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Community Based Post Disaster Housing Reconstruction: Indonesian Perspective

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Abstract

Located at a juncture of four tectonic plate has made Indonesia highly prone to earthquake disasters. The giant earthquake magnitude 9.1 Richter scale which triggered tsunami on 26 December 2004 in Aceh and followed by Nias earthquake magnitude 8.6 Richter scale on 28 March 2005 have created massive damage to infrastructure at these two neighbourhood area. The reconstruction dealt with the construction of 120,000 new houses and rehabilitation of 85,000 damaged houses. This large scale housing reconstruction programme has been realised to be the most challenging and problematic activities during the disaster recovery phase. One procurement method that can be adopted on housing reconstruction is the community based approach. In this method, community is not only consulted as the beneficiaries, but has the power to control the construction phase. In this context, this paper highlights the importance of community based approach on post disaster housing reconstruction. It will present the trends of natural disasters in recent years, describe the rationale of the needs of community based approach, outline the advantages and analyse the problem it faces. A detailed literature review on Aceh and Nias in Indonesia reconstruction including literature on best practices was carried out in order to achieve these objectives. It was found that a community based approach could create better housing construction compare to contractor based approach in terms of quality, accountability and beneficiaries satisfaction. This method also could build the social capital of the survivors.

Keywords: disaster, earthquake, housing reconstruction, community based

1. Introduction

Indian ocean tsunami on 24 December 2004 which triggered by giant earthquake in Aceh, Indonesia, on 8.9 Richter scale has been found to be one of the deadliest disasters in the world. It hit 12 nations and Indonesia suffered the greatest. In Aceh, this disaster took 167.000 people dead or missing, displaced 500.000 people, damaged 110.000 houses and 2.000 schools, and 3.000 km road become impassable (BRR, 2005). Three months later, on the adjacent area another big earthquake on 8.6 Richter scale occurred in Nias, and left 900 people dead and destroyed 13500 houses (BRR and partners, 2006).

The massive reconstruction of houses in Aceh and Nias, was not an easy task for governments, donors, international agencies and NGOs which are involved in the reconstruction phase. ACARP (2007) states that the permanent housing has been found to be the most problematic task of the entire tsunami recovery effort, and the most challenging sector for international NGOs working in Indonesia (World Vision, 2008). However, there are a lot of things can be learned from this experience, especially in the housing reconstruction sector.

This paper investigates the detail problem during Aceh and Nias reconstruction and highlight the importance of community based approach on post disaster housing reconstruction. It will also describe the rationale of the needs of community based approach, outline the advantages and analyse the problem it faces. A detailed literature review on Aceh and Nias housing reconstruction including literature on best practices from other countries was carried out in order to achieve these objectives.

The next section presents disaster trend in the world, its impact and disaster management cycle.

2. Disaster Trends

According to United Nations International Strategy for Disaster Reduction (UN-ISDR, 2009) disaster is a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. Community is the most important word on this definition. If the event does not affect the community that it can not be categorized as a disaster. For example, if landslide occurs in area which is inhabited, then this event can not be counted as a disaster. Therefore, every effort in recovery or reconstruction process in order to bring back community into their normal life should benefit the community. This principle must be put on the first consideration.

Disaster can be categorized into 3 types (Shaluf, 2008), natural disasters which resulted from natural forces, man-made disasters which resulted from human decisions, and hybrid disasters which resulted from both natural and man-made causes. Natural disaster can be divided into 5 sub-groups which in turn cover 12 disaster types and more than 30 sub-types (Figure 1) (Rodriguez, et. al., 2009). The occurrence of natural disaster is based on the convergence of two factors, hazard and vulnerability (Guha-Sapir et al., 2004). Hazard factor is based on the geological, meteorological or ecological

characteristic of certain area, while the vulnerability factor can be classified into four types, physical, social, economic and environmental.

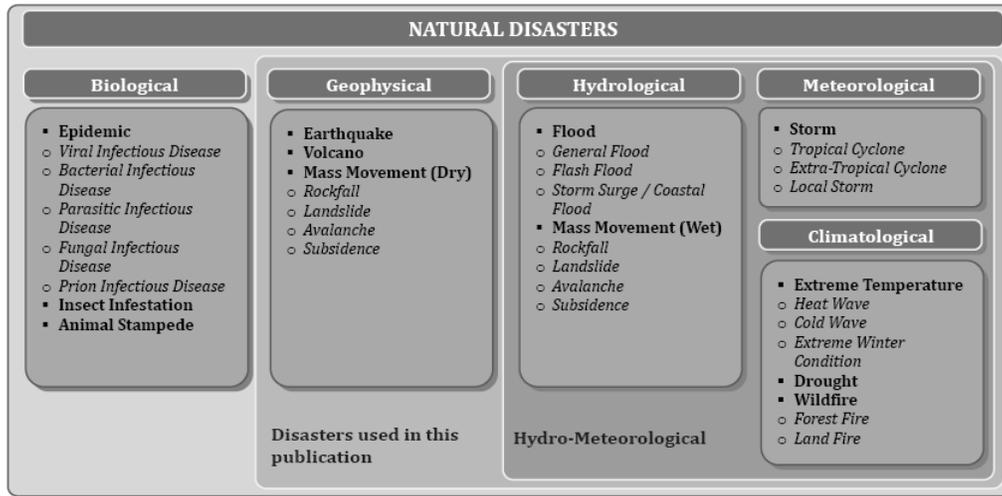


Figure 1: Natural disaster classification (Rodríguez, et. al., 2009)

Over the past 20 years, Rodríguez et al. (2009) reports that the number of reported natural disasters has increased dramatically, from 172 in 1989 to 354 in 2008. In 2008, they found more than 235.000 people were killed, 214 million people were affected and economic costs were over 190 billion US\$. Figure 2 shows the natural disaster trends from 1989 to 2008.

