

Building the Cadastral Framework: Achievements and Challenges in the English-Speaking Caribbean

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Abstract

The Caribbean experience in property registration provides some insights into why and how cadastres in developing countries emerge and the challenges that must be addressed to make the cadastral framework part of the 'ideal' spatial data infrastructure. There have been three phases of Caribbean cadastral development: deeds and title (Torrens) registration introduced at the height of the colonial era; a more appropriate form of land registration for new and independent nations; and recently, tenure regularization to address State land informality. Achieving a complete and sustainable cadastral system has been achieved but only in some of the small-island states. This has highlighted perhaps the biggest challenge, which is the cost of building the SDI cadastral layer through titling and registration.

Introduction

An 'ideal' spatial data infrastructure includes the land parcel framework as fundamental or core geospatial data (GSDI 2004). The source of this data is typically provided by the cadastre, which is an up-to-date parcel-based land information system containing records of interests in land (FIG 1995). It may have been developed for taxation purposes but cadastral systems, particularly in the English-speaking world, are synonymous with property registration and cadastral or land boundary surveying.

This paper reviews the achievements of countries and territories of the English-speaking Caribbean in building and maintaining property registries, highlighting the challenges that must be overcome to create a complete cadastre and build an 'ideal' spatial data infrastructure (SDI). The paper does not discuss or analyse the merits or otherwise of property registration systems and the benefits that they may or may not bring to citizens and communities in the Caribbean.

Background

Colonial history provided both a common language and a legal system for the Caribbean Community¹. The English common law concepts of land tenure came to the Caribbean with the plantation system of settlement. Entitlement, or 'title', to land is held from the Crown or State, typically as freehold (held in perpetuity and 'free' of feudal obligations) or leasehold (held for a fixed period of time). In theory, ownership is a right to use land, but in modern times freehold title is tantamount, even in statutory law, to absolute ownership.

Land is alienated into private ownership by a Crown grant, which is a deed conveying rights to a particular parcel of land. Initially large swaths of land were granted, whole islands even, to investors who established plantation systems of agriculture. Often though, not all land was granted and most countries or territories have residual, unalienated, State or Crown land.

¹ The Caribbean Community of Nations, also known as CARICOM, comprises members and associate members, who are listed in Table 1, with the exception of Haiti and Suriname, which are non-English speaking.

Grants of large estates to a few planters didn't call for registration of the deed; but, as times changed and former slaves and indentured labourers acquired small plots of land, there were more transactions, more disputes, and more need for publicity. Registration of a deed provides public notice and to an extent protects land rights granted or acquired, and all colonial governments provided public offices for this purpose. Most colonies also introduced a degree of compulsion for registration, except Bermuda and the Bahamas, where private conveyancing is still practiced².

The South Australian Real Property Act of 1858 had a significant impact in the Caribbean. Only 3 years after Robert Torrens introduced a title by registration system in Australia, the colonial legislators introduced variants of the system into British Honduras (Belize) in 1861, the Leeward Islands³ (1873-1886), Jamaica (1890), and Trinidad & Tobago (1892). The Torrens system was ideally suited to the grant and administration of Crown land, and when it was introduced it was assumed that its advantages were sufficient to attract the conversion of existing 'old law' titles, but this proved not to be the case. In almost all instances, including Australia, some land remains within the deeds registration system (Williamson & Enemark 1996), and compulsion is now known to be necessary in order to have all land in one registration system (Simpson 1984).

Because the Torrens system was most suited to Crown grants it did not accommodate the identification of land parcels or the use of maps. Identification of the title is by the volume and folio number of the certificate, and to identify the parcel reference must be made to the title plan plotted on the certificate. The lack of a parcel map showing all registered land meant that, without care and effort, often compounded by a lack of resources, land was inadequately surveyed and identified and titles could overlap (Williams, 2003d). Although Torrens himself described the use of maps in his registration system as "totally unworkable" (Simpson, 1984, p147), the lack of suitable base mapping and/or sufficient survey control probably necessitated at the time the use of one-off cadastral surveys. Today, all Australian registries now maintain index maps of registered titles showing boundaries to a graphical standard of accuracy (+/-1mm at map scale), which are prepared, not necessarily from cadastral survey data, to improve administration of the system and to provide land information (Williamson & Enemark 1996).

