS services over and above the official fees and charges from the agency providing LAS services. In many countries there is a requirement for contracts to be notarized and for survey plans to be prepared by private surveyors. In most countries survey plans are only required where the parcel dimensions change through sub-division or consolidation but in some countries a survey plan is required for all dealings. In Liberia, for example, where there are very poor records, all deeds have to be accompanied by a survey plan, even where there is no change in parcel dimensions.

In some countries consent is required prior to making application to register changes in land rights. This is the case in most states in Nigeria where Governor's consent is required for most transactions, even applications to register mortgages. In many countries applicants need to pay local government and other taxes and provide tax clearance certificates. In some countries other documentation needs to be provided, including building approvals and certificates.

All these additional requirements add time and cost to any application to register a change in a LAS and increase the barriers to participation in the formal LAS.

5.2.4 Public-Private Partnership

In developed economies, public-private partnerships are a well-established alternative to the public financing of public services, particularly in areas such as transportation infrastructure and the provision of medical and educational services. Törhönen et al (2012) reviews the limited experience of public-private partnerships in funding LAS. They note that there is some experience in using public-private partnerships to finance the provision of LAS services in a range of jurisdictions including Ontario in Canada, Maharashtra in India, South Korea, the Philippines, USA and Australia. They observe however that there is no experience in using public-private partnerships to fund the development of an LAS with broad geographic cover, particularly the requirements for systematic registration. They conclude that any government considering a public-private partnership to finance the development of an LAS with broad geographic cover should carefully consider:

- The feasibility of including systematic registration in any public-private partnership, particularly addressing the incentives for the private party in providing services to all sectors of society, particularly the poor and vulnerable
- The appropriate allocation of risk such that the private party can be secure in making the necessary long-term investments yet still carry the key commercial risks. This will require some alignment of the estimated cost of the investment to the projected revenue from providing LAS services that will ensure a fair, but reasonable return to the private party.
- The need for clear measurable indicators for service, cost and access to be agreed up-front and regularly monitored during implementation
- The need for government to be able to manage and monitor the performance of the private operator to ensure both quality and fairness in services
- The need for the private party to be very familiar with the social and political sensitivities in providing LAS services so that services are provided in a manner that builds public trust, and
- The need to ensure that any contracting for a public-private partnership is conducted in an open, transparent manner that is free from corruption.

5.3 Implications of Decisions on Financing

The financing options available to government for LAS reform are set out in the previous section. It seems clear that for less-well developed systems public funding with possible development partner support will be the major source of funding for LAS reform, particularly in the initial task of developing an LAS with broad geographic cover. There are however, some important policy implications that need to be understand when considering the different approaches to the financing of LAS reform. These implications revolve around the importance of LAS data.

In reviewing the development of Key Registers in the Netherlands and Denmark, de Vries (2012) notes that LAS data is one of the core government datasets that enables government to provide fundamental services and meet the evolving societal needs. Williamson et al (2009:440) note that LAS data has moved beyond a standalone government dataset that only supports the provision of LAS services to a National Spatial Data Infrastructure (NSDI) that not only provides the 'transformational technology that supports and benefits from efficient organization of government and administrative systems' but also enables government to create a Spatially Enabled Government (SEG) where 'location and spatial information are available to citizens and businesses to use in creative ways and when governments use place as a means of organizing their activities.' The potential for innovation founded on the NSDI, and potential revenue from sale of data and data services, should be considered at all stages of CoFLAS.

LAS data can further be seen to have a clear 'public good' role above and beyond the provision of LAS services and this needs to be recognized in making decisions on how LAS reform and LAS services are financed. The three traditional methods of financing LAS, based on the work of de Vries (2012:9), are:

1. The agency providing LAS services charges a fee to the user requesting a change or update in the LAS data;
2. The agency providing LAS data/information charges a fee to the user requesting access to or the use of LAS data; and
3. The agency providing LAS services is funded as a public service.

These traditional methods are not mutually exclusive and many agencies providing LAS services are funded by all three methods. In his analysis, de Vries advocates that in order for LAS data to be available as a fundamental dataset, a Key Register, it needs to be publicly funded and that it is counter-productive to charge for access to and use of LAS data – he was less certain that there should not be a fee to private parties in seeking to update or change the LAS data.

Regardless, where a government is considering options for financing LAS reform, particularly the options of having part of LAS services provided by private sector suppliers or entering some sort of public-private partnership, government needs to ensure that there is little if any restriction on the use of LAS data as a fundamental dataset for existing a future needs as part of NSDI and SEG. This would seem best implemented with the government maintaining ownership of the data and having the right to distribute the data.

Methods to evaluate the nominated approaches should include both value proposition and cost-benefit analysis, where value proposition realises the inherent public good and tangible and intangible benefits to government; whilst cost benefit analysis quantifies the anticipated outputs (such as an NSDI) against the input costs.

Chapter 6. Conclusions

This report sets out a tool that can be applied by developing countries to assess the likely scope and cost of establishing an LAS with broad geographic cover and providing on-going LAS services. Countries need to plan for the long-term as LAS reform typically involves significant effort of many years. The tables in CoFLAS provide a detailed framework for the design and costing of LAS reform. As the information is compiled, the key decisions that have an impact on the cost of establishing and maintaining a LAS are highlighted and discussed. The Fit-For-Purpose approach (FIG/World Bank 2014) will undoubtedly provide the framework for key technical decisions as it will enable countries to establish an LAS with broad geographic cover in the most cost-effective manner yet still provide the ability to strengthen the quality of records incrementally over time. The focus on affordable, Fit-For-Purpose, country-wide approach also reduces barriers for the poor and ensures that there are benefits to society as a whole. These benefits are far broader that the benefits of the simplistic approach that is often developed by the land sector of concentrating the reform on existing records and systems.

The report also considers the likely revenue that a strengthened LAS might generate and the options available to developing countries in financing LAS. Countries need to consider a range of funding options, often seeking development partner support for the initial investment in establishing systems and records, while ensuring that they have adequate funds to operate and maintain the systems.

The options for financing a LAS once it is established are reviewed, including the key options of relying on public finance, transferring some or all the cost of providing LAS services to users of the system through self-financing arrangements, reducing the cost of providing LAS services by assigning some functions to local government or private sector service suppliers, or by entering into some form of public-private partnership. These options are not mutually exclusive. However decisions on financing can impact on the use of LAS data and information for broader benefits to government and society.

The tool has been prepared based on information gathered from a selection of country case-studies. It is proposed that the CoFLAS tool is validated in the coming months and this validation process will lead to a refining of CoFLAS.

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World Bank (2012), Pakistan: Punjab Land Records Management and Information Project, project paper for additional credit and restructuring, report 69774-PK, August 2 2012.

World Bank (2013), Democratic Republic of Congo: Urban Development Project, project appraisal document, report 75571-ZR, April 11, 2013.

World Bank (2014), Output 2: Draft National Strategy for Systematic and Sporadic Real Estate Registration, draft report prepared under World Bank Advisory Services, 30 April 2014.

Glossary and Definitions

This definitions list aims to provide a simplified glossary to describe some terms and interpretations used in preparing CoFLAS.

Cadastre: A cadastre is normally a parcel based and up-to-date land information system containing a record of interests in land (i.e. rights, restrictions and responsibilities). (FIG 1995)

Cadastral surveying: A cadastral survey is a geometric description of a land parcel that is registered and linked to other records describing the nature of the interests, and ownership or control of those interests.

Condominium: A condominium is a building or complex of buildings containing a number of individually owned apartments or houses over one or more parcels of land.

Costing: specific to this study, costing refers both recurrent or routine and non-recurrent expenses incurred by an organisation.

> Recurrent/Routine costs: A recurrent cost consists of regular and ongoing expenses. These may include expenses such as staff salaries, occupation, offices and asset costs, insurances and utilities, training, information communication technologies, operations, and maintenance.
>
> Non-recurrent costs: The non-recurrent costs include development (such as capital works and infrastructure) and projects (additional activities carried out by the agency) that are non-recurring activities. These expenses may also include contract staff salaries, occupation, offices and asset costs, insurances and utilities, training, information communication technologies, operations, and maintenance that are required for a defined period of time.

Financing: refers to the approach in ensuring that finances are provided to support the provision of services. Land administration may be financed in a number of ways including:

> as direct budget allocation by government at varying levels (national, state/province, local government, district etc.); or
>
> by the retention of some or all of the fees and charges collected; or
>
> by private parties, including private sector service providers or those providing a service based on land administration records; or
>
> as loans provided by government or financial institutions; or
>
> in the case of developing countries by loans or grants provided by development partners; or
>
> by a mixture of the above.

In some countries land administration is financed under a model of **self-financing**: whereby the cost of the provision of land administration services is covered by the retention of some or all of the fees and charges collected by the land administration agency.

Land Administration: the processes of determining, recording and disseminating information about tenure, value and use of land when implementing land management policies'[18] (UNECE, 1996).

Land tax: land and property taxation is used broadly to cover land and property-related taxes, rates, levies, fees, ground rent, or lease payments (as a form of tax on usufruct tenure in some countries).

[18] UNECE 1996 Land Administration Guidelines. Geneva: United Nations Economic Commission for Europe. http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/land.administration.guidelines.e.pdf

Land use plan: A plan that identifies areas for a designated use for the purpose of land management. Used for classification, resource management planning, identification of areas for future development uses, including road widening.

Parcel (of land): A parcel is a defined area of land with a unique record of ownership, use, or other characteristics, it is the basic spatial unit used for land registration/recording in a cadastre.

Planning (parcel level): this refers to layout plans and detailed plans for specific areas e.g. subdivisions, and does not refer to broad scale land use and master plans (refer to Section B, 1g).

Property (urban/rural): the term property refers to immovable property, and is used synonymously with real property or real estate. It can refer to land and building. Some registers and cadastres may record land and buildings separately, others may record these together.

Purchasing Power Parity (PPP): An economic theory that estimates the amount of adjustment needed on the exchange rate between countries in order for the exchange to be equivalent to each currency's purchasing power.

Registry: The term 'registry' or 'register' is used to denote the organization where the information on registered land rights is held. Information on registered land is typically textual and spatial, with the former typically maintained in a registry and the later in a cadastre office. In some countries there is a combined organization that has both sets of data and in some countries this office is called the cadastral office (in the Balkans, for example). In others there are separate registry and cadastre offices. For the purpose of this questionnaire, it is clearly specified between the use of the terms where registry and cadastre activities occur separately.

Restrictions: These are limitations on one's rights to property held in their name.

Revenue: Revenue is the land related fees, charges and taxes that are collected by the government associated with the provision of land administration services. This revenue is typically collected on an annual basis or on the basis of transactions or the provision of services or data/information.

Self-financing: refer to *Financing* above

Sporadic registration: The process of registering rights over land on a case-by-case basis.

Systematic registration: The registration of rights over contiguous parcels on an area-by-area basis, involving adjudication, surveying, and registration.

Transaction cost: Costs associated with an agreement over property rights and the costs of enforcing those rights. For example, purchase of land may require not only payment of the negotiation asking price but also legal land transfer fees to establish who is the rightful owner, survey and valuation costs, arrangement of credit and drafting the legal transfer document. Taxes and duties are not considered part of a transaction cost.

Transfer tax: Taxes associated with the transfer of properties payable to the State. The most common is in the form of a stamp duty or capital gains tax.

These definitions have been drawn from the following references:

FAO Land glossary: http://www.fao.org/docrep/005/y4307e/y4307e09.htm

GLTN Land glossary: http://web-archive-net.com/page/3224432/2013-11-24/http://www.gltn.net/index.php/about-us/land-glossary?view=glossary&letter=a

FIG Bathurst Declaration, Appendix 4:
https://www.fig.net/pub/figpub/pub21/figpub21.htm#APPENDIX IV

Williamson, Enemark, Wallace, Rajibafard (2009): Land Administration for Sustainable Development, glossary – pages 448 to 457

http://www.esri.com/landing-pages/industries/land-administration/e-book#sthash.Lp4BYcKW.aZSH5oh6.dpbs

UNECE, WPLA, Guidelines on Real Property Units and Identifiers, December 2004, Appendix I: http://www.unece.org/fileadmin/DAM/hlm/documents/Publications/guidelines.real.property.e.pdf

Annexes – CoFLAS Tool and Questionnaire

CoFLAS Tool
Stage 1: Assessing Readiness for LAS Reform

The following information is gathered in Stage 1 of CoFLAS:

1. Key policy issues that impact on establishing a LAS in the country;
2. Information to estimate the number of properties;
3. Analysis of existing records of rights in land
4. Preparation of a tenure typology for the country and an estimate of the properties that could be registered;
5. Preparation of an Institutional Matrix to identify key institutional actors and potential overlaps
6. A review of the major LAS processes with proposals for reengineering
7. Demonstration of knowledge of the issues, wide stakeholder consultation, other government initiatives and existing development partner support.

