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Local Characteristic Influence on Land Readjustment Project A Case Study of Banda Aceh

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Abstrak *Pada Sumatera bagian utara, gempa berkekuatan 9,3 skala Richter mengguncang Samudra Hindia dan provinsi paling barat Indonesia, Aceh pada 26 Desember 2004, yang menghantam daerah pesisir dengan gelombang tsunami setinggian 20 meter. Daerah terberat adalah pantai barat Aceh, khususnya dua kota pesisir Banda Aceh dan Meulaboh, di mana setidaknya 120.000 dan 25.000 orang meninggal. Di Kota Banda Aceh yang merupakan ibukota provinsi, area yang terkena dampak tsunami adalah sekitar 70 persen dari wilayah geografis Kota. Bencana tersebut telah menyebabkan tidak hanya hilangnya nyawa dan kerusakan infrastruktur tetapi juga kerusakan pada puluhan ribu tanda batas Parsil tanah dan hak milik. Rekonstruksi Parsil tanah sangat penting karena akan menjadi dasar untuk pekerjaan rekonstruksi, perencanaan tata ruang, kompensasi, dan pengembangan ekonomi jangka panjang; dan juga akan menciptakan keadilan sosial dan menjamin stabilitas sosial jangka panjang. Banda Aceh, dengan kerusakan 70 persen untuk Pasil tanah di daerah perkotaan dan pedesaan yang disebabkan oleh gempa bumi dan tsunami memiliki kesempatan untuk meningkatkan kualitas dan keberlanjutan kota dengan menggunakan metode Penyesuaian Parsil Tanah (Land Readjusment). Tujuan dari penelitian ini adalah untuk menguji pengaruh karakteristik lokal pada proyek Penyesuaian Parsil Tanah (Land Readjusment) percontohan di desa lambung, banda aceh pada Maret 2006.*

Kata kunci: *Tanah penyesuaian, Karakteristik lokal, Disaster Recovery, Pembangunan Perkotaan*

Abstrak *In northern part of Sumatra, a strong magnitude 9.3 Richter scale earthquake shook the Indian Ocean and westernmost province of Aceh in December 26th, 2004, which than hit the coastal areas with tsunami waves about 20 meter height. The severest hit was the western coast of Aceh, particularly the two coastal cities of Banda Aceh and Meulaboh, where at least some 120,000 and 25,000 persons died respectively. In Banda Aceh city which is the capital city of the province, the tsunami-affected area is about 70 percent of the district's geographic area. The disaster has caused not only to the loss of life and damage to infrastructure but also damage to the tens of thousands of land parcel boundary marks and property right. The reconstruction land parcel is very important because it will be the base for reconstruction work, spatial planning, compensation, and long-term economic development; and also will create social justice and ensure long-term social stability. Banda Aceh, with 70 percent damage to the land parcel in urban and rural areas caused by the earthquake and tsunami disaster has the opportunity to improve the quality and sustainability of the city by using the Land Readjustment method. The purpose of this study is to examine the local characteristic influence on the land Readjustment pilot project established in lambung village, banda aceh on march 2006.*

Keywords: *Land Readjustment, Local Characteristic, Disaster Recovery, Urban Development*

1. INTRODUCTION

On December 26th, 2004, a strong magnitude 9.3 Richter scale earthquake, with its epicentre in northern part of Sumatra, shook the Indian Ocean and Sumatra's northernmost province of Aceh and the islands of Simeulue. The powerful quake produced a movement along Sumatra's western fault line, [1]which than caused tsunami waves about 20 meter height, hitting the coastal areas of northern Indonesia. The disaster not only took about 160,000 lives but also caused 10,000 injury and trauma, and also caused major destruction along the affected areas. The severest hit was the western coast of Aceh, particularly the two coastal cities of Banda Aceh and Meulaboh, where at least some 120,000 and 25,000 persons died respectively. In Banda Aceh city, the tsunami-affected area is about 70 per cent of the district's geographic area (Abidin, Haroen, & Heryani, 2006). (see figure 1).

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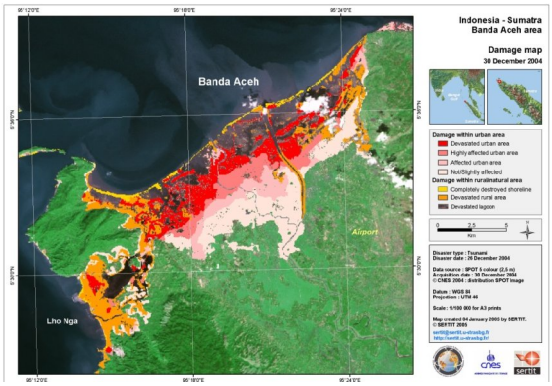

Figure 1. Banda Aceh area – Damage map (Source : SERTIT, http://sertit.u-strasbg.fr)

Land parcel reconstruction is very important because it will be the base for reconstruction work, spatial planning, compensation, and long-term economic development; and also will create social justice and ensure long-term social stability. There are approximately 300,000 land parcels have been affected by the tsunami, these comprise 170,000 urban land parcels and 130,000 rural land parcels (Abidin et al., 2006)

In recent decade, several methods were introduced into the international literatures that related to land management of urban and rural areas, one of the methods known as Land Readjustment (LR). LR has been practiced in many countries to achieve policy goals ranging from farmland consolidation to inner-city revitalization (Doebele 1982; Hong and Needham 2007). The method is legally established in Germany, France and, lately in Sweden. While in Asia, it is mainly used in Japan, South Korea, Taiwan and parts of India (Bombay region) and Australia in the region around Perth (Larsson, 1997).

The application of LR in Indonesia is considered in the middle stage of implementation since introduction in 1981. LR is well established in Indonesia as the Ministry of Agrarian Affairs/National Land Agency (BPN - Badan Pertanahan Nasional) has undertaken 102 LR projects in 25 provinces since 1981 (Archer, 1994).

Banda Aceh, with 70 per cent damage to the land parcel in urban and rural areas caused by the earthquake and tsunami disaster has the opportunity to improve the quality and sustainability of the city by using the Land Readjustment method. This study describe and discuss the local characteristic influence on Land Readjustment project on disaster effected area in Banda Aceh by investigating Land Readjustment (LR) pilot project established in Lambung village, Banda Aceh on March 2006.

2. LITERATURE

A. Banda Aceh Land Problem after Tsunami

There are several problems occur on the process of reconstruction on land parcel after the earthquake and tsunami disaster that have been taken to account, namely:

1. There are many physical evidence of land parcel boundaries that has been wiped away by the disaster. Many man-made and natural objects which actually can be used to identify these boundaries have also been destroyed or gone.
2. There are many land parcels along the coast has submergence due to tsunami inundation and land subsidence caused by the earthquake.
3. Ground displacement cause by earthquake and tsunami can affect the coordinates based parcel boundary. Meilano et al., 2005 says, horizontal and vertical displacement of ground surface was obtained from two GPS campaigns conducted in 1995/96 and 3-7 March 2005, the displacement can reach as much as 2.7 m at west coast of Banda Aceh.
4. The loss and damage of land books, cadastral maps and other land documents. BPN (Badan Pertanahan Nasional or the National Land Administration Agency of Indonesia) estimates that about 10% of land books were lost. However, the remaining 90% of land books were found in a critical condition.
5. Many owners or inheritors of land parcels are died or missing because of disaster.

This will complicate the certification of parcel boundaries process.

6. There are large number of parcels was affected by the earthquake and tsunami. There are approximately 300,000 land parcels have been affected by the tsunami, these comprise 170,000 urban land parcels and 130,000 rural land parcels (Abidin et al., 2006).
7. There are also false statements of land ownership made by some irresponsible peoples.

Responding to above problems, the Ministry of Agrarian Affairs/National Land Agency (BPN - Badan Pertanahan Nasional), the Multi Donor Fund (MDF) and managed by the World Bank, approve a US$28.5 million grant for a project called RALAS (Reconstruction of Aceh's Land Administration System). The project consists of the following components:

1. The reconstruction of property rights through 'Community Driven Adjudication' (CDA) and the issuance of land titles.
2. The reconstruction of the BPN institution in Aceh province.

According to MDF progress report, published in June 2006, 52,915 have been surveyed and 50,500 land titles were ready to be issued, but were waiting for a Governmental regulation.

B. Land Readjustment Objective and Characteristic

According to Larsson (1997), the general aim of Land Readjustment (LR) method is, through cooperation between landowners of an area of land, to adapt its subdivision and facilities to plans for new or more efficient use of an urban nature. Such kind of project has various objectives such as;

1. Urbanization of new areas
2. Conversion of previously urbanized areas
3. Integration of large facilities
4. Rehabilitation of disaster and war-damaged areas

Land readjustment characteristic as follows (Larsson, 1997);

1. It includes certain preemptory rules and therefore requires some kind of official sanction, in this respect, the actions area is delaminated.
2. The property owners in the area constitute a temporary association to carry out the process if the local authority is not willing to get involved
3. Land exchanges, equalization of the effects and communal facilities are important part of the readjustment process. the land needed for public facilities such as streets, parks and other spaces is provided by each landowners surrendering an equivalent portion of the area or value. In addition, the process is financed with further surrenders.
4. In principle, process must be completed without impairing the land titles or personal property rights of shareholders even if part of the land is reallocated.
5. The process is completed through a formal decision, after which the association is dissolved. After the completion of the project, landowners have the right to appeal.
6. Landowners also have the responsibility of further subdivision and sale of their land. This responsibility is sometimes left to the association.

C. Land Readjustment Process

By definition, LR is an instrument for which a pool of landowners of scattered and irregular land plots cooperates in a compulsory or voluntary partnership for land development or redevelopment of integrated planning, construction of roads and major infrastructure, subdivision of serviced land into urban plots and partial contribution of plots for project cost recovery. For urban planning, it is an approach by which local or central government could undertake the projects to promote rearrangement of land and property rights in urban-fringe areas instead of land expropriation with compensation. It is advantageous to private landowners who could enjoy newly developed public facilities at

existing location through partial land contribution instead of displacement.

The requirement for cooperative landowners is the partial contribution of approximately 30 percent of their land holdings for the provision of roads, parks or open space, and reserved land. The "reserved land" or "financial resource land" is captured through land valuation method estimating the sale of the reserved land to cover designated project costs. The development costs and benefits are shared among landowners for the voluntary LR scheme. The contribution ratio for landowner varies proportionally by plot which is calculated using land valuation of before- and after-LR project.

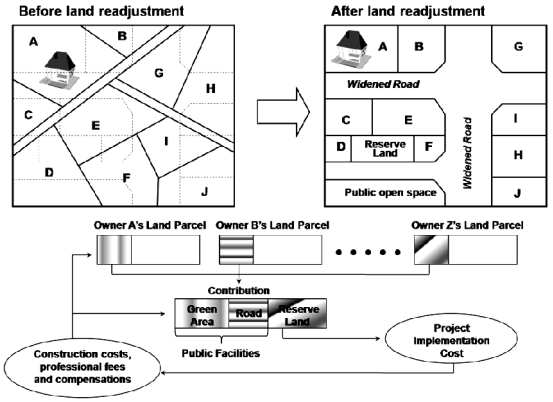

Figure 2. An illustration of the LR process (source: Montandon and de Souza, 2007).

The figure above illustrates the transformation of private land and land rights through the use of LR instrument. The process of transformation to newly serviced plots is called "re-plotting". The lower part of Figure 2 demonstrates land re-plotting and contribution portions of landowners. Through the re-plotting process, land area of each plot reduces as a result of partial land contribution (marked areas in Figure 2) to public facilities (roads, parks or open space), and reserved land. Each landowner remains his/her rights on the existing location. Land price, in turn, increases due to the improvement of the urban environment.

D. Land Readjustment in Indonesia

The application of LR in Indonesia is considered in the middle stage of implementation since introduction in 1980. LR is well established in Indonesia as the Ministry of Agrarian Affairs/National Land Agency (BPN - Badan Pertanahan Nasional) has undertaken 133 urban area LR projects in 25 provinces since 1981, comprising 53,485 participants, on a size of 8,412.75 Ha. Rural land readjustment covered 18 locations in 13 provinces, comprises 38,753 household, on a total size land of 40,212.43 Ha (Archer, 1994; National Land Agency BPN - Republic of Indonesia, 1995). A decree was, subsequently issued by BPN (No. 4/1991) giving general overviews on the implementing of Land Readjustment which was further broken down into protocol (No. 410-4245) giving direction and practicalities.

The objectives of Land Readjustment in Indonesia is to reform the present holding of lands so as to make it in accordance with General Planning of Regional Spatial Plan (*Rencana Umum Tata Ruang Wilayah-RUTRW*), and to optimize the use of lands within an orderly network of spatial planning to support the nation's development.

Within the framework of land policy, Land Readjustment in Indonesia is:

1. To reshape the existing physical condition of land holding and land use to be in accordance to RUTRW.
2. To acquire lands in support to development by means of creating Cost-Equivalent Lands (CEL) in undertaking of Land Readjustment.
3. To increase the efficiency and productivity of lands, and the quality of environment as well as the conserving of lands, through a consistent land use planning.
4. To mobilize the potential of society in support to national and BPN development.
5. To create legal certainty on the readjusted lands itself.

3. ANALYSIS

3.1 Research Methodology

In order to achieve the research objective of exploring the local characteristic influence on Land Readjustment (LR) project on disaster affected area in Banda Aceh, this study attempt to examine the LR pilot project established in Lambung village using several approaches to collect data.

Table 1. The Total household of Lambung village (Source: village authorities)

Neighborhood names in Lambung village, Banda Aceh	Number of household	Number of people	Number of household of permanent resident	Number of household of non-permanent resident
Dahlia neighborhood	60	128	27	33
Mawar neighborhood	69	134	20	49
Melati neighborhood	49	78	13	36
Seulanga neighborhood	70	110	28	42
Total	248	450	88	160

The primary data are obtained by surveying and collecting questionnaires to find out the effect of local characteristic on LR, villagers participation on the project and the process of establishment of property right after LR. Interviews were also conducted to several person who involve in the implementation of LR in Lambung village in order to obtain several information regarding LR scheme and method. The secondary data are obtained from several institutions and agencies concerned, such as National Land Agencies or *Badan Pertanahan Nasional* (BPN), National Statistical Agencies or *Badan Pusat Statistic* (BPS), National and Regional Development Agencies or *Badan Pembangunan Daerah* (BAPEDA), and village authorities offices.

The participants of this research are divided into two categories, first is the land owner or the permanent resident of Lambung village that who truly understand the process of Land Readjustment in the village and participate on the process and the second is the non-permanent resident or renter who experiencing the effect of LR in daily activities.

Lambung village has 4 neighbourhoods and it comprises 248 household with 450 people, which include 88 household of permanent resident and 160 household of non-permanent. (see table 1).

In this study, questionnaire was used. The questionnaire was similar to those used by (Sukolratanametee, 2007) that focus on land value on implementation of Land Readjustment in Bangkok. But for this research, the questionnaire has some modification to fit the current research situation and location. The questionnaire use 5 level of scale (Likert-type scale) including very disagree (1), disagree (2), neither disagree nor agree (3), agree (4) and very agree (5). The questionnaires were divided into four parts. Part (1) contains general information regarding the respondent, part (2) is about local characteristics of existing Land Holding, part (3) is about village land parcel and infrastructure, part (4) questions regarding the application of Land Readjustment in Lambung village. Then, the questionnaires data analyzed by using SPSS (Statistical Package for the Social Science).

4. RESULT

Based on the objective of the research, the study relates the finding to investigate Land Readjustment pilot project in Lambung village and examining the effect of local characteristic on Land Readjustment in order to find an ideal scheme that could encompass local characteristics in applying LR in disaster affected area.

The interview results indicate that the decision to cooperate with LR project is related to existing physical condition of the village, the support of landowner or the permanent resident of Lambung village was an attempt on post disaster recovery efforts, the village was overwhelmingly devastated by the disaster. The community desire to have a clean and tidy village and a village model that can reduce the impact of disasters in

the future and able to cope with the issues in the previews model of village before disaster.

Based on the survey and interview, the finding indicate that the fully funded LR project by MDF (Multi Donor Fund) and the support by BPN generally motivated and give confidence to the landowner in the joint effort of cooperative LR project. The MDF support on funding LR in Lambung village already secure the basic need on project implementation, There is no additional plan (selling reserved land) to fund the LR project in Lambung village and coupled with the donation from the community through *wakaf* (endowments) is greatly support the success of LR project. Many public infrastructures were built in *wakaf* land, such as mosque, escape building, cemetery and school. The finding also indicate that the landowners completely agreed on giving several meters (10-15 percent) of their land for the village development, in term of providing road access, open space and public utility. The social relationship is very strong in Lambung village, the big land plot owner agreed to donate several meters of their land for the small land plot owner.

The questionnaires result reveal that there was a significant relationship between the level of education, resident status, length of reside and family income with the understanding of land readjustment system and process. see table below.

