Cambodia National Land Titling Program
Land Mines to Land Registration

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Key words: land titling, Cambodia, land mines

SUMMARY

In the Western World we take for granted the security of land title. In most of the rest of the world this is not so. International Financial Institutions have been funding land titling projects in developing countries for a number of years, providing security of tenure for the world's poorest people, and releasing the tremendous potential for capital generation existing in untitled land. However, the areas in greatest need are often in war-torn, remote regions, and few have ever tackled the unique challenges of bringing the benefits of titling to these areas.

With the implementation of the World Bank funded Land Management and Administration Program in Cambodia, a gap developed in addressing and resolving the issue of land affected by land mines and unexploded ordinance. The Canadian companies, McElhanney and Geospatial saw an opportunity to combine their expertise in satellite imagery, cadastral mapping, Geographic Information Systems and land mine surveys to design and implement a ground-breaking project in Northwestern Cambodia. With funding from the Canadian International Development Agency, property mapping, demarcation and adjudication, was completed for more than 3,500 land title certificates in five villages badly contaminated with land mines. These grateful land owners were then able to make improvements to their land without fear of access, and losing their right to ownership. Title introduced better access to credit, thus providing investment capital to generate economic activity in this developing region.

During this project, the use of aerial photography and QuickBird satellite imagery for the preparation of property mapping and land titles was evaluated. The project also designed and implemented the first documented procedures for surveying, demarcation and dispute resolution for land parcels in mine-contaminated areas. The project provided training in these procedures for 28 Cambodian men and women, using commonly available equipment and software, leaving a process for future projects to build upon.

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INTRODUCTION

In recent years there has been a transformation in the thinking of the International Financial Institutions (IFI's) that provide aid to the developing world. Increasingly, these agencies are seeking ways to give to the poor the tools they need to help themselves – a hand up instead of a handout. At the same time, there has been a growing recognition by the world's economists that even in the poorest countries there exists an immense reservoir of untapped capital. This untapped capital is in the form of occupied, but untitled, land, and its value is many times greater than the sum of all the foreign aid received throughout the world since the concept of aid began in 1945.

In his seminal work, "The Mystery of Capital", published in 2000, the Peruvian economist Hernando do Soto revolutionized conventional wisdom by explaining how the existence of interlocking legal, banking and land registration systems provides the capital for much of the commercial activity that underpins the world's most prosperous economies. In the Western World we take the existence of these interlocking systems for granted, whereas in the developing world and the former Communist nations these systems either do not exist or are dysfunctional. For example, in the United States, the single most important source of funds for new businesses is a mortgage on the entrepreneur's house. By contrast, most of the poor inhabitants of the Third World and former Communist nations (representing over 80% of humanity) occupy land and have built houses, but these represent dead capital, because they lack the mechanisms to enable them to be used to generate capital.

These two events, the transformation in the thinking of the IFI's and the recognition of the untapped potential of untitled lands, have led to the understanding that the creation of reliable land registration systems and the formal titling of occupied land are fundamental to overcoming poverty in the Third World. Many projects have been initiated in various parts of the world to address this shortcoming, including a World Bank project in Cambodia known as Land Management and Administration Project (LMAP). However, the projects undertaken to date have all focused on lands that are relatively accessible and where ownership has been reasonably easy to establish.

McElhanney Consulting Services Ltd of Vancouver, Canada, and Geospatial International Inc of Victoria, Canada recognized that much of the world's untitled land occupied by the very poorest people is located in remote areas that have been subjected to armed conflict, foreign occupation, population dislocation, resettlement, loss of male family members, and contamination by landmines. Such a place is the Province of Banteay Mean Chey, adjacent

to the Thai border in Northwestern Cambodia, which was not included in the initial Provinces for the start up of the LMAP project. After suffering three decades of civil war, occupation, and genocidal government, the last remnants of the brutal Khmer Rouge regime were eliminated from Banteay Mean Chey as recently as 1998. Cambodia as a developing country, stands in stark contrast to the powerful Khmer Empire of a thousand years ago, exemplified by the magnificent temple structures of Angkor Wat.

McElhanney and Geospatial designed a unique project to tackle these issues in the most difficult of circumstances, and provide the poorest of the poor with the most potent tool available for economic development – the injection of life into the dead capital of untitled land. The project had the endorsement of our client, the Cambodian Ministry of Land Planning, Urban Management and Construction (MLPUMC), and funding by the Canadian International Development Agency (CIDA).

PROJECT OBJECTIVES

The Project Mission was to demonstrate how the enormous capital-generating potential of land titling can be provided to those most desperately in need of it – the poor occupants of rural land ravaged by war. Our key objectives in achieving this mission were to:

a. **Educate rural populations** in the long-term benefits of creating a new land registration system in a country where all previous records had been methodically destroyed by the Khmer Rouge regime, and where most people are focused on the challenges of food, clothing and shelter;
b. **Develop systematic procedures** to safely carry out surveying, mapping, demarcation, dispute resolution and title preparation for land contaminated by unexploded landmines;
c. **Provide training** to inexperienced men and women in the new systematic procedures, in a country where most of the generation of educated people that formerly carried out this work perished in the genocide of the late 1970's and the ensuing years of civil war; and
d. Identify villages, representing a cross-section of challenges, and **undertake property demarcation, adjudication**, **preparation of cadastral maps and land title certificates** for all properties in those villages.

PROJECT SCOPE

Implementation required expertise in mapping, surveying, geographic information systems (GIS), land titling, landmine mapping, socio-economic analysis, and interview/dispute resolution techniques. A relationship was forged with the Halo Trust, a British charity already established in Banteay Mean Chey, specialising in the removal of debris of war. Halo's role on the project was to dispose of landmines and unexploded ordanance encountered during the course of the work.

An office was set up in the Cambodian capital of Phnom Penh as production facility for maps, databases and land titles, and point of liaison with the client and other agencies. A field office was established in Sisophon, the capital of Banteay Mean Chey. Project equipment included three 4x4 trucks, four cross-country motorbikes, three computer

workstations, Arcview GIS (Geographic Information Systems) software, Sokkia Total Station survey equipment, two metal detectors and safety equipment. We also used GPS (Global Positioning Satellite) equipment to establish survey control points for each village and control for the satellite imagery.

A team of 24 Cambodian men and 4 Cambodian women were mobilized to conduct the field and office work, under the direction of a Cambodian Project Manager. McElhanney/Geospatial provided project direction through a Canadian management team that included a Project Director, Land Surveyor, GIS Specialist, Socio-Economic/Gender Specialist and Land Registration Specialist. This team provided training, client presentations and project direction at key points in the assignment, with the emphasis on training the Cambodian staff and empower them to carry out the work themselves.

In accordance with local custom we celebrated the beginning and end of each phase of the project by organising a public ceremony involving local officials and blessings by monks. This served the added purpose of establishing the importance of land titling in the minds of the local population and endowing our staff with the authority they needed to receive the co-operation of the villagers. At the final ceremony to present land titles we were honoured by the presence of the Minister of Land Planning, Urban Management and Construction, His Excellency Minister Im Chhun Lim, and the Canadian Ambassador to Cambodia, Her Excellency Stefanie Beck.

We started the field work with an intensive 8-week training program, using the LMAP program as a model, and involving Cambodian government staff as both participants and instructors. We trained our staff specifically to carry out the discrete functions of landmine safety, surveying, demarcation, adjudication, gender sensitivity and data entry, but we included cross-training to ensure that the graduates of our program would be well-rounded, and be able to switch roles when necessary to optimise the overall team productivity.

PROJECT RESULTS

a. Prepared Orthophoto Mapping, Cadastral Index Mapping and over **3,500 land titles** for the villages of Bak Chan Chas, Slaeng, Thmei, Kvav Lech and Ta Voek;
b. Developed new **land titling procedures** applicable to areas contaminated with landmines;
c. Developed new applications in the use of **satellite imagery** to compile Orthophoto Mapping suitable for land titling;
d. Provided **training and project experience** for Cambodian men and women in various facets of conventional land titling, and in the unique procedures required in landmine-contaminated areas;
e. Ensured that **ownership adjudication** recognized joint title for married couples,
f. Compiled an extensive **socio-economic baseline survey** that will eventually facilitate an analysis of the downstream impact of land titling on families with disproportionate numbers of female heads-of-household and amputees;

g. **Established guidelines** for previously undefined aspects of Cambodian land administration, including road allowances, water body set-backs, and the definition of forest boundaries; and
h. **Educated the local Cambodian population** on the benefits of land titling.
i. **Generated goodwill for Canada** with all levels of government, and the local population.

Demarcation team meeting with local villagers to determine property boundaries using orthophotos.

CHALLENGES

The practical challenges that we faced included the inaccessibility of the area, the poverty and lack of education of the population, and the complete lack of services available in the targeted villages. Sisophon, our field operations base, was a tortuous 8 hour drive from Phnom Penh. The villages selected are a further 2 hours north, on roads that are frequently impassable during the rainy season.

To overcome these difficulties we rented a building near the target villages, to provide food and accommodation for our field staff. Our field teams used motorbikes to travel to inaccessible villages and fields. We provided our staff with distinctive uniforms, achieving the dual purposes of instilling pride in the work and gaining the recognition and respect of the villagers. We conducted frequent public information meetings in each village, often attended by our Canadian specialists, to provide education on the significance of land tenure and encourage cooperation with our staff.

The project was carried out with commonly available equipment, technology and software that is easily accessible and reasonably priced. Even with its modest resources, Cambodia will be able to proceed with new projects using the staff we have trained and the equipment we have donated. Nevertheless, the project was state-of-the-art in its execution, and employed numerous unique and innovative techniques to overcome the challenges we faced, including:

a. **Satellite Imagery:** In South East Asia it is notoriously difficult to obtain the clear aerial photography essential for accurate land titling. In Western Cambodia, the window of opportunity each year is confined to the early morning hours of December to April on

days when there has been sufficient wind to clear the area of the haze of stubble-burning. For a single project, in a remote location, it is prohibitively expensive to mobilise the specialised plane and camera, and keep them on standby. But until recently there was no choice. Then in 2001 the QuickBird satellite was launched, offering imagery with a pixel size of 60 centimetres, a vast improvement over previously available imagery, and suitable for identifying ground features such as fence lines. Although this technology had not been tested for land titling applications, we made the decision to use it for the project. This meant applying procedures to rectify digital image distortions, particularly in the village centres. The result was a resounding success.

Quickbird Satellite Imagery

b. **Landmine Contamination:** No-one before had documented the techniques to safely carry out property surveys and demarcation in landmine contaminated areas. Geospatial had previously mapped areas of known and suspected landmine contamination throughout Cambodia using methodical interview and verification techniques, recording areas using GPS. We enhanced this database by identifying uncultivated areas on the satellite images, recording landmine incident locations, and seeking out villagers that had knowledge of the landmine laying areas. Our trained staff, wearing protective clothing, then used metal detectors to establish safe pathways, marked with red spray paint, to each property corner, and arrange for detonation of any unexploded munitions encountered. These techniques, and the staff trained in their application, will be invaluable to Cambodia as it embarks on the long task of reclaiming thousands of square kilometres of alienated farmland.

Detecting mine and UXO

Prodding suspected point activities, the mine detector man is following safety procedures

DEMOLITION OF MINES FOUND BY HALO TRUST

Safety briefing for Demarcation Officers

Safety briefing for Parcel owner and Neighbors

c. **Automatic Data Transfer:** Because all previous land registration records had been destroyed, the system being built to replace it is still in its infancy. Before our project, property title data entry was carried out twice – once for the cadastral database, and once

for the land title. We designed an interactive database that automatically generates land titles from the cadastral database. Systems elsewhere in the world already do this, but the intricacies of the Khmer script required us to design a unique application that will serve Cambodia on future projects.

SUSTAINABILITY OF BENEFITS ON POPULATION AND POVERTY

The establishment of land titles has provided the owners with security of tenure. Knowing that their land cannot be taken from them, property owners will be more likely to invest their time and money in constructing irrigation/drainage, buildings, wells, and sanitary facilities, and planting sustainable crops (astonishingly, although Cambodia appears to be blanketed in rice fields, it is a net importer of rice). Certainty of land title will enable the owners to raise capital through mortgages and agricultural credit at more reasonable rates (annual interest rates for credit in Banteay Mean Chey currently range from 36% to 60%), and invest in the equipment needed to engage in commercial activity. Even a modest increase in the level of economic activity will dramatically improve the lives of these villagers, and enable them to become better custodians of the land.

Security of tenure will also encourage landmine action organizations to engage in systematic landmine clearing of the rice fields (to date they have focused on village centers). Many landmine-contaminated areas have been abandoned by the original owners, and either claimed by military personnel or occupied by those so desperately poor that they will risk cultivating contaminated fields. In the absence of land title, the landmine action organizations have been hesitant to clear these areas, knowing that disputes will often result. Our project has removed this concern.

By the time the project was completed, 28 men and women had been trained and practiced in the procedures of land titling in the difficult circumstances prevailing in much of Cambodia, using commonly available equipment. We had also created an increased appreciation of the benefits of land titling in the national and provincial governments and among the local population.

GENDER EQUALITY

We actively recruited women for training and employment on this project. We overcame cultural resistance to ultimately include 4 women employed in field and office aspects of the work. We also took pains to ensure the equal participation of women in all community meetings, ceremonies, and landowner interviews. As a result the majority of land titles that we created were in joint ownership between man and wife, and many of the remainder were in the names of single female heads of households.

Land Title Certificates Presentation

CONCLUSION

The project was highly successful in establishing an awareness of the problems associated with unexploded mines and ordenance, and provided a process to work in these difficut areas. Appropriate training enabled the work to be largely executed by the Cambodian staff, with Canadians providing the technology and the innovation described in this document. The problems encountered in Cambodia and the de-mining required, is common in many parts of the world. The situation will continue to delay development and conflict in land ownership recognition.

REFERENCES

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BIOGRAPHICAL NOTES

John Blair - Introductory Biography

John Blair is the Vice President of Geomatics with McElhanney Consulting Services Ltd., He has more than 30 years experience throughout Canada and internationally working on land information, cadastral land management, mapping, and marine survey applications. Project management has included negotiating and managing contracts for The World Bank, InterAmerican Development Bank, CIDA, engineering, resource and government clients in North and South America, South East Asia, Africa, Turkey and The Middle East.
Recently he was the project director for an 18 month Cadastral Land Management project in Cambodia undertaking property identification and issuing land titles, and project coordinator for a Land Management and titling program for the Canadian Red Cross in Indonesia. John is a professional land surveyor in Canada. Originally a graduate and commissioned land surveyor from Australia.

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