The process of gathering this information and undertaking the necessary analysis is set out below. This section includes the forms needed to gather the information.

1. Key Policy Issues

1.1 Key Policy Information

The following information assists in quantifying the policy context for any LAS reform activity.

Table 1.1: Key Policy Information

Question	Response
Does a National Land Policy exist?	
Are urban and rural policies integrated?	
What levels of administration exist in the country, and how many units are there at each level?	
At what level are land registration services provided to the public and how many offices have been established at this level?	
Is there a policy that land registration services be provided at a particular level of administration?	
Is the registration system deeds registration or title registration?	
If title registration, does the state guarantee title?	
Are strata titles (condominium, unit titles) recognized under the law?	
Can a right be registered without a survey plan?	
Does adverse possession of land lead to formal rights?	
What procedures exist for the adjudication of rights?	
Does the law permit systematic registration?	
How are boundaries monumented?	

Question	Response
In a dispute over boundaries, which are more important, boundary monuments or registered survey plans or coordinates?	
Is there a legal requirement that land parcels are surveyed?	
Are cadastral surveys connected to the national geodetic control network?	
Can land parcels be defined on the basis of maps?	
Do cadastral surveyors have to be registered? If so, what is the process of registration and what body manages the registration process.	
Are cadastral surveys undertaken by government surveyors, private surveyors or both?	
How many registered surveyors are there who are able to undertake cadastral surveys?	
Are cadastral index maps available?	
If so, are they kept up-to-date?	
Is there an annual land tax?	
If so, how is it assessed, how is it collected?	
What taxes, fees and charges apply to the registration of a transfer by sale?	
What regulations govern the maximum and minimum sizes of land parcels and details such as road reserve widths, parcel frontages etc.?	
What controls exist over land use? How are they enforced?	

1.2 Legally Recognized Rights

The Table 1.2 in the attachments gathers information the property rights that can be formally registered in the country. If necessary, further explanatory information can be added at the end of the table or in attached documents. This information is intended as a guide to what is possible under the current policy and legal frameworks.

2. Estimate of the Number of Properties

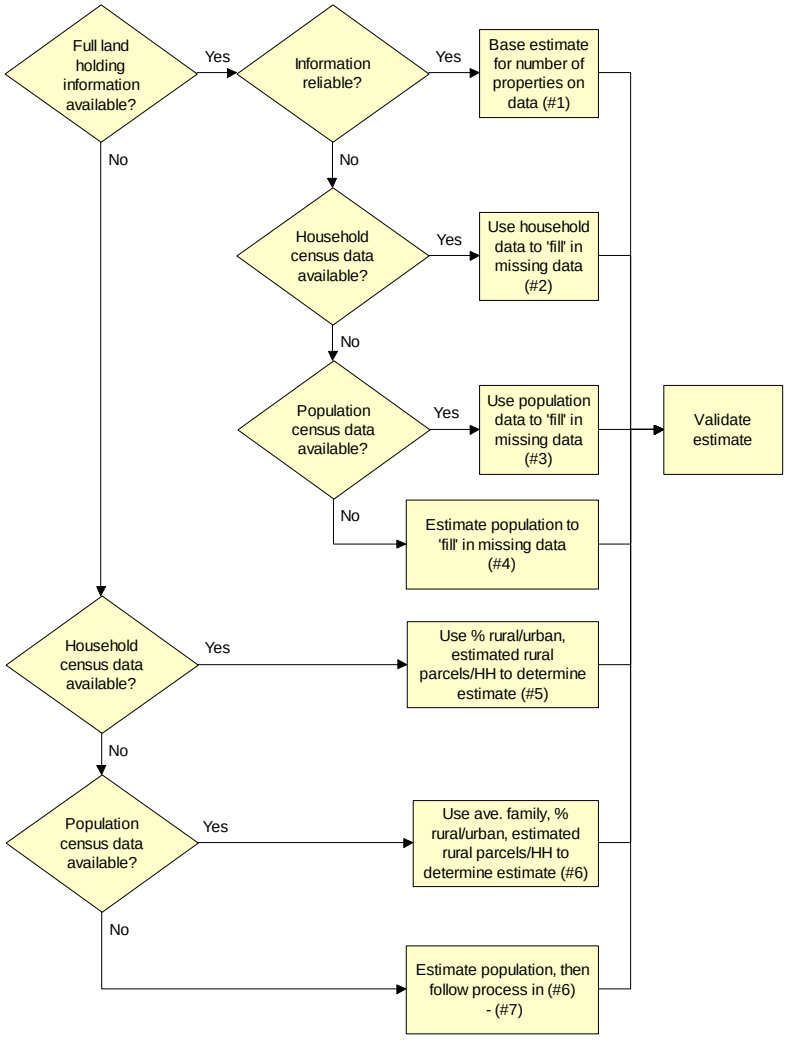
The relationship between population and the number of land parcels in a country will vary due to a range of factors including the land tenure regimes in the country, population density, the percentage of the population living in urban areas, the nature and extent of agricultural activity, the climatic and topographic constraints on land use generally and agriculture in general, the preservation of land for forestry, environmental, wildlife and habitat preservation, protection of historical or archaeological sites or other purposes and the possible impact of previous land reform or restitution policies.

Despite these differences there is a clear relationship between population and the number of land parcels. This relationship is demonstrated in the information for the country case studies in the Tables in Annex 6 and 7. For the well-developed systems in the country case studies there is an average of

about 2 head of population per property (2.005 in Denmark, 1.699 in the Netherlands, 1.968 in New Zealand, 2.025 in Norway and 1.911 in Sweden). There is much more variation in the countries with less well developed LAS. In countries where there has been redistribution, particularly in countries that have transitioned to market economies, there is likely to be more parcels per head of population due largely to the effects of aligning available property to claimants in the restitution process. This is evident in Albania where there are 0.705 head of population per estimated property. In countries where customary tenure prevail the reverse is likely to occur where large groups have communal rights to a lesser number of parcels. This is evident in Lesotho where there are 4.921 people per estimated property, although the level of registration is very low in Lesotho and it is likely that the estimate for the number of properties is light.

This text sets out a strategy to estimate the number of properties in a country. This strategy is illustrated in Figure 7 below.

Figure 7 - Strategy to Estimate the Number of Properties in a Country



In a limited number of countries reliable information is available for estimating the number of land parcels. Obviously the countries with well-developed land administration system have largely completed first registration and virtually all know how many properties they have.[19] In countries with less well-developed LAS it is often difficult to gather information. In most states on India there is fairly

[19] The possible exception is USA where property registration is a deeds registration system undertaken at county level. As a result there is no authoritative information on the number of properties registered in USA.

reliable information of the number of agricultural land parcels. This information is a legacy of the administrative systems established under colonial administration to raise revenue from agricultural land. However in India there are generally poor records in urban areas, even for the residential areas in villages. In other countries there is good tax mapping, particularly in urban areas and these records provide a fairly reliable estimate for the number of properties – at least those subject to tax. However, even in these cases there is a possible need to update these estimates. In the Indian states that have attempted to implement mass re-settlement surveys, such as Gujarat, the experience seems to suggest that the previous estimates for the number of agricultural land parcels are light by perhaps 10-20%. There is similar experience that tax mapping under-estimates the number of land parcels, either due to the fact that not all legal land parcels are included in the tax mapping or due to the fact that the number of legal land parcels differs from the number of tax land parcels.[20]

Where full information is available some adjustment can be made to cover the potential for underestimation of the number of land parcels. There is also a possible requirement to provide for condominiums which may not be included in the estimate for tax properties. Here an estimate for the percentage of households living in condominiums can be used to adjust the total estimate for the number of properties. This process is the simplest, but most rare, case in Figure 7, case #1.

The information in the following table (Table 1.3), compiled for the lowest available administration area (for example either: zone, region, district or ward in Anglophone counties in Africa) is used to apply the other strategies to estimate the number of properties. In this table:

- The estimate for the average number of people per household is only required where household census information is not available. This information is used to generate the column 'Household' using the population data.
- The percentage of the population residing in urban areas is obtained from local sources or from the World Bank 'country at a glance' information (http://data.worldbank.org/data-catalog/at-a-glance-table)
- The percentage urban population living in condominiums is based on the best local estimate (assumed to be zero if no information available)
- The estimate of the percentage of urban property that is non-residential (commercial, industrial, public land) is based on local knowledge (assumed to be 25% if no information available)
- The percentage of the rural population dependent on agriculture is based on the best local estimate (assumed to be 100% if no information available)
- The average number of land parcels per rural household dependent on agriculture is based on agricultural census data, or local knowledge of the agricultural activity. An allowance is made for a residential plot, plus a number of agricultural plots.
- The percentage of land parcels in rural areas not used by agricultural households for residences and agriculture (reserves, public land, commercial, etc.) is estimated based on local knowledge (assumed to be 25% if no information is available).

[20] Tax mapping often maps a number of legal land parcels held by one land holder as one tax land parcel.

Table 1.3 – Basic Census and Other Data by Administrative Area

A	B	C	D	E	F	G	H	I	J
Administrative Area	**Population**	**Households**	**Ave. Pop/HH**	**% Pop. Urban**	**% urban pop. in condomin.**	**% of urban prop. non-resident.**	**% rural pop. in agricult.**	**Ave. plots/HH in agric.**	**% of rural plots non-agricult.**
Total									

Based on the information in Table 1.3 the following table is generated.

Table 1.4 – Estimated Properties by Administrative Area

Administrative Area	Land Properties		Condominiums	Total Properties
	Urban	Rural		
Total				

The following process is used to determine the information in the columns in Table 1.4:

- The number of urban land properties is calculated =

  [number of households * (% population urban) * (1 - % urban population in condominiums) * (1 + % urban property that is non-residential)] on the basis that there is one residential property per urban household or

  [C * (E * (1 – F) * (1 + G)]

- The number of rural land parcels is calculated =

  [number of households * (1 - % population urban) * { (% rural population dependent on agriculture) * (average plots / household in agriculture) + (1 - % rural population dependent on agriculture) } * (1 + % of rural properties that are not used by rural households dependent on agriculture) or

  [C * (1 – E) * { (H * I) + (1 – H) } * (1 + J)]

- The number of condominiums is calculated =

  [number of households * % population urban * % urban population living in condominiums] or

  [C * E * F]

The information in Table 1.4 is prepared for all strategies #2 to #7 as set out in Figure 7 and a final estimate prepared for the strategies as follows:

- Strategies #2, #3 and #4 are used to fill-in information from Table 1.4 that is not available from existing data, possibly either in terms of urban or rural sectors or in terms of administrative districts. A new table of estimated properties is produced by merging the existing data that is deemed reliable with the new information from Table 1.4. The following strategies are used to prepare the fill-in information in Table 1.4:
    - Strategy #2 uses existing household census data
    - Strategy #3 uses estimates for average household sizes and population census data to estimate the number of households; and
    - Strategy #4 uses estimates for average household sizes and an estimate of population in the administrative areas to estimate the number of households.
- Strategy #5 uses existing household census data to prepare the information in Table 1.4, which sets out the estimated number of properties
- Strategy #6 uses estimates for average household sizes and population census data to estimate the number of households in order to prepare the information in Table 1.4, which sets out the estimated number of properties
- Strategy #7 uses estimates for average household sizes and an estimate of population in the administrative areas to estimate the number of households in order to prepare the information in Table 1.4, which sets out the estimated number of properties

The total estimated number of properties in the country should be validated. One strategy would be to consult various land sector experts and demographic experts to seek their view on the estimates. The overall number of estimated properties should also be compared with international experience – with about 1 property for every 2 head of population in well-developed economies, or as high as 1 property for every head of population if there has been a major land reform or allocation program and as low as 1 property for every 3-5 head of population if communal tenure is very prevalent.

3. Existing Records

The existing registration and cadastral data should be investigated and documented. This data will provide information on what property is already registered. The data will also provide information on the possible scope of systematic activity to improve or convert existing records to clearer or more certain rights. This information is to be set out in Table 1.5 in the Attachment to this annex.

4. Tenure Typology

A tenure typology is to be prepared based on the approach in LGAF. This tenure topology is to include both tenure that is formally recognized and tenure that is informal. The template for the tenure typology is set out in Table 1.6 in the Attachment to this annex.

Based on the estimate of the number of properties, the number of existing records and the tenure typology an estimate is to be prepared on the number of properties that need to be registered. This updated table is to be in the form of Table 1.4 above. There may be several versions of this table, one with what can be registered under the existing policy and legal framework and others with different assumptions concerning changes in the policy and legal framework.

