

# Land Tenure Systems Development for Disaster Risk Management within the OECS

**Jamal BROWNE, St. Vincent & the Grenadines**

**Key words:** Land Tenure System, Land Tenure Security, Disaster Risk Management, Social Tenures

## **SUMMARY**

The prevailing land tenure and cadastral arrangements for most Caribbean SIDS prohibit well-organized and timely post-disaster responses and economic recoveries. With the proliferation of natural disasters caused by meteorological hazards within the Atlantic Basin, disaster/ emergency response personnel, aid agencies, and planners across the small islands comprising the Organization of Eastern Caribbean States (OECS) are today required to have a clear and common understanding of the operating picture, or risk a breakdown in the response and recovery phases of emergency management. Data on land tenure, infrastructure, street centerlines, and floodplain delineations in compatible digital formats are critical, hence demanding major developments within the cadastral domain. Furthermore, the need to reduce vulnerability while increasing the coping capacity of the region's societal systems cannot be over-emphasized.

A preliminary study, which entailed semi-structured interviews with leading experts in the relevant fields – to reduce undue ethical considerations and generalization – as well as a subsequent literature review, was conducted to determine a conceptual framework that guides the research methodology. This takes the form of a qualitative multi-case exploratory study, and incorporates: Semi-structured interviews (with mapping, land tenure and disaster risk management personnel); the analysis of secondary data on selected affected areas (per territory); and the collection of documentary material. This study is expected to achieve holistic and in-depth results on the relationships implied in the thesis of this research. Preliminary results from St. Lucia highlight major advancements in land titling and registration, while underscoring the insufficiency of cadastral data in compatible digital formats and weaknesses in capturing data on informal tenures – all critical to emergency and disaster risk management.

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## 1. BACKGROUND

Development in the land tenure and cadastral domains of Caribbean Small Island Developing States (SIDS) has by no means been a homogenous experience. While some countries forge ahead with modernized systems of land registration and advanced cadastral databases – for multi-site storage and quick retrieval – most others lag behind in this regard. This study presents the cases of St. Vincent & the Grenadines, St. Lucia, and Grenada – the former functioning under a system of Title Registration and the latter two maintaining a system of Deeds Registration.

G.D.N. Clark in his 1960 report on ‘Land Registration in the Windward and Leeward Islands’ identified what he deemed:

*“...the absence of comprehensive plans of the land that is the subject matter of the register”.*

Characteristic of the Deeds Registration System – as confirmed by Clark (1960) – is the absence of any form of cross-referencing between the spatial unit and the deed. Financial institutions in St. Vincent & the Grenadines are today absolutely averse to granting mortgages against property defined by deeds that make no reference to registered survey plans. It can therefore be strongly argued that the current system of deeds registration in St. Vincent & the Grenadines does not guarantee absolute security of tenure, and remains a disincentive to investment in real property, and – more applicable to this study – complicates post-disaster economic recovery efforts at all levels.

All three (3) countries are significantly impacted by relatively large informal/ squatter settlements. All three are noted to have undertaken major land reform initiatives to create improved tenure security for agricultural and residential tenants – post-independence – through land redistribution and resettlement, but the results have somewhat varied. The rate of increase of informality has significantly outstripped state regularization exercises in all three instances.

While there is little to no readily available data on the tenure distribution across the general population for St. Vincent & the Grenadines for example, 1989 figures – arising from the Government of SVG and OAS Agricultural Credit Management Workshops 1989 – for land tenure in the agricultural sector revealed that approximately 40% of all agricultural tenures were:

- Rentals for cash;
- Sharecropping;
- Sharecropping and cash;
- Squatting (either on government or private land);
- Rent free; and
- Peppercorn tenancy.

All of which comprise the local range of informal land tenure arrangements.

In relation to cadastral systems development – all three states have for many years operated paper-based systems. Survey plans, topographic maps, legal records (deeds and titles), and land tax records are all stored in paper formats, and only within the past few years have the relevant

state repositories made commitments to scanning and digitizing all new and existing in-house records. This transitioning has however been a slow process, crippled particularly by human resource constraints.