The decline of colonialism brought a realization that cadastral systems for developing countries needed to be more inclusive, responsive, and appropriate to the needs of all citizens and the nation State. A new cadastral system emerged, built on colonial experiences and bringing together the most suitable bits of the English and Torrens registration systems, such as index maps and publicity, respectively. Conceptualised in Egypt (Dowson 1912), developed in the Sudan and Kenya (Simpson 1984), this new model of land registration arrived in the Caribbean in 1967. In fact, it was not the first land registration system in the Caribbean; in 1959 Guyana introduced the Land Registry Act that also used the land parcel as the units of record, identified titles by parcel number, used index mapping, and introduced adjudication to compile the register. However, the Turks and Caicos Islands Registered Land Law proved to be the more appropriate and most successful in the Caribbean.

Land registration in the Turks and Caicos Islands was instigated and completed in a short, 3-year, period of compulsory systematic field adjudication (table 1). Unlike Guyana, where

² In Bermuda and Bahamas transactions can be done privately, without publicity, and copies of the deeds prepared by an attorney-at-law do not need to be registered. Compulsion confers notice and priority of registered deeds, helping to prevent fraud, but a deed by itself is not evidence of title; this must be deduced, usually by an attorney-at-law, from an unbroken chain of deeds. In Guyana, a judge of the High Court "transports" each deed and gives the title legal validity.

³ At the time the Leeward Islands comprised: Antigua-Barbuda, St Kitts-Nevis-Anguilla, Montserrat and Dominica.

adjudication is handled by a Land Court, teams of recording and survey officers in Turks and Caicos Is. went into the field, collected data, identified, indicated and mapped parcels, and prepared an adjudication record that was publically displayed and finalized expeditiously.

| Country (see note 1) | Area Sq. Kms (‘000) | Registra- tion system ² | Date ³ | % regis- tered ⁴ | Digital? | Parcels mapped ⁵ | % area State Crown land ⁶ | Inform- ality ⁷ | Rank ⁸ |
|---------------------------|---------------------------|--|-------------------|--------------------------------|----------|--------------------------------|---|-------------------------------|-------------------|
| Anguilla | 0.10 | Land | 1972–1976 | 100% | | 100% | | | |
| Antigua | 0.44 | Land | 1977–1980 | 100% | Partly | 100% | 42% | | 75 |
| Bahamas | 13.9 | Private | 1928 | (note 9) | Partly | 30% | 70% | | |
| Barbados | 0.43 | Land | 1988– | 10% | Partly | 10% | 0.1% | <1% | |
| | | Deeds | | | | | | | |
| Belize | 22.9 | Land | 1977– | 8% | Partly | 8% | 57% | | 113 |
| | | Title | 1861 | | | | | | |
| | | Deeds | 1857 | 51% | No | | | | |
| Bermuda | 0.05 | Private | | | No | | | | |
| British Virgin Is | 0.15 | Land | 1970–1974 | 100% | | 100% | 40% | | |
| Cayman Is | 0.26 | Land | 1973–1977 | 100% | Yes | 100% | | | n/a |
| Dominica | 0.75 | Title | 1883– | 50% | No | 0% | 50% | | 83 |
| | | Deeds | | | No | | | | |
| Grenada | 0.34 | Deeds | | | No | 0% | 10% | 15% | 145 |
| Guyana | 215 | Land | 1960– | | Partly | 65% | 90% | 29% ¹⁰ | 53 |
| | | Deeds | | | No | | | | |
| Jamaica | 11.0 | Title | 1890– | 45% | Partly | 60% | 20% | 45% | 108 |
| | | Deeds | 1841 | | | | | | |
| Montserrat | 0.10 | Land | 1978–1980 | 100% | Partly | | | | |
| St Kitts-Nevis | 0.26 | Title | 1886– | 50% | No | 0% | 82% | 4% | 140 |
| | | Deeds | | | No | | | | |
| St Lucia | 0.62 | Land | 1984–1987 | 100% | No | 100% | 38% | 45% ¹¹ | 51 |
| St Vincent- Grenadines | 0.39 | Deeds | | n/a | No | 0% | 25% | 10% | 104 |
| Trinidad & Tobago | 5.12 | Title | 1892– | 15% | No | | 53% ¹¹ | 47% | 157 |
| | | Deeds | | 35% | Yes | | | | |
| Turks and Caicos Is. | 0.42 | Land | 1967–1970 | 100% | No | | | | |