5. Institutional Arrangements

Key information that will inform any proposal for land administrative reform is information on institutional responsibility and mandates. Particularly important will be information on overlaps or lack of clarity in mandates. This analysis of institutional responsibilities and mandates is to consider institutions at central and decentralised levels of government.

Table 1.7: Institutional Responsibilities and Mandates

Institution	Type of Land/ Resource	Main Laws	Main Responsibility/ Mandate	Overlaps with other Institutions

6. Service Delivery with Streamlined Procedures

Prior to any large scale LAS reform initiative it is important that there be a careful consideration of the current procedures and processes to update and maintain the land records. A LAS reform project will only be successful if the land records are updated as a matter of routine by the public as changes in rights occur through events such as the trading in rights or succession. This consideration will need a change in mind-set from one of being an agency that is implementing government policy to being an agency that is providing a service that people appreciate and value. The process of implementing service delivery typically requires the following activities:

(a) A careful review of all procedures to update land records, reengineering the procedures to make them most efficient for users of the system;
(b) A careful review of the fee schedule to ensure that the delivery of land services is affordable to all sectors of society;
(c) The implementation of service delivery in offices providing LAS services; and
(d) The development and implementation of a comprehensive public awareness campaign.

A key recommendation made after reviewing the experience in implementing sophisticated ICT systems on LAS reform on World Bank-funded project in Europe and Central Asia was the benefits from undertaking a comprehensive business process reengineering prior to implementing ICT and computerised (Tonchovska et al, 2012:18). Reengineering procedures, simplifying both the processes for handling applications and the structure and content of the manual records, is an essential prerequisite for computerisation of land records.

In reengineering LAS processes it is often important to establish systems that ensure that the Government can provide strong service delivery and build public confidence. de Vries (2012:9), in reviewing the experience in the Netherlands in developing Key Registers, lists as a key principle for the government in providing services is that it should not be asking for information that is already known.

A range of strategies can be implemented in land offices to support a shift to service delivery. A key strategy is ensuring that there is a clear promise in what is being provided, what it will cost and how long it will take. A key strategy in implementing efficient service delivery in Thailand was a government regulation that, unless there was a legal problem, all applications for registration had to be processed and the records updated on the day of application. This regulation makes a clear promise on the timeliness of delivery. Other strategies in improving service delivery include establishing comfortable customer services areas and counters, establishing help desks, providing clear explanations of procedures and requirements, monitoring and tracking key service delivery against clear standards and establishing effective customer complaint procedures.

In well-developed LAS there has been a trend to full or partial cost recovery for LAS. UNECE (2009) notes the important link between decisions of how LAS is developed and implemented, fees and charges and public participation:

> *"The importance of land and property markets to encourage capital accumulation in the financial sector and promote economic growth has been widely recognized. Property registration and cadastral services are fundamental to the operation of these markets and can be implemented in many different ways. Some might be more efficient than others, but all systems come at a cost. It is crucial to balance the costs against the benefits, and thus the need to apply appropriate fees and charges is of major importance. Fees that are too high, or perceived to be too high, may actively depress a market. Fees that are too low may not recover enough costs to create, maintain or further develop cadastre and registration systems."*[21]

In making decisions on the procedures and the technology to implement the procedures it is important to ensure that the services can be provided in a cost-effective manner, particularly where there is a policy for cost-recovery.

The requirements to establish a focus on service delivery and undertake business process reengineering will be very context specific. The approach to BPR will also vary from country to country. In some countries BPR can be undertaken in-house. In other countries BPR has to be out-sourced. A BPR was undertaken by a contracted in Tanzania as part of a recent World Bank project. This BPR was a comprehensive review that took about 12 months to complete and cost more than US$0.5 million.

The following questions should also accompany the proposal for LAS reform.

Table 1.8 – Decisions on Service Delivery

Question	Response
Is there a clear policy on service delivery, particularly as regards time and cost?	
If BPR has been undertaken, has the BPR process been used to rationalise the number, structure and content of the forms and records?	
What processes are in place to receive and handle customer complaints?	
Has the schedule of fees and charges been reviewed to ensure that the charges are affordable to all sectors in society?	

[21] UNECE (2009) page 3.

7. Understanding of Issues and other Initiatives

The following table is used to document the key issues and current activities in the land sector.

Table 1.9: Key Issues and Initiatives

Question	Response
Is there a list of the key land sector issues?	
Are these issues documented (for example in a LGAF or other land sector report)?	
How extensive has the discussion been with other key stakeholders in preparing the list of issues?	
If a major LAS reform is planned, have the core processes that will be scaled up been piloted and is there a good understanding of the key process parameters (resource requirements, unit cost, timeframe, stakeholder engagement, etc.)?	
Has a LAS capacity development plan been prepared and, if so, does the plan consider capacity development at the three key levels of: (i) societal/system; (ii) entity or organization; and (iii) social group or individual?	
Does any proposal for LAS reform set out appropriate arrangements and budget for project management and monitoring and evaluation?	
What are the main existing government projects/initiatives in the land sector?	
What support are development partners providing to the land sector?	
Have the land issues been discussed with development partners?	

Table 1.2 – Existing Rights Recognized by Law

Name of Right	**Legal Basis** (specify law)	**Can be upgraded to** (specify if appropriate)	**Term of Right**			**Rights** (Y or N)						**Comments/Elaboration**
			Perpetual	**Fixed**		**Sale**	**Inherit-ance**	**Mortg.**	**Sub-Divide**	**Develop**	**Other** (specify)	
				Term (yr)	**Basis for Extension**							

Table 1.5 – Summary of Existing Data Registered/Recorded

Add columns or tables as required in order to cover the tenure types listed in Table 1.2 If data is not available for the same list of administrative areas set out in Table 2.2 provide an explanation that links the two sets of administrative areas. Estimate the percentage of registered properties that are supported by a survey plan.

Administrative Area	**[Tenure Type** from table 1.2**]**			**[Tenure Type** from table 1.2**]**			**[Tenure Type** from table 1.2**]**			**[Tenure Type** from table 1.2**]**		
	Parcels	**Area**	**% Surv.**	**Parcels**	**Area**	**% Surv.**	**Parcels**	**Area**	**% Surv.**	**Parcels**	**Area**	**% Surv.**

Table 1.6 – Existing Rights Recognized by Law

The following tenure typology should be completed and include all major existing tenure regimes, including the formal tenure regimes set out in Table 1.2 above, and any informal tenure regimes. An attempt should be made to quantify the scope of the different tenures by estimating the population and area (to nearest 1,000 km^2) for each identified tenure type. The areas need not add up to the total area in the country as tenures may overlap. Data may be unavailable or of dubious quality, and this should be indicated and an estimate or range in estimates provided. Any assumptions should be documented in footnotes. The data to complete the tenure typology can be obtained from different data sources (statistics agency, academic reports, administrative data, etc.). All sources used should be indicated.

Tenure	Area and Population	Legal Recognition and Characteristics	Overlaps with other Tenures
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	

Tenure	Area and Population	Legal Recognition and Characteristics	Overlaps with other Tenures
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	
[specify tenure type]	Area: Population:	Legal recognition: Registration/recording: Transferability:	

CoFLAS Tool
Stage 2: Establishing an LAS with Broad Geographic Cover

1. Completing First Registration

Table 1.4 from CoFLAS Stage 1 sets out the estimate of the total number of properties, broken down by administrative area into urban and rural land properties and condominiums. Table 1.5 sets out information on the existing rights that are recorded. The analysis of these two tables provides the start point for estimating the scope of work in completing first registration.

The first consideration in completing first registration is to explore the options for converting lesser documents (document with lesser rights, lacking survey information, etc.) into new records with improved status and/or information. Conversion options are identified in comparing tables 1.5 and 1.2 from Stage 1. For each conversion activity an assessment of the average cost is made based on Table 2.1 and Table is 2.2 prepared in order to estimate the cost of the conversion process(es). Where possible the conversion process should have been piloted and the cost estimate based on a careful analysis of the pilot conversion. If conversion is no possible, this step is skipped.

Table 2.1 - Estimated Unit Cost of Conversion

Conversion process from [tenure type] **to** [tenure type]					
Current status of existing records and documents	Documents sorted and consolidated, in good condition and regular sizes for automatic document scanning.	Documents sorted and consolidated, but additional work due to poor condition and/or irregular sizes	Some additional work required, but no need for field verification (sorting/consolidation, irregular sizes)	Significant work required for conversion (extensive travel, sorting/ consolidation, poor condition/ irregular sizes, some field verification)	[other]
Conversion cost/property (US$)	0.50	1.00	2.00	5.00	[specify cost]

Table 2.2 – Estimated Cost of First Registration by Conversion

Administrative Area	**Conversion Process 1**		**Conversion Process 1**		**Conversion Process 1**		**Total**	
	Record/Prop.	**Unit Cost**	**Record/Prop.**	**Unit Cost**	**Record/Prop.**	**Unit Cost**	**Record/Prop.**	**Cost**
Total								

The next step is to estimate the cost of completing first registration by systematic registration. The estimated unit cost of systematic registration is decided based on Table 2.3. Where possible the unit cost should be based on systematic registration pilot activity with a careful assessment of the likely unit cost of scaling up systematic registration under the range of expected conditions. Table 2.4 sets out the scope of the requirements for systematic registration (based on the estimated properties in Table 1.3, less existing registered properties from Table 1.5, less the properties planned for conversion from Table 2.2), the cost of systematic registration and the estimated person months required (based on either the international experience of 50 properties/person month or better information available from pilot systematic registration activity. Note that the scope of the proposed systematic registration

activity may be less than the estimate for the total estimate for the number of unregistered properties as systematic registration may be phased or some types of properties (for example condominiums) excluded from systematic registration.

Table 2.3 - Estimated Unit Cost of Systematic Registration

Systematic Registration process	Adjudication by local volunteers, no surveys	Use of large scale image maps with little investment in GRN, paid field staff.	Use of large scale image maps with investment in GRN, paid field staff.	Ground surveys, with investment in GRN, paid field staff.	[other]
Systematic Registration cost/property (US$)	1	10	15	50	[specify cost]

Table 2.4 – Estimated Cost of First Registration by Systematic Registration

Administrative Area	**Land Properties**				**Condominiums**		**Total** (person months (pm) estimated at 50/___ [specify] properties/pm)		
	Urban		**Rural**						
	Prop.	**Unit Cost**	**Prop.**	**Unit Cost**	**Prop.**	**Unit Cost**	**Prop.**	**Person mths.**	**Cost**
Total									

The last step in preparing the plan for first registration is completing the following set of questions.

Table 2.5 – Strategy to Complete First Registration

Question	**Response**
Has the proposed conversion activity been piloted? If, so summarise the results.	
Has the proposed systematic registration activity been piloted? If, so summarise the results.	
Is the systematic registration and/or conversion activity to be phased? If so, provide details of the planned phasing.	
Are any changes to legislation necessary to undertake systematic registration and conversion?	
Have lower cost approaches for conversion and/or systematic registration been explored?	

Question	Response
Have time-based work plans been prepared for the conversion and systematic registration activities? If so, provide detail.	
What is the strategy to staff the systematic registration activity?	

2. Spatial Framework for LAS

The proposal for LAS reform is not expected to include costs for establishing or upgrading the geodetic reference network (GRN) or for photogrammetric line mapping. It also is not expected to cover other surveying mapping needs such as hydrographic charting, levelling networks and topographic mapping or the digitization of existing manual mapping – particularly maps at small to medium scale which have little direct relevance to LAS. These activities will assist LAS but are not essential for LAS and have broad benefits to society beyond LAS. Any proposals in these areas should be substantiated with clear cost/benefit analysis.

CoFLAS anticipates that specific inputs may be required in terms of high resolution satellite imagery (definitely sub-metre pixel, but preferably sub 0.5 metre pixels) and CORS stations. The CORS stations are classed into two types: prime CORS stations covering about 15,000 km^2 and "Fill-in" CORS stations covering about 1,000 km^2.[22] The cost of base mapping and surveying may be included in the unit costs for systematic registration.

Table 2.6 – Spatial Framework

#	Item					Number/Cost
1	Area of country	Square kilometres (km^2)				
2	Number of prime CORS	= integer (row 1 divided by 35,000 km^2 + 0.5)				
3	Number of "Fill-in" CORS	= integer (row 1 divided by 2,000 km^2 + 0.5)				
4	Cost of Prime CORS (row 2 x appropriate cost)[23]	Existing buildings with power and internet	Existing building with power	Need to provide building and utilities	Other [specify]	
		$30,000	$40,000	$60,000	[specify]	
5	Cost of "Fill-in" CORS (row 3 x appropriate cost)	Existing buildings with power and internet	Existing building with power	Need to provide building and utilities	Other [specify]	
		$20,000	$30,000	$50,000	[specify]	
6	Annual operating cost (row 4 x appropriate cost)	Cost/station (minimal)	Cost/Station (low internet costs)	Cost/Station (high internet costs)	Cost/Station Other [specify]	
		$1,200	$2,400	$6,000	[specify]	
7	CORS software with portal and ePayment	Specify if needed – could be up to $100,000				
8	Area covered by HRSI	Square kilometres (km^2)				
9	Cost of HRSI (0.5m, geo-referenced, ortho-rectified) (row 8 x approp. cost/km^2)	Competitive Price/km^2	High Price/km^2	Other/km^2 [specify]		
		$15	$30	[specify]		
10	**Total Investment cost**	**= row 4 + row 5 + row 7 + row 9**				

[22] It is assumed that the prime CORS stations cover a circular region with radius of 150 km and the "Fill-in" CORS stations cover a circular region with a radius of 35 km, with both coverages reduced by 50% to due overlaps and irregular boundaries for the jurisdiction.

[23] Note that the unit cost of $30,000 for a CORS station is based on the developing country experience quoted by Byamugisha (2013). The experience in developed countries is that the cost of GNSS receivers with choke-ring antennae can be bought in bulk for $10,000/CORS.

The following questions should also accompany the proposal for LAS reform.

Table 2.7 – Spatial Framework

Question	Response
If investment in the spatial framework beyond CORS and HRSI is proposed, is there a cost-benefit analysis? If so, provide details.	
Can the proposed estimated annual cost to operate the CORS (row 6 in Table 2.6) be funded? If so, how?	
What capacity development is planned to support the introduction of CORS?	
Is there a proposal to phase the acquisition of HRSI? If so, provide details?	

3. Physical Infrastructure for LAS

The physical infrastructure required for the provision of LAS services is driven to a large extent by the policy decision on where LAS services are to be provided. The first step in making this decision is to develop some standard LAS office topologies, with standard characteristics and furniture, vehicles and non-major ICT equipment. The list of equipment includes office computers and associated printers, but not the technical equipment to support the main ICT functions (communications, servers, workstations, graphics devices, etc.).

The following table is a copy of Table 6 from page 26 of the CoFLAS report.

Table 2.8 - Basis for Estimating the Total Staff Requirements under CoFLAS

Number of staff in the office	High Level of Staffing/Office	Medium Level of Staffing per Office	Low level of staffing per office	
Number of management/ administration/other non-technical staff relative to total registration and survey/ cadastre staff	About the same as the number of registration and survey/cadastre staff	About half the number of registration and survey/cadastre staff	About 10% of the number of registration and survey/cadastre staff	
Registration staff per 100,000 properties covered by the office	Manual records, complicated registration process, limited role for private sector	Efficient registration process, possibly computerised, limited role for private sector	Computerised records, efficient registration process, substantial role for private sector	
	10	5	3	
Survey/cadastre per 100,000 properties covered by the office	Survey/cadastre not automated, limited role for private sector	Survey/cadastre automated, limited role for private sector	Survey/cadastre automated, limited role by government	LAS services provided without cadastre
	10	5	3	0

Table 2.9 – LAS Office Typologies

Detail		Office Type 1 [specify]	Office Type 2 [specify]	Office Type 3 [specify]
Role of Office (if different)				
Approximate number of properties				
Staff/100,000 properties	Manag./admin./ other			
	Registration			

	Survey			
Nominal useable space (m^2)				

Item	Unit Cost	Office Type 1		Office Type 2		Office Type 3	
		Number	Cost	Number	Cost	Number	Cost
Vehicles							
Sedans							
Microbus							
4WD							
Motorbike							
[other]							
Furniture							
Customer counter							
Meeting table/chairs							
Desk/chair							
Filing cabinet							
Map cabinet							
Shelves							
[other]							
Equipment							
Generator (large)							
Generator (small)							
Split system air-con.							
Window air-con.							
Photo-copier (large)							
Photo-copier (small)							
Projector							
Screen							
ETS set (incl. equip)							
GPS set (incl. equip)							
Tablet							
Office computer							
Laptop							
Office printer (large)							
Office printer (small)							
Scanner A3							
Scanner A4							
[other]							
Total cost/office type							

The following table is used to specify the design building area.

Table 2.10 – Specification of Office Workspace Standards

Office Use	Specification of Requirements				
General working space	Standard			Other [specify]	
	10 m^2/person			[specify] m^2/person	
Front office for visitors/clients	20 m^2				
Record archive ($properties/m^2$)	Single file/property	Thick file/property	Two files/ property	Multiple files/property	Other [specify]
	10,000	5,000	1,000	500	[specify]

The information in Table 2.8 is used to determine the cost of establishing the physical infrastructure necessary to establish an LAS with broad geographic cover. The information from Table 1.3 on the estimated number of properties is used to prepare the following table. Note that the first column may not directly correspond with the 'Administrative Area' used in Table 1.3 and may be grouped for reasons of efficiency. For this reasons the column is headed 'Proposed LAS Office' rather than 'Administrative Area'. The type of office is specified based on the information in table 2.8. The staff

numbers are determined based on the number of properties based on the information in Table 2.8, which in turn comes from Table 6 on page 26. The proposed area is based on the number of properties, the staff numbers and the office space specifications in Table 2.9. The existing area is input based on an investigation of existing office space (assumed to be zero if no information is available). An estimate is prepared for the average cost of constructing a new office ($/m^2). This cost may vary from locality to locality. If the office space is to be leased rather than built, the unit cost of construction is set to $0. The total cost is the of the physical infrastructure is the cost of constructing the needed new office space (either the proposed area less the existing area multiplied by the average cost of construction, or the annual cost of renting the full office space) plus the total cost of vehicles, furniture and equipment for the office type as specified in Table 2.8.

Table 2.11 – Estimated Cost of Physical Infrastructure

Proposed LAS Office	Estimated Properties	Office Type	Staff				Proposed (m^2)	Existing (m^2)	Construction		Annual Lease	
			Mgt.	Reg.	Cad.	Total			Cost/m^2	Cost	Cost/m^2	Cost
Total												

The following questions should also accompany the proposal for LAS reform.

Table 2.12 – Decisions on Physical infrastructure

Question	Response
What is the justification for the purchase of any vehicles? Can approvals be obtained for the procurement of proposed vehicles? Can the operating costs of the vehicles be covered by available funds?	
What decision has been made for the establishment of the LAS Offices? Is it related to the number of properties and expected land market or is it purely related to administrative areas? Justify this decision.	
How was the provision for archive space decided?	
Was an investigation made of available office space?	
Is leasing office space a better option that constructing new buildings?	

4. ICT for LAS

CoFLAS in looking at the cost of establishing an LAS with broad geographic cover only considering the cost of developing software and the procurement of hardware. There are various approaches to the development of LAS software and many countries have adopted a phased approach to the

development of software. However in any proposal for LAS reform one approach is normally adopted and this is specified based on the following options.

Table 2.13 – Development of LAS Software

Approach to Software Development	Project based software developed in-house or with support from local IT companies or technical advisers	Open source software, such as FAO SOLA, with development partner support	Design, development and testing by central government IT agency	International procurement using in-house or contracted specialists to prepare the specifications, assist in bid evaluation and assist in contract management.	[other]
Estimated cost of software development/customisation (US$)	$200,000	$100,000 to $200,000000 (for software configuration, customisation and, where required, extension)	$200,000 to $500,000	$1 m to $10m	[specify cost]

Estimated annual cost of software maintenance to start in 20__	Project or open-source software	Contractual arrangement with local software house	Contractual arrangement with large international company	[other]
	10% of the cost of software development[24]	20% of the cost of software development	30% of the cost of software development	[specify % of cost of software or $/year]

ICT infrastructure for LAS is usually established with offices providing local or regional support for the provision of LAS services supported by central or regional offices providing support functions such as database development and maintenance, data distribution, storage and archival, GIS and digitally mapping, internet and intranet maintenance, web portal maintenance, email and other services, desktop support etc. These ICT offices may or may not be co-located with the offices providing LAS services. The following Table gathers information on the proposed ICT offices. Use more than one table if there are more than three types of ICT Offices.

[24] Using SOLA, the most expensive experience is in Lesotho where the annual cost of software support is about $50K for an initial investment of $300K. Tonga the annual maintenance cost is about $12K for a $150K customisation effort. In Samoa the annual maintenance is now about $5K for $250K pilot effort.

Table 2.14 – LAS ICT Office Typologies

Detail		ICT Office Type 1 [specify]	ICT Office Type 2 [specify]	ICT Office Type 3 [specify]
Role of ICT Office (if different)				
Relationship to LAS Offices				
Typical Staffing	System support			
	System development			
	Desktop support			
	Other [specify]			
Nominal useable space (m^2)				
Estimated annual cost of internet connection (US$)				
Estimated annual cost of network, hardware and desktop support (US$)				
Estimated cost of office construction (US$____/$m^2$) if applicable				
Estimated annual cost of office rental (US$____/$m^2$) if applicable				

Item	Unit Cost	ICT Office Type 1		ICT Office Type 2		ICT Office Type 3	
		Number	Cost	Number	Cost	Number	Cost
Equipment							
Generator (large)							
Generator (small)							
Split system air-con.							
Window air-con.							
Photo-copier (large)							
Photo-copier (small)							
Projector							
Screen							
Server (large)							
Server (local office)							
Network							
Desktop computer							
Laptop							
Tablet							
Office printer A4 (large)							
Office printer A4 (small)							
Plotter/Printer A0							
Plotter/Printer A3							
Scanner A0							
Scanner A3							
Scanner A4							
[other]							
Total cost/office type							

Table 2.15 – Estimated Cost of ICT Infrastructure

Proposed ICT LAS Office	Covering LAS Offices	Cost
Total		

The following questions should also accompany the proposal for LAS reform.

Table 2.16 – Decisions on ICT

Question	Response
Is there an ICT Strategy? If so, provide a key summary.	
What senior manager is responsible for the implementation of the ICT strategy and what are the arrangements for the senior management oversight of the ICT strategy?	
Is there a clear strategy to develop the LAS software? Is this process linked to any proposal for business process re-engineering?	
What resources are available to support the development, testing and maintenance of the LAS software.	
What resources are available to support the specification, procurement and contract management of the software and hardware suppliers?	

5. Capacity Development

CoFLAS only looks at the requirements for capacity development in very broad terms as a percentage of the overall cost of the LAS reform.

Table 2.17 – Investment in Capacity Development

Requirements for Capacity Development	LAS reform is scaling up proven processes and there is no shortage of qualified staff.	The LAS processes being scaled up need to be tested, but there is no shortage of qualified staff.	The LAS processes being scaled up need to be tested, there is some shortage of qualified staff, but the academic sector is sound.	The LAS processes being scaled up need to be tested, there is a shortage of qualified staff and limited capacity in the academic sector.	[other]
Estimated investment in capacity development as % of cost of LAS reform	3%	5%	10%	15%	[specify cost]

The following questions should also accompany the proposal for LAS reform.

Table 2.18 – Decisions on Capacity Development

Question	Response
Is there a HRD/M Strategy? If so, provide a key summary.	
Is a training needs assessment of the land sector available?	

6. Project Management and M&E

CoFLAS only looks at the requirements for project management and monitoring and evaluation in very broad terms as a percentage of the overall cost of the LAS reform.

Table 2.19 – Investment in Project Management and Monitoring and Evaluation

Requirements for Project Management and M&E	The LAS processes being scaled up are well proven and the agency has strong project management capacity and good M&E skills.	The LAS process being scaled up need to be tested, but the agency has strong project management capacity and M&E skills.	The LAS process being scaled up need to be tested and the agency has limited experience with project management and M&E.	The LAS process being scaled up need to be tested and the agency responsible for LAS needs external assistance with project management and M&E.	[other]
Estimated investment in project management and M&E as % of cost of LAS reform	1%	3%	5%	7% +	[specify cost]

The following questions should also accompany the proposal for LAS reform.

Table 2.20 – Decisions on Project Management and M&E

Question	Response
Is there a clear strategy and plan for managing the LAS reform?	
Is there a results framework or logframe for the LAS reform that clearly sets out a time-based schedule of key outputs and outcomes for the LAS reform?	

7. Total Estimated Cost of Establishing an LAS with Broad Geographic Cover

The total estimated cost of establishing an LAS with broad geographic cover is summarised in the Table below.

Table 2.21 – Summary of Costs to Establish an LAS with Broad Geographic Cover

Activity	Reference	Cost
Conversion of existing records	Total in Table 2.2	
Systematic registration	Total in Table 2.4	
Spatial framework for LAS	Total in Table 2.6	
Physical infrastructure for LAS	Total in Table 2.11	
ICT (software, hardware, infrastructure)	Total in Tables 2.13, 2.14 and 2.15	
Capacity Development	Applied as a % as selected in Table 2.17	
Project Management and M&E	Applied as a % as selected in Table 2.19	
Total		

CoFLAS Tool
Stage 3: Likely Cost in Running LAS

CoFLAS provides a means of estimating the annual cost of providing LAS services. This process is based on the estimated number of properties to be registered in the country and an assessment of the many in which the LAS services are to be provided, in three key aspects – the way the services are managed, the way rights are measured, the spatial framework for the rights and the other responsibilities of the agency providing LAS services. The estimated number of properties in the country is set out in Table 1.4. The assessment of the cost/property based on the manner in which LAS services is undertaken based on Table 3.1 below (which is duplicated from Table 12 from page 37.

Table 3.1 - Table of Annual Cost/Property for LAS

USD (PPP)/ Property	Management	Registration	Cadastre	Other
1	Single agency, central back-office. Flat organisation structure. Significant investment in IT system with on-line registration capability.	Central back office. Agency adopts regulatory role with data entry/update by private parties.	All cadastre digitized. Surveys undertaken by private surveyors. Survey plans lodged electronically.	Agency solely focussed on LAS. Valuation, tax collection, planning undertaken by LGAs or private sector.
2	Single agency with limited branch offices (<10). Flat organisation structure. Significant investment in IT.	Central back office. Registration updates undertaken by the agency.	Cadastral surveys undertaken by private surveyors. Survey plans lodged manually.	Agency focussed on LAS and providing most LAS services in-house.
5	Multiple agencies, and/or significant regional network (~50 offices). Limited attempt to flatten organisational hierarchy.	Multiple offices, traditional processing of registration without optimising resources (no back office/front office). IT used for processing (no B2B or C2B interface).	Cadastral surveys undertaken by government surveyors. Significant investment on support of reference frame, NDSI, etc.	Agency largely provides LAS in-house. Agency also responsible for other tasks not directly associated with LAS.
10	Multiple agencies, regional network (~100 offices). Traditional bureaucratic structure.	Multiple offices, traditional processing of registration without optimising resources, emphasis on paper lodgement and processing.	Cadastral surveys undertaken by government surveyors. High survey standards, requirement for extensive mapping (buildings, land use, etc.) Significant mapping program.	Agency responsible for a broad range of tasks.

The total estimated cost of providing LAS services is then determined by:

Annual Cost = (management + registration + cadastre + other)$_{cost/prop.}$ ** Number of Properties* *(Table 1.4)*

This annual cost is in USD PPP and can be converted to local currency by applying the conversion factor published by the World Bank (http://wdi.worldbank.org/table/4.16).

The estimated annual cost of providing LAS services is based on the estimated number of properties in the country. In a country that is developing an LAS with broad geographic cover the number of staff and other costs will be substantially less than that determined by CoFLAS using the procedure set out above. Here some judgement is needed on the timeframe and phasing in the development of an LAS with broad geographic cover. This timeframe will determine the timeframe required to build up the capacity and resources needed to provide LAS services and the cost of doing so.

The estimate provides a global estimate for the cost of providing LAS services. These costs include salary and other recurrent costs. Depending upon the decisions made in establishing the LAS there may be major investments required over time in areas such as CORS maintenance, upgrading GRN,

updating mapping, software maintenance and upgrades, etc. The following table captures information on these items.

Table 3.2 – Summary of Annual Major Costs to Maintain/Upgrade LAS

Activity	Reference	Cost/Year
Cost of office rent (if applicable)	From Tables 2.11 and 2.14 in Annex 2.	
CORS operating costs	Item 6 in Table 2.6 in Annex 2	
Cost of HRSI	Annual program based on cost/km^2 in Table 2.6 in Annex 2	
Software maintenance/upgrades	From Table 2.13 in Annex 2	
Survey equipment maintenance		
Internet connection	From Table 2.14 in Annex 2	
ICT equipment maintenance, desktop support	From Table 2.14 in Annex 2	
Other		
Total		

CoFLAS Tool
Stage 4: Likely Revenue from LAS

The two main potential sources of revenue from LAS are:

(a) annual land and property taxes and
(b) the taxes, fees and charges levied on transactions or LAS services.

The potential revenue that might be obtained from an annual property tax will be based on the estimates for the number of properties (Table 1.4 in Annex 1) together with information on the rate for the tax and how it is determined (that is the average characteristic that determines the tax, which might be area or value and the rate at which the tax is assessed). The agency responsible for LAS in the country will have some basis for estimating what this tax might be and will be able to produce a table setting out the potential tax that might be collected.

This table is set out below with the total potential tax based on the three types of properties. The actual tax that might be collected will be less than this amount due to inefficiencies in the compilation of the tax roll and the assessment and collection of the taxes. The actual taxes that might be collected may also differ from the initial assessment due to discrepancies and errors in the assumptions for tax rates and the basis for assessing tax. The estimate in the table below therefore needs to be reduced by factors that reflect difficulties in identifying properties and preparing the tax roll, and assessing and collecting taxes. It is not unreasonable to assume that these factors will improve over time so there may be several stages in the implementation of any program to collect taxes.

Table 4.1 – Estimated Annual Tax by Administrative Area

Administrative Area	Land Properties						Condominiums			Total Estimated Annual Tax
	Urban			Rural						
	No.	Ave.	Tax Rate	No.	Ave.	Tax Rate	No.	Ave.	Tax Rate	
Total										

The estimated annual taxes, fees and charges from land and property transactions or the provision of LAS services is again based on the total estimate of the number of properties set out in Table 1.4 in Annex 1. As demonstrated in the country case studies the taxes, fees and charges on the transfer of property is a major part of the revenue likely for providing LAS services. An estimate therefore needs to be made for the expected annual property turn-over, or the percentage of properties that are sold each year. As noted previously, the turn-over can change in response to changes in the general economic conditions and land market activity, but can also be impacted adversely if there is a high rate of tax on the registration of the transfer (that is a rate higher than 5-7%). The following table provides the basis for estimating property turn-over and the applicable average cost to register the transfer (either as an average fixed fee or as a percentage of the property value).

Table 4.2 – Estimated Turn-Over Rate and Tax Rate for Transfers

	Low market activity with a high transfer fee	Moderate market activity, with average transfer fee	High market activity with average transfer fee	Transfers are not permitted	Other [specify]
Expected annual turn-over (as percentage of properties	3%	6%	10%	0	[specify]
Either, expected fee per transfer as % of value, or	8%	5%	5%	0	[specify]
Expected fixed fee per transfer	0	0	0	0	[specify]

Where transfers are permitted the following table is used to estimate the potential breakdown of the expected revenue from providing LAS registration services. This table is based on the experience of the country case studies.

Table 4.3 – Expected Breakdown of Registration Revenue

	Active mortgage market	Limited mortgage market	No mortgage market	[specify]
Expected % registration revenue from transfers	50%	50%	60%	[specify]
Expected % registration revenue from mortgages	30%	10%	0%	[specify]
Expected % registration revenue from other services	20%	40%	40%	[specify]

Where transfers are not permitted, or where there is expected to be substantial revenue from services other than registration (services such as survey services or the sale of map products) then the following table provides the basis for estimating the revenue (add columns for the services that might be provided).

Table 4.4 Expected Level of Additional Services

Service 1 [specify]		Service 2 [specify]		Service 3 [specify]	
Expected % of property holders requesting service each year	Average cost of service (fixed fee or % of property value)	Expected % of property holders requesting service each year	Average cost of service (fixed fee or % of property value)	Expected % of property holders requesting service each year	Average cost of service (fixed fee or % of property value)

The information in Tables 4.2 to 4.4 are used to prepare Tables 4.5 to 4.7 that set out the expected annual revenue for urban land properties, rural land properties and condominiums respectively. To be able to determine that the expected revenue some estimate of the average value of the properties is required. The Economist magazine publishes annually information on house prices in 23 well-developed economies.[25] Information on prices in a broader range of countries is available on the Global Property Guide,[26] but this information is focussed on the expatriate market and not the general

[25] http://www.economist.com/blogs/dailychart/2011/11/global-house-prices
[26] http://www.globalpropertyguide.com/

domestic market. There is generally information available in most economies on property prices. Although in many cases the sale prices recorded in land offices are understated, most senior land officials have a good idea of market prices. Information is also available from real estate agents and brokers. CoFLAS is based on having this information available for the three property categories – land properties in urban and rural areas and condominiums. This information is added to Tables 4.5 to 4.7.

The total expected revenue is then the sum of the three total sin Tables 4.5, 4.6 and 4.7. This total is the total expected revenue from a complete LAS with broad geographic cover. In a country that is developing a LAS, the progression to this final expected revenue from providing LAS services needs to be phased. This phasing will be directly linked to the phasing in the completion of the LAS. This phasing may be by administrative area or by property type, or both. This phasing may result in a series of tables 4.5 to 4.7 that apply at specified phases in the development of the LAS.

Table 4.5 – Estimated Annual Tax by Administrative Area for Urban Land Properties

Administrative Area	No. (from Table 1.4)	Expected Transfers	Average value	Expected Registration Revenue			Service 1		Service 2		Service 3		Total Revenue
				Transfers	Mortgages	Other	Number	Revenue	Number	Revenue	Number	Revenue	
Total													

Table 4.6 – Estimated Annual Tax by Administrative Area for Rural Land Properties

Administrative Area	No. (from Table 1.4)	Expected Transfers	Average value	Expected Registration Revenue			Service 1		Service 2		Service 3		Total Revenue
				Transfers	Mortgages	Other	Number	Revenue	Number	Revenue	Number	Revenue	
Total													

Table 4.7 – Estimated Annual Tax by Administrative Area for Condominiums

Administrative Area	No. (from Table 1.4)	Expected Transfers	Average value	Expected Registration Revenue			Service 1		Service 2		Service 3		Total Revenue
				Transfers	Mortgages	Other	Number	Revenue	Number	Revenue	Number	Revenue	
Total													

Costing and Financing Land Administration Services (CoFLAS)
QUESTIONNAIRE

Data Sheet – Part 1	
i. Name of questionnaire respondent	
ii. Position of respondent	
iii. Date questionnaire completed	From / to / / 2013
iv. The land administration system reported in this questionnaire covers the following jurisdictional area (tick one option and insert the name): ☐ Country [ ] ☐ State/Province [ ] ☐ County / District [ ] ☐ Municipality [ ]	
v. Currency used in questionnaire	[ ]
vi. Fiscal year period	From end [month] to end [month]
vii. Indicate in the boxes the administration level of government at which land administration activities take place, and circle the term used for that level of Government. (*You may tick more than one option and provide further detail below.)*	☐ National level ☐ Province / ☐ State / ☐ Regional ☐ District / ☐ Local Government / ☐Municipality ☐ Other, provide details [ ]
viii. Provide a summary of your information sources (include name of institution and departments, reports, personnel interviewed, positions etc.) : • [ ] • [ ] • [ ] • [ ] • [ ] • [ ]	

Questionnaire Overview		
Section Titles	**Questions**	**Pages**
Section A - POLICY SETTING	Q.1 – 9,	P. 3-7
Section B – LAND ADMINISTRATION ARRANGEMENTS	Q. 1 -4	P. 8-11
Section C - LAND ADMINISTRATION STATISTICS and STAFFING	Q. 1-2	P. 12-13
Section D – COSTING INFORMATION	Q. 1-3	P. 14-17
Section E – REVENUE INFORMATION	Q. 1-3	P. 18-20
Commentary		P. 21

Questionnaire Data Sheet – Part 2, Section A

Section A. POLICY SETTING

This section aims to gather information on the policy context of how the land administration system is financed and what revenue it generates. Many questions in the following section, request you to select the most appropriate statement to complete the response. Where the provided statements are not appropriate, please explain the alternative scenario. Information is sought on the following topics:

1. The policy or legislation for setting fees for various land administration services provided to citizens.
2. The additional costs borne by applicants for land administration services.
3. The basis for setting staff salaries.
4. The policy to establish new offices that provide services directly to the public.
5. Policies that facilitate the participation of vulnerable people.
6. The geographic cover or record completeness of the land administration system and approaches to registration.
7. Restrictions on property transactions and prerequisites for registration.
8. Funding options of recurrent and non-recurrent activities
9. Policy towards a self-financing agency.

1. Fees Policy Select the most appropriate statement that best describe how fees are set within the land agency.		
1a	**Registration fees** for services provided to citizens are set: [select one]	☐ to recover the cost for providing the service ☐ to raise revenue ☐ by legal regulations (not necessarily based on cost of providing the service) ☐ otherwise [provide details] [ ]
1b	The fees set for accessing land registry information are: [select one]	☐ Nil, they are free for the public / government to access ☐ set to recover costs ☐ set to raise revenue ☐ regulated by law (not necessarily based on service costs) ☐ set otherwise [provide details] [ ]
1c	**Cadastral surveying** fees for services provided to citizens are set: [select one]	☐ to recover the cost for providing the service ☐ to raise revenue ☐ by legal regulations (not necessarily based on service costs) ☐ otherwise [provide details] [ ]
1d	The fees set to access cadastral survey and mapping information are: [select one]	☐ Nil ☐ set to recover costs ☐ set to raise revenue ☐ regulated by law (not necessarily based on service costs) ☐ set otherwise [provide details] [ ]

2	**Additional costs for the user**
	Indicate the costs borne by the property holder during a property transaction in addition to set government fees/taxes on a transaction: [Tick those which apply and add others not listed] ☐ Cost to obtain forms, information, title search, inspection ☐ Cost of notary / lawyer / conveyancer / broker ☐ Cost of cadastral survey (if required) ☐ Transport fees ☐ Loss of salary or employment due to significant time required to apply for registration ☐ Cost of insurances ☐ Valuation [ ] ☐ Other [ ] ☐ Other [ ] ☐ Other [ ]
	Please provide further comments to explain costs, and provide estimates of costs where known. [ ]

3. How are staff salaries set?
[If salaries are set differently between separate registry and cadastre agencies, please indicate by circling the agency] ☐ They are based on public service schedule of salaries. (Registry / Cadastre) ☐ They are based on public service schedule plus additional allowances for performance. (Registry / Cadastre) ☐ They are based on performance and aligned to a range of factors including public sector and private sector salaries, merit, performance, negotiation. (Registry / Cadastre) ☐ Other [Provide details] (Registry / Cadastre) [ ]

4. Establishing Offices
A policy is set to establish offices providing service directly to the public, this is based on: ☐ Establishing an office in every administrative area. ☐ A defined criteria to open an office, i.e. demand by users, volume of documents ☐ Other policy directive [Provide details on the policy decision above, ensure this is answered for Registry / Cadastre if separate] [ ]

5. Participation
What policies exist to ensure access to services by vulnerable people (reduced fees, waiving fees, public announcements etc.) in the formal land registration system? [Provide details for categories the policy directly impacts – Women, Widows, Poor, Ethnic Minorities, Disabled, Youth] [ ]

6. Coverage	
6a.	Is the registration system complete (there is a record of all land parcels / plots and properties) and comprehensive (required data for each record is completed)? ☐ If yes, move to Question 7. ☐ If no, continue Question 6b,6c and 6d. [ ]

6b.	Is there a policy or statutory requirement for ensuring complete and comprehensive recording in a register of all land and property? [ ]
6c.	If there is a policy is it implemented on the basis of: ☐ N/A (answer to 6b was NO) ☐ Systematic registration only ☐ Sporadic registration only ☐ Both systematic and Sporadic registration only

7. Restrictions on Transactions	
7a.	Are there restrictions placed on property transactions which are imposed by policy / law? [Provide details on the tenure and types of restrictions.] [ ]
7b.	Are there restrictions on property transactions which are imposed by customary tenure arrangements? [Provide details on the tenure arrangement and types of restrictions.] [ ]
7c.	Describe any prerequisites for the registration of a property transaction, such as a tax clearance certificate, development approval / building permit, approval by local authority / community etc. [ ]

8. Funding of recurrent and non-recurrent operations [This response for question 8 should indicate where funding is obtained for the total cost of services carried out by central/ provincial/ local level agencies as appropriate] [Answer part 8a/b **OR** 8c/d and 8e/f] [Answer Parts 8g/h **AND** 8i/j only if they are mandated activities of the land administration agency.]		
8a.	The routine/recurrent operations of the single organisation are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury revenue) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks
8b.	The non-recurrent operations of the single organisation are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks, Private sector
	For non-recurrent operations, describe how the revenue source is secured, and if it is applied for differently between developments (capital works) and projects (additional activities carried out by the agency). [ ]	

8c.	The routine/recurrent operations of the land registry are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to consolidated revenue) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks
8d.	The non-recurrent operations of the land registry are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks, Private sector
	For non-recurrent operations, describe how the revenue source is secured, and if it is applied for differently between developments and projects. [ ]	
8e.	The routine operations of the cadastre are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks
8f.	The non-recurrent operations of the cadastre are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks, Private sector
	For non-recurrent operations, describe how a non-routine revenue source is secured, and if it is applied for differently between developments and projects. [ ]	

8g.	The routine operations of the valuation on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks
8h.	The non-recurrent operations of the valuation are funded on the basis of:	[Only tick one box] ☐ Government budget allocation (all collected fees and taxes transferred to Treasury) ☐ Government budget allocation supported by full or partial retention of collected fees and taxes ☐ Self-financing – through retention of all or part of collected fees and taxes
		[Tick if also applies] ☐ Funding from development partners ☐ Other, i.e. banks, Private sector
	For non-recurrent operations, describe how a non-routine revenue source is secured, and if it is applied for differently between developments and projects. [ ]	

9. Self-Financing	
9a.	Is there a policy for the registration and/or cadastral agency to be self-financing? ☐ If yes, continue Questions 9b, 9c and 9d. ☐ If no, move to Section B.
9b.	For the agency that has a policy to be self-financing, what policy and strategy is in place to ensure that the agency charges affordable and reasonable rates for services? [Describe policy and strategy] [ ]
9c.	For the agency that has a policy to be self-financing, what policy and strategy is in place to ensure that when there is a downturn in revenue generation, the agency has sufficient funds to continue providing efficient and effective land administration services? [Describe policy and strategy] [ ]
9d.	For the agency that has a policy to be self-financing, fees are set by: ☐ An understanding of the cost of service using activity based accounting. ☐ An estimation of costs based on historical budget allocation to the agency. ☐ Other [ ] [Provide details] [ ]

Questionnaire Data Sheet – Part 2, Section B

Section B. LAND ADMINISTRATION ARRANGEMENTS and TECHNOLOGY

This section gathers information on the institutional arrangements for land administration services. Information is sought on:

1. The roles and responsibilities for key land administration activities at various levels of government.
2. The office network that supports land administration services.
3. The applicability of land tax of urban/rural properties.
4. The nature and accessibility of land administration records and computerisation.
5. The spatial framework for land administration.

1. Level of roles and responsibilities for various land administration services

[For all answers to question 1, one or more boxes may be ticked. Use side box for explanation where more than one box is ticked]

1a.	First registration is carried out by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private Sector ☐ Other	Comment: [ ]
1b.	Subsequent property transactions are registered by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private Sector ☐ Other	Comment: [ ]
1c.	Cadastral survey, boundary demarcation of properties is carried out by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private Sector ☐ Other	Comment: [ ]
1d.	Cadastral mapping and geodetic control is carried out by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private sector ☐ Other	Comment: [ ]

1e.	Valuation is carried by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private sector ☐ Other	Comment: [ ]
1f.	Land and property tax[27] collection is carried out by:	☐ Central Government ☐ State / Provincial Government ☐ Local Government / Municipality ☐ Private sector ☐ Other	Comment: [ ]

2. Institutional Framework

2a. Office network

Input number of offices for each government institutional arrangement

	National	**State / Province / Regional**	**Local**	**Other** [Provide Details]	**Comments**
Single Organisation[28]	[ ]	[ ]	[ ]	[ ]	[ ]
Land Registry (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
Cadastre (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
Valuation (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
Other [Provide details of other land administration service provided] [ ]	[ ]	[ ]	[ ]	[ ]	[ ]

[27] See Annex 1 for definition of land and property taxation. We include here various accounts of taxation on land and property that is imposed by the Government.

[28] Single organisation, refers to the Ministry/Department/Agency/Authority organisation that is in charge of all the functions of land administration services as described in the Definitions of Annex 1.

2b.	**Offices providing services directly to the public** The number of offices shown below will be a subset of offices indicated in Section B. 2a (above).					
		National	**State / Province / Regional**	**Local**	**Other** [Provide Details]	**Comments**
	Single organisation (if applicable)	[ ]	[ ]	[ ]	[ ]	[ ]
	Registry (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
	Cadastre (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
	Valuation (if separate)	[ ]	[ ]	[ ]	[ ]	[ ]
	Other [Provide details of other land administration service provided to the public] [ ]	[ ]	[ ]	[ ]	[ ]	[ ]

3. Taxation on property			
3a.	Urban property incurs an annual tax (land / property/ lease/ ground rent etc.)	☐ Yes [provide details >] ☐ No	Describe the tax base: [ ]
3b.	Rural property incurs an annual tax (land / property/ lease/ ground rent etc)	☐ Yes [provide details >] ☐ No	Describe the tax base: [ ]

4. Data format and storage location		
4a.	Status of Registry information is available:	☐ digitally at the office - ☐ central / ☐ state / ☐ local [check those which apply] ☐ manually at the office - ☐ central / ☐ state / ☐ local [check those which apply] ☐ online

4b.	**Access Personnel** / Type of Information accessible	**Staff directly responsible for task**	**Other staff in the agency'**	**Other Government Agency**	**Professional Intermediaries** (lawyers, notaries, brokers, banks, surveyors)	**Those with legal interest in the registered property**	**General Public / Other**
	Parcel ID	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Owner Information	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Deeds (transaction)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Mortgage	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Encumbrance	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Cadastral Map (showing parcel typology)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Cadastral Survey Plan (defining parcel boundary)	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Boundary Coordinates	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Assessed Property value	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
	Comments	[ ]					

5	**Spatial Framework**
	Boundaries of registered parcels can be demarcated on the basis of [you may tick more than one box]: ☐ Fixed boundaries with corner marks and surveyed using ground survey techniques ☐ Fixed boundaries with corner marks charted on large scale maps/ imagery ☐ General boundaries charted on large scale mapping / imagery ☐ Non spatial description, abuttals, identification of neighbours [Provide details] [ ] ☐ Other [Provide details] [ ] Of the above methods used, what is the most commonly used practice, and why? [ ]

Questionnaire Data Sheet – Part 2, Section C

Section C. LAND ADMINISTRATION STATISTICS and STAFFING

This section gathers information on the key statistics to understand the size and revenue streams of the land administration system. Information is sought on:

1. The estimated number of registrable properties (land parcels, apartments etc.), how many properties are registered, the area covered by registration and the urban/rural breakdown.
2. The approved and filled positions broken down by function and level of government, as well as the breakdown of staff by employment status (permanent, temporary, contract basis).

1. Properties

1a	Estimated total number of properties (land parcel, apartment etc) that could be registered in the jurisdiction.	[ ]	Provide a breakdown of land parcels, apartment, if available. [ ]
1b	Number of registered properties (land parcel, apartment etc) in the jurisdiction.	[ ]	Provide a breakdown of registered land parcels, apartments, etc, if available. [ ]
1c	Total area covered by registered properties.	[ ] km^2	[ ]
1d	% properties that identify as urban % properties that identify as rural	[ ] urban [ ] rural	[ ]

2. Technical and Administrative Staff Resources to identify the staffing resources allocated to land administration service delivery.

2a. **Approved Technical and Administration personnel positions as at Month** [ ]**Year** [ ]

Staff capacity [Complete the number of all positions within the organisation, filled or unfilled]	**National Government**	**State / Provincial Government**	**Local Government**	**Other [provide detail]**
a. Management and administration and services	[ ]	[ ]	[ ]	[ ]
b. Registration	[ ]	[ ]	[ ]	[ ]
c. Cadastre	[ ]	[ ]	[ ]	[ ]
d. Valuation	[ ]	[ ]	[ ]	[ ]

e. Dispute resolution* (if applicable)	[ ]	[ ]	[ ]	[ ]
g. ICT	[ ]	[ ]	[ ]	[ ]
h. Other - describe [ ]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]

2b. **<u>Filled</u> Technical and Administration positions at Month** [ ]**Year** [ ]
Use the same period as above (Q2a)

Filled permanent positions [all levels, Director to officers of permanent full time staff]	**National Government**	**State / Provincial Government**	**Local Government**	**Other [provide detail]**
a. Management and administration and services	[ ]	[ ]	[ ]	[ ]
b. Registration	[ ]	[ ]	[ ]	[ ]
c. Cadastre	[ ]	[ ]	[ ]	[ ]
d. Valuation	[ ]	[ ]	[ ]	[ ]
e. Dispute resolution* (if applicable)	[ ]	[ ]	[ ]	[ ]
g. ICT	[ ]	[ ]	[ ]	[ ]
h. Other - describe [ ]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]

2c. **Staffing by employment status at Month** [ ]**Year** [ ] **(filled positions)**
Use the same period as above

Staff capacity (total) [all levels, Director to officers]	**National Government**	**State / Provincial Government**	**Local Government**	**Other [provide detail]**
a. Permanent employees / Civil Servants	[ ]	[ ]	[ ]	[ ]
b. Contract Staff	[ ]	[ ]	[ ]	[ ]
c. Temporary Staff	[ ]	[ ]	[ ]	[ ]
d. Other - describe [ ]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]

Questionnaire Data Sheet – Part 2, Section D

Section D. LAND ADMINISTRATION COST INFORMATION

Land administration cost of operations information is sought on:

1. The period that applies for the cost and revenue information.
2. The routine/recurrent running costs for the various land administration activities broken down into cost categories.
3. The non-recurrent or development costs for upgrading or reforming land administration divided into cost categories.

1. Specify the applicable period that is used to complete the financial information required below.	From [ ] / [ ] To [ ] / [ ] month / year

2. Provide an amount for the operational costs of routine/recurrent service operations

(use currency previously specified in Preliminary Questionnaire part v.)

[Answer part 2a **OR** 2b **and** 2c.]

[Answer Parts 2d and 2e only if they are within the functional mandate of the land administration agency and were not answered as part of 2a.]

Routine Operational / recurrent Costs	**National Government**	**State / Provincial Government**	**Local Government**	**Other** [Private sector, etc, provide detail] [ ]
a. Single Organisation agency				
— Staff Salaries (including social costs)	[ ]	[ ]	[ ]	[ ]
— Staff allowances (i.e. per diem, housing)	[ ]	[ ]	[ ]	[ ]
— Vehicles and vehicle operating expenses	[ ]	[ ]	[ ]	[ ]
— purchase of capital equipment (i.e. IT hardware, software, survey equipment)	[ ]	[ ]	[ ]	[ ]
— occupation expenses (i.e. building rent, utilities etc)	[ ]	[ ]	[ ]	[ ]
— Materials and consumables	[ ]	[ ]	[ ]	[ ]
— Contract services (IT outsourcing, cleaning etc)	[ ]	[ ]	[ ]	[ ]
— Repairs and maintenance	[ ]	[ ]	[ ]	[ ]
— Other [provide details] [ ]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]

b. Land registration (if separate)				
— Staff Salaries (including social costs)	[ ]	[ ]	[ ]	[ ]
— Staff allowances (i.e. per diem, housing)	[ ]	[ ]	[ ]	[ ]
— Vehicles and vehicle operating expenses	[ ]	[ ]	[ ]	[ ]
— purchase of capital equipment (IT software, hardware)	[ ]	[ ]	[ ]	[ ]
— occupation expenses (i.e. building rent, utilities etc)	[ ]	[ ]	[ ]	[ ]
— Materials and consumables	[ ]	[ ]	[ ]	[ ]
— Contract services (IT outsourcing, cleaning etc)	[ ]	[ ]	[ ]	[ ]
— Repairs and maintenance	[ ]	[ ]	[ ]	[ ]
— Other [provide details]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]
c. Cadastral survey & mapping (if separate)				
— Staff Salaries (including social costs)	[ ]	[ ]	[ ]	[ ]
— Staff allowances (i.e. per diem, housing)	[ ]	[ ]	[ ]	[ ]
— Vehicles and vehicle operating expenses	[ ]	[ ]	[ ]	[ ]
— purchase of capital equipment (i.e. IT software, hardware, survey equipment)	[ ]	[ ]	[ ]	[ ]
— occupation expenses (i.e. building rent, utilities etc)	[ ]	[ ]	[ ]	[ ]
— Materials and consumables	[ ]	[ ]	[ ]	[ ]
— Contract services (IT outsourcing, cleaning etc)	[ ]	[ ]	[ ]	[ ]
— Repairs and maintenance	[ ]	[ ]	[ ]	[ ]
— Other [provide details]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]

d. Land Valuation and Taxation (if separate)				
— Staff Salaries (including social costs)	[ ]	[ ]	[ ]	[ ]
— Staff allowances (i.e. per diem, housing)	[ ]	[ ]	[ ]	[ ]
— Vehicles and vehicle operating expenses	[ ]	[ ]	[ ]	[ ]
— purchase of capital equipment	[ ]	[ ]	[ ]	[ ]
— occupation expenses (i.e. building rent, utilities etc)	[ ]	[ ]	[ ]	[ ]
— Materials and consumables	[ ]	[ ]	[ ]	[ ]
— Contract services (IT outsourcing, cleaning etc)	[ ]	[ ]	[ ]	[ ]
— Repairs and maintenance	[ ]	[ ]	[ ]	[ ]
— Other [provide details]	[ ]	[ ]	[ ]	[ ]
Total	[ ]	[ ]	[ ]	[ ]
[Provide commentary as necessary on information provided above.] [ ]				

3. Outline non-routine / development costs required for reforming or upgrading land administration services.

Using the following cost categories, identify development costs for reforming or upgrading land administration (annual costs):

Non-recurrent development costs	**National Government**	**State / Provincial Government**	**Local Government**	**Other** [Private sector, etc, provide detail] [ ]
— Staff Salaries (including social costs)	[ ]	[ ]	[ ]	[ ]
— Staff allowances (i.e. per diem, housing)	[ ]	[ ]	[ ]	[ ]
— Vehicles and vehicle operating expenses	[ ]	[ ]	[ ]	[ ]
— Purchase of capital equipment (i.e. IT software, hardware)	[ ]	[ ]	[ ]	[ ]
— Occupation expenses (i.e. building rent, utilities etc)	[ ]	[ ]	[ ]	[ ]
— Materials and consumables	[ ]	[ ]	[ ]	[ ]
— Contract services (IT outsourcing, cleaning etc)	[ ]	[ ]	[ ]	[ ]

	— Repairs and maintenance	[ ]	[ ]	[ ]	[ ]
	— Construction and civil works	[ ]	[ ]	[ ]	[ ]
	— Other [provide details] [ ]	[ ]	[ ]	[ ]	[ ]
[Provide detail on the non-routine total budget / activity / frequency / targets etc.] [ ]					

7.1.1.1.2 Questionnaire Data Sheet – Part 2, Section E

Section E. LAND ADMINISTRATION REVENUE INFORMATION

Land administration revenue stream information is sought on:

1. For a specified range of transactions over the past few years the number of transactions and revenue generated.
2. The property tax collected over the past few years.
3. Land administration revenue distribution streams.

1. **Registered transaction types, the number entered into the system, the corresponding revenue (land related taxes, fees and charges) generated and basis to determine taxes/fees/charges. Provide data for 5 years where possible, and a minimum of 2 years.**

	Fiscal Year Ending	[ ]		[ ]		[ ]		[ ]		[ ]		**Describe the current basis to determine the fee per transaction**
	Transaction / Service Type	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	
1.a	Transfer (Sale, exchange, gift)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1b.	Issue certificate for first registration	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1c.	Mortgage	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1d.	Discharge Mortgages	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1e.	Servitude (easement, right of way, etc)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1f.	Survey	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

	Year Ending	[ ]		[ ]		[ ]		[ ]		[ ]		Describe the current basis to determine the fee per transaction
	Transaction / Service Type	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	**Number**	**Revenue**	
1g.	Other registration / survey / mapping related fee [add rows as necessary]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1h.	Transfer Tax	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1I.	Capital Gain Tax / Stamp Duty	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
1j.	Other [add rows as necessary]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	Total	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

2. Property taxation collected over 5 year period, minimum of 2 years.

	Year Ending	[ ]		[ ]		[ ]		[ ]		[ ]	
	Land Tax	**# Properties Taxed**	**Revenue**	**# Properties Taxed**	**Revenue**	**# Properties Taxed**	**Revenue**	**# Properties Taxed**	**Revenue**	**# Properties Taxed**	**Revenue**
2a.	Urban	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2b.	Rural	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	Total	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

For significant changes in the tax formula or collection rates over the period shown, please explain the change.

[ ]

3. The revenue (fees, charges and taxes) collected in the registry / cadastre is retained or transferred in the following manner: (in the year 20[ ]ending in the month					
		Transferred to Treasury (amount)	**Retained by agency (amount)**	**Transferred to 'other' > (amount)**	**If other, provide details**
	Single organisation	[ ]	[ ]	[ ]	[ ]
	Registration (if separate)	[ ]	[ ]	[ ]	[ ]
	Cadastre (if separate)	[ ]	[ ]	[ ]	[ ]
	Valuation (if separate)	[ ]	[ ]	[ ]	[ ]
	Taxation (if collected by agency)	[ ]	[ ]	[ ]	[ ]

For all other additional information, insert below.

Question Reference: Section __ / ____	**Comment**
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]

Annex 6: *Summary Data from Case Studies*

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
LAS provided by:	National/LGAs	National/LGAs	National agency	National/LGAs	National agency	National agency	National/LGAs	National	National/Province/District	National/LGAs	National
Institutional Responsibilities											
First registration	IPRO	n/a	NAPR	LGAs	n/a	n/a	n/a	Various	RNRA	n/a	LDD in HQ & Prov.
Registration	IPRO	LRC and LGAs (till 2015)	NAPR (HQ/TO), Public Service Halls, Reg. Users	LAA	Kadaster (HQ and 6 offices)	LINZ/private sector	LR	Registration is decalartive not constitutive. Various.	Requests in DLBs, registration in Province	Lantmateriet and (38 of 290) LGAs	Full service in 77 Land Off. & 382 Branch/Sub-Branch
Cadastre (control, mapping)	Private sector	DGA	NAPR	LAA	Kadaster (HQ and 6 offices)	LINZ/private sector	LGAs	IGN, private surveyors	RNRA-DLM	Lantmateriet and 38 of 290 LGAs	DOL
Cadastral surveying	Private sector	Private sector	Private sector	Private sector	Kadaster (HQ and 6 offices)	Private sector	LGAs	Private sector, LGAs, agencies	Private and public surveyors	Lantmateriet and 38 of 290 LGAs	Mostly DOL - 1,167 private surv.
Valuation	Private sector	MoT	Private sector	Private sector	LGAs	LGAs	Central/LGAs	LGAs, private	Private sector	STA	
Fees are set:	Law	Registration by law, cadastral fees to recover costs	Law	Registration by law, cadastral fees to recover costs	To recover costs for the agency as a whole. Subject to Ministerial oversight.	To recover costs	Registration by law, cadastral fees to recover costs	Registration to recover cost, access to data and surveys by law	Law, cadastral survey to recover cost	To recover costs	Law, survey costs set by Provinces
Staff salaries are:	Public service	Public service	Fixed salaries	Based on performance and range of factors	Based on performance and range of factors	Based on performance and range of factors	Public service	Salaries as approved by agency	Public service	Based on performance and range of factors	Public service (CSC)
Funding arrangements:	Self-financing	Land registration funded by government, cadastre supported by partial retention of fees	Self-financing, with budget support	Government budget supported by retention of fees	Self-financing	Self-financing	Land registration funded by government, cadastre supported by partial retention of fees	Self-financing	Government budget, with support from Development Partners	Self-financing	Government budget

Annex 6: *Summary Data from Case Studies*

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Self-funding policy:	Self-financing only began in April 2013. By law the unspent revenues are carried forward to the next fiscal year budget. The reserved fund of IPRO remains available for the purposes it is created.				Ministerial agreement to maintain equity of 85.7 million Euro - 51.7 million as structural reserve and 34 million as economic conditions reserve	Fees subject to review, stakeholder consultation and oversight by parliamentary committee. Fees set to recover costs over long term. In downturn provision for government capital injection.	Fees for cadastral surveying and for registration into the cadastre is set by each municipality. The Law states that the fee shall not be higher than the real cost of providing the service.	Fees are set based on estimation of costs. Special rates for vulnerable groups and the poor.	There is no policy for self-financing	Lantmateriet sets fees but must consult The National Finance Management Authority.	All fees and taxes to Revenue Department with some fees revenue going to local bodies (Provinces and Districts)
Data format and accessibility:	Data in digital form and online	Registration data and post 1950 cadastral data digital and online	Data in digital form and online	Data digital but only accessible in office.	Data in digital form and online	All data digital and available online to licensed users. Mapping data available free online.	Data in digital form and online	Digial data at central, state and local levels.	Data in digital form, available to RNRA and RDM (mortgages). Data accessible in Registrar of Titles	Registration data is digital and online, cadastral data is digital and available at state and local levels.	Regist. data computerised in ~500 land offices. Cadastre & regist. in ~70 offices. Not available outside DOL
Est. # of properties:	4,000,000	2,730,000	3,200,000	420,000	9,881,807	2,270,000	2,500,000		10,306,357	5,000,000	36,200,000
Registered properties:	3,000,000	2,730,000	1,280,000	18,000	9,881,807	2,114,000	2,500,000	8,838,137	9,275,721	4,933,274	34,607,150
Total area registered (sq. km):	24,800	43,094	10,549	1,260	41,526	213,255	324,000		23,721	528,447	204,822
Offices providing LAS	**35**	**101**	**77**	**1**	**7**	**70**	**429**	**164**	**36**	**115**	**831**
By central agency	35	3	65	1	7	3	1	74	6	77	459
By others		98	12			67	428	90	30	38	372

