

# **LAMP II: A Land Registration Project in Jamaica**

**Munsung KOH, Republic of Korea and Garfield KNIGHT, Jamaica**

**Key words:** LAMP, Land Registration, Jamaica, KCSC

## **SUMMARY**

Jamaica is a middle income country (World Bank 2010), with almost half of its population residing in suburban areas and dependant on the land for agriculture. Less than 40 percent of the suburban areas in Jamaica are registered, most of which, however, remains outdated and these conditions lead to difficulties in developing land, proving ownership and even property taxation. The strict land law requirement and long processing time incurred by the Jamaican title registration system had been recognized as the main hindrance for land registration. To facilitate the process, the Government of Jamaica had commenced Land Administration and Management Programme(LAMP) in 2000, which aimed to assist land holders without titles to obtain land title, and installed continuously operating reference stations (CORS) in a national scale to assist better land surveying services by Network-RTK activation. Besides, it introduced a Special Provisions Act to supplement the existing Registration of Titles Act and conducted a pilot for cadastral mapping of 25,000 parcels of land. However, such endeavors did not fully assist land holders to obtain their land titles despite the improvement of the legal and technical surveying environment.

Korea Cadastral Survey Corporation(KCSC) had realized that more improvement was feasible in Jamaica. Thereby, the participation in LAMP II project was initiated in 2010 in St. Elizabeth, the parish showing the lowest land registration rate, 32 percent. KCSC primarily focused on cadastre innovation by computerization and technology transfer. The cadastral surveying was undertaken using Network-RTK method on the basis of systematic mapping. And an improved method involving a more holistic approach to land tenure regularization has been adopted to reduce the long processing time. As a result, KCSC encouraged a more active government role which resulted in the emphasizing of the Property Tax Roll amendment to Titling through systematic survey and Adjudication Committee activation.

This paper introduces the land registration in Jamaica and presents the endeavors and lessons learned by KCSC.

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## **1. INTRODUCTION**

Land Administration and Management Programme is a pilot project started in 2000 by the Government of Jamaica in collaboration with the Inter-American Development Bank (IDB) to assist people getting their property titles at reduced time and costs. In April 2010, the Government of Jamaica, Geoland Title Limited (Geoland) and Korea Cadastral Survey Corporation (KCSC) signed a contract for deploying the second phase of LAMP especially in the parish of St. Elizabeth called LAMP II which was through a consortium formed between KCSC and Geoland.

KCSC is a government-owned organization supervised by the Ministry of Land and Transport of the Republic of Korea(Korea). KCSC provides its citizens with a wide range of cadastre and land related information services, including cadastral surveying and mapping, land information system (LIS) development & operation, research and development (R&D) as well as training and education. The corporation collects and maintains cadastral data sets using the state-of-the-art information communication technologies.

Geoland is a privately owned Jamaican company specializing in land administration and management that enables equitable and efficient land titling services, and delivery of cadastral mapping in specific areas.

KCSC's endeavor to assist Jamaican land registration extended to its participations in Land Access for National Development(LAND; 2011), Cadastral Mapping Land Registration Project(KOICA; 2013) and several survey equipment donations and trainings.

## **2. BACKGROUND**

### **2.1 Project Areas**

Jamaica is a Caribbean island with 11,264 square kilo meters in size and population of 2.7 million. Jamaica is a middle income country with US 5,600 dollars GDP per capita in 2012 according to the International Monetary Fund (IMF). The country's major revenue sectors, including economy, agriculture, mining and tourism, are highly dependent on international markets and now show high debt burden (140% GDP). The unemployment rate is 12.6% and population below poverty line is 17.5%. Despite its high labors on agriculture (20%), low land registration rate hinders efficient agricultural activities and causes limitations on land ownership activities.

LAMP II started in the St. Elizabeth parish which shows one of the lowest land registration rate in Jamaica, 32%. The parish expanded its service areas to other parishes [Figure 1]. As seen from the figure, LAND project rolled out in St. Catherine, Clarendon, Manchester, St.

Elizabeth and St. Mary to issue certificate of compliance (COC) under Facilities for Titles Act (FTA). KOICA project has started in the northern parts of Jamaica, including St. Ann, Portland and St. Mary, to assist carefully selected government land settlements and in some cases squatters to register their occupying lands.



[Figure 1] Map of Jamaica

**2.2 Land Registration System**

Jamaica had used deeds registration system until title registration system was introduced in 1889. To the effect, both systems are currently employed. However, the title registration, which delivers powerful indefeasibility, is now more common in Jamaica. Once registered under the title registration, the land value tends to increase because of the preference driven by the stronger indefeasibility of title and its scarceness. Besides, the commercial banks have propensity not to acknowledge certificates under deeds registration as collateral. Thus, the title registration system prevails in Jamaica because of its indefeasibility and land commoditization. The title registration system in Jamaica requires legal documents to prove land ownership and approved survey plan that the assistances of attorney and commissioned land surveyor are accompanied in the entire land registration process.

**2.3 Current Status & Problems**

The land registration rate shows less than 54 percent in Jamaica (2010). The land registration rates in the capital region and other urban districts are significantly high, while those of suburban areas are very low. For example, St. Elizabeth, one of the suburban parishes in Jamaica, records only 32 percent of land registration rate. (See [Table 1] below) However, more lands than the statistic’s figure remain unregistered, especially in suburban areas, due to informal subdivisions resulting from successions, transactions, squatted lands and other reasons.

**[Table 1] Land Registration in Jamaica per Parish (2010)**

Province	Registered	Unregistered	Ratio
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Total	417,301	366,735	53.22%
Kingston	12,403	1,472	89.39%
St. Andrew	79,375	15,321	83.82%
St. Thomas	13,928	22,799	37.92%
Portland	11,021	21,652	33.73%
St. Mary	17,974	28,838	38.39%
St. Ann	27,474	32,424	45.87%
Trelawney	11,615	16,851	40.80%
St. James	36,193	14,383	71.56%
Hanover	9,342	12,834	42.13%
Westmoreland	19,332	21,489	47.36%
St. Elizabeth	19,962	41,901	32.27%
Manchester	26,893	36,268	42.58%
Clarendon	34,866	55,386	38.63%
St. Catherine	96,923	45,117	68.24%

\* Source: National Land Agency, Jamaica

Such a low land registration issue stems from strict land registration requirements, long processing time and resultant high costs. There are two major parties concerned in the land registration process: applicants (land owners) and referees (land title approvers). More details of the problems are explained as below.

### 2.3.1 Applicants

Under the title registration system in Jamaica, Property Tax Certificate and ownership proving documents such as wills and contracts are required according to the Jamaican laws. However, applicants are at difficulties in preparing such documents due to four reasons below:

First, many applicants are unable to prove thirty (30) year root of Title. It is difficult to keep proper documents for such a long period time, and next of kin are usually unwilling to cooperate. These discourage the entire process, requiring longer time just to prepare for land registration.

Second, land transaction takes place without proper documents or contracts. The land owners obtain, buy and sell land without obtaining or giving receipts, conveyance or deed of gift mainly because of cultural norms and ignorance.

Third, many applicants are unable to provide Property Tax Certificate. Predecessors in title did not notify the Collectorate of the change in ownership at the times of property transaction or subdivision. Many new owners have not been able to pay property tax since Property Tax Roll was not updated, causing them to not be able to prepare the tax certificate to register land

or face a high cost to pay the taxes and fees on a larger parcel of land than they are applying to register.

Fourth, when land has been subdivided from the size of the official tax roll or from an existing registered title, a subdivision approval is required which means that the land has to comply with the requirements of the planning authority in terms of infrastructure.

However, when the collected documents are deemed satisfying with the requirement at certain level, assigned attorneys submit the application with the documents to referees for titling process through the Title Office of the National Land Agency.

### 2.3.2 Referees

The referees may reject the application or demand complement of insufficient documents if the submitted documents are not deemed complying with the requirements. Frequent rejects or demands, some of which incur several times and/or take several years, may discourage many applicants to continue their land registration process.

The referees consist of retired judges or senior attorneys assigned by the government. Less than ten (10) referees are currently in practice.

## **2.4 Improvement Efforts**

There have been many national projects carried out until LAMP to assist land registration and management including Land Settlement Project (1940s), Project Land Lease (1970s), Operation PRIDE & Parish Land Divestment Com. (1995) and Emancipation Lands (1997). Furthermore, to facilitate the current land registration process and efficient land administration, the government enacted two special acts as below:

### 2.4.1 Special Provisions Act (SPA)

The Act removes some of the legal impediments to register land including cost, establishing root of title and issues related to subdivision. It facilitates the titling of informal settlements and incremental development of such settlements at the expense of land owners, and allows waivers on transfer tax, stamp duty and the processing fee based on unimproved value of land.

Recognizing that the cost is a serious disincentive to persons registering land, the payment of all transfer tax on death has been waived. Additionally, all fees in relation to the processing of an application are based solely on the value of the land on the tax roll.

Under the provisions of the Registration of Titles Act, title cannot be processed without evidence that the applicable duties have been paid and therefore the SPA with its concessions facilitates registration at a lower cost.

## 2.4.2 Facilities for Titles Act (FTA)

The Act makes provision for persons who do not have a registered Title for their land to be able to obtain loans for agricultural purposes. Application is made to the approved financing Agency supported by affidavits from at least two persons so that the applicant is the reputed owner of the land for at least 7 years. The notice is published in the Gazette and adjoining owners are notified. Boundaries and values are checked. The Agency will accept a mortgage over the qualified applicant's land and issue a certificate of compliance (COC). COC is a proof of ownership to the land when registering land. One of the advantages of COC is simplification of title search and the need for less documentary proof, which enables less processing time (6 months) than that of the land title (24 months) to issue the respective certificate.

Because COC achieves land commoditization, it is recognized as an alternative solution for the official land title. The beneficiaries are those who need rapid mortgage by detour of the strict land registration law and long processing time. Besides, it is expected that the next official titling process is easier for those who once acquired COC than for those who did not.

## **3. MISSIONS**

### **3.1 Cadastral Computerization**

Most of the survey plans in Jamaica contains a single parcel diagram with bearings and distances between each fixed positions, while some few survey plans, referred as deposited plan accommodate more than two parcels in one single plan. All these survey plans are individually handled by the Survey Division of the National Land Agency (NLA). NLA manages these by index cards on community basis. Each index card contains information of each survey plan such as examination number, plan number, acreage, name of surveyor and name of instigator.

The existing survey plans and index cards in St. Elizabeth were not fully digitized although some had been scanned and stored in NLA by 2010. For better LAMP II performance, the cadastral computerization in the selected areas in St. Elizabeth was implemented by KCSC. Key-in process for 25,856 parcel information in index card and vectorizing with Key-in process for 21,280 survey plans inclusive of the existing 5,000 scanned images have been carried out.

The cadastral computerization had to be taken to develop cadastral map, which enables more comprehensive plan and parcel management. The multi-parcel-based cadastral map system allows more effective land administration and business management than the single-parcel-based survey plan system. To develop cadastral map, the coordinate geometry (COGO) process followed as assigning coordinates acquired by Network-RTK into vectorized parcels. The cadastral computerization provided guidelines for planning systematic survey and adjudication through boundary and ownership identification. Furthermore, it enabled efficient cadastral mapping, management and statistics of the project.

### 3.2 Systematic Survey

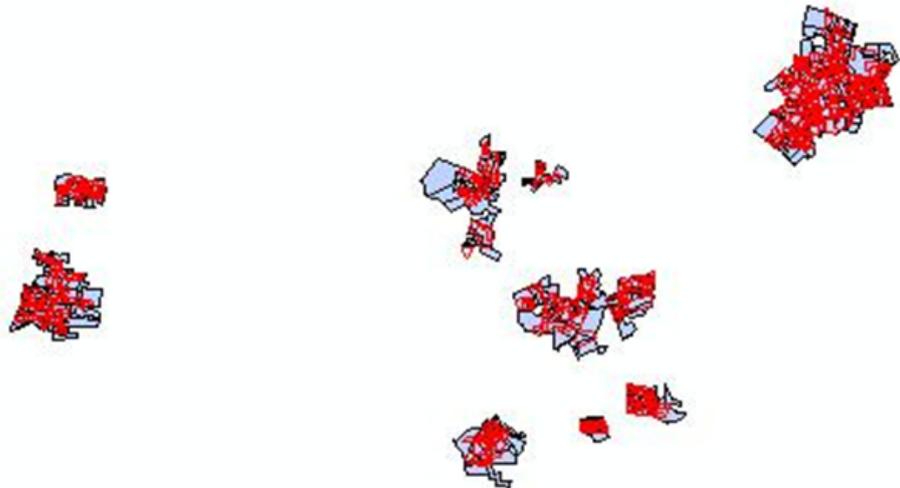
While most of the previous land survey in Jamaica had been conducted sporadically on a single application basis by using total stations, KCSC conducted systematic survey on community basis by allowing both total station and GPS to each survey team for better performance.

This community-based systematic survey leads saving in surveying cost to applicants. Basically, surveying cost is estimated in accordance with parcel size and tax roll range recorded on Property Tax Roll. Under the fee schedule used in LAMP II, for example, surveying cost for 2 acres estimates US 90 dollars (JD 7,800) and US 210 dollars (JD 18,200) for 20 acres wherein Tax Roll Range is up to US 6,000 dollars (JD 500,000). In other words, smaller land in size is more cost-saving in land registration. However, the current Property Tax Roll has not been properly updated in accordance with the reality.

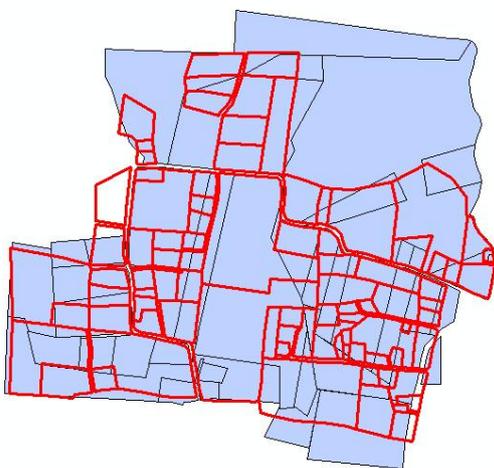
Many land owners are purposely or ignorantly avoiding property taxation, which leads them to not being able to meet the requirements of being a lawful owner or assigns costly surveying costs. The less surveying costs will be available to applicants if Property Tax Roll is updated because the applicants own and/or utilize smaller land in reality than that of the records in Property Tax Roll.

The government is another beneficiary for systematic surveying. First, the number of property tax payers will be tripled according to the statistics below [Figure2]. The red layer (systematic survey) shows 2,750 parcels in 600 hectares, while the blue layer (NLA data) shows 1,800 parcels in 1,200 hectares, the intersecting area with the red layer. This statistic indicates two thirds of parcels in reality are excluded from the current Property Tax Roll. The discrepancy between the reality and the Property Tax Roll exists because of informal subdivisions [Figure3] and omitted areas [Figure 4]. Thus, the systematic survey will be able to update more tax payers on Property Tax Roll.

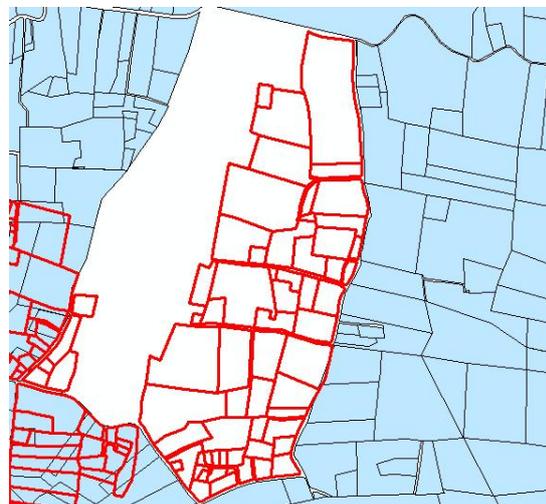
Second, the systematic survey will assist national land management. eLandjamaica, a website operated by NLA, provides the interactive map service which overlays parcel information onto satellite images. However, some of the parcel information shown on the website represent unreasonable land shapes as resulting from the poor survey conditions in the past, inaccurate plan digitization and outdated tax roll. The systematic survey will then help national level of land administration and deliver high-quality land data to Jamaican citizens.



[Figure 2] Systematic Survey (Red) and its intersected NLA data (Blue) (St. Elizabeth)



[Figure3] Example of informal subdivision  
(part of Brighton in St. Elizabeth)  
90 parcels in 30HA (Survey);  
40 parcels in 45HA (NLA Data)



[Figure4] Example of omitted area  
(part of Potsdam in St. Elizabeth)  
A part of white blank area (NLA Data) is newly  
filled with 60 new parcels (Survey)

### 3.2.1 Network- RTK

Network-RTK service has been available in Jamaica since 13 continuously operating reference stations (CORS) were installed under the LAMP in 2000 which allowed KCSC to utilize the technology to land survey.

The main advantage of Network-RTK is its rapid observation with high accuracy. According to a study, equipment initialization takes only 24 seconds and observation takes 10 to 30 seconds which proves the rapid observation of Network-RTK. He adds its accuracy compared with static observation is 0.009m in horizontal axis and 0.012m in vertical axis which represents high accuracy.

The KCSC's experience in Network-RTK achieved improvement in productivity. First, productivity in land survey increases by 30 percent. Compared to the traditional survey method using total station, which completes three (3) surveys a day, Network-RTK method completed four (4) surveys a day with shortened time.

Second, productivity in drafting plan increases. Compared to the traditional land survey method, which requires extra work for re-positioning parcels on plan [Figure 5], Network-RTK removed such extra work since the raw data from Network-RTK delivers coordinate information that it automatically positions exact location on each point of parcels [Figure 6].

Third, survey plan approval process benefits from Network-RTK. Under the traditional land survey method, survey plan approval process requires bearing and distance information mostly in handwriting on paper. However, under Network-RTK method, such requirement can be delivered in coordinate data on electrical textual format (TEXT) which increases accuracy and expedition in collecting, storing, identifying and examining the submitted information.

<i>FR. 10</i>		<i>METRES</i>
<i>S09</i>	<i>09E</i>	<i>10.36</i>
<i>S16</i>	<i>29E</i>	<i>15.68</i>
<i>N76</i>	<i>25E</i>	<i>18.02</i>
<i>S22</i>	<i>24E</i>	<i>3.79</i>
<i>S84</i>	<i>12E</i>	<i>11.61</i>
<i>S14</i>	<i>57E</i>	<i>11.18</i>
<i>N65</i>	<i>32E</i>	<i>20.83</i>
<i>N68</i>	<i>56E</i>	<i>10.98</i>
<i>N78</i>	<i>35E</i>	<i>10.82</i>
<i>N86</i>	<i>06E</i>	<i>10.31</i>
<i>S84</i>	<i>57E</i>	<i>9.90</i>
<i>S80</i>	<i>58E</i>	<i>14.23</i>
<i>N87</i>	<i>55E</i>	<i>5.87</i>
<i>N10</i>	<i>30W</i>	<i>44.49</i>
<i>S81</i>	<i>25W</i>	<i>28.54</i>
<i>S81</i>	<i>11W</i>	<i>19.38</i>
<i>S78</i>	<i>58W</i>	<i>65.06</i>
	<i>TO 10</i>	

[Figure 5] Example of bearings and distances  
(Requirement of Total station)

Point Name	N(X)	E(Y)
1001	657412.342	676898.782
1002	657432.546	676891.232
1003	657141.706	676894.437
1004	657151.951	676830.243
1005	657099.029	676801.132
1006	657101.222	676799.418
1007	657097.215	676771.602

[Figure6] Example of coordinate  
(Requirement of Network-RTK)

However, a careful guidance must be required to Network-RTK method. The most important caveat is to maintain high accuracy of the observed data. Data accuracy is not trusted if GPS signal was interfered by tall buildings or umbrageous trees when surveying. Fortunately, there are not many obstructive objects in suburban areas in Jamaica that in rare cases total station was used instead to avoid the interferences as per the surveyor's guideline, and the resultant cadastral maps were re-checked by surveyors and land owners before the submission to NLA.

### 3.2.2 Total Survey System (TOSS)

TOSS is CAD engine-embedded software designed for cadastral survey in Korea. In field, it is directly connected to total station which allows surveyors to monitor surveying activity in real time as GPS controllers do to assist surveyors. In office, it enables cadastral mapping with customized semi-automated functions. The final output data is exported either in SHP or DXF format that its compatibility and convenient applications increased productivity in land surveying, drafting and submission of output data.

Under LAMP II until 2012, 74 sheets of cadastral maps were produced using TOSS, and it is still in use by draughtsmen and land surveyors in Jamaica.

## 3.3 Others

### 3.3.1 LAND

The Land Access for National Development Programme (LAND) was designed to help land holders without title by using FTA and SPA to bring such land owners incrementally up to a standard, so that they can at least, obtain a Certificate of Compliance (COC) for the land. KCSC partner with Geoland Title Limited was officially designated as a COC issuing entity under LAND initiated by the Ministry of Agriculture and Fisheries in September 2011. The beneficiaries are those who need rapid mortgage by detour of strict laws and long processing time. Compared to the land titling process which requires approximately 2 years or more, COC requires approximately 6 months for the issuance of the certificate.

### 3.3.2 KOICA

KCSC has undertaken the project, Cadastral Mapping and Land Registration, in Jamaica planned by Korea International Cooperation Agency (KOICA) which granted US 2 million dollars to the project. The primary mission of the project is to apply for the land title for the carefully selected 1,000 squatters who reside in St. Ann, St. Mary and Portland. The project allows them to receive the official land title through adjudication and land survey by KCSC. Additionally, in an attempt to facilitate legal file processing computerization, number of Korean cadastral experts was dispatched to train local professionals with the provision of Stewart Land Folio software. The project will be completed in the beginning of 2014.

### 3.3.3 Training

In an attempt to emphasize the importance of cadastre in land registration, training in cadastre has been conducted annually. In 2010, KCSC delivered a lecture regarding Korean experience in cadastre and a demonstration of TOSS software to students and faculty members in survey department in University of Technology, Kingston. The demonstration soon attracted wide attention to the convenience of TOSS in land survey. And it came to a realization in necessity of cadastral computerization throughout the lecture.

In 2010 and 2012, the Ministers in Jamaica were invited to Korea to observe Smart Geospatial Expo, a professional geospatial information exhibition which shows the latest technology and numbers of IT services about geospatial information. Cadastre plays a core role in geospatial information in Korea, and KCSC is one of the major supporters for the Expo. These invitations facilitated to understand that cadastre enables efficient land management and land administration in Korea.

In 2013, the number of Jamaican government officers were invited to Korea for cadastre training in NGIS, NSDI, photogrammetry, GPS and etc., and assisted to discover necessary solutions for cadastre innovation in Jamaica. KCSC has been assisting land registration and cadastral innovation in Jamaica through consistent training with a belief that the cadastre is a core engine for land management.

## **4. SUGGESTIONS**

### **4.1 Systematic Survey**

As discussed in 3.2, the update of Property Tax Roll enables the expansion of the property taxation and more efficient land management at national level by the renewal of land owner information with the update of the land information such as actual land size and location. The update requires cadastral surveying, which is currently payable by applicants. The government does not take active supports on systematic survey. Thereby, KCSC tried to conduct systematic survey by requiring survey fee to the applicants after the completion of the survey. This active method was beneficial for both the government by renewing Property Tax Roll and the land owner by reducing the survey fee. However, this method was shown inadequate for a private sector to conduct, because it incurred the lack of liquidity, which affected on business management.

Therefore, the government should actively participate in systematic survey by any form of assistance because updated Property Tax Roll allows wider property taxation and efficient land management, which in turn will enrich national finances and strengthen governance.

### **4.2 Adjudication Committee**

Throughout the systematic survey in Jamaica, the disputed areas are the major hindrance for the land survey performance and by extension, land titling. The disputed areas where land rights or boundary issue did not reach an agreement hinder systematic survey, since adjudication is unavailable. Because cadastral assistance such as the cadastral computerization and state-of-the-art survey technology cannot effectively resolve it, the government mediation

is highly required. In severe cases under LAMP II for example, it brought unexpected discord or even violence which deferred land surveying in an entire community for months, bringing inconvenience to the adjacent land owners and economic losses on business sectors.

In order to mediate such problem, Adjudication Committee was introduced in 2005 which, unfortunately, has not been previously implemented. The committee consists of numbers of attorneys, surveyors and other related professionals to resolve issues concerning the property rights and interest in land so that land may thereafter be registered. In November 2013, intervention of the committee has again been considered for resolving land issues in Rose Town, Kingston which, however, it is too early to determine the results as yet.

The disputed areas are not easy to resolve without governmental authority, so the government is required to empower the committee to practice.

### **4.3 Cooperation between Public and Private Sectors**

The direct cooperation between public sector and private sector, Geoland Title Limited represents significance to national projects. Such cooperation amplifies synergy effect through the governmental authority of public sector and flexibility of private sector. The governmental authority was able to facilitate the approval process of survey plan or any other processes requiring public relations, while the flexible private sector was able to adjust to the changeable market by rapidly reorganizing the employment and its business structure. Such cooperation enabled expeditious work process and active problem solving.

However, more private sectors are required to participate in land registration matters in Jamaica. For example, more opportunities to private attorneys, commissioned land surveyors and other land experts will be able to improve land registration system in Jamaica by lowering land registration fees and promoting healthy competition. The competition will improve the current land registration process and continuously generate alternatives similar to the COC.

## **5. CONCLUSIONS**

Jamaica is a middle income country, with almost half of its population residing in suburban areas and dependant on the land for agriculture. However, the current land registration issue and outdated land information lead to difficulties in developing land, proving ownership and property taxation. It is driven by the strict land law requirement, long processing time incurred by the Jamaican title registration system, and the ignorant customs over land registration. To facilitate the process, the Government of Jamaica had taken many measures as amended regulations (SPA, FTA) and projects. LAMP in 2000 was considered the one of the most feasible measures ever taken in Jamaica. In an effort to assist Jamaican land registration system, KCSC participated in LAMP II in 2010. KCSC has made endeavors to develop the land registration system in Jamaica by improving cadastre using cadastral computerization and state-of-the-art technologies.

The cadastral computerization through the digitized cadastral mapping allowed more efficient land administration and business management. The systematic survey conducted by Network-

RTK and TOSS allowed significant productivity enhancement by reducing works and costs. Besides, the LAND project tried to seek alternative methods for the official land registration process, while the KOICA project assisted the selected numbers of squatter to be able to receive land titles. And the continuous trainings have been provided for knowledge share and technology transfer to improve the Jamaican land registration system.

Most of all, realization of the importance of systematic survey is significant to the current land registration system in Jamaica, which in turn requests more active government actions in Property Tax Roll amendment, Adjudication Committee empowerment and private sector participation.

In addition, more varied alternative methods are required to assist those who have difficulties taking official land titling process in Jamaica such as COC designed for those who wish to utilize mortgage in an expedite way.

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## **BIOGRAPHICAL NOTES**

**Munsung KOH** holds a bachelor degree in Geoinformatics of University of Seoul (KR). He is a cadastre surveyor at Korea Cadastral Survey Corporation. He participated in Land Administration and Management Programme II in Jamaica from 2010 to 2012 as a land survey consultant.

## **CONTACTS**

Munsung KOH  
Korea Cadastral Survey Corporation  
15, Tanbeol dong, Gwangju-si, Gyeonggi-do  
REPUBLIC OF KOREA  
Tel. + 82-31-799-2030  
Fax + 82-31-799-2001  
Email: munsung@lx.or.kr  
Web site: www.lx.or.kr

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