Programmes and Projects

LATIN AMERICA AND THE CARIBBEAN

Information Systems and Land Administration

FAO/World Bank Cooperative Programme
Latin America and the Caribbean Service
Investment Centre Division

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List of Acronyms and Abbreviations

AHIBA	Honduran Association of Banking Institutions
CHICO	Honduran Chamber of the Construction Industry
CNR	National Registries Center
COHCIT	Honduran Council of Science and Technology
COHDEFOR	Honduran Corporation of Forest Development
COHEP	Private Enterprise Council (Honduras)
CONAPON	National Commission for Property Policy and Regulation
COPRE	Presidential Commission for the Reform and Modernization of the State (Guatemala)
CPROD	Production Center (Nicaragua)
DCBP	Directorate of Cadastre and National Assets (Panama)
DOL	Department of Lands (Thailand)
FEDAES	Federation of Lawyers Associations of El Salvador
FONAC	National Convergence Forum
ICT	Information and Communicatioan Technology
INA	National Agrarian Institute (Honduras)
INDN	Institute of Notary Rights (Honduras)
INETER	Institute of Territorial Studies (Nicaragua)
IP	Property Institute (Honduras)
IUSI	Unique Tax on Real Estate
NMCA	Norwegian Mapping and Cadastre Authority
PAAR	Rural Land Management Project
PATH	Land Administration Program of Honduras
PRISA	Agricultural Sector Reform and Investment Project (El Salvador)
PRODEP	Land Administration Project (Nicaragua)
PRONAT	National Land Administration Program (Panama)
REDI	Digital Registry System (Panama)
RGP	General Property Registry (Guatemala)
RIC	Cadastre Information Registry (Guatemala)
RPPIM	Public Registry of Real Estate and Commercial Property (Nicaragua)
RTC	Record of Rights, Tenancy and Cultivation (India)
SENACYT	Infoplaza Association (Panama)
SIG	Geographic Information System (Panama)
SIICAR	Integrated Registry-Cadastre Information System
SINARE	National Registry System
SIRyC	Registry and Cadastre Information System (El Salvador)
SIT	Territorial Information System (Nicaragua)
SURE	Unified Registry System (Honduras)

INFORMATION SYSTEMS AND LAND ADMINISTRATION

I. INTRODUCTION

1.   The foremost challenge of Latin America's land regularization efforts has been sustainability. Substantial investments in the 70s and 80s had limited impact as land registries became outdated shortly after implementation (Borrero 1999; Jaramillo 1998; Barnes, Stanfield, and Barthel 2000; Barnes 2002, 2003).

2.   Most rural real estate transactions involve the exchange of small properties of low market value between poor people that know each other and are carried out far away from the service windows of public property registries. The common premise of past interventions, that once the initial rural land regularization effort was completed users would diligently incorporate subsequent transactions in the registry, has proven illusive.

3.   In principle, this is now feasible in rural areas with dynamic markets. The new information and communication technologies (ICTs) are drastically reducing the costs of recording, updating, administering and publishing enormous quantities of data in a secure environment, all critical elements of property registration, and can therefore form the basis for a profound transformation of rural land administration.

4.   In practice, many computerization and technology driven projects fail (Burns *et al* 2006). Systems can give support to institutional reform and help lower costs and expand sustainable rural outreach; but systems effectiveness is largely determined by the institutional context.

5.   This paper examines the role of information systems and the way that systems help shape and are affected by institutions. The focus is on five countries where the World Bank supports land administration projects: El Salvador, Honduras, Guatemala, Nicaragua and Panama. The experience in these countries is complemented with available information on international experience, to draw lessons and derive recommendations to improve the effectiveness of information systems in expanding the sustainability and rural outreach of land administration interventions.

II. THE SETTING

A. Challenges

6.   Land administration is expensive in low density rural areas typical in countries like Panama, Nicaragua and Honduras. The territory to serve is smaller and more densely populated in El Salvador (Table 1). Panama has higher per capita income and more resources that the other countries. Nicaragua and Honduras rank among the poorest countries in the hemisphere. The multiple Mayan ethnic groups that make up its majority population, the different forms of traditional land tenure and the long history of conflict over land present formidable challenges for the regularization of rural property rights in Guatemala. Diversity in culture and in traditional land tenure patterns also make the use of differentiated approaches necessary in the other four countries studied.

Table 1. Area, Population and Gross Income per Capita in Study Countries

Country	Area (000 has)	Population (2004) 000	Population % rural (2004)	%indigenous **	Density (people/ha)	Income per capita (US$)
El Salvador	2 104	6 614	39.7	7	3.1	2 350
Guatemala	10 889	12 661	53.2	66	1.2	2 130
Honduras	11 209	7 099	54.0	15	0.6	1 030
Nicaragua	13 000	5 597	42.2	5	0.4	790
Panama	7 552	3 177	42.6	6	0.4	4 450

Sources: Surface area and population: www.fao.org/waicent/portal/statistics_en.asp
  Gross income per capita: World Bank (2005b)
  % of indigenous population refers to different dates. See original estimates in Deruyttere 2003.

7.   El Salvador and Panama have achieved some efficiency in their public institutions (Table 2). There remains considerable room for improvement in all 5 countries, with corruption and inefficiency particularly serious in Honduras Nicaragua and Guatemala.

8.   The cash costs of selling an urban property are relatively high in some developed countries, notably in The Netherlands (6.1% of the value of the property) and Australia (7.1%); but processing time is generally lower in these countries. The time of citizens appears to be more valued in developed countries that in Central America.

Table 2. Institutional Indicators - Central America and Selected Countries

	Cost of registering urban property (1)			Corruptions Perception Rank 2006 (2)	WB Government Effectiveness Rank (1-100) (3)	WEF Institutions Index (2006 Rank) (4)
	No. of steps	Days	Cost (% of value)			
Costa Rica	6	21	3.5	55	64.1	55
El Salvador	5	52	3.6	57	45.9	61
Guatemala	5	69	4.7	111	29.7	81
Honduras	7	36	5.8	121	31.6	110
Nicaragua	7	65	6.5	111	24.9	102
Panama	7	44	2.4	84	58.9	65
Argentina	5	44	8.3	93	47.8	112
Brasil	15	47	4	70	55.0	91
Chile	6	31	1.3	20	86.1	25
Mexico	5	74	5.3	70	56.4	69
Australia	5	5	7.1	9	94.7	11
Canada	6	10	1.7	14	95.7	21
USA	4	12	0.5	20	91.9	27
Spain	3	25	7.2	23	89.5	39
France	9	183	6.5	18	90.0	24
The Netherlands	2	2	6.2	9	97.1	9
Germany	4	40	4.5	16	90.4	7
Italy	8	27	0.9	45	71.8	71
Norway	1	1	2.5	8	97.6	6
New Zealand	2	2	0.1	1	95.2	8
Thailand	2	2	6.3	73	66.0	40
United Kingdom	2	21	4.1	11	94.3	15
Latin America and Caribbean	6.7	76.5	4.8			

Sources:
(1) World Bank www.doingbusiness.org
(2) Transparency International www.transparency.org
(3) World Bank Worldwide Governance Indicators 2005
(http://web.worldbank.org/WBSITE/EXTERNAL/WBI/EXTWBIGOVANTCOR/0,,contentMDK:20771165~menuPK:1866365~pagePK:64168445~piPK:64168309~theSitePK:1740530,00.html)
(4) World Economic Forum, Global Competitiveness Report 2006-2007
   (www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm)

B. Projects

9.   Table 3 lists recent World Bank projects supporting land administration in Central America. In all 5 countries land administration is a long-term endeavor (e.g. 15-20 years) expected to involve several sequential operations. Common objectives of these interventions are to increase the security of rural property rights and to improve the legal and institutional framework and increase the information available to stakeholders so that land markets function efficiently. Common elements of these operations are: i. strengthening the policy, legislative and institutional frameworks for land

administration; ii. systematic regularization in specific parts of the country; iii. demarcation of protected areas; and iv. development and implementation of an Integrated Registry-Cadastre Information System.

Table 3. World Bank Sponsored Land Administration Projects in Central America

Country / Project	Execution Period	Total Cost (Million US$)
El Salvador		
Agricultural Sector Reform and Investment Project – PRISA	1994-2003*	48.5 (land admin=7.2)
Land administration Project-Phase I	1997-2005*	69.5
Land administration Project-Phase II	2006-2010	55.8
Guatemala		
Land Administration Project	2000-2007	31.0
Honduras		
Rural Land Management Project, PAAR	1998-2004*	44.8 (land admin=15.1)
Land Administration Program of Honduras, PATH	2004-2008	38.9
Nicaragua		
Land Administration Project, PRODEP	2003-2008	38.5
Panama		
National Land Administration Program (PRONAT)	2001-2009	58.57

Notes: Total Cost figures include World Bank as well as national funding.
* indicates the project has been completed and is now closed.