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Comments on Offices		Separate registry, cadastre, valuation. 98 LGAs providing registration (until 2015) and planning.	HQ plus 64 territorial offices. 12 Public Service Halls. 350 registered users.			HQ plus two service centres. LGAs undertake valuation and planning.	1 central registry, cadastre, valuation and planning by 428 LGAs.	SUNARP has a central office and 14 registrary areas. Each area has 1-9 offices - totalling 59 offices.	There are 10 provincial offices, 5 with Deputy Registrars, and 30 District Land Bureaux	Registry/ cadastre in 70 offices, 1 valuation. Registry/cadastre in 38 of 290 LGAS.	Full service in 77 Land Off. & 382 Branch/Sub-Branch offices. Some services in 372 district land offices
Filled Positions:	**567**	**240**	**785**	**62**	**1,788**	**186**	**550**	**3,313**	**215**	**860**	**11,920**
Management/ administration	152	10	300	26	737	24		368	93	50	3,899
Registration	378	120	400	2	490	66	250	1,236	77	300	4,706
Survey/Cadastre		50	70	7	561	62	300	57	30	500	3,192
Valuation		50		1		5				10	
Dispute resolution			15	2				12			
ICT	27			3				104	5		123
Other	10	10		21		29		1,536	10		
Employment Status	**590**	**240**	**1,332**	**64**	**2,110**	**186**	**550**	**3,313**	**236**	**860**	**11,920**
Permanent employee	567	20	914	55	1,873	182	550	1,777	236	860	10,594
Contractor	23	220	418	7		2		1,536			932
Temporary					237	2					394
other				2							
Comments on staffing	23 contractors are hired as part of the WM LAMP.				Employed staff includes part-time staff.						All contract and temorary staff admin.

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Recurrent expenditure:	**552,550,409**	**209,000,000**	**40,570,300**	**20,579,330**	**242,000,000**	**44,986,000**	-	**510,459,802**	**2,192,918,852**	**1,202,000,000**	**5,411,902,900**
Staff salaries and social costs	461,997,879	78,000,000	12,600,300	11,667,170	117,000,000	24,000,000		196,912,528	1,823,518,852	808,000,000	3,408,216,900
Staff allowances	5,610,197		170,000					35,108,172			1,309,307,200
Vehicles and vehicle costs	4,216,431	4,000,000	4,000,000	267,812				485,037	143,000,000		
Capital equipment	6,448,499	34,000,000	1,700,000	2,337,143				19,240,296	8,000,000	40,000,000	
Occupation costs	40,549,483	4,000,000	1,600,000	236,873		1,407,000		28,874,421		74,000,000	
Materials and consumables	23,588,891		500,000	1,048,667		1,204,000		16,675,090	89,500,000	278,000,000	694,378,800
Contract services	2,851,003	66,000,000	5,000,000	466,391				143,297,292	11,000,000		
Repairs and maintenance	4,111,715		15,000,000	271,867				11,780,730			
Other	3,176,311	23,000,000		4,283,407	125,000,000	18,375,000		58,086,236	117,900,000	2,000,000	
Development expenditure:	-	-	**40,570,300**	**14,700,000**	**20,000,000**	-	-	-	-	**39,000,000**	-
Staff salaries and social costs			12,600,300	4,700,000						26,000,000	
Staff allowances			170,000								
Vehicles and vehicle costs			4,000,000	2,000,000							
Capital equipment			1,700,000	5,000,000						2,000,000	
Occupation costs			1,600,000	1,500,000						2,000,000	
Materials and consumables			500,000	1,000,000						9,000,000	
Contract services			5,000,000	200,000							
Repairs and maintenance			200,000	300,000							
Other			14,800,000		20,000,000						

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Transactions (latest year):	**794,469**	**2,053,000**	**290,251**	**977**	**651,982**	**619,189**	-	**288,759**	-	**5,867,494**	**7,086,814**
Transfer/sale	10,547	151,000	76,044	121	293,200			150,773		302,020	1,683,262
Issue certificate	180,164		126,851					2,607			94,307
Mortgage	23,210	1,600,000	51,392	353	275,600			64,529		386,845	1,079,917
Discharge mortgage			35,560	4				69,332			
Easement	2,027	295,000	404		6,082			1,518		69,929	
Survey					77,100	8,496				19,835	
Other registration/survey		7,000									
transfer tax				251							
capital gains/stamp duty				248						688,865	
Other	578,521					610,693				4,400,000	4,229,328
Revenue:	**1,321,111,765**	**10,407,000,000**	**13,234,760**	**8,091,525**	**238,000,000**	**63,912,409**	-	**91,088,429**	-	**9,116,600,000**	**73,782,725,439**
Transfer/sale	28,954,900	500,000,000	4,776,232	4,132,875	46,000,000	44,454,810		47,522,229		141,600,000	17,736,280,418
Issue certificate	270,246,000		2,391,917					254,248			9,758,579
Mortgage	220,745,500	9,800,000,000	3,858,973	883	21,000,000			29,930,643		97,900,000	8,839,044,056
Discharge mortgage			2,184,593	6				13,326,694			
Easement	182,430	49,000,000	23,045		1,000,000			54,615		22,500,000	
Survey					70,000,000	5,781,011				787,100,000	37,482,674
Other registration/survey		58,000,000									44,656,057
transfer tax	339,302,301			2,359,494							
capital gains/stamp duty	461,680,634			1,598,267						7,835,000,000	46,164,820,190
Other					100,000,000	13,676,588				232,500,000	950,683,465

Annex 6: *Summary Data from Case Studies*

	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Allocation of Revenue:	**1,321,111,765**	**4,958,000,000**	-	**8,091,525**	**238,000,000**	**63,912,409**	-	-	-	**9,116,600,000**	**73,782,725,439**
Treasury	1,321,111,765	4,927,000,000		8,091,525						8,097,000,000	46,463,153,650
Retained by agency		31,000,000			238,000,000	63,912,409				1,019,600,000	
Transferred to other agency											27,319,571,789

Annex 7: *Parameters Derived from case Studies*

Key Data	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
Country Area (Wikipedia)	28,748	42,916	69,700	30,355	41,543	268,021	385,186	1,285,216	26,338	449,964	513,120
Population (Wikipedia)	2,821,977	5,602,536	4,555,911	2,067,000	16,788,973	4,468,200	5,063,709	30,475,144	12,012,589	9,555,893	66,720,153
PPP Conversion factor (WB WDI)	45.9	7.9	1.0	4.8	0.8	1.5	9.1	1.6	271.7	8.9	17.5
Est. # of properties:	4,000,000	2,730,000	3,200,000	420,000	9,881,807	2,270,000	2,500,000	-	10,306,357	5,000,000	36,200,000
Registered properties:	3,000,000	2,730,000	1,280,000	18,000	9,881,807	2,114,000	2,500,000	8,838,137	9,275,721	4,933,274	34,607,150
Total area registered (sq. km):	24,800	43,094	10,549	1,260	41,526	213,255	324,000	-	23,721	528,447	204,822
Central agency LAS offices	35	3	65	1	7	3	1	74	6	77	459
Filled Positions:	**567**	**240**	**785**	**62**	**1,788**	**186**	**550**	**3,313**	**215**	**860**	**11,920**
Management/Admin./Other	189	70	315	53	737	58	-	2,020	108	60	4,022
Registration	378	120	400	2	490	66	250	1,236	77	300	4,706
Survey/Cadastre	-	50	70	7	561	62	300	57	30	500	3,192
Total Transactions	**794,469**	**2,053,000**	**290,251**	**977**	**651,982**	**619,189**	**-**	**288,759**	**-**	**5,867,494**	**7,086,814**
Transfers	10,547	151,000	76,044	121	293,200	-	-	150,773	-	302,020	1,683,262
Other transactions	783,922	1,902,000	214,207	856	358,782	619,189	-	137,986	-	5,565,474	5,403,552
Recurrent expenditure (USD PPP):	**12,038,135**	**26,455,696**	**40,570,300**	**4,287,360**	**302,500,000**	**29,990,667**	**-**	**319,037,376**	**8,071,104**	**135,056,180**	**309,251,594**
Staff salaries and social costs	10,065,313	9,873,418	12,600,300	2,430,660	146,250,000	16,000,000	-	123,070,330	6,711,516	90,786,517	194,755,251
Other	1,972,822	16,582,278	27,970,000	1,856,700	156,250,000	13,990,667	-	195,967,046	1,359,588	44,269,663	114,496,343
Total revenue (USD PPP):	**28,782,391**	**1,317,341,772**	**13,234,760**	**1,685,734**	**297,500,000**	**42,608,273**	**-**	**56,930,268**	**-**	**1,024,337,079**	**4,216,155,739**
Retained by agency	-	3,924,051	-	-	297,500,000	42,608,273	-	-	-	114,561,798	-

Annex 7: *Parameters Derived from case Studies*

Possible Parameters	Albania	Denmark	Georgia	Lesotho	Netherlands	New Zealand	Norway	Peru	Rwanda	Sweden	Thailand
% complete	75.0%	100.0%	40.0%	4.3%	100.0%	93.1%	100.0%	0.0%	90.0%	98.7%	95.6%
Head of Population/Estimated Property	0.705	2.052	1.424	4.921	1.699	1.968	2.025	0.000	1.166	1.911	1.843
Offices/10,000 sq km (country)	12.17	0.70	9.33	0.33	1.69	0.11	0.03	0.58		1.71	8.95
Registered Properties/Office	85,714	910,000	19,692	18,000	1,411,687	704,667	2,500,000	119,434	1,545,954	64,068	75,397
Transactions/Office	22,699	684,333	4,465	977	93,140	206,396	-	3,902	-	76,201	15,440
Transfers/Office	301	50,333	1,170	121	41,886	-	-	2,037	-	3,922	3,667
Total Staff/Office	16	80	12	62	255	62	550	45	36	11	26
Management/Admin/Other Staff/Office	5	23	5	53	105	19	-	27	18	1	9
Registration Staff/Office	11	40	6	2	70	22	250	17	13	4	10
Survey Staff/Office	-	17	1	7	80	21	300	1	5	6	7
Registered Properties/Management etc staff	15,873	39,000	4,063	340	13,408	36,448	-	4,375	85,886	82,221	8,604
Registered Properties/Registration staff	7,937	22,750	3,200	9,000	20,167	32,030	10,000	7,151	120,464	16,444	7,354
Registered Properties/Survey staff	-	54,600	18,286	2,571	17,615	34,097	8,333	155,055	309,191	9,867	10,842
Transfers/Registration Staff	28	1,258	190	61	598	-	-	122	-	1,007	358
Transactions/Registration Staff	2,102	17,108	726	489	1,331	9,382	-	234	-	19,558	1,506
Transfers/Registered Property	0.4%	5.5%	5.9%	0.7%	3.0%	0.0%	0.0%	1.7%	0.0%	6.1%	4.9%
Transactions/Registered Property	26.5%	75.2%	22.7%	5.4%	6.6%	29.3%	0.0%	3.3%	0.0%	118.9%	20.5%
Expenditure (USD PPP)/Est. Property	3.01	9.69	12.68	10.21	30.61	13.21	0.00	0.00	0.78	27.01	8.54
Expenditure (USD PPP)/Registered Property	4.01	9.69	31.70	238.19	30.61	14.19	0.00	36.10	0.87	27.38	8.94
Expend (USD PPP) (Est. Mgmt etc Salaries)/Regis. Prop.	1.12	1.05	3.95	115.43	6.10	2.36	0.00	8.49	0.36	1.28	1.90
Expend (USD PPP) (Est. Reg Salaries)/Regis. Prop.	2.24	1.81	5.02	4.36	4.06	2.69	0.00	5.20	0.26	6.42	2.22
Expend (USD PPP) (Est. Surv Salaries)/Regis. Prop.	0.00	0.75	0.88	15.25	4.64	2.52	0.00	0.24	0.10	10.70	1.51
Expend (USD PPP) (Non-Salaries)/Regis. Prop.	0.66	6.07	21.85	103.15	15.81	6.62	0.00	22.17	0.15	8.97	3.31
Revenue (USD PPP)/Registered Property	9.59	482.54	10.34	93.65	30.11	20.16	0.00	6.44	0.00	207.64	121.83
Ratio Revenue/Expenditure	2.39	49.79	0.33	0.39	0.98	1.42	0.00	0.18	0.00	7.58	13.63