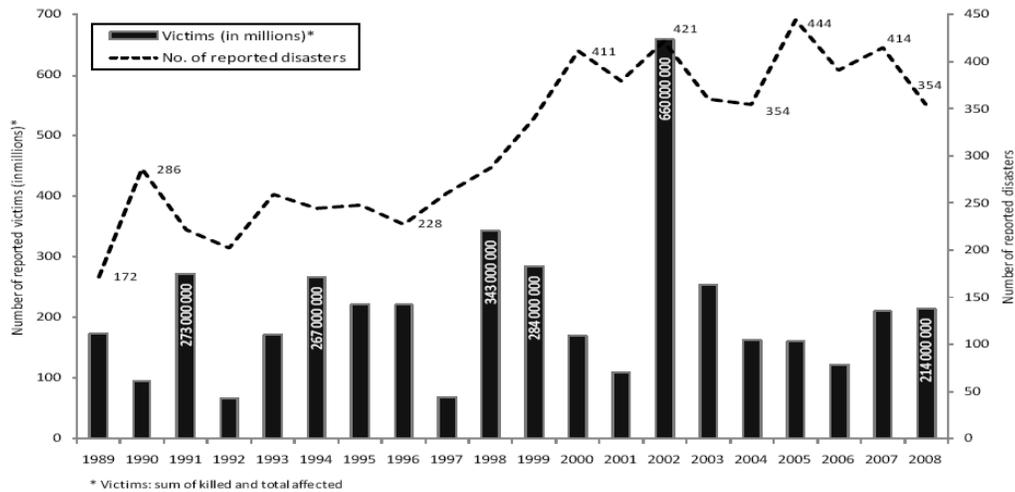


Figure 2: Natural disaster trends in occurrence and victims (Rodríguez et al.,2009).

In Indonesia, there was also an upward trend in disaster occurrences in the last decade. Figure 3 presents total number of disasters and people killed per year in Indonesia from 1999-2008 based on DIBI (Indonesian Disaster Data and Information). It can be seen that disasters occurrences increased slightly from 101 in 1999 to 190 in 2002. Then, it rose dramatically to 895 occurrences in 2004 before

slightly decreased in 2005 and soared again to 1302 occurrences in 2008. The highest number of fatalities was took place in 2004, which mainly contributed by the Aceh boxing day tsunami.

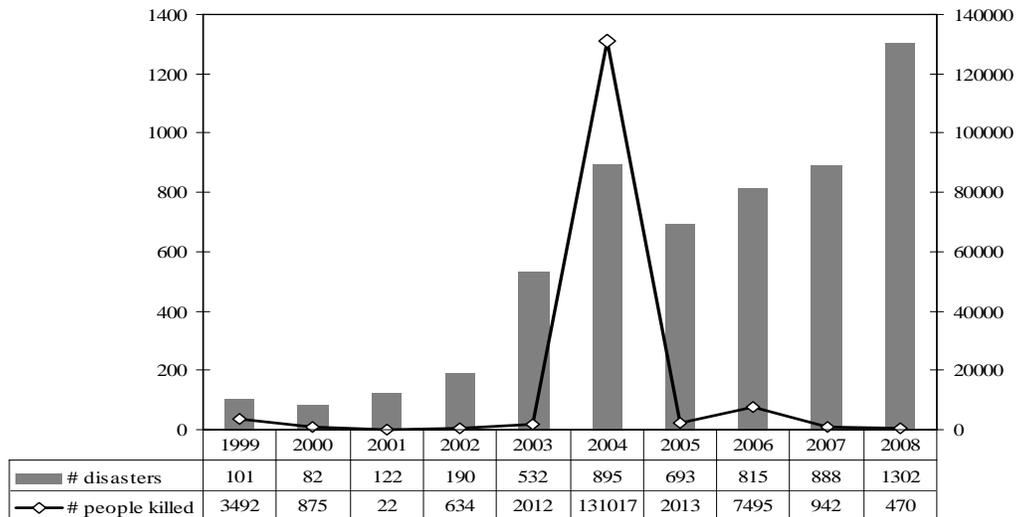


Figure 3: Number of disaster occurrences and people killed in Indonesia from 1999-2008 (source: after DIBI, 2009)

The distribution of type of natural disaster in Indonesia between 2000-2009 is shown in Table 1. It can be seen that the most common natural disaster in Indonesia is flood (39.86%), followed by earthquake (24.32%) and landslide (17.57%). Although earthquake only contributed 24.32% to the total events, it took 97.20 % of total killed in Indonesia.

Table 1: Number of Disaster in Indonesia by types of Disaster from 2000-2009 (source: after EM-DAT, 2009).

Disaster Category	Disaