Land Management and Land Registration in the Tsunami Recovery Program, Aceh, Indonesia

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SUMMARY

The tsunami which struck on 26 December 2004 resulted in complete devastation of communities, villages and family units along the coastal regions of Northern Sumatra. The recovery and rebuilding of the property data bases and communities has provided an opportunity to realize the value of maintaining secure land records and integrating these with new technology for land management.
Large sections of coastal Sumatra were left with all structures and vegetation totally gone. Accessing archived satellite imagery and aerial photography provide the initial base for mapping, planning, surveying, engineering, and re-establishment of the cadastral framework.
Contributing to the recovery, the Canadian Red Cross and CIDA provided funds to assist in re-building. A condition established prior to new house construction was that land owners were to have secure registered title to the property they were claiming. This ensured no future claims could be made against an occupant once the new house was built.
A Canadian teams based in the Province of Aceh Indonesia, and working as part of the Canadian relief program, provided surveying, mapping, environmental and geotechnical services for infrastructure and community redevelopment.
Starting with pre-tsunami satellite imagery and paper records, ground features and old road alignments were identified and redevelopment conditions evaluated.
Community participation was incorporated for planning, property demarcation, ownership identification, adjudication, dispute resolution and reconstruction.
The property recovery program integrated consensus based upon community agreement of land claim boundaries and property corners placed by land claimants, archived imagery, and the remains of features identifiable on the ground. Field surveys recorded these boundary features and prepared compiled Cadastral Index Plans overlaying orthophotos .
The key community challenges were:

- many families were totally lost, and unable to make claims
- either husband or wife was lost, resulting in only one claimant
- husband and wife were lost, with children remaining to make a claim
- family relatives or friends making claims on behalf of children
- friends and relatives making claims for non-existent friends and relatives.
- creating compiled Cadastral Index Plans based on minimal historical data and peoples claims, often resulted in more claimants in a community than parcels recovered and compiled on the Cadastral Index Plans.

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INTRODUCTION

Security of land ownership in developing countries provides the base for the greatest source of personal wealth, enabling business development and personal security. Indonesia has slowly been initiating a registered land ownership program supported by the World Bank, creating data bases of formal and informal records of land parcels.
Land registration in Indonesia is coordinated through the National Land Agency (BPN). At the time of the tsunami there were minimal formal registered land titles in Aceh. Most titles were informally held, with records of cadastral base maps and files of ownership records in hard copy, held in the municipal and land records offices.

The tsunami resulted in many of the ownership and land title records to be totally lost, or severely water and mud damaged. The first efforts were made to slowly dry these records out and clean the mud off. Many records were totally lost, others partially or fully recovered. A sample of the wet records is shown in the photo.

The Province of Aceh does not have a survey network established to reference subdivision plans and individual parcels to, therefore land ownership is defined by the general boundaries concept, where property limits are based on occupation, and defined by physical features or limits such as fences, adjoining neighbors, riverbanks etc. The tsunami caused total and partial loss of parcel boundaries, erosion and inundation of land, destroyed land documents, loss of land owners and family members. As part of the tsunami recovery program, a Manual of Land Registration was developed by the Indonesian government, in support of the Reconstruction Of Aceh Land Administration System (RALAS) providing guidelines for the recovery of the cadastral fabric, ownership identification and parcel registration.

The principles of the program developed for recovery starts with the Community, and is driven by a bottom up approach. Aceh is a strict Muslim State, with their decisions directed by the Syariah Court, and the imam meunasah (head) of the individual villages. The claim to land starts with the Community for recognition and confirmation of ownership. The Community provides adjudication, and working with surviving family members to recognize ownership where inheritance or guardianship is necessary, and mitigating wrongful or illegal land grabbing. All citizens, male and female have the right to claim and own land.
The field program for land recovery is built on a systematic approach where all parcels in a village area are adjudicated simultaneously. The overall plan in Aceh is for the recovery of approximately 300,000 parcels of land in the tsunami affected areas to be officially registered with certificates of titles issued to owners, and a further 300,000 owners in surrounding areas.

FIELD OPERATIONS

The property boundary demarcation starts with high resolution geo-referenced pre-tsunami satellite imagery. Imagery was available prior to December 26 2004, the day the tsunami struck. On December 28 2004 Quickbird acquired new imagery. The Quickbird imagery has a 0.6m pixel resolution providing working maps showing details to approximately 1:2,500 scale.

Area of the capital, Banda Aceh prior to the tsunami.

Same area of the capital, Banda Aceh after the tsunami

BPN PROPERTY PROCESSING

The principle of a community driven process leads to a bottom-up approach to reach agreement on issues. With the assistance of local community heads working to lead and resolve issues, agreements on boundary identification and inheritance rights are mutually agreed upon.

The community approach addresses the following key issues for villagers:

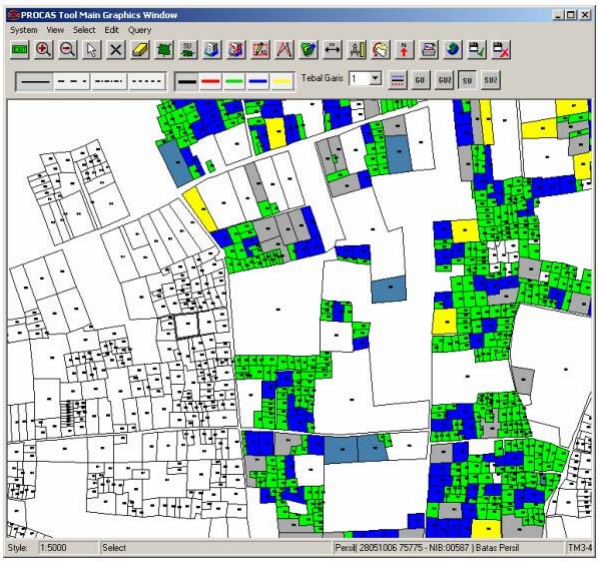
- They are familiar with local inhabitants and occupation, and their claim to ownership
- Most knowledgeable on buildings and boundary locations prior to the tsunami
- Provides a means of contributing to community redevelopment
- Mitigates wrongful and illegal claims
- Community peer pressure encourages fairness
- Are knowledgeable on family members & children

Using the high resolution accurate pre-tsunami satellite imagery, and working with Communities, key physical features, road alignments, and where visible individual property boundaries are identified and demarcated. Complications arise where roads, buildings and all features have all been destroyed. This is the task of the cadastral surveyor to bring his skills in to property boundary re-establishment. Starting with as little as basic road alignments, sketch maps, and community input, a cadastral fabric is re-built.

Drainage Canals and remaining street infrastructure provide a base for Re-establishing street alignments in the city and built-up urban areas.

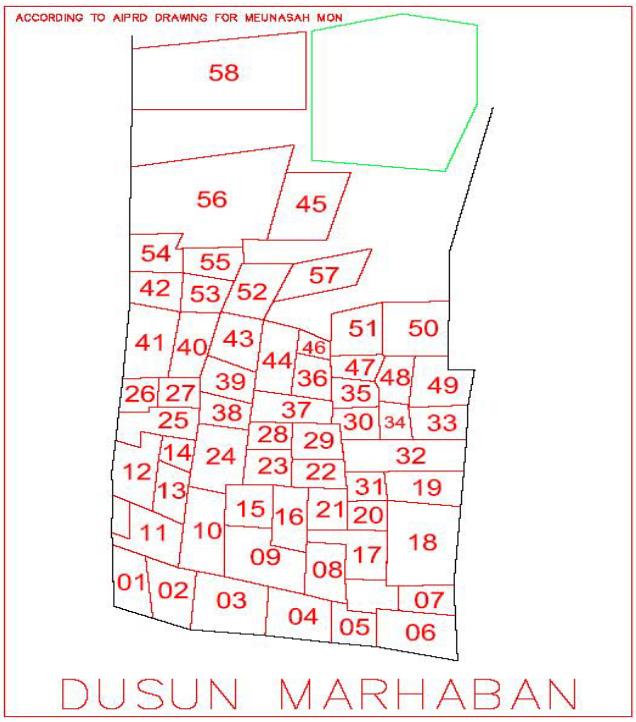
Remaining building foundations provide recovery of house and property corners.

Immediate costal areas and further inland where there was minimal infrastructure, often only the foundation of buildings remain for reference.



Municipal land records and property base maps provide a cadastral fabric. Based on scaled dimensions property boundaries could be recovered and confirmed.

Quickbird satellite imagery provided property outlines pre-tsunami, at approx. 1:2,500 scale.



Where limited map data was available, the cadastral framework was rebuilt starting with the geo-referenced satellite imagery. Working with the community and land claimants, and using identifiable remaining features such as canals and house foundations, property boundaries were re-constructed, and a Compiled Cadastral Index Plan prepared.

The property recovery program integrates consensus based upon community agreement of land claim boundaries and property corners placed by land claimants, and field surveys, to prepare compiled Cadastral Index Plans.

The challenges occur with the following:

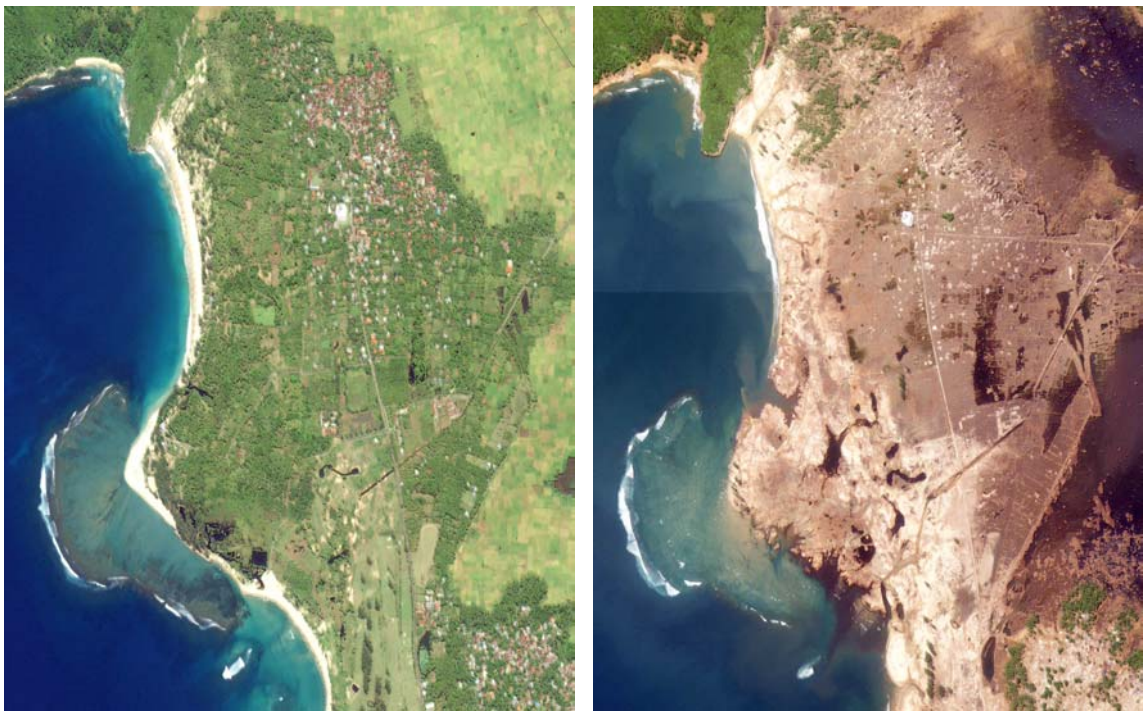
- many families were totally lost, and unable to make claims
- either husband or wife was lost
- husband and wife were lost, with children remaining
- family relatives or friends making claims on behalf of children
- friends and relatives making claims for non-existent friends and relatives.
- Creating a compiled Cadastral Index Plan where there were more claimants than parcels of land.

The Composite Index Plans of the cadastral boundaries, cross reference to recorded ownership claimants and orthophoto / satellite image mapping, is presented in the community area for a 30 day Public Display period.
All interested parties are able to view the re-established property boundaries & names of those making claims. Any challenges to ownership and claims are made at this point. After the public display any dispute resolution is undertaken initially by the community, and referred to the provincial government level if satisfaction cannot be reached.

The dispute resolution process was set up with three stages of challenge and confirmation:
- village level resolution; regional level, local government; - Provincial level, courts

The field surveys and parcel boundaries are legal commitments, and are therefore confirmed by BPN, who have the final responsibility of validating boundary demarcation, owner records and confirmation for issuing title.

Following ownership identification and adjudication if necessary, certificates of title are issued.



Costal village in Aceh before and after the tsunami

COMMUNITY RELOCATION

Much of the coastal area was left inhabitable due to low lands being washed away, and retaining dykes being destroyed. In these cases complete new village locations were required to be planned and built. This process is still underway.

COMMUNITY PLANNING

Community participation again is a key component to establish a successful program of re-location and includes the following:

- Collect mapping and regional community data, and conduct preliminary meeting with village heads and key community leaders.
- Have an open village meeting to bring all participants into the planning process. A typical meeting would divide the villagers into a number of groups according to the principal economic activity that they are engaged in: e.g. the rice farming group, the livestock raising group, the traders, fisherman group, youth group, and womens

group. Each group conducts a small meeting to decide on the priority facilities and its location within the group. At the end, each group of participants presents its planning proposal to the villagers as a total group.

- A draft village plan detailing public community, residential and infrastructure requirements is prepared

SITE DEVELOPMENT

As part of the site development a preliminary engineering, environmental and geotechnical assessment is undertaken for the new location. Key issues addressed are water and sanitary servicing needs, environmental impact, slope stability and sub-surface soil conditions. The final work involves the survey of the roads and lots for subdivision development, and house constrction. The recovery for the people of Aceh has been a slow process, with many families still living in temporary housing.

REFERENCES

BPN: Badan Pertanhan Nasional (National Land Agency); Technical Manual of Land Registration in the Affected Tsunami Areas.

BIOGRAPHICAL NOTES

John Blair
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 is currently project coordinator for a Land Management and titling program for the Canadian Red Cross in Indonesia. John is a BCLS, CLS and ALS (ret). Originally a graduate and commissioned land surveyor from Australia.

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