10.   The more successful interventions have started as small components of a broad effort that paved the way for subsequent larger land administration operations. Performance assessments bear this out. Phase I of El Salvador's program and Honduras PAAR had **Satisfactory** outcomes and **Substantial** institutional development impact. Sustainability was rated **Highly Likely** for El Salvador (World Bank 2005b) and **Likely** for Honduras (World Bank 2004a).

C. Institutions

11.   In most Latin American countries the registries started out as part of the judiciary. The high value of urban property and the high productive capacity of owners and of those interested in the effective functioning of registries (Banks, businessmen) have been auspicious to their development as financially self-sufficient autonomous institutions. In principle, most property registries have authority over rural property. In practice, urban real estate has been and continues to be the main source of revenue and the driving force behind efforts to modernize registration procedures.

12.   The regularization of rights over rural lands has had a more troubled past, with actors having widely divergent interests and power quotas engaged in a long term struggle marred by acts violence and at times outright war. Ministries of Agriculture and Agrarian Reform agencies created as an immediate response to conflict over land have played a central role in rural land regularization. Where decentralization has been effective and in large towns some form of **fiscal** cadastre has enabled local authorities to collect tax revenues and in the process also helped demarcate and thus lend support to validating property rights.[1]

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[1] Barnes (2002 and 2002a) gives additional information on land administration institutions in Latin America.

13. A unified cadastre-registry agency is a modern trend and a best practice recommended in international forums (Kaufmann and Steudler 1998, Barnes 2003, Osskó 2006, Burns *et al* 2006, Bruce 2006) In the study countries, this ideal has been achieved only in two countries: El Salvador in 1994 and Honduras in 2004 (Table 4).

Table 4. Salient Features of Principal Land Administration Agencies in the Study Countries

Country / Institution	Project Unit	Registry	Cadastre	Independent & Self-sustaining
El Salvador				
National Registries Center *Centro Nacional de Registros,* CNR	X	X	X	X
Guatemala				
General Property Registry *Registro General de la Propiedad*, RGP		X		X
Cadastre Information Registry, *Registro de Información Catastral*, RIC	X		X	
Honduras				
Land Administration Program of Honduras *Programa de Administración de Tierras de Honduras*, PATH	X			
Property Institute *Instituto de la Propiedad*, IP		X	X	X
Nicaragua				
Land Administration Project *Proyecto de Ordenamiento de la Propiedad*, PRODEP	X			
Public Registry of Real and Commercial Property *Registro Público de la Propiedad Inmueble y Mercantil*, RPPIM		X		
Nicaraguan Institute of Territorial Studies *Instituto Nicaragüense de Estudios Territoriales*, INETER			X	
Panama				
National Land Administration Program *Programa Nacional de Administración de Tierras*, PRONAT	X			
Public Registry of Panama *Registro Público de Panamá*		X		X
Directorate of Cadastre and National Assets (Ministry of the Economy and Finance) *Dirección de Catastro y Bienes Patrimoniales*			X	

14.   Since 1994 El Salvador's National Registries Center, CNR, has exercised authority over the real property registry, the cadastre and the geographical institute (Hurtado, Pleitez and Díaz 2004). CNR is administratively autonomous and financially self sustaining with service revenues covering operating expenses and generating a surplus that is regularly transferred to the national treasury.[1]

15.   The creation of a Property Institute in Honduras unifying land registration, intellectual property and cartography is more recent (2004) and is an important accomplishment of the Rural Land Management Project (PAAR).

16.   Registries can be self-supporting but a cadastre can rarely proceed without government support (Adlington 2002; Onsrud 2003). In El Salvador, registry services generated 98% of the US$ 20.7 million collected in 2005 for registry and cadastre services (Table 3).

Table 3. CNR Income from Land Registry and Cadastral Services in 2005

Services	US$	%	No. of Documents
Registry			
Sales-purchase of land	7,354,532	35.6	96,397
Constitution of Mortgage	3,737,210	18.1	43,922
Constitution of Open Mortgage	2,708,690	13.1	12,397
Cancellation of mortgage	1,517,017	7.3	53,875
Segregation by sale	859,299	4.2	29,940
Transfer of property in payment	638,511	3.1	4499
Transfer of mortgage loan	604,027	2.9	5,119
Dismemberment of land in head parcel	400,158	1.9	907
Cautionary annotation	372,452	1.8	38,596
Modification of mortgage	333,794	1.6	6,943
Other documents	1,678,947	8.1	50,508
Subtotal	**20,204,636**	97.8	**343,103**
Cadastre			
Property location	80,387	0.4	
List of parcels and owners	2,030	0.0	
Cadastral map	10,535	0.1	
Project Reviews	158,570	0.8	
Project Recording	15	0.0	
Certifications and cadastral reports	212,804	1.0	
Subtotal	**464,341**	2.2	
Total	**20,668,977**	100.0	

17.   Responsibilities for land administration are divided in the other 3 countries. Guatemala's General Property Registry, RGP, and Panama's Public Registry are strong independent self sustaining agencies that use modern information systems, but are not responsible for the cadastre and have limited coverage outside the main cities. Nicaragua's Public Registry of Real Estate and Commercial Property, RPPIM, is still a subdivision of the Supreme Court with a weak link to the cadastre agency.

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[1] The CNR also houses the Commercial and Intellectual Property Rights Registries but these generate only small amounts of revenue.

18.   Guatemala's General Public Registry has been autonomous for many years (Trackman, Fisher and Salas 1999). Its financial statements are not subject to audit or independent oversight (Sares-Agridec 2003). The present RGP's administration has established a National Registry Commission and introduced regulations that allow registries to retain 20% of service revenues for use in the modernization of processes subject to approval by the Commission (Articles 32 to 40 of the Regulations of Property Registries, Diario de Central America 2005). A formal bond is thus established between the two property registries (RPG and Second Registry) and a mechanism is introduced for monitoring the registries' performances and modernization expenditures. The Commission is permanent and the service period of each member is five years. This length of tenure should provide for continuity and some independence from the particular government that designates members which only has a four-year mandate. Regrettably there is also a potential conflict of interest in that the head of the RGP presides the commission and the head of the Second Registrar is also a member.

19.   In 2006 Guatemala also established the Cadastre Information Registry, RIC, as an independent agency. The RIC has taken over the execution of the Land Administration Project, replacing a project unit that was part of the Ministry of Agriculture. Because it is exclusively a cadastre agency it is unlikely to be self-sustaining.

20.   Panama's Directorate of Cadastre and National Assets (DCBP) is a branch of the Ministry of Economy and Finance. Because the DCBP's cadastre is used to determine real estate taxes it is an important part of the Ministry of Finance. This helps explain why the country did not unify the cadastre with land registration when the Property Registry was separated from the Justice system and formed as an autonomous agency in 1999.

21.   Nicaragua's Institute of Territorial Studies, INETER, is a decentralized agency responsible for maintaining the physical cadastre, the geodesy, the cartography, the meteorology and territorial planning in Nicaragua. It has tried to modernize – e.g. with the adoption of modern information systems – but with no link to land registration. Nicaragua's institutional arrangements for land administration are complex, to a large extent due to ongoing land tenure disputes arising out of the agrarian reform process.

22.   Lawyers and Notaries have dominant decision-making power in property registries.

    In El Salvador, the CNR's Executive Council is made up of six members: four from Government, and representatives of two civil society organizations: the Federation of Lawyers Associations of El Salvador (FEDAES), and the Civil Engineering guild (Corte Suprema de Justicia 1994).

    By law, the heads of Guatemala's RGP and of the Second registry must be notaries. The head of the RGP also presides the National Registry Commission. Other members in the Commission are: three designated by the Association of Lawyer's and Notaries (www.infovia.com.gt/cang/) and another three appointed upon recommendation of the board of directors of the Guatemalan Institute of Notary Law (www.igdnotarial.org.gt/)

    In Honduras, the highest authority of the Property Institute's is its Executive Council, made up of seven members: four directly named by the President and three others selected by the

President out of options proposed by each of the following civil society organizations: the Honduran Private Enterprise Council (COHEP;www.cohep.com), the General Confederation of Settlers' Organizations, and the Honduran Institute of Notary Rights, INDN (La Gaceta 2004).

In Nicaragua, the Supreme Court names all public registrars and personnel of departmental registries.

In Panama, the Director of the Public Registry must by law be a lawyer named by the President. Civil society participation includes three members appointed to the Registry's Board by the President one each from the financial and services sector, the legal profession and the construction sector. Another three Board members are Government officials also appointed by the President.

III. CONCEPTUAL FRAMEWORK

A. Core Functions

23.   In small communities there is no need for formal means of recognizing rights; members know who has rights over an asset and what she may or may not do with it. It is when land is scarce and actively traded and acquires a high value and when communities grow and discover the benefits of transferring rights to strangers outside the community or to people about whom little is known that the need for property rights institutions arises. (Libecap 1999, Henssen 1995, Arruñada 2003, Wallace and Williamson 2005)

24.   The **formal** regularization of property rights requires the definition and demarcation of the property (**cadastre**) as well as the validation of the rights of use of the land (**registration**), following a system sanctioned by the State that enjoys widespread acceptance. The cadastre is an archive that is useful to the State for administrative purposes; the registry has a legal purpose (Rajoy, Rodriguez and Rodriguez 2003). For historical reasons, two types of institutions play a central role in Latin America and much of Europe: property registries and those entrusted with recording the physical cadastre.

25.   Public registries within the Germanic-Spanish tradition record **property rights** and differ from those that record **deeds**. In a deeds registry every document presented must, by law, be recorded, provided it meets certain formal requirements. All kinds of deeds are recorded, some with errors or even fraudulent. In the case of third party claims it is the court that determines who holds the valid right to property depending on the priority or chain of title in the registry. [1]

26.   The role of registries is strong in countries that follow the Germanic-Spanish tradition – e.g. the five study countries - because **property rights** on land are registered following a formal review protocol as opposed to just recording "deeds". Third parties acquiring title or other rights on land – e.g. through a mortgage – are protected by a formal quasi-judicial process that reviews each submission and denies registration to defective or fraudulent documents. Should a mistake happen, the rights of a third party that acted in good faith and purchased from a non-owner because he trusted registry records will be upheld, whereas the mistake in registration will damage the right to the land of the original owner even as the system compensates him for the loss. The effect is to eliminate from the real estate market the uncertainty and information asymmetries regarding property rights if the decisions of the registrar were subject to challenge (Rajoy 2003, page 9).

B. Trustworthiness

27.   When registries fail as guardians of property rights people lose confidence and the system collapses from user desertion (Arruñada 2003, page 422). Property registries generally manage to protect the real estate rights of the prosperous urban population, but not those of low income rural residents. When a community or a good part of its members perceive that property registration does not protect their rights they resort to informal mechanisms such as a private unrecorded contract.

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[1]   Deeds registries are dominant in parts of the US and of Canada and in France, and, in general, in countries following the French legal tradition. The weaker role in protecting rights played by deeds registries has given rise in the United States to an important title insurance industry (Arruñada 2003, Rajoy 2003) and, in France, to the assignment of a more prominent role to notaries - e.g. in the substantive search for previous rights on land (Rajoy 2003).

28.   Lack of trust is one of the main reasons why rural people do not use registry services. Registry offices are distant from rural communities and rural people see registration processes as "overly bureaucratic, costly, inaccessible, centralized, corrupt and not transparent to the users" (Barnes 2002)

29.   Corruption reduces the public's confidence in the registry and depreciates the value of formal registration. Prior to the reforms Guatemala's RGP officials often received gratifications directly from users for processing a document, completing registration and even for registering fraudulent or defective deeds, changing records or certifying false documents (Trackman, Fisher and Salas 1999a). Something similar used to happen in El Salvador where the old Registry was known as one of the most corrupt institutions in the country (Daly 2006). In Nicaragua, most cases of fraud occur as a result of double recording of properties or of imprecision, mistakes or outdated registry records (EuroGeo 2003).

30.   Fraud and error is an ever present concern of public registries even in well run agencies (Van der Molen and Tuladhar 2006). Daly (2006) considers that the corruption problems in El Salvador no longer occur, but wonders whether the preferential treatment being afforded to some enterprises might be making room for new forms of corruption to arise. Guatemala RGP's legal department presently detects 2 to 4 cases of fraud every week.

C. The Modern Land Administration Agency as Public Service Monopoly

31.   Property registries (and agencies that integrate cadastre with registry functions) are monopolies sanctioned by the State. They require functional autonomy to discharge their quasi-legal duty of protecting property rights in a dependable fashion (Rajoy *et al* 2003). As monopolies, they must also be subject to regulation to foster probity and transparency and to ensure that registration services benefit all the people not just a privileged few.

32.   In 1994 Kadaster retained its long held monopoly over Dutch property registration but became an autonomous agency. Kadaster now provides services in commercial terms in Holland and in other countries. It is regulated by the Minister of Housing, Environment and Spatial Planning in respect to tariffs, long term planning and the designation of members to the agency's Executive Board (Wubbe 2005). Regulation is indirect (Van der Molen 2003). The Minister does not intervene in day to day operations but relies instead, as mandated by law, on organizational structures with broad stakeholder representation (Table 11).

33.   The modern land administration agency integrates both cadastre and registry functions. This unification simplifies objectives, reduces inter-agency competition for customer revenues, makes it easier to align a single agency's incentives to focus on serving its clients, reduces the number of transactions that property owners have to carry out and facilitates registry-cadastre data integration.

Table 11. The Netherlands: Kadaster's Management and Oversight Structure

Executive Board	Supervisory Council	User Council
3 members designated by the Minister of Housing, Environment and Spatial Planning	5 members designated by the Minister, selected on account of their prestige and personal merits, not because of their organizational affiliations or political persuasion. Present composition is: 1 Queens governor for one of the northern provinces, also former minister; 1 well known information technology expert; 1 well known lawyer; 1 Chairman of a Bank; 1 labor law expert, also former minister;	16 members appointed by the members of the Supervisory Council following the Minister's guidelines. They are representatives of the following umbrella (national) organizations: (2) umbrella organizations of notaries umbrella organization of Real Estate Brokers (Agents) umbrella organization of Municipalities umbrella organization of Provinces umbrella organization of Water boards umbrella organization of Consumers and Real Estate Owners umbrella organization of Banks umbrella organization of Geo-information Industries publishers of geographical books and atlases Ministry of Defense Ministry of Housing, Environment and Spatial Planning Ministry of Transport and Water Management Ministry of Education, Culture and Science Ministry of Agriculture and Nature Ministry of Home Affairs
Responsible for day to day operations and administration of Kadastre	Meet 4 times a year and are responsible for approving decisions of the Executive Board	Meet 4 times a year. Members receive allowance to compensate for expenses. They give advice either in response to requests or by their own initiative. They pay special attention to service levels, product management and fees.

Course: Courtesy of Paul van der Molen, Director of Kadaster International (http://www.kadaster.nl/international-english/default.html)

D. Sustainability Challenges

34.   In Central America sustainability depends on public registries, the institutions entrusted with validating property rights. Property registries become outdated when two types of actions go unrecorded: either the buying-selling of real estate (or modification of property rights, as by a mortgage), or when a property is transformed, for example by dismemberment or by the fusion of several properties. (Zevenbergen 2004)

35.   Sales are common transactions. Once a large number of residents in an area receive title during regularization (cadastral sweep), residents need to trust and value the security that the registration of documents provides, to the point that they are willing to incur the expenses associated with recording any subsequent transfer of property. It is not necessary that the law require deeds recording; whether registration should or should not be mandatory is immaterial. What is needed is for the benefits of regularization to be palpable, that the registry be trustworthy and that the costs of registration, including waiting times, to be within the reach of rural residents.

36.   Dismemberments occur mainly in cases of inheritance. Delays in registering property transformation are not problematic for the parties because the property right is held by either the parent or the offspring, people that know and trust each other. Registration of property changes may be left for "later on" with no serious consequences.

37.   Unreported dismemberments resulting from inheritance are probably the principal cause of informality and of the downgrading of property registries (Griffith-Charles 2004, Barnes and Griffith-Charles 2006). Saint Lucia is a small country (616 km^2; 158,000 inhabitants in 2001) where between 1984 and 1987 all land properties were regularized. Sixteen years later, in 2002, an estimated 28% of the properties had been dismembered by inheritance and in no case was this dismemberment formally recorded in the registry.

38.   For Sonsonate, El Salvador, where the CNR has completed the regularization process, Carcach (2004) estimates that 93% of all new transactions are registered by beneficiaries. Daly (2006) however suggests that the number of unregistered properties may be as high as 60%, particularly taking into account areas in which the CNR has not yet carried out cadastral sweeps.

39.   No survey data are available for Honduras, but according to a representative of Notaries working in Comayagua new property transfers (post cadastre) are no longer being done through private documents as was previously the case but through deeds recorded in the Property Institute. This is happening even though notary charges for recording a deed in the IP is 10 times higher (4,000 Lempiras or US\$ 210 for a property of 2 has) than the amount charged for executing a private document (about US\$ 21).

E. Outreach Challenges

40.   Limited access to registry offices undermines trust in the ability of these institutions to protect rural people's property rights, increases the costs of registration to rural residents and in the process hinders the formation of a culture of property registration. The situation is grave where the dominant population is of a different cultural tradition, ethnic group and educational level and where past experience has shown to the population that the registries' ability to protect their property is questionable.

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41.   Registries in the study countries have very few rural service offices (Table 9). The extreme case is Guatemala, with only two registries and a few subsidiaries that can only receive but do not process documents; but access is also limited in the other four countries.

Table 9. Public Service Offices of Registry Agencies, Area and Population

Country	Offices	Territory km2	km2/ office	Population 000 000	000 people/
El Salvador	10	21,040	2,104	7.0	700
Guatemala	6	108,890	18.148	12.9	2,150
Honduras	18	112,090	6,227	7.4	411
Nicaragua	17	129,494	7,617	5.6	329
Panama	7	78,200	11,171	3.3	471
Norway Onsrud (2003)	87	324,220	3,727	4.6	53
Thailand (Land Equity)	758	513,115	677	64.8	85
Karnataka, India (Land Equity)	177*	192,000	1,085	52,7	298

* Only gov. kiosks. Service expansion through private kiosks is planned (20 in service 2004).

42.   The limited number and relatively low quality of notaries serving rural communities is probably a more serious constraint on rural access to land registration. Presently notaries are responsible for presenting property rights documents to the registry and therefore represent the "service window" closest to the rural resident.

IV. LESSONS OF EXPERIENCE

A. Information Systems and Land Administration Reengineering

Effective Use of Systems

43.   Computers enable the automation of simple routines but for information systems to have a significant impact parallel changes in institutional procedures are required; i.e. a reengineering of traditional ways of doing things is necessary (Brynjolfsson and Hitt 2003; Dedrick, Burbaxani and Kraemer 2002). Information systems for land administration are most effective when they support comprehensive reforms involving changes in the law, institutions, procedures and work flows and link registry with cadastre data (Table 5).

Table 5. Status and Main Function of Selected Land Information Systems

Country /Name of Information System	Status*	Property Registration	Cadastre Data Mgmt.
El Salvador			
- Registry and Cadastre Information System (*Sistema de Información de Registro y Catastro, SIRyC*)	O	Yes	Yes
Guatemala			
- RGP's information system	O	Yes	No
- RIC's information system	P	Yes	Yes
Honduras			
- Unified Registry System (*Sistema Unificado de Registros*, SURE)	O	Yes	Yes
Nicaragua			
- Integrated Registry-Cadastre Information System (*Sistema Integrado de Información Catastro-Registral, SIICAR*)	P	Yes	Yes
- Territorial Information System (*Sistema de Información Territorial,* SIT)	F	No	Yes
Panama			
- Integrated Registry-Cadastre Information System (*Sistema Integrado de Información Catastro-Registro, SIICAR*)	P	Yes	Yes
- Geographic Information System (*Sistema de Información Geográfica, SIG*)	O	No	Yes
- Public Registry information system	O	Yes	No

* Operational (O), Planned (P), Defunct or Failed (F)

44.   In El Salvador, the 1994 law joining the Registry with the National Geographic Institute and the Commercial Registry (Jakob et al 2005) paved the way for cooperation between these previously separate units and facilitated cadastre-registry systems and data integration. The SIRyC developed in 1996-97 generates and administers a unique data base that integrates alphanumeric information from the registry, with the images of legal documents, receipts and documents delivered for inscription and geographic information. Besides SIRyC, other systems supporting CNR work

include: Document Control, Cadastre Control, Web-based consultation system of Registry and Cadastre Information, Technical and Legal Assistance Supervision, Projects Management, and Requirements Information (Hurtado, Pleitez and Díaz 2004). All these systems have been developed by the Information Technology staff of the CNR, which in mid-2006 numbered 103 and were grouped in 3 units: Systems, Technical Support and Infrastructure.

45.   Remarkable improvements in service have followed. Whereas in 2000 it took the CNR's office in Santa Ana, El Salvador, an average of 128 days to register documents, once the SIRyC was implemented it only took 23-29 days in 2001-2003 (Hurtado, Pleitez and Díaz 2004).

46.   Honduras' Unified Registry System (SURE) was developed in tandem with a comprehensive revision of the legal framework, the reengineering of registry-cadastre processes and the automation of procedures using information technology. The SURE makes extensive internal use of digital signatures to authorize different users to input or consult data or issue certificates. All new property titles issued as part of a cadastral effort in State lands (i.e. with no prior private owner and therefore no prior registry record) are electronically recorded in the IP with no paper trace. The SURE's "Electronic Notary Protocol" was made possible by the new law approved under project sponsorship and enables the recording of property rights using electronic means by duly trained and certified Delegated Registrars. The implementation of this module as a regular procedure needs to be endorsed by the IP, where it is facing apprehension on the part of the agency's notaries.

47.   PATH staff estimates that the times of registering a document was reduced from six months to fifteen days in Tegucigalpa and in San Pedro Sula. In Comayagua, the implementation of the *folio real* using the SURE has doubled the number of monthly transactions carried out by the registry (PATH 2006).

48.   Reengineering of processes is frequently linked to information technology, often fails to achieve expected results and can vary appreciably in scope (Cummings and Worley 2005). Even if cadastre-registry data integration is not an objective autonomous registries that charge for services and keep part of the proceeds have the incentive and frequently improve service and efficiency by modernizing their processes using information technology.

> After its system collapsed in 2003, Guatemala implemented a first phase use of electronic signatures to impart greater security and speed to the processing of documents. The new system optimizes the electronic allocation of files among operators, distributing the work load more fairly (operators are paid piecemeal and handling some kinds of documents is more remunerative than others) but respecting the order of precedence according to the time of submission. The system also imparts greater transparency to the registration processes, significantly reduces processing time, and facilitates the monitoring of the files which in the past often strayed, and enables publishing of available registry information on the Internet. (General Registry of the Property 2006).

> From 1998 to 2003 Panama's Registry installed a Digital Registry System (REDI) that enabled the digitization of 19 million documents and the establishment of a Web based consultation system accessible by the public.

49.   To the extent that they enhance transparency and reduce possibilities for error, corruption or fraud, information systems coupled with the reengineering of processes will also increase trust in property registration.

In India, the "record of rights, tenancy and cultivation" (RTC) is not recognized by the law as proof of rights on land (Burns 2005). Nevertheless, the substitution of manual records with a reliable computerized system with internal checks and controls over the deeds registered has minimized opportunities for error and helped reduce land-related conflicts (Ahuja and Singh 2006).

In Guatemala, the introduction of electronic management of documents reduced the number of errors that used to occur when the information was transcribed manually from an original to the registry's books or from one book to another. Now, with an automated control system that restricts access to authorized users and keeps tabs on who authors every change, unauthorized changes in documents are practically impossible (Trackman, Fisher and Salas 1999a).

50.   The role of technology should not be overstated. Technology can help, but having an appropriate legal framework, simple procedures and sound institutions is more important. Consider property registration in Thailand. The population of Thailand is predominantly rural - 68%. Registering urban property in Thailand takes less than two days (Table 2) and not much longer in the countryside. Thanks in part to three World Bank loans and a titling program spanning over 20 years (Burns 2004), the great majority of people enjoy secure land tenure. Efficient as it is, land administration in Thailand is carried out predominantly using manual procedures. The Department of Lands (DOL) has a total of 880 offices throughout the country, of which less than 50 are computerized. The DOL has no integrated database and its online services are very limited. Efficient land administration in Thailand is the result of a sensible institutional setting for land administration and simple and trustworthy service oriented procedures.

Integration of Registry and Cadastre Data

51.   When separate registry and cadastre datasets are kept by different agencies, property owners have to comply with the requirements of these different institutions, each of which charges its own fees to try to recover costs. There are also greater possibilities for error and inconsistencies between data stored by each agency (Kaufmann 1998).

52.   Recent laws in Nicaragua and Guatemala (Asamblea Nacional de Nicaragua 2004 and Diario de Centroamérica 2005), have reaffirmed the determination of these countries to keep these functions administered separately by two different institutions and to use information systems and interagency cooperation to achieve the necessary unification of registry and cadastre data and processes. Panama also has two agencies and also plans to integrate data through a unified information system and data sets; but Panama's institutional set up would appear to be better suited to achieve such integration because its physical cadastre depends on a strong Ministry of Economy and Finance and is instrumental to the collection of real estate taxes, an important source of government revenue.

53.   In general, interagency coordination is difficult. In Nicaragua, an essential step for the effectiveness of the SIICAR is the establishment of a single cadastre-registry window to service clients. In practice, the new office buildings in each of the three project areas are being constructed with project funding but in separate locations, one for the Registry and another for INETER (cadastre), and, in the case of Somoto, Madríz, one site is quite distant from the other. These decisions

suggests that Nicaraguan institutions are far from engaging in inter-agency cooperation and are bound to complicate any future effort to unify services.

54.   Sharing systems and data between land agencies is particularly challenging. The registry function generally covers expenses and produces a surplus that adds to the national treasury, while the cadastre consumes considerable State resources. This financial imbalance conditions the relative bargaining power and coordination possibilities when the two functions are separated and assigned to different agencies.

55.   It is possible to create systems integrating data from two separate systems for the purpose of **publishing** information. In Norway, until recently the data recorded by the country's 87 local registries (dependent on the judiciary) were updated daily and forwarded to the Registry's headquarters to make up a centralized database. This information was also transmitted to a state enterprise, Norsk Eindomsinformasjon Ltd., an agency formed for the purpose of establishing, administering and publishing on the Internet a single database that integrated registry (from local registries) and cadastre information (from Mapping Authority). This experience helped government appreciate the value of a uniform database and contributed to the decision to join the registry and cadastre into a single agency, the Norwegian Mapping and Cadastre Authority, NMCA (www.statkart.no), beginning in 2003. The objective is to maintain an up to date unified database, but always protecting the security and integrity of registry information which can only be modified at the request of the property owner. (Onsrud 2003).

56.   Information sharing agreements between registry and cadastre agencies generally do not work well (Zevenbergen 2004). Evidence in the countries studied confirms international experience.

> Panama's Registry does not authorize access to its systems by the Geographic Information System of the DCBP (cadastre). Updating of property information in the cadastre is done manually by staff physically located in Registry premises.

> Guatemala's General Property Registry (RGP) does not authorize access to its system by the Geographical Information System of Guatemala Municipality's Directorate of Cadastre and Administration of the Unique Tax on Real Estate (*Impuesto único sobre bienes inmuebles*, IUSI).

> The integration of the RGP's systems with those of the UTJ-Protierra (now RIC) anticipated by the project has not materialized. The collapse of the RGP's system in 2003 was a formidable problem, the resolution of which took precedence to the linking of RGP data with UTJ cadastre and prevented the modernization of the RGP's own office in Peten.

57.   Property registries are, or have the potential to be, independent self-sustaining powerful institutions. They can generate considerable income from services rendered: US$ 20.1 million by the CNR (2005); US$ 25 million by the Public Registry of Panama (2006); US$ 2.5 million by the public registry of Managua (1999). The authorities of these agencies recognize and cherish the security of their systems and data. They impose strict security measures on which their own institutional survival depends. It is difficult to imagine a set of conditions under which they would be willing to permit another agency to access their systems' or in any way jeopardize the integrity of their registry data.

B. Increasing Trust through Improved Governance

Vulnerability to Political Swings

58.   In October 2005 the opposition party won the elections and a new administration took over on 27 January 2006. PATH was affected by the transition as follows:

(i)   An acrimonious public controversy over the appointment of the project coordinator took place and was only resolved late in May. (La Prensa 2006, El Heraldo 2006b);

(ii)   the new administration dissolved the Project Coordination Unit and redistributed responsibilities for the execution of the three projects previously assigned to this unit. PATH staff which up to now has operated as part of the Ministry of Government and Justice but managed project activities with considerable leeway is to be transferred to the IP;

(iii)   a 3-month delay in PATH staff salary payments occurred (El Heraldo 2006). In December 2005 PATH had a total staff of 470 people, but by June only about 150 remained. Approximately half of the former officials were fired, the other half separated voluntarily largely in response to the reigning uncertainty. The staff lost had undergone a rigorous training and certification process undertaken at considerable expense;

(iv)   field activities were stopped for about 6 months. (El Heraldo 2006a, 2006c, La Tribuna 2006). Only the maintenance of the information system was sustained, albeit at a very low level of operation;

(v)   over half of systems staff was lost during the transition. The system and data were spared from irreparable damage, thanks in part to a timely telephone call from World Bank officials bringing to the attention of the new authorities the importance of safeguarding these valuable assets;

(vi)   many municipalities that also changed government endangered their recently acquired tax collection capabilities by firing part of their personnel qualified in the use of the SURE.

Systems Development under a Fragile Uncertain Setting

59.   In Nicaragua, PRODEP has hired consultants to develop and implement an Integrated Registry-Cadastre Information System, SIICAR over an 18 month period at a cost of about US$ 1.5 million. In planning the SIICAR (EuroGeo 2003, 2003a, 2003b and PRODEP 2003), the following options were considered: i. system design taking advantage of information systems already in place in Nicaragua (9 in all); ii. adaptation of El Salvador's SIRyC to Nicaraguan requirements; iii. development of an entirely new system.

60.   The first option was ruled out because available systems were considered partial ad hoc solutions that were not integrated to other systems or databases. The Territorial Information System (SIT) installed by INETER in 1998-99 is the most complete prior effort. The SIT is a geographic information system developed for a 7,000 Km^2 pilot project area. It has two modules: a Production Center (CPROD) that administers the alphanumeric and geographical databases and permits updating and maintenance of property information, and the Information and Consultation System that enables access to the information via web pages. According to *Grupo Cívico Etica y Transparencia* (2004), the SIT was developed at a cost of US$ 1,253,000.

61.   Since June 2002, when the hard drive hosting the SIT failed, INETER stopped using the system. Thirteen INETER officials trained to use the SIT by the MICADO project have been reassigned to other functions. Software licenses dating from 1998-1999 have not been renewed (EuroGeo 2003b). The reasons behind the desertion of the SIT are ambiguous, but the experience shows that "it is not enough to develop an information system in order to automate an institution." (EuroGeo 2003).

62.   PRODEP and EuroGeo staff paid a visit to El Salvador to become acquainted with the SIRyC and to explore the possibility of adjusting it to meet Nicaragua's requirements. Although the SIRyC appears to have most of the functions needed, its adoption was ruled out, mainly because no up to date documentation was available on which to base a purposeful evaluation of its features. (EuroGeo 2003b, 2003c). It was also difficult to ascertain the costs that such a transfer would entail, in part because this would have been the first instance in which collaboration of this kind would have taken place.

63.   PRODEP is working on the chosen option: the development of an entirely new system. The SIICAR is being developed following a creditable process, based on comprehensive terms of reference and using programming tools that mitigate some of the risks that typically affect large software developments (e.g. requiring that the system be developed in modules using the *Rational Unified Process*). Notwithstanding these positive features, the successful implementation of the SIICAR is subject to considerable institutional uncertainty:

(i)   The creation of a single service window will require close coordination between the Public Registry and INETER. It is further proposed that municipalities maintain the physical cadastre with INETER's support. These are radical changes in procedures that will require some form of revenue sharing in order to pay for the costs of running the unified service and maintaining the information system. There are no precedents suggesting that the implementation of such inter-agency agreements is viable.

(ii)   The creation of a secure digitized property registry that is linked to reliable cadastre data is feasible from a systems standpoint; but its successful implementation depends on cooperation between at least two institutions: The Supreme Court and INETER. It will also require public confidence regarding the future reliability of any inter-agency agreement; otherwise the trustworthiness of the property registry could be compromised. While Nicaraguan registries have a limited mostly urban reach, they have a degree of credibility with the public as shown by

service revenues of over US$ 2.5 million a year.[1] Nevertheless, the evidence available regarding interagency cooperation is discouraging.[2]

(iii)   The legislation under consideration by the Asamblea Nacional since 2001 foresees the creation of a National Registry System (SINARE) that would unify Nicaragua's registries into a single institution, dependent and subordinate to the Supreme Court with respect to its budget (EuroGeo 2003b, clause 3.2.4.1.1). Maintenance and upgrading costs of the SIICAR are likely to be significant.[12] To leave budgetary discretion over the upkeep of the system in the hands of an institution that is distant in objectives and functions from the SINARE could compromise the sustainability of the SIICAR.

(iv)   On 5 December 2006 Nicaragua had a change in government. This will create uncertainty with respect to the feasibility of implementing reforms in the registry-cadastre processes including the passage of complementary legal changes pending, and to the institutional viability of the information systems being developed in support of these changes.

Outsourcing by Weak Institutions

64.   Outsourcing can yield satisfactory results, provided that it does not jeopardize the trustworthiness of registry data and does not tie up land agencies to rent extraction by contractors. One advantage of outsourcing is the relative ease of hiring personnel remunerated at comparatively high rates. High salaries are required to recruit qualified professionals, but bureaucratic restrictions often limit the remuneration that national agencies can pay.

65.   Notable examples of satisfactory outsourcing include:

Public (Norsk Eindomsinformasjon Ltd in Norway) and private (GBM in Guatemala) enterprises and public agencies (National Informatics Centre's development of Bhoomi system in Karnataka, India) have proven capable of developing, installing and administering reliable land information systems.

Panama's Registry outsourced the development and installation over a five-year period of a Digital Registry System (REDI) that was subsequently turned over for administration by Registry staff. The project included the successful installation of a network of 100 computer work stations, optical fibre infrastructure, database servers and Jukebox storage units, scanners, and the digitization of 19 million documents and software development including the establishment of a Web based consultation system.

66.   Outsourcing also carries risks. In the Philippines, an IFC sponsored program to hire a private consortium to "Build, Operate & Own" a system to computerize the Registry of Deeds (IFC 2003) has stalled for failure by the contracting parties to agree on fees and a suitable contract

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[1]   Managua´s registry generates US$ 1,050,000 a year, or about 40% of the fees collected by the RPPIM. All revenues collected are transferred to the national treasury Trackman, Fisher and Salas (1999).

[2]   "Basically each one of these entities [PPIM., INETER, _Intendencia de la Propiedad_, municipalities, DGI] pursues its own objectives, of economic, technical, and legal character, which are, at the same time, complementary, but that have been antagonistically implemented to this day. Such divergence not only in vision but also in terms of operational coherence is why, to date, these institutions do not to provide a suitable environment for the implementation of an integrated system sustainable over the long term." (translated from EuroGeo 2003b, page 82.)

arrangement that provides adequate compensation to the firm while protecting the interests of the public (World Bank 2005a, page 4; Commission on Audit 2004).

67.	Guatemala's information system was developed in 1996 by GBM (www.gbm.com), a regional subsidiary of IBM. A few years later the GBM staff managing the system convinced RGP authorities to hire them directly to replace GBM as the contractor. This change proved disastrous. In May 2003 the RGP's information system collapsed and, for lack of backups, some 430,000 images of electronic and physical records were lost. GBM was hired anew to help recover the records and refurbish the system. As of March 2006 some 375,000 images had been recovered. Prior to the system's collapse, the cost of outsourcing the system's management amounted to US$ 40,000 a month; under the new contract, outsourcing costs doubled to US$ 80,000 a month.

68.	The system collapse seriously affected the Lands Administration Project. The RGP established a subsidiary office in Peten as envisaged, but, struggling with the rescue of its own records, it was unable to establish modern registration procedures in Peten and the hoped for integration of cadastre with registry data was not implemented.

69.	It is probably no coincidence that most of the SIRyC (El Salvador) and the SURE-SINIT (Honduras) were developed with own staff. Three reasons appear to favor in-house development, especially in demonstration projects and bearing in mind the fragility of this type of operation.

(i)	In-house systems development encourages ownership; i.e. a direct link between the system and the institution and a commitment by the leadership to successful implementation. This helps when dealing with complex systems that are invariably challenged by implementation problems that are difficult to gauge by managers with limited technological expertise. When something does not go according to plan it is easy to discard a system and blame a previous administration. This is more difficult to do when the agency's own effort is engaged.

(ii)	For maximum impact, information systems should be developed in parallel with the reengineering of registration-cadastre processes and changes in legislation. Consultants can recommend and support reforms, but ultimately a personal connection and commitment by authorities is needed, as well as their familiarity with the potential, constraints and basic features of the systems under development. The rapport and commitment required will be easier to obtain from authorities that assume direct responsibility for in-house development.

(iii)	There are many donor funded land administration projects in Central America besides those of the World Bank, often providing for systems development but not always following the same approach or orientation. Coordination of these separate efforts can best be done locally, by authorities and agencies with direct responsibility for in house systems development.

Perils of Hastened Regularization

70.	It is not uncommon for projects to proceed with regularization before they are ready to do so. Whereas the cadastre and the distribution of titles is an attractive and politically visible activity, the reengineering of procedures and the linking of cadastre-registration databases is hard work and a low profile chore.

71.   Panama's experience shows the risks of hastening regularization, without first having in place: i. procedures for recording cadastre results in a suitable database linked to the public registry, and ii. low-cost means of recording subsequent transactions. The cadastre sweeps carried out during the first few years of PRONAT were done without a uniform methodology. The firms entrusted with the task delivered incomplete information that does not permit the construction of a consistent database. PRONAT's current administration is giving priority to the systematic recovery and reconstitution of a comprehensive database using the information already collected. This is a commendable effort, but most likely a new (double) cadastre exercise will be required given the unavoidable continuation of real estate transactions in the areas already subjected to the initial cadastral sweep.

72.   PAAR's initial effort in Comayagua, Honduras, did not have a way to record in the registry the information gathered by the cadastre. Furthermore, existing registry documents were not scanned or geo-referenced and there was therefore no way to record new transactions subsequent to the cadastre. A year and a half later, the cadastre had to be redone, this time making sure at the outset that there was an integrated registry-cadastre database and that incentives were in place (low costs, simple procedures, responsibilities assigned, qualified personnel) to record new transactions in the SURE by the staff of participating institutions (IP, municipalities).

73.   In Peten, Guatemala, since no link has been established between the property registry and cadastre data, the land records surveyed are also bound to soon become out of date.

74.   The development of the information systems linking cadastre data with registry records, the reengineering of procedures, and the set up of the incentives needed to motivate the registration of subsequent changes in properties and property rights, must take precedence over cadastral sweeps. Otherwise, the result is likely to be a significant waste of resources.

Reducing Vulnerability of Land Administration Agencies

75.   The information systems that support a modern registry are costly, complex and brittle. Where institutions are weak, systems' achievements can be quickly reversed.

> The recent change of government in Honduras resulted in considerable waste in terms of trained professionals fired or forced to quit, endangering investments in the SURE.

> The motives behind the abandonment of the SIG in Nicaragua are not clear, but a loss of interest on the part of the authorities of INETER probably played a major role.

> The collapse of Guatemala's RGP system in 2003 was a technical failure, but had its root in institutional limitations. Its impact was intensified for lack of data backups; an elementary mistake that could have been avoided by a well managed institution but that had severe implications for the RGP and for World Bank sponsored investments in Peten.

76.   The following measures observed in the study countries will help ward off these risks by strengthening the independence of public registries and improving their managerial capacities as well as their ability to weather political swings and changes in government:

(i)   Integration of the registry-cadastre functions in a single agency that is financially and administratively autonomous, but subject to external financial oversight and strong mechanism of social and financial control.

(ii)   Enabling Registries to retain part of their service revenues to provide for the maintenance of the information systems, and to fund investments in further technological modernization and in the expansion of the agency's rural outreach.

(iii) Legal adoption of periods of service for top registry officials longer than those of the elected Government (for example, five years, as is the case of Panama's Registry, instead of the 4-year duration of Panama's Government).

C. Expanding Outreach

Notaries and Systems-Managed Notary Protocols

77.   Available evidence indicates that the requirement that property deeds be prepared by a notary renders the costs of property transfer artificially high. Arruñada (2004, 2004a) notes that the existence of a strong and reliable property registry reduces the notary's contribution to the preservation of property rights and that the standardization of contracts combined with the enhanced security of electronic information systems often makes the work of notaries and lawyers in the registration process unnecessar

78.   In countries where notaries must prepare sale documents, the cost of selling property is higher by 26% compared to countries where the notaries does not have to intervene (World Bank 2006a). The problem also affects countries like Holland where the notary is still responsible for preparing deeds of sale (Louwman 2003). The World Bank's Cost of Doing Business study recommends the elimination of the requirement; i.e. that the participation of the notary be optional. [19]

79.   The obligatory participation of a notary is particularly burdensome for rural communities, given their relatively low income, the longer journey needed to find a notary, and the fewer number and lower quality of service provided. According to estimates made in 1998 for El Salvador (reported in Daly 2006), it costs US$ 1,800 to register a 2.24 ha property; an exorbitant figure considering an average income of about US$ 120/month for such a smallholder.

80.   The World Bank's Cost of Doing Business in 2006 highlights Honduras' achievements in cutting down by half the costs of registration and of transfer taxes and in eliminating stamp duties. Nevertheless, as a proportion of the value of the property, cash costs of registration decreased only from 8.8% to 5.8% (Table 2), mainly because of high notary service charges. Honduras therefore remains one of the countries of Latin America with the highest cost of property registration (World Bank 2006a, page 31).

81.   Special strategies have been adopted in some countries.

In Peru, despite strong opposition from notaries, a separate registry was created to service low income urban residents, the number of notaries was increased through new appointments, and the new registry was allowed to accept the registration of deeds by other types of specialists (Burns 2001, page 11).

In Honduras the Law creating the IP anticipates the use of a Notary Protocol that allows electronic registration of deeds. The system is fully developed and the law allows it; but implementation is pending, under study by authorities. PATH efforts are presently focused on training and certifying delegated registrars that would substitute notaries and carry out registration of properties at low cost.

82.   It is improbable that a reduction in registry procedures and a total lowering of transaction costs faced by rural residents will be obtained at the initiative of institutions dominated by notaries and lawyers where there is not a minimum of representation of consumers or rural residents in decision making processes. In the countries studied only in Honduras is participation of civil society foreseen in the management of the registries in a way that is comparable to that observed in developed countries (Table 11). But even in Honduras, two years after the creation of the Property Institute (IP), the National Commission for Property Policy and Regulation (CONAPON; Table 6) had yet to meet for the first time.

Table 6. Institutions represented in the National Commission for Property Policy and Regulation in Honduras

Public institutions	Private institutions
Ministry of Government and Justice (Presides), National Agrarian Institute, INA Honduran Corporation of Forest Development, COHDEFOR	- National Convergence Forum, FONAC - Workers Confederation - Indigenous and Afrohonduran Peoples - Association of Municipalities of Honduras - Honduran Association of Banking Institutions, AHIBA - Honduran Chamber of the Construction Industry (CHICO) - Confederation of Peasant Associations of Honduras

83.   To lower intermediation costs of registration to a level affordable by rural residents, the following strategies are recommended:

(i)   The reengineering of registry-cadastre processes, the development of secure information systems and the modification of the laws, to allow electronic registration of documents in the public registry (e-conveyancing);

(ii)   the elimination of the participation of the notary as a requirement for the preparation and submission of deeds, making this service optional depending on each client's needs; and

(iii)   training and certification of delegated registrars;

(iv)   incorporation in decision making structures of registries representation of users (e.g. in advisory councils), including indigenous populations and minority ethnic groups, owners of rural lands and owners of small urban properties; and specification of the terms and conditions of this participation, including regular periodic meetings.

