

A Study of Life Recovery and Social Capital regarding Disaster Victims – A Case Study of Indian Ocean Tsunami and Central Java Earthquake Recovery –

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ABSTRACT

This paper aims to determine the critical factors associated with life recovery for disaster victims. Huge disasters undoubtedly impact and change lives. Life recovery is a subjective issue that differs from social values, living conditions, loss, etc. Although the importance of life recovery has been previously addressed, international assistance for victims in disaster-affected areas continues to be directed toward conventional needs such as housing reconstruction and livelihood development, often failing to fully consider life recovery. In this paper, we try to explore the critical factors associated with life recovery through a case study of Indonesia, which has recently experienced two massive natural disasters—the Indian Ocean Tsunami on December 26, 2004, and the Central Java Earthquake on May 27, 2006. By conducting field studies, we highlight and examine the critical factors relating to life recovery in Indonesia. Thereafter, we analyze the results according to the societal background of each community, especially as it relates to social capital.

Keyword: life recovery, social capital, disaster, Indian Ocean Tsunami, Central Java Earthquake

I. Introduction

The aim of this study is to determine the critical factors associated with life recovery for disaster victims in developing countries. There is no doubt that massive disasters influence and change lives. Some disaster victims may be able to return to a pre-disaster existence in a timely manner, but others are unable to do so due to loss of family, home, or health. Life recovery is a subjective issue that differing from social values, living conditions, loss, and so on.

In the present study, we try to identify the critical factors relating to life recovery by conducting a case

study in Indonesia, which has recently experienced two enormous natural disasters—the Indian Ocean Tsunami of December 26, 2004, and the Central Java Earthquake of May 27, 2006. Not only were huge amounts of international assistance provided in both cases, almost all donors came to believe that the challenges had been effectively addressed, many leaving the country assured that matters were under control.

A 2007 study conducted in both affected areas showed that the people in the Special Region of Nanggroe Aceh and Darussalam, suffering the Indian Ocean Tsunami, considered their lives recovered to only 40~50% of pre-disaster levels.^[1] Interestingly,

the people in the Special Region of Yogyakarta, beset by the Central Java Earthquake, considered their lives almost totally recovered. In reality, life recovery assistance, e.g., housing reconstruction and livelihood improvement, was similar in both areas. Although such assistance was considered essential for life recovery, other kinds of conventional support may have warranted closer examination.

Accordingly, the study on life recovery for the victims of the Kobe earthquake, which hit the city of Kobe, Japan, and its suburbs on January 17, 1995, provides a frame of reference for the present research. The study highlights the existence of seven critical factors, each relating to life recovery. On a long-term basis, the most important factor was characterized by the term “social ties,” specifically referring to human networks.

Generally, life has many distinct components. When life recovery is examined, a variety of factors has to be taken into account. Consequently, if adequate assistance is directed toward the most critical life recovery factor, the entire recovery process will advance more effectively.

II. Previous Studies on Life Recovery

A long-term detailed study on life recovery was conducted after the Kobe earthquake. In 1999, five years after the disaster, a series of grassroots, stakeholder assessment workshops was conducted by the Kobe City Research Committee on Disaster Recovery, with the participation of not only disaster victims, but academicians and local government officials as well, in order to identify life recovery determinants. Overall, 269 people participated in a total of 12 workshops, 1,623 opinion cards being collected in the process. The cards were carefully studied and classified into the following seven factors:^[2]

- a) Housing
- b) Social Ties
- c) Community Rebuilding
- d) Physical and Psychological Health
- e) Preparedness
- f) Economic and Financial Situation
- g) Relation to Government

Such factors were continuously examined during the 2001, 2003, and 2005 workshops.^[3] In particular, the most critical factor in the 1999 workshop was

“Housing” followed by “Community Rebuilding” and “Preparedness.” However, “Housing” declined its importance in the 2003 workshop, instead, “Social Ties” became the top priority, followed by “Community Rebuilding” and “Preparedness.”