Table 2. Spearman Rank Correlation Between Level Of Education With The Understanding of LR

			Education	understanding of LR system and it process
Spearman's rho	Education	Correlation Coefficient	1.000	.407**
		Sig. (2-tailed)	.	.000
		N	71	71
	understanding of LR system and it process	Correlation Coefficient	.407**	1.000
		Sig. (2-tailed)	.000	.
		N	71	71
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 3. Spearman rank correlation between the status of resident with the understanding of LR

			understanding of LR system and it process	Resident Status
Spearman's rho	understanding of LR system and it process	Correlation Coefficient	1.000	-.572**
		Sig. (2-tailed)	.	.000
		N	71	71
	Resident Status	Correlation Coefficient	-.572**	1.000
		Sig. (2-tailed)	.000	.
		N	71	71
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4. Spearman rank correlation between the length of reside in Lambung with the understanding of LR

			understanding of LR system and it process	Length of reside
Spearman's rho	understanding of LR system and it process	Correlation Coefficient	1.000	-.462**
		Sig. (2-tailed)	.	.000
		N	71	71
	Length of reside	Correlation Coefficient	-.462**	1.000
		Sig. (2-tailed)	.000	.
		N	71	71
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 5. spearman rank correlation between the family income and the understanding of LR

			understanding of LR system and it process	Family monthly Income
Spearman's rho	understanding of LR system and it process	Correlation Coefficient	1.000	.443**
		Sig. (2-tailed)	.	.000
		N	71	71
	Family monthly Income	Correlation Coefficient	.443**	1.000
		Sig. (2-tailed)	.000	.
		N	71	71
**. Correlation is significant at the 0.01 level (2-tailed).				

The result also indicated that the information on LR in Lambung village is not fully utilized; most of the respondent did not understand the system and process of land readjustment. The

community understanding on LR system and process have a significant influence on the outcome of LR project. These local characteristic of education level, resident status, length of reside and family income must be considered carefully in order to attain success in the LR project.

That why the landowner participation in this project is crucial. There was meeting that was held by the LR committee to inform the community on the progress of the LR project, as the result also indicate that there was a significant relationship between joining the LR meeting with the understanding of LR. But in some extent, information accessibility might not be consistently enough to facilitate recognition of land readjustment and gain wider public understanding.

In term of trust, village official and the LR committee, to some extent, have been excellent in gaining public trust dealing with the transfer of land right to the BPN (government). The findings olso indicate that there was a significant relationship between acceptances of location and reduced land plot with the trustworthy on calculation of land value by village official.

5. CONCLUSION

The local characteristic of Lambung village does influence the outcome of LR project. In the finding reveal that there was a significant relationship between the level of education, resident status, length of reside and family income with the understanding of LR project in Lambung village.

Several factors also influence the outcome of LR in Lambung village. The environment, the village that heavily destroyed by tsunami; 90% of infrastructures are destroyed, including land parcel. The leadership, most of village official survive the disaster, a strong and has influencing leadership is very importance in gaining public trust on the project. The result shows that 92% trust on calculation of land value. The fund, The situation at Aceh is unprecedented in history, not only because the disastrously effect of disaster, but also because the extremely well-funded (relief) program combine with an extremely large number of organizations who were involved in recovery process, more than 500 organizations from over 40 countries were involved and with more than USD 7 billion of aid.

REFERENCES

[1]. Abidin, H. Z., Haroen, T. S., & Heryani, E. (2006). Post-Tsunami Land Parcel Reconstruction in Aceh: Aspects , Status and Problems. *World Bank Co-operation - Disaster Management and Land Administration*, 1-13.

[2]. Archer, R. W. (1994). Urban land consolidation for metropolitan Jakarta expansion, 1990–2010. *Habitat International*, *18*(4), 37-52.

[3]. Hong, yu hung, Brain, I., & Anderson, john E. (2012). "Land Lines". Lincoln Institute of Land Policy, (January), 1-26.

[4]. Larsson, G. (1997). Land readjustment: A tool for urban development. *Habitat International*, *21*(2), 141-152.

[5]. Montandon, D. T., and de Souza, F. F. (2007) *Land readjustment and joint urban operations*. Sao Paulo, Romano Guerra Editora.

[6]. National Land Agency BPN - Republic of Indonesia. (1995). Study for the guiding principles: land tenure in development cooperation. *International Workshop on the Implementation of Rural Land Consolidation.*

[7]. Sukolratanametee, S. (2007). *Land Readjustment in Bangkok.*