## **2. RECENT DISASTER SCENARIOS**

### **ST. VINCENT & THE GRENADINES:**

According to The Hurricane Tomas Emergency Recovery Project Environmental Assessment of June 2011, the impact of Hurricane Tomas in October 2010 was significant enough for the government to declare disaster areas within the northern section of the island. Given the geographical concentration of the agricultural sector in the northern part of the island, the most significant economic impact was felt in that sector. Losses were estimated at US\$25 million, with the banana industry recording the most significant losses.

From Park Hill to Sandy Bay (on the Windward coast), and Belle Isle to Fitz Hughes (on the Leeward coast) – all within the affected northern section – over 1200 persons were displaced and took refuge in the designated shelters. Official figures revealed that 26% of the total population was severely affected by the impact of Hurricane Tomas.

### **GRENADA:**

In 2004, Hurricane Ivan devastated the tiny island state of Grenada, damaging ninety percent (90%) of all buildings, and displacing thousands. According to World Bank figures, total damages stood at two hundred percent (200%) of the country's Gross Domestic Product (GDP) or US\$900 million – according to the Government of Grenada (Treasury Bills and Notes Prospectus, 2009).

This was quite easily compounded by the country's public debt which as of June 30, 2005 stood at US\$560 million – 130% of GDP. An analysis of the country's debt sustainability in May 2005, revealed an immediate (2005) fiscal deficit of US\$41.9 million and a projected 2008-2020 average of US\$75.7 million.

It therefore meant that unless the reconstruction burden was appropriately shared among the Government, donors and creditors – with the latter two taking a significant proportion of the burden – the country's economic woes were likely to be exacerbated for many subsequent fiscal periods (Grenada: A Nation Rebuilding, 2005).

With such significant losses in a single event, economic recovery can be an arduous process – far more – a daunting prospect. As part of the recovery phase in the wake of Hurricane Ivan, several agencies, international organizations, and generous governments stepped forward to offer their assistance. The World Bank facilitated a donor review of the OECS/ ECLAC damage assessment on October 4, 2004 – process that yielded over US\$150 million in pledges to help Grenada's rebuilding efforts.

Grenada – post-Ivan – attracted aid from a wide cross-section of donors. However, with regards to housing reconstruction, there were many queries from donors regarding the organization of the country's land tenure system – from both a geo-spatial and legal stand-point. It can be argued that this may have hampered rather than facilitated the recovery process post-Ivan.

### **ST. LUCIA:**

The Environment and Sustainable Development Unit (ESDU) of the OECS Secretariat is an example of a quasi-governmental agency that has taken advantage of spatial technology towards enhancing its capacity for reasonably informing critical decision-making processes in land resource management within the sub-region.

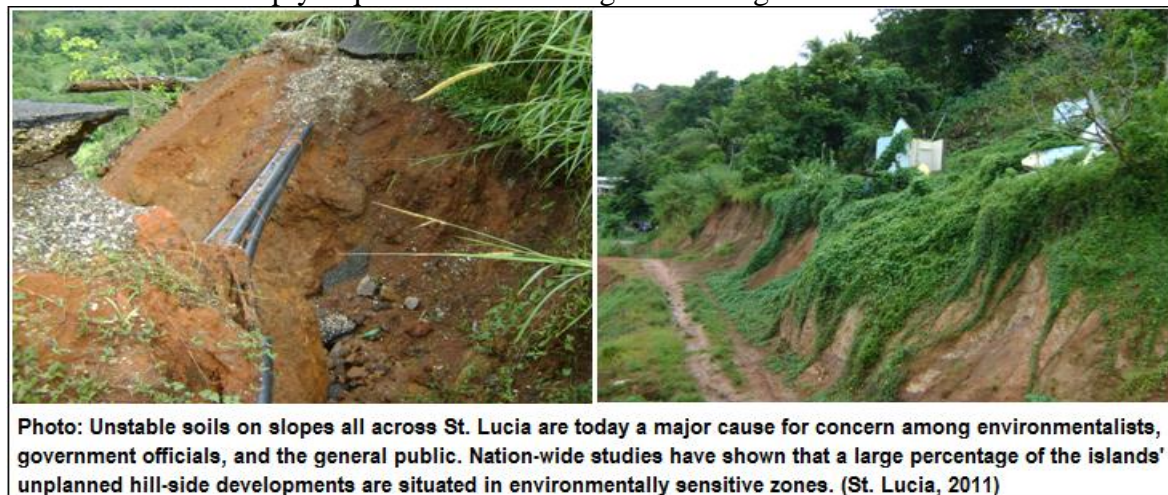
The ESDU is currently undertaking vulnerability and risk assessment studies within informal/ squatter communities throughout St. Lucia. Mr. Peter Felix – Chief Surveyor at that country's

Survey & Mapping Department – has described the topography of the island as “*steep slopes and flood plains*”. This according to Mr. Keith Nicholls – Head of the ESDU – has resulted in numerous environmentally sensitive areas throughout the island, many of which have been occupied by squatters. The agency is now left with the challenge of identifying which areas are at risk to floods, landslides, and other measurable adverse geological occurrences (Illustrations 1 and 2).



**Illustration 1: Disaster Impact in Ravine Poisson, St. Lucia**

The ESDU recognizes the importance of spatial technology in determining: Which settlements are at greatest risk and would require relocation; those areas best suited for resettlement; and those that would simply require enhanced mitigation arrangements.



**Illustration 2: Disaster Impact of Hurricane Tomas on St. Lucia (2010)**

### 3. HISTORICAL NOTE

The first recorded surveys in St. Lucia were carried out by Michelle Le Four De Latour in his capacity as Surveyor General while St. Lucia was yet under French rule.

Subsequent to this, Mr. Horrace Wason (former Chief Surveyor, St. Lucia) sought to have all land units tied to the national grid. These new surveys carried out by the office of Mr. Wason were based on Le Four De Latour's older plans. Resultantly, all survey plans in St. Lucia are today tied to the national grid.

All surveys carried out in St. Lucia and St. Vincent & the Grenadines, are required to show grid coordinates – evidence of a connection to the national grid control network. These coordinates are checked and verified by trained personnel at the Lands & Surveys Department of both territories.

Laws have historically been enforced to ensure that all survey plans (Illustration 3) are lodged at the central surveys and mapping agency of each territory (Illustration 4). However, with the modern demand of geospatial data in compatible digital formats, there is a growing need for all paper-based records (Illustration 5) housed at these vaults to be scanned and digitized.

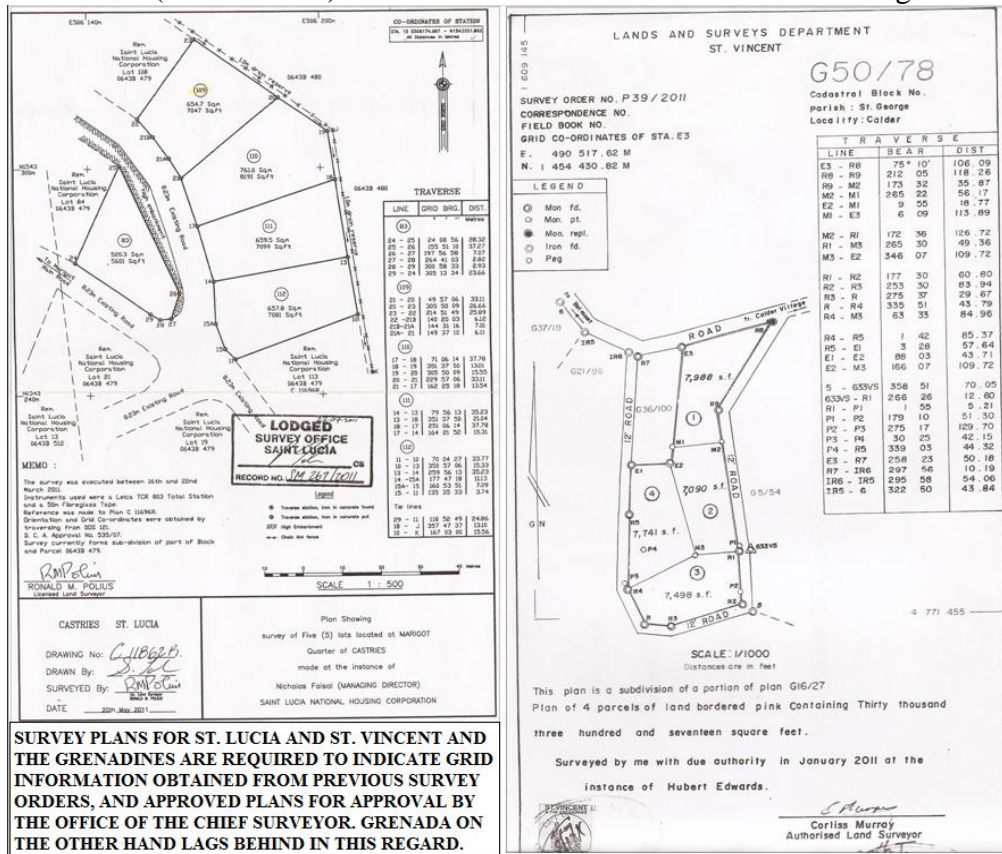


Illustration 3: Samples of survey plans from St. Lucia (left) and St. Vincent & the Grenadines





**Illustration 4: Cadastral storage facilities (Vaults) in St. Lucia, St. Vincent and Grenada**



**Illustration 5: Storage at Grenada's Registry of Deeds and Mortgages**

#### **4. LAND REGISTRATION AND CADASTRAL DATABASE DEVELOPMENT**

Prior to 1984, all legal rights in property were registered at the Registry of Deeds and Mortgages. However, all this changed with St. Lucia's Land Titling and Registration Project (LRTP). It took just three years (1983 – 1986) to adjudicate and demarcate 33,287 parcels recorded under the Land Registration and Titling Project (LRTP). Queries have however been raised by local surveyors regarding the use of the 'General Boundaries' system in the LRTP as the compass reading were likely to have been distorted by local magnetic rocks. Land Registry officials have however based their operations on these 'General Boundaries' which are often conflicting with

what is determined by the local land surveyors as the actual boundaries – based on original survey plans.

While this presents a significant technical challenge and can potentially be a contentious issue, what remains absolute is the legal status and legitimacy of the tenure of individuals as recorded by the registry. This is particularly critical in the wake of major disasters where government appropriation of resources or housing reconstruction by friendly governments and NGOs are based on proof tenure through some form of official documentation.

The table shown (Table 1), illustrates the number of cadastral plans scanned and digitized up to November 4, 2011. The total number represents 94.3 % of the total number of parcels demarcated and recorded under the LRTP. This has been achieved within less than twelve months, as personnel have been specifically assigned to completing this task. All incoming survey plans are also scanned and digitized.

QUARTER	NUMBER OF PLANS SCANNED AND DIGITIZED
Anse La Raye	1,810
Castries	11,907
Choiseul	949
Dauphin	1,485
Dennerly	1,871
Gros Islet	6,034
Laborie	1,310
Micoud	1,850
Praslin	810
Soufriere	1,303
Vieux Fort	2,070
<b>TOTAL</b>	<b>31,399</b>

**Table 1**

**This table illustrates the number of cadastral plans scanned and digitized up to November 4, 2011**

The key issues which gave rise to title registration in St. Lucia almost three decades ago included:

- Numerous instances of duplication under the Deeds Registration System;
- Large plots of Family Land could not be sold; and
- There was an urgent need to facilitate greater ease in the transfer of lands to facilitate increased activity in the local land market.