The most important factor in the long run was “Social Ties,” being articulated in opinions such as the following: “I have been helped,” “Understanding and empathy through ties,” “New relationships emerged,” as well as “Self-governance and solidarity are key to developing closer ties.”

Tamura, using quantitative data, has also verified the results. Regarding social ties, the people who felt self-governed and expressed solidarity with others felt that they had recovered more fully.^[4]

Tatsuki has discussed these results in terms of damage alleviation and event evaluation.^[3] In the short term, issues such as housing and income, as well as physical and psychological health management, support life recovery, directly alleviating damages. On the other hand, social ties facilitate event evaluation, i.e., establishing the meaning of the experience. In turn, event evaluation is influenced by social ties via community rebuilding empowerment and/or opportunity enrichment, both due to encountering significant person capable of providing assistance.

The importance of social ties was reflected in the recommendations by the Discussion on Kobe City’s Disaster Recovery and Activation as “the creation of social capital through horizontal and open networks.”^[5]

Such social capital is associated with theories relating to human networks. Putman has defined social capital as “connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them.”^[6] Although there are various social networks, those in which members are connected by means of strong ties and the norms of reciprocity arise only by means of bonding social capital, not only benefiting members but also leading to higher functional levels. In particular, members of such networks are often homogeneous and know each other very well, information flow being exclusively confined to members. Further, bonding social capital is more easily observed in rural areas where neighbors are together in daily life, not only attending the same school but often working and spending holidays together as well.

On the other hand, in urban areas, people generally live in the suburbs and commute by train or car, significantly broadening their living boundaries. Naturally, if people spend more time in the office, they will likely communicate less with neighbors. However, they belong to offices, schools, hobby clubs, sports clubs, and other such communities and thus, they easily establish social bridges. A study by Wellman has resulted in an analysis of social network characteristics in urban areas through a case study in East York, Toronto, Canada. ^[7] East Yorkers established social networks with their close family (children, parents, brothers, etc), despite some residents living far from their family members. Regardless of the close family ties, it was difficult to request assistance during emergencies due to the distance between family members. Moreover, requesting help was problematic if there had been no contact had existed among residents.

For the sake of comparison, Kobe is also urban area with almost 1.5 million residents. Contact among neighbors was relatively weak. As the damage due to the quake was enormous, all transportation ceased, communication and lifelines were cut off. Further, governmental and close-tie assistance was not immediately accessible. People had to survive by means of individual effort and skill, stirring them to realize the importance of neighborly mutual help. In fact, social networks among neighbors functioned as important social capital for the life recovery of disaster victims.

The critical life recovery factors model associated with Kobe earthquake victims is considered to be applicable to other areas as it had been applied in several life recovery studies including a study on the September 11 attack on the World Trade Center, New York. ^[8]

III. Methods

1. Study Areas

In order to identify the critical factors associated with life recovery in developing countries, we focused on Indonesia, because it has recently experienced two massive natural disasters—the Indian Ocean Tsunami of December 26, 2004, and the Central Java Earthquake of May 27, 2006.

In Indonesia, we selected two different areas and situations. As for the area, we focused on the city of Banda Aceh and its suburbs (hereafter, Aceh), which

was heavily damaged by the Indian Ocean Tsunami, and the cities in the Special Region of Yogyakarta (hereafter Yogyakarta), which was damaged by the Central Java Earthquake. In each area, we selected places where people were reconstructing their houses in the same place as before the disaster, Meurduati in Aceh and Patalan in Yogyakarta and newly constructed relocated villages where they have to reconstruct their life in a completely different situation, Tzu-Chi in Aceh and New Nglepen in Yogyakarta.



Photo 1 Meurduati



Photo 2 Tzu-Chi

Meurduati, located in the Kuta Raja district of Aceh, was one of the areas heavily impacted by the devastating tsunami (photo 1). Almost 75% of the 20,217 people living in the district were killed or ended up missing. Housing reconstruction was conducted based on pre-disaster housing criteria for residents as follows: household members losing their houses and land, owners of irreparable houses in need of new construction, tenants losing rented accommodation, and squatters losing temporary shelter. ^[9] Those losing houses received 36 m² sized houses from international donors such as the UNDP and ADB, regardless of previous housing conditions. In general, not only pre- but some post-disaster residents were involved in the process, including some newcomers and relatives of the pre-disaster residents.

For those who had completely lost their houses and land or even rented accommodation, newly relocated villages were constructed in Neuheun, Aceh Besar Province, 14 km north of Aceh (photo 2). Although the Indonesian government had started development in the mountainous area, several donor organizations completed the residential development. Specifically, Buda Tzu-Chi represented one of the largest villages developed by the NGO, the Tzu-Chi Foundation. They built 3,700 houses in the area with wide roads and public facilities including mosques. Houses were constructed according to a complex style (connected semi-detached), each house with two

bedrooms and a living room. As housing applications were sorted by foundation or government representatives, determining who was to live in which house, people from different locales in Aceh gathered accordingly.



Photo 3 Patalan



Photo 4 New Nglepen

Patalan, in the Jetis district of Bantul Province, Yogyakarta, was heavily impacted by the earthquake of May 27, 2006 (photo 3). Of 40 families living in the area, 10 people were killed and all houses totally destroyed. Houses were constructed primarily by funds from the Rehabilitation and Reconstruction Program (RR), a joint program of the Indonesian government, the World Bank, and the Java Reconstruction Fund (JRF) as well as several other donors funded by the EU and additional countries. Each community was able to determine for themselves from which assistance to choose based on discussion during community committee meetings, *pokmas*.

Houses in Nglepen, located in the Prambanan district of Sleman Province, completely collapsed due to earthquake landslides. Three months after the earthquake, the government announced that the village was not safe enough to inhabit, based on the results of a geological survey. Residents had two alternatives: to prepare houses for habitation on their own, or to apply for housing reconstruction funds. Although the government had not determined housing reconstruction fund amounts at the time, NGO assistance could be utilized for habitation purposes. With regard to the villagers of Nglepen, 34 families agreed to receive dome-style houses provided by an American NGO. Others refused the dome houses citing their small size and unfamiliar shape. The new village, New Nglepen, was completed at the end of 2006 (photo 4). Specifically, 71 houses were constructed, all dome houses, 11-12 houses in each unit, or *blok*. Residents from Nglepen and the villages of Bantuk, Sengir, and Delapan moved to New Nglepen. Despite people living in the area being satisfied with their situation, current

problems relating to land ownership persisted. In particular, although residents could use the land without payment for three years, they had to decide whether to rent or purchase their homes after this time.

2. Study Methods

In order to implement a framework in which to conduct a study, we focused on critical life recovery factors related to the Kobe earthquake. Initially, we verified the validity of such factors in relation to Indonesia. The pilot study, based on seven critical life recovery factors, was conducted in the newly constructed, relocated village of Neuhuen, Aceh Besar Province, similar to the research area in population distribution and residential setting. The researcher interviewed 11 people, taking into consideration age, gender and village position. As a result, the following critical issues were illuminated.

Firstly, the accepted definition of community, at times encompassing neighbors, school friends, religious groups, political groups, etc., varied among subjects. Further, the existence of the local residential and administrative system, *desa*, has influenced the views of communities in Indonesia. *Desa* was originally a Java Island tradition, but with the enactment of Law No.5, 1979, it spread throughout the country as the main local administrative system. In particular, *desa*-based activity was quite robust in Yogyakarta, located in the center of Java Island.

In Aceh, a new regulation called *gampong*, enacted to strengthen such a traditional administrative system, took effect in 2003.^[10] Further, there was also a religious unit, *mukim*, consisting of three to four small prayer houses called *meunasah*, which included the people living in the society adjacent to the *meunasah*. Although there are no discernable boundaries exist between the *mukim* and *gampong*, many traditional activities were conducted in the *mukim*.^[11] Finally, in the pilot area, an additional residential unit, *blok*, has been constructed. Around 12 families live in each *blok*, the leaders of which are selected by the residents.

Considering these varieties, we decided to focus on the community as a basis for daily life. During the interviews, all the subjects referred to contact with neighbors. Some complained that their pre-disaster relationships with neighbors were stronger than their current relationships. Specifically, there used to be

many activities among neighbors, like marriage or funeral ceremonies, festivals, mutual collaboration activities (*gotong rhyong*) such as cleaning, or activities related to the Women's Family Welfare Movement (*Pembinaan Kesejahteraan Keluarga, PKK*). These results revealed that networks between neighbors were critical for life recovery.

Secondly, the concept of "social ties" is interpreted differently by Japanese and Indonesians. Although the Japanese mentioned relations with neighbors, the Indonesians talked in terms of who had provided support for life recovery and what support had been provided.

Finally, religion, which had not emerged in previous studies, appeared as an important factor in our research. During interviews, many people mentioned religion as having supported recovery in a variety of ways, providing meaning to their experiences. Aceh is a region with a strong Islamic influence, and religion is a part of the people's lives.

The results of the pilot study were discussed with professors at Syiah Kuala University in Aceh with the following eight factors selected for closer examination. Indonesian translations have been included.

- a) Housing (*Perumahan*)
- b) Social Ties (*Hubungan sosial*)
- c) Neighbors (*Tetangga*)
- d) Physical and Psychological Health (*Trauma fisik atau mental*)
- e) Preparedness (*Persiapan untuk bencana*)
- f) Economic and Financial Situation (*Situasi ekonomi dan keuangan*)
- g) Relation to Government (*Hubungan dengan pemerintah*)
- h) Religion (*Agama*)

Based on these factors, we decided to conduct the field study using a semi-structured interview method, emphasizing the content of each interview. Each interview started with a question related to recovery feelings: "To what extent do you feel your life has recovered? (1 signifying the least and 10, the most recovered)" Referring to the eight factors, the interviewer then asked in detail what had influenced their feelings associated with life recovery. If more factors were involved, the interviewer would ask more detailed questions. At the end of the interview, the interviewees were requested to rate recovery levels for each factor (1 representing the lowest and 10, the

highest score) as well as rating the importance of each of the eight factors (1 standing for the most important and 8, the least).

The field study was conducted from December 15, 2008 to January 5, 2009 by Indonesian researchers. Each researcher used questionnaires, filling them out by him/herself, and all interviews were recorded. Researchers interviewed 10 people according to each highlighted area. Researchers visited each house and initially asked about the interviewees' disaster experience, age, gender, profession, etc., followed by the primary interview with the person agreeing to be interviewed. Each interview took approximately 1~2 hours.

IV. RESULTS

A summary of the interview is shown in Table 1. The most discussed factor throughout the interviews was "neighbors."

In Yogyakarta, people mentioned many neighborly activities such as community meetings (*pokmas*), community works (*gotong rhyong*), and fund raising (*arisan*). Such activities had been generally conducted under the *desa* (Patalan) or *blok* (New Nglepen) system with the participation of the residents. Conversely, in Aceh, activities between neighbors were less active in the *desa* system and more active in *meunasah*. In Meurduati, after Saturday's final prayer at the *meunasah*, people gathered and discussed the activities in which they could participate, such as *gotong rhyong*, events, and sports. In fact, they performed the activities together the following day. In the relocated area of Tzu-Chi, many people complained that they had no contact with their neighbors because they had been sorted and then directed where to live without their input. They also mentioned that each resident's degree of damage was so different that they were hesitant to talk to each other. Further, all of them mentioned that a number of activities such as *gotong rhyong* had existed at their pre-tsunami residences.

Discrepancies regarding activities and neighborly communication were also reflected during prioritization of the eight critical factors associated with life recovery (Table 2). People in Yogyakarta considered that "neighbors" or "social ties" were important for life recovery, whereas people in Tzu-chi evaluated these as being less important.