Online Service Delivery

84.   Offers of registry services via Web are limited in the study countries (Table 14). Guatemala, El Salvador and Honduras offer the most complete array of services. El Salvador's CNR has the most extensive territorial coverage. No agency has yet instituted services making use of mobile phone text messaging.

85.   First and foremost, users want to know what kind of services are on offer and how to gain access to them. In the sub-region Panama's Directorate of Cadastre and National Assets offers the most detailed and user friendly information on services (www.mef.gob.pa/Catastro%20y%20Bienes%20Patrimoniales/contenido/Guia%20de%20servicios.asp). Elsewhere, the Department of Land Information of Western Australia illustrates the kind of comprehensive cadastre-registry service guide that is useful to the public. (www.dli.wa.gov.au/corporate.nsf/web/Products+and+Services).

86.   The sites of El Salvador's CNR and of Honduras' IP have the most detailed information on online services offered, but neither one has user friendly guides such as Frequently Asked Questions sections (e.g. as done by the British Columbia Title and Survey (www.ltsa.ca/ltsa_faq.htm), comprehensive site maps (e.g. Land Information New Zealand, www.linz.govt.nz/home/sitemap/index.html, or a section dedicated to show how citizens can obtain various services; e.g. responses to basic questions like: How do I purchase land? How do I sell land? How do I register dismemberments in property? etc (as done by Land Information New Zealand www.linz.govt.nz/home/index.html).

87.   None of the sites allow payment by credit card, all require pre-payment either in the agency's offices or through deposits made in the institution's bank account.

88.   Only Honduras offers users the possibility to obtain a sketch of their property online.

89.   Guatemala offers summary online certificates that are not legally valid but that provide information that is of practical value to property owners. Through El Salvador's website users may request certifications, literal or summarized, that, once paid in full, can be obtained at CNR's premises.

Table 14. Products and Services Offered via Web by Public Registries in the Five Countries Studied (19 August 2006)

Product or service	El Salvador CNR www.cnr.gob.sv	Guatemala RGP www.rgp.org.gt	Honduras IP-PATH www.ip.hn	Nicaragua - RPPIM (1) www.csj.gob.ni/regis. htm	Panamá - Registro Público www.registro-publico.gob.pa/
Transparency	Information about tenders, bases and adjudications. Legislation.	Strategic plan with detailed information on present setting and modernization plans. Rules governing Registries.	Offers only a copy of the law, and general description describing the institution.	Offers only a general description of the institution.	i. Names of members of Board of Directors. ii. 2006 budget. iii. Work Plan 2004/05 iv. Salary of every Registry official v. Laws.
Information about services provided (online and offline)	List of services and processing requirements. Detailed price list by type of service.	Write up detailing service costs.	Detailed explanation of every consultation that can be made. Services are not charged at present.	No information on services provided.	Contains a schematic diagram of registry process.
Registration of documents		Enables downloading of form needed to submit documents.			
Consultation regarding status of a document.	Provided free of charge.	Provided free of charge.	Provided free of charge.		
Consultation regarding property rights		Available subject to prepayment of US$ 1. No cadastre info.	Many options for real estate, including cadastral map.		Free online consultation. No possibility to view cadastral map.
Certificates	Online requests of cadastral or registry certificates upon prepayment of tariff, for collection at CNR offices. (San Salvador only.)	Online informational certificates are available.			
Advice online	Contact phone numbers. Suggestions may be made online.	email - form to "get help, report errors or make comments".			Email contact (1)
Other services	Online requests to purchase various maps.				

(1) Link was not operational on 17-18 July or on 19-20 August 2006.

90.   The registries of El Salvador, Guatemala and Honduras enable free of charge consultation of the status of processing of a document submitted.

91.   Panama, Guatemala and Honduras permit consultations on the registration status of real estate property. Guatemala is the only country that charges for this service, US$ 1 per consultation. From its inception in May until December 2005 the RGP collected the equivalent of about US$ 81,000 (Table 15).

Table 15. RGP: Incomes by consultations online in 2005 – US$

May	8,217
June	7,292
July	5,662
August	7,020
September	14,392
October	13,433
November	15,318
December	9,709
	81,043

92.   Interaction between the citizen and governments is important and the registries of El Salvador, Guatemala and Panama let users complain, make suggestions and ask questions online. An effective way to strengthen this interaction is through the provision of advice online, particularly when geared to address practical problems and is imparted on a person-to-person basis, free of charge and carried out in collaboration with other institutions (Proenza, et al 2006).

93.   Panama stands out for its online efforts to strengthen the transparency of public service. Every visitor to the site of the Public Registry - and to the sites of most other public agencies in Panama - has access to the roster of Registry staff, which also includes detailed information on the monthly salary of every government official. Panama Registry's site also gives the names of the members of the board of directors, a summary of the budget for the 2006, and the agency's work plan for 2004/05.

94.   World wide, the main challenge today is registration of deeds in the public registry via the Web. e-Conveyancing has been operational for two years in British Columbia.[1] In Holland, it took six years to reform the law and to put the parties affected (notaries, inspecting, professionals of real estate) in agreement to implement the service starting in September 2005 (Wubbe 2005). Honduras has already developed the software and the procedural protocol and has enacted the legislation enabling online registration of documents. What is missing is the political decision to put the new procedures into practice.

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[1]   Christensen (2004) reviews the experience with electronic processing of documents in Canada, New Zealand and the United Kingdom.

Virtual Service Windows

95.   Three innovations observed in the projects studied will help reduce the distance between the registry and rural communities.

> First, the number and the quality of services offered in electronic format and via Web are on the rise in all the countries studied. The Internet enables a low cost increase in rural access to registry services. Norway, for example, is reducing the number of rural service offices in the expectation that an increasing number of services will be provided via Web.

> Second, PATH in Honduras is establishing training and certification procedures that will give authority to delegated registrars to register property rights by electronic means through the SURE. The delegated registrar combines the functions of the public registrar with those of the notary, thus lowering costs and making the service more accessible.

> Third, PATH has also begun to establish municipal wireless networks. It has started in Tegucigalpa through the establishment of a low cost secure connectivity service to SINIT partner institutions. A second network will be installed soon in Comayagua by agreement between PATH and COHCIT. These low cost infrastructure networks will help increase access to the Internet by small municipalities.

96.   Besides cybercafés, which are expanding rapidly and beginning to penetrate rural areas, governments in the five countries studied also sponsor rural telecenters (Table 10). As kiosks have done in Karnataka, India (Chawla and Bhatnagar 2004; Rajasekhar 2005, Ahuja and Singh 2006), cybercafés and telecenters everywhere can become land information service windows for rural communities.

Table 10. Main State Sponsored Telecenter Programs in the Study Countries

	Agency	Program	No. of centers*
El Salvador	Association Infocentros	Infocentros	40
Guatemala	COPRE - Presidential commission for the Reform and Modernization of the State	Telecentros	150**
Honduras	Honduran Council of Science and Technology, COHCIT	Common centers of Know-how and Communications	122
Nicaragua	System of Agricultural Information, Department of Agriculture	Centers of Information for the Development	12
Panama	Infoplaza Association, SENACYT	Infoplazas	71

* May – June 2006   ** In planning stage.

97.   Limited Internet access and lack of basic computer skills are generalized problems impeding greater provision and use of registry-cadastre services via Web. Nevertheless, rural notaries (in Comayagua, Honduras, and probably also elsewhere) are beginning to use the Internet, from their home or from cybercafés, to make real estate consultations and initiate transactions. Similarly, municipal authorities access the SURE via Web for consultations and to update property information.

98.   To increase rural outreach the following measures may be considered:

(i)   Increasing the offers of registry-cadastre services accessible via web.

(ii)   Increasing the capacity of notaries and municipal authorities to provide registry-cadastre services using electronic means. This will require digital literacy training (training in basic computer use) and training in the specific use of the information systems of registry-cadastre services.

(iii)   Training and certification of "delegated registrars" to help carry out the registration of property deeds.

(iv)   Increase access to the Internet by investing in rural wireless networks (Lehr, Sirbu and Gillet 2006).

Developing a Culture of Registration

99.   The value of a registered deed is low, in great measure because most neighbors also do not have their property rights formally registered. Network effects are important: a deed recorded in the registry is much more valuable if your neighbors also have their own deeds of title.

100.   Projects – e.g., PATH in Honduras, and CNR in El Salvador – have been effective in promoting a culture of registration of deeds through intensive communications campaigns that are part of the land regularization sweeps. These campaigns explain to citizens how the new procedures of registration will now be much more valuable, expeditious and affordable. They could be even more effective through access to services via web and mobile phones.

Role of Local Government

101.   Clear incentives motivate local governments to help keep the cadastre updated (Tables 12 and 13).[1]

102.   An updated cadastre helps raise revenue, increases the capacity for action of municipal authorities and may serve as a spatial planning tool (Williamson 2005). In Tegucigalpa, land regularization showed that nearly 50% of the houses were located in municipal land. To rectify the situation, occupants were allowed to buy the lands they occupied at low cost and using commercial bank financing sponsored by the project. Besides regularizing property rights, increasing the link between the new property owners and commercial credit, and increasing the revenues and fiscal base of the municipality, the cadastre also facilitated land use planning, for example by making it easier to prescribe and ban construction in areas susceptible to land slides.