Family lands however persist and continue to create major problems for local policy and governmental officials. Much attention has been given to the individualization of land parcels where Family Lands exist. This has however created much difficulty, as the large numbers of individual claims on an undivided tract of land makes subdivision impractical. The phenomenon therefore persists. In the context of disaster management, the documentation and spatial representation of the social tenures of individual occupants is critical to facilitating disaster/

emergency response and recovery.

Stage (2005) argues that cadastral data can provide the most current and accurate information in support of emergency management, but notes that access to such information can be limited by a number of factors including:

- Data distribution agreements; and
- Data formats.

These present additional critical considerations in facilitating efficiency in disaster and emergency management.

Data required for disaster and emergency management include:

- Infrastructure information;
- Property records;
- Street centerlines;
- Utility information; and
- Floodplain delineations.

In the context of emergency and disaster risk management, spatial and tenure information is ideally located in a central repository – backed up in multiple digital/ virtual environments in diverse locations. These should be readily accessible in the wake of a natural disaster.

So what is the likely outcome of all this?

- Lives are saved;
- Aid is more readily distributed;
- Reconstruction is better facilitated; and
- The cost to society of dealing with emergencies is reduced due to greater organization of spatial data.

## **5. RECOMMENDATIONS**

Surveys & Mapping:

- Public awareness campaigns on the importance of delimiting (surveying) the extent of one's tenure;
- The continued scanning and digitizing of all registered and incoming survey plans towards an automated subsystem;
- The verification and maintenance of the grid control network using modern geodetic procedures – including the use of GPS;
- The introduction of a GPS pilot project in meeting the afore-stated data requirements of emergency management;
- The investigation of the legal implications and the necessary provisions for integration of GPS technology into national cadastral services; and
- The development of online services consistent with the best professional practices.

Land Registry:

- The development of an automated Deeds Index Register designed for efficient title search (similar to Proprietor's Index of St. Lucia);
- The development of online services consistent with the best professional practices;



- The provision of an efficient service for researching title chains;
- The automation and restoration of existing title deeds volumes; and
- The provision of a secure and controlled environment with limited access to original paper based records.

#### Community Level:

- Study of the use of the Social Tenure Domain Model (STDM) for mapping of social tenures in informal/ squatter communities – initially as a checks and balances measure; and
- Consider training local college students (through departments of Geography) in the use of GPS and STDM software to promote the adoption and further development of this technology for local use.

#### REFERENCES

- Bennett, Rajabifard, Kalantari, Wallace, Williamson (2010). Cadastral Futures: Building a New Vision for the Nature and Role of Cadastres. Sydney, Australia: FIG.
- Clark, G.D.N. (1960). Land Registration in the Windward and Leeward Islands. Colonial Report.
- De Soto, H. (1994). The Missing Ingredient: What Poor Countries Will Need to Make Their Markets Work. Housing Finance International: 3-5.
- Grenada, Government of (2009). Prospectus for Treasury Notes and Treasury Bills. Government Prospectus.
- Kaufmann, J, D. Steudler. (1998). Cadastre 2014: A Vision for a Future Cadastral System. Rudlingen, Switzerland, FIG.
- Latin America and Caribbean Hazard Risk Management Unit (2005). Grenada: A Nation Rebuilding – An assessment of reconstruction and economic recovery one year after Hurricane Ivan. Report.
- Mitchell, D. (2011). Assessing and Responding to Land Tenure Issues in Disaster Risk Management. Rome, FAO: 44.
- Phillips, B.D. (2009). Disaster Recovery. Florida, USA, Auerbach Publications.
- Prospectus for Treasury No
- Williamson, Enemark, Wallace, Rajabifard (2010). Land Administration for Sustainable Development, ESRI Press.

## **BIOGRAPHICAL NOTES**

Mr. Jamal Browne is a 27-year old land surveyor currently pursuing his Master of Philosophy degree in Surveying & Land Information with the Department of Geomatics Engineering of the University of the West Indies, St. Augustine in Trinidad & Tobago. Mr. Browne has focused his research on land tenure systems in disaster management within the Caribbean Basin, and intends to continue this research at the PhD level.

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