TABLE I. Summary of Interview

Factors	Summary of Interview
Housing	People talked about how they had their houses reconstructed or satisfaction with their new houses. Residents in Tzu-Chi(Aceh) were discontent with their houses because of their quality. Residents in New Nglepen(Yogyakarta) were satisfied with their houses regardless of their dome-styled shape.
Social ties	Family, friends or neighbors had supported their life after disaster, providing food, clothes, places to stay (mainly in Aceh), encouragements etc.
Neighbors	Relations with neighbors were relatively good in Yogyakarta, but there were no relations at all in Tzu-Chi. Activities with neighbors such as <i>gotong rhyong</i> , <i>arisan</i> , community meetings, marriage or funeral celemories were very active in Yogyakarta. There was no activity with neighbors in Tzu-Chi.
Physic./Psycho. Health	Many people were still afraid of big sounds and psychologically traumatized in both areas.
Preparedness	"Run" was a common answer in Aceh. "Evacuate the house immediately" was common answer in Yogyakarta. Many people in Yogyakarta attended disaster preparedness training conducted by NGOs after the disaster.
Economic situation	Daily expenses increased in Tzu-Chi, as many of them commute to Banda Aceh City. Income increased in New Nglepen as tourists purchased from their stands; at the same time, their expenditure also increased.
Relation to gov.	In Aceh, all people mentioned that they had no specific relation with the government. Many people received support from the goveremnt in the recovery process in Yogyakarta.
Religion	Religion was a very important factor especially in Aceh; "Religion supported my life recovery," "Disaster was a trial from God," and "Religion is our identity."

The result also showed that “religion” appeared as the top priority in Aceh and Patalan, Yogyakarta. In the interview, many people mentioned the importance of religion during recovery as follows: “For me, religion was important in recovering from the disaster. The disaster was a trial (*cobaan*) from God.” (Tzu-Chi, female, 31) “Religion played a big role in the rehabilitation process, besides working hard.” (Patalan, female, 30)

TABLE II. Priorities in Critical Life Recovery Factors

Priority	Aceh(n=20)		Yogyakarta(n=20)	
	Meurduati (n=10)	Tzu -Chi (relocated) (n=10)	Patalan (n=10)	New Nglepen (relocated) (n=10)
1	Religion	Religion	Religion	Neighbors
2	Housing	Economic situation	Social ties	Social ties
3	Social ties	Housing	Neighbors	Religion
4	Physic./Psync. health	Social ties	Economic situation	Housing
5	Economic situation	Relation to gov.	Housing	Economic situation
6	Neighbors	Neighbors	Physic./Psync. health	Relation to gov.
7	Relation to gov.	Physic./Psync. health	Relation to gov.	Physic./Psync. health
8	Preparedness	Preparedness	Preparedness	Preparedness

Figure 1 shows the results of the inquiry, according to the designated areas, into victims’ feelings regarding recovery based on the question, “To what extent do you feel your life has recovered?” Numbers

on the vertical axes represent levels of recovery, 1 standing for “not recovered” and 10, for “totally recovered.”

The result shows that people in the relocated village of New Nglepen, Yogyakarta considered their lives almost recovered, whereas people in Tzu-Chi of Aceh felt lower degree of recovery. Many factors might have influenced the results: differences in the degree of hazards, damage, quality of reconstructed houses, social background, etc. Moreover, factors such as “neighbors” or “social ties” were closely linked to human networks.

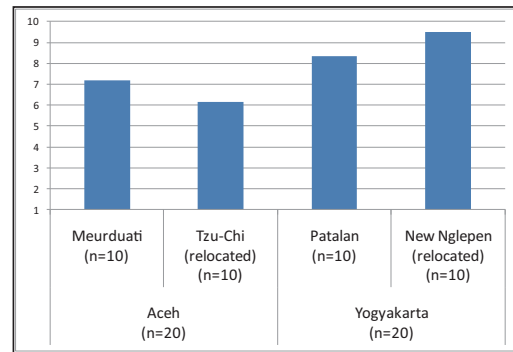


FIGURE I. Recovery Feelings of Victims

V. Discussion

In this section, we focus on specific human networks prevalent within the research area as it was considered to be one of the most important factors influencing life recovery, and discuss the results from the perspective of social capital theory, i.e., considering human networks as capital.