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[1]   Unfortunately, during the recent change in government many municipalities endangered their recently acquired tax collection capabilities by firing part of their personnel qualified in the use of the SURE.

Table 12.
Changes in revenues collected, primarily related to land regularization and to the participation of municipalities in use of SURE
–**Municipality of Lamaní, Comayagua** (5,789 inhabitants in 2005)

	previous years	2004	January-May 2005
Property taxes			
urban	106	1,472	695
rural	1,058	2,047	695
Preparation of cadastral map	106	369	131
Sale of Real estate (municipal lands)	508	1,503	1,831
Total:	1,778	5,391	3,352

Table 13.
Changes in revenues collected, primarily related to land regularization and to the participation of municipalities in use of SURE
–**Municipality of Lejamaní, Comayagua** (4,633 inhabitants in 2005)

	2003	2004	January-May 2005
Property taxes			
urban	77	134	272
rural	1,235	912	226
Municipal services			
preparation of cadastral maps	80	37	29
Surveying	69	32	37
Sale of Real estate (municipal lands)	1,945	4,514	2,761
Total:	**3,406**	**5,628**	**3,325**

103.	In Comayagua, Honduras, municipalities maintain their fiscal cadastres up to date and help update the SURE on a regular basis. Each time a farm is sold, the selling party is motivated to inform local authorities, so that she does not have to pay taxes on a property that no longer belongs to her. Once the municipality is notified, it inputs the information in the SURE. The recorded information does not substitute the formal act of registration of the deed of sale; something that can only be done at the initiative of the holder of the property right. But the data recorded in the cadastre enables the IP to keep updated of what is happening and could eventually serve as an informational input to help resolve future conflicts over land rights. It also enables the IP to keep abreast of the extent to which property transactions are being formally registered.

104.	Projects should contemplate an active participation by municipalities, during the regularization phase and afterwards. Data reported by municipalities to the information system should help update the cadastre and help registries keep abreast of ongoing changes in property rights.

V. TOWARDS AN INCENTIVES-BASED STRATEGY FOR SUSTAINABLE OUTREACH

A. Realignment of Incentives

105.   The viability of a modern cadastre-registry system is questionable in remote low productivity rural areas. Benefits from a modern system will be marginal where land markets are underdeveloped and only a few occasional transactions with outsiders take place. Regularization can strengthen property rights in dynamic land markets, but sustainability requires to explicitly plan the way in which benefits and costs will affect the registration of future transactions and to make sure that the incentives that determine institutional behavior will further sustainability.

106.   Organizational design is a challenge, particularly in countries with a weak tradition of public service (Fukuyama 2004). Some of the constraints and opportunities observed in the study countries are the following.

107.   First, property registries in the region are strong institutions that readily achieve functional autonomy and considerable political power and should therefore be key partners in rural land regularization interventions. Reliance on politically charged institutions to implement land administration projects may be appropriate in a situation that demands taking sides in a political fight, but are not suitable implementing agencies where the purpose is to provide long term sustainable security over land rights.

108.   Second, there may be circumstances under which no institutional formula will work; e.g. where powerful groups have a vested interest and wherewithal to keep land right disputes unresolved. In principle, donors should stay away or limit their engagement. In practice, determining what to do under these circumstances involve very difficult judgment calls.

109.   Guatemala's recent experience helps illustrate. In 2004 donors were pressuring the Government of Guatemala for the passage of cadastre and land rights legislation.

> "The last year under the guidance of the Dutch they [donors] gave more or less an ultimatum to the government to pass the legislation or to face a freeze of the financial support for this the development of the Cadastre, the last happened. In nearly all of the local projects financed by different donors; Germany, Spain, Sweden, the Netherlands, European Union, World Bank, the activities have stopped with exception of the World Bank project in the department of Peten." (Van Hemert 2004).

110.   The cadastre law was eventually adopted in 2006. Did this law pass because of the foreign donors that froze their projects or because the World Bank remained engaged in Peten? Was this law covering only the cadastre and creating a separate cadastre agency the best that could be achieved under the circumstances? Was this a step forward?

111.   Third, in order for registries and registry officials to have an incentive to record and handle the low value deeds of small rural properties, it is necessary for rural land registration to generate a not insignificant profit. However, profits from rural properties will be small per transaction relative to urban properties, because of differences in demand and because the cost of outreach to

serve a low-income, low education, distant population is high. Low revenue per transaction may be partly compensated through high volume; i.e. increased rural outreach.

112.　　　Fourth, the demand for registration of rural properties will increase to the extent that a widespread culture of registration develops. This will happen provided rural residents perceive that benefits outweigh costs. Benefits depend on the security that rural property owners can get from registration, and on network effects; i.e. the extent to which neighbors also register their properties. Costs are determined by fees charged by the registry and by the cost of access; i.e. by cultural and physical distance to registry offices and by the costs of intermediation (i.e. presently, notary fees).

113.　　　Fifth, as long as there are no stakeholders calling for change involved in decision making within the registries, registry officials will concentrate on highly profitable urban land rights markets, and will have incentive to expand outreach. Important innovations such as advanced notary and e-conveyancing solutions will tend to be relegated "until further in-depth study has been completed". In the countries considered only in Honduras is broad civil society participation in the management of the registry foreseen, and even there it is still pending.

114.　　　Sixth, information systems can improve trust in registration, expand rural access to registry services (e.g. electronic notary protocols, e-conveyancing) and simplify procedures, but without a realignment of institutional incentives, the opportunities for reducing costs or increasing benefits will be limited. Two key reforms are critical: fusion of registry with regularization-cadastre work into a single autonomous self-sustaining public regulated monopoly; and formation and certification of alternatives to notaries (e.g. delegated registrars, electronic notary protocols) to expedite and expand the rural outreach of registration processes. Again, information systems can help but are no substitute for the political leadership necessary to overcome resistance from those with a significant stake in maintaining the status quo (e.g. heads of existing agencies and notaries) and to muster the political and societal will to proceed with the reforms.

B. Project Units as Agents of Change

115.　　　Project officials are rewarded when they deliver greater efficiency and benefits for the target rural population. They can therefore be very innovative and, with strong political support, sensitive reforms can be realized.

116.　　　Project units formed as well endowed quasi-agencies operating with considerable autonomy using information systems and modern procedures different from those of existing agencies were successful in effecting change in El Salvador and in Honduras. Work by these Units put in evidence the need to integrate registry and cadastre in order to achieve efficiency and increase outreach. Once what is possible was proven in practice, the creation of a unified registry-cadastre institution, the CNR in El Salvador and the IP in Honduras, was the only reasonable conclusion.

117.　　　El Salvador's project unit is now fully incorporated into the CNR. The transfer of Honduras' PATH to the Property Institute (IP) created by the project is scheduled to occur within the present project phase. PRODEP in Nicaragua and PRONAP in Panama still operate separately of the main land administration agencies in these countries. Guatemala's initial Project Unit has recently become a separate agency responsible for the cadastre.

118.   Project implementation in Panama, Guatemala and Nicaragua could potentially bring about reforms as was done in El Salvador and Honduras. Up to now Panama and Guatemala have not made any tangible advances, in both instances because institutional weaknesses have undermined project implementation. Nicaragua's project is still in an early stage.

119.   Project units present a special conundrum. Sustainability requires that the innovations introduced by project units be incorporated into the mission and daily routines of more stable institutions. The issue of when to make the transfer is tricky. In Honduras, where the PATH is introducing important reforms and is still managing SURE, full transfer to the IP will be a delicate undertaking because the newly created IP has not yet been consolidated as an institution and because important reforms (e.g. notary protocols, delegated registrars) are still pending and under consideration by authorities. Hence the importance of taking advantage of the space that the long term perspective that the World Bank's APL programs allow (e.g. 3 or 4 operations over a 10 to 12 year period).

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The foremost challenge of Latin America's past regularization efforts has been sustainability. Substantial investments in the 70s and 80s had limited impact as land registries became outdated shortly after implementation.

The new information and communication technologies (ICTs) are drastically reducing the costs of recording, updating, administering and publishing enormous quantities of data in a secure environment, all of which are critical elements of property registration, and can therefore form the basis for a profound transformation of rural land administration. The shape that this transformation takes in practice and its impact on land tenure security and on the efficiency of land markets will be largely determined by institutions.

This report focuses on information systems and on the way that systems help shape and are in turn affected by institutions. The focus is on five countries where the World Bank supports land administration projects: El Salvador, Honduras, Guatemala, Nicaragua and Panama. Common objectives of these interventions are: (i) to increase the security of rural property rights; (ii) to improve the legal and institutional framework and increase the information available to government, citizens and investors, so that land markets function efficiently. The experience in these countries is used to draw lessons and derive recommendations to improve the effectiveness of information systems and land administration projects.