Notes:

1. All figures are extracted from country and regional references given at the end of the paper
2. Registration systems are classed as: private = private conveyancing, where deeds registration is optional; deeds = deeds registration usually compulsory; title = title registration, or the Torrens system; land = land registration, organized on parcels and parcel ID.
3. From-to means commencement and completion dates of title or land registration; no end dates mean programme is ongoing
4. Estimated
5. Estimated; mapped means on a scale of 1:1,000-1:5,000; does not include survey or subdivision plans, or valuation maps.
6. Estimated
7. Estimated; can include informal settlement, irregular tenures and family land.
8. Doing Business (World Bank 2007) global ranking for 178 countries for ease of property registration, where 1 is the best.
9. Registration is not mandatory, and valid deeds may exist that have not been registered; therefore, it isn't possible to estimate the amount of land registered.
10. As recently as 1998 the estimated incidence of informal tenure stood at 47% of parcels but the recent programme of State land tenure regularization has reduced this significantly.
11. Almost all can be classed as "family land", based on the 1996 census.
12. 40% can be classes as State land forest

Table 1: Summary of Registration and Land Tenure in the English-speaking Caribbean

Anguilla, British Virgin Is., Cayman Is., Montserrat and Antigua & Barbuda soon followed. All were completed under the umbrella of the Caribbean Cadastral Survey Project funded by Britain's Ministry of Overseas Development. In Antigua & Barbuda and Montserrat this new land registration system repealed and completely replaced the existing Torrens and deeds registration systems. Building on these successes and drawing on different funding sources, St. Lucia completed its titling and land registration project in 1987 and Belize commenced in 1998.

A key factor in the success of these completed projects was that the maps prepared were index maps of parcels created quickly by delineating boundaries on the map approximately. This did not mean, however, that the boundary was 'approximate'; often it was precisely known, either on the ground and/or on an existing survey plan, but for expediency, existing boundaries were not re-demarcated and not accurately surveyed. Compass and tape surveys were used whenever it was not possible to delineate boundaries by interpretation of aerial photography or topographic maps. An adjudication law lays down the procedure for adjudication of title and identification of land. Boundaries were not subject to adjudication: a version of the English 'general boundaries' principle⁴ was employed to expedite completion of the adjudication map, which at the close of each adjudication section became the 'registry map' or parcel index map of that section.

The larger jurisdictions have taken different approaches to registration. Draft legislation for replacing both deeds and title registration with land registration has existed in Trinidad & Tobago since 1981. However, the law was never enacted, as it was thought to be to be inappropriate and too expensive to implement (Robertson 1993), and was replaced by another set of laws, passed by the Parliament of Trinidad & Tobago in 2000 but not yet in force, which embraces the adjudication model, including index maps, that has been so successful across the region (Johnson 2005).

The Bahamas have been contemplating land registration since legislation was drafted in 1969, but remains unimplemented. Guyana, as already discussed, chose to adopt and implement its own model, but so far it has proved too difficult and expensive to complete, unless more use is made of the Special Provisions Act that provides for index mapping of boundaries identified from aerial photography (Lawrence 1977). Unlike Trinidad & Tobago and Antigua, Jamaica is actively pursuing a programme of expanding its Torrens system to cover the rest of the country.

In the preceding background review, four classes of registration system have been identified: private conveyancing; deeds registration; title (by) registration; and, land registration. All four are extant in the English-speaking Caribbean, many within the same jurisdiction. There is also evidence of a trend toward replacing deeds and title registration with land registration (which raises the issue of costs, mainly survey costs).

Achievements and Challenges

The purpose of a cadastral system is to support sustainable socio-economic development. This is achieved through the implementation of policies that encourage, amongst other things, vibrant property markets and greater social equity, both of which depend upon appropriate and

⁴ A general boundary is defined, in the Cayman Islands for example, as one that is not 'fixed' in accordance with the Registered Land Law and the lines indicated on the registry map are approximate boundary lines representing the approximate situation of the parcel. If the boundaries have not been fixed, a boundary can be more accurately ascertained from evidence, which may be in the form of physical boundary features or monuments or a plan of survey. A boundary is 'fixed', when it is agreed by the parties, or determined by the Registrar, in accordance with procedure laid down in the Registered Land Law; there is a survey, but the boundary is not 'fixed' by survey – it is 'fixed' in accordance with the Registered Land Law – although the survey evidence becomes more important because it has been collected and presented in accordance with the law.

accessible land information. A complete and sustainable cadastral system that collects, organizes, maintains and delivers land information in an integrated and effective manner for the benefit of both individuals and the State is the ultimate goal. There are seven jurisdictions in the English-speaking Caribbean that have achieved this goal – Anguilla, Antigua & Barbuda, British Virgin Islands, Cayman Islands, Montserrat, St. Lucia, and the Turks & Caicos Islands⁵. Their most obvious common characteristic is that they are all relatively small in size; however, they also share the same titling methodology (systematic compulsory adjudication), registration system (land), and spatial organization (parcel index maps), and all have benefitted from external support for implementation. From the SDI perspective, they all have up-to-date and consistent maps of all land parcels linked by a unique parcel identification number to information held in public registers⁶. So far only the Cayman Islands operate a fully digital geospatial cadastre; Antigua & Barbuda and the Turks & Caicos Islands are moving ahead with computerization.

No such concerted or coherent approach to registration is evident in the remaining jurisdictions, both small and large, although there are *ad hoc* efforts to strengthen existing systems through, for instance, document scanning and registry computerization. Bahamas and Bermuda continue with private conveyancing (both are intending to reform, however); Grenada and St. Vincent-Grenadines have introduced some compulsion to deeds registration; title registration on the Torrens model exists alongside deeds registration in Dominica, Jamaica, St. Kitts & Nevis and Trinidad & Tobago; and, Barbados, Belize, and Guyana are in the process of introducing land registration (and Trinidad & Tobago and St. Vincent-Grenadines are proposing to). Barbados is moving slowly and sporadically toward land registration. Jamaica is persevering with the titles system. Belize is currently in the process of systematic adjudication with an aim to bring all titles, private freehold and national land leasehold, into the land registration system, which is currently being computerized; Guyana has, for the past 20 years at least, suspended its programme of systematic land registration (IADB 2002, Johnson 2003).

The reason why most countries are persevering with deeds or multiple registration systems points to perhaps the greatest challenge facing Caribbean cadastres – cost. The unit cost of titling and registration has been variously reported at between US\$1 and US\$2,800 per title (Barnes 2007). While it is difficult to compare costs because of different contexts and approaches, the English-speaking Caribbean offers a degree of contextual similarity that highlights the cost of different approaches. Costs start at US\$108 per parcel for regularization of tenure on State land in Guyana, and peak at US\$1064 for State land tenure regularization in Trinidad and Tobago, as indicated in table 2 below.

What is immediately apparent from these figures is that tenure regularization is not inherently cheaper than title adjudication, despite the different approaches to formalization of title⁷. All the approaches include, however, a component for surveying and mapping of parcels, which typically accounts for anywhere between 35-70% of total costs (Dale & McLaughlin 1999). In Guyana the surveying costs for tenure regularization were 50% of the total (Bishop 2003). This suggests that different approaches to surveying and mapping may account for most of the differences in unit costs. The Guyana land tenure regularization project, and all the Caribbean

⁵ A caveat to this achievement: in St Lucia, where family land is prevalent, there was some resistance to the trust mechanism to formalize ownership where estates had not been administered, the result being that some titles were registered in the names of deceased persons (Vargas & Stanfield 2003).

⁶ There is, however, evidence from St Lucia (Barnes & Griffith-Charles 2007), which may also apply to other islands where family land is also prevalent, that formal titles are sliding back into informality and that in places the cadastre no longer reflects reality on the ground.

⁷ Tenure regularization is typically more administrative in nature because it usually involves a landlord-tenant relationship, whereas title adjudication is typically more judicial because it involves land rights acquired under various laws.

adjudication and land registration projects, use index maps to identify and described land for legal purposes. Alternatively, title registration in Jamaica and regularization in Trinidad & Tobago employ cadastral surveys to prepare 'title plans' of each parcel that depict accurately measured distances and directions between placed or re-placed corner monuments. The more costly approach, it is argued, is the latter.

| <i>Country</i> | <i>Programme Methodology</i> | <i>Cost per parcel (USD in reported year)</i> | <i>Cost per parcel (2006 USD)¹</i> |
|--------------------------------|---|---|---|
| Guyana ² | State agricultural land tenure regularization | \$108 | \$118 |
| Belize ³ | Land adjudication | \$232 | \$259 |
| St Lucia ⁴ | Land adjudication | \$250 | \$398 |
| Jamaica ⁵ | Systematic titling | \$400 | \$438 |
| Trinidad & Tobago ⁶ | State residential land tenure regularization | \$530 | \$564 |
| Jamaica ⁷ | Ad hoc titling | \$900 | \$985 |
| Trinidad & Tobago ⁸ | State agricultural land tenure regularization | \$1064 | \$1190 |

Notes and references:
1. Based on implicit US GDP deflator as determined from www.measuringworth.com
2. (Bishop 2003) 3. (IADB 2002) 4. (Barnes 2000) 5. (DaCosta 2003) 6. (Rajak & Barharte 2004) 7. (DaCosta 2003) 8. (Driver 2002)

Table 2: Adjudication, Titling and Regularization Cost Comparison

The importance of the cost issue can be underlined by estimating that it might cost anywhere between US\$45m up to US\$447m, based on the above range of figures, to register or regularize all land in Trinidad & Tobago. The lower of the two figures is more economical by an order of magnitude and therefore politically more feasible.

High cost in titling and registration also discourages public participation. In the larger jurisdictions there is a significant proportion of unregistered land and a high incidence of informal transfers and illegal occupation of land. Across the region land transaction costs are generally unaffordable to many landowners (IADB 1992), and represent an obstacle to voluntary registration (Driver 2002). Encouraging public participation means reducing access costs and transaction costs, and by extension, reducing the costs of surveying and mapping.

There is, however, a pervasive undercurrent of non-participation in the formal land sector and informality of land transactions in the Caribbean - the incidence and tradition of 'family land'⁸ is testament to this. The result is that, even after registration and regularization, the currency of land information gradually deteriorates and land records then do not always reflect land occupation. But a recent study has found that the creation of a complete and accessible registration system encourages formality (Barnes & Griffith-Charles 2007). Once the benefits of using a register begin to outweigh the costs, there will be more public participation, although encouragement is continually required.