The study revealed that communities that identified with such human networks varied greatly. In Yogyakarta, people primarily discussed and conducted activities such as *pokmas*, *gotong rhyong*, and *arisan* in *desa*. *Desa* existed in Aceh as well, but as an administrative unit. In addition, people conducted similar activities to those in Yogyakarta in the *meunasah*. In Tzu-Chi, no such networks existed among neighbors, which resulted in resident complaints.

Within networks, norms of reciprocity were observed in *arisan*, which is the traditional fund-raising system of local communities in Java Island. In Nglepen and Pantul, Yogyakarta, once or twice a month, according to the Java calendar, people gathered in members’ houses living in same *desa* to

discuss community activities like *gotong rihoyong* or how to care for community property. At the end of each meeting, residents conducted *arisan*, each member contributing 10,000~25,000 rupiah (approximately US\$1~2.5). Then a lottery was held, the total amount being offered to the winner who, in turn, hosts the subsequent meeting. The winnings were used primarily to organize meetings or to fund additional local activities. People in Aceh also gathered for *arisan*, however, the meetings were held among friends and the corresponding funds were used to purchase private goods. There were no obligations imposed for joining *arisan*, nor was punishment exacted for those running away with funds. Thus, reciprocity and trustworthiness among members were requisites for participating in *arisan*. The case in Yogyakarta revealed that norms of reciprocity were in operation among members of *desa*, and with *arisan* activities leading to network strengthening.

The decision-making process involved in housing reconstruction in Meurduati, Aceh, revealed a discernible village network structure. In particular, village leaders played a key role in the entire decision-making process. The housing committee (*kavling*) was organized by members who had in turn been selected by village leaders. Detailed negotiations for housing reconstruction were executed by means of discussion between village leaders and donor institutions. Thus, networks were enacted vertically beginning with village leaders. In Yogyakarta, residents organized community committees (*pokmas*) to discuss housing reconstruction, all decisions being made based on these discussions. Further, representatives from each family, regardless of gender or age, participated in *pokmas*. Thus, networks among community members were enacted horizontally, strongly uniting members.

Social capital varied by area. In Yogyakarta, the community was structured around the residential *desa*. Members were strongly tied to each other through community activities, and horizontal participation defined operation of the network. The same kind of network was observed in the relocated village of New Nglepen. Further, in terms of residential-based communities, Yogyakarta was distinguished by its high degree of social capital. In Aceh, social capital flourished in the *meunasah*, functioning as not only a religious center but also a community center facilitating various activities. In the relocated village,

there was a mosque but no place such as a *meunasah* operated as a kind of community center, rendering the creation of human networks difficult.

Such results showed that human networks were multi-functional despite some functions being indiscernible. For example, the *meunasah* not only facilitated religious-based activities, it also functioned as a place to promote mutual collaboration among neighbors, ethical education for children, etc. Such benefits, derived from the existence of the *meunasah*, might affect life recovery in many ways. To come to the point, the existence of rich social capital could empower life recovery.

VI. Recommendation for Life Recovery Assistance

In the present study, we discussed what constitutes life recovery regarding disaster victims using a critical life recovery factor model based on research from the Kobe earthquake. The corresponding results highlighted eight critical factors including religion, which had not been previously emerged. Of the eight factors, network between neighbors was considered the most critical.

When we looked in detail at the human networks surveyed, we realized social capital varied according to each particular area. Life recovery assistance from donors, who did not take such differences into account, brought about the segmentation of existing social networks, rendering life recovery difficult. Thus, effective life recovery assistance, which enriches existing social capital, was manifestly required.

Conversely, social capital was not just embedded in daily life; it was obscured by it. In order to provide effective assistance for social capital, a better understanding of local human relations, as well as the establishment of mutual trust and collaboration between donors and recipients, is essential.

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