⁸ Family land has been variously described as a Caribbean cultural institution symbolising a social response to oppressive colonial land regimes and also, more mundanely, as co-ownership of land in undivided shares by the descendants of the original purchaser (Johnson 2005)

Sustaining the cadastre and keeping land information current also requires the support and commitment of the State. Most registration and surveying organizations are still government departments, but recently the State agency model has emerged in Jamaica (National Land Agency) and Guyana (Lands and Surveys Commission) with mandates to improve service delivery and reduce financial burdens on the general taxpayer, at which they have been singularly successful. Cadastral modernization often requires, however, a response that goes beyond improving mechanisms for service delivery and instead requires deep-seated process reform. In the Caribbean, deeds registries have been replaced by title systems, which themselves are being replaced by land registration systems⁹, and possibly as a result both St Lucia and Antigua achieve top half rankings in a global survey of property registration for Doing Business (World Bank 2007). And this has been achieved by sticking with the government department model of service delivery and without computerization.

SDI achievements have accompanied the introduction of land registration in the region. These typically include: upgraded geodetic networks with CORS capability; new aerial photography and very high resolution satellite imagery; and, base topographic mapping. These all came about to support systematic adjudication, specially the compilation of the registry index map, and an early lesson learned from the work conducted in Turks & Caicos Islands was that sufficient and accurate control is needed for ground surveys because parcel boundaries could not always be interpreted and plotted directly from rectified aerial photography or topographic maps (Wright 1978). These developments have taken place because of land registration, and recent and current geospatial infrastructure investments in Belize, Trinidad & Tobago, and the Bahamas, undertaken with the support of the Inter-American Development Bank, are all designed to support current or future land registration initiatives. Whether these investments would have taken place anyway, without concomitant investments in land registration and the support of donors and development banks is debatable. There is, however, some evidence of a converse relationship, where in Guyana a lack of progress on land registration equates to a lack of recent SDI investment.

Conclusions

The achievements realized in the Caribbean offer most or all of the lessons that are needed to overcome the challenges and obstacles that remain to introducing, expanding and maintaining registration and the cadastre in the region. The foremost obstacle is the high unit cost of titling. The evidence from recent and current registration and regularization programmes and projects suggests that a substantially lower cost can be achieved by adopting a less rigorous approach to describing registered land. Instead of deed or title plans (prepared by cadastral surveys), index maps (prepared by multiple methodologies) can be used, which are less demanding of time and money. Index maps may be less accurate than cadastral plans in terms of the geometric qualities of boundary lines, but index maps are equally as accurate in terms of identifying, locating and describing a parcel of land sufficient to register it, and, guarantee the title. The Caribbean model of land registration does not guarantee a boundary, but neither does the Torrens system, but the Caribbean model does provide for an expeditious compilation of a parcel map showing all land. Whereas the deeds and Torrens title system demand an accurate cadastral survey plan for registration, the Caribbean land system does not, and the land can be registered with general boundaries; if there is a plan, however, it can be accepted and used as evidence in the event of a boundary dispute or relocation. By relaxing the surveying requirements, people, particularly the poor, are not denied the opportunity to register their land and gain from any benefit that may flow from formally held title. People may choose not to

⁹ And further reforms are underway in Belize and Barbados, and proposed in Trinidad & Tobago, Bermuda and St. Vincent-Grenadines.

realize any benefit, or some benefit may not be realized because of other factors in the market, but at least they have a choice, and, the State has useful and useable land information in the SDI cadastral layer.

Successful cadastral and registration systems require first and foremost public support. Participation is paramount – in building registers by adjudication or regularization, and then maintaining the register by people using it for their own benefit. This benefit will not be realized if costs are prohibitive. Experiences and lessons learned in the Caribbean demonstrate that costs can be reduced and that it is possible to build complete and effective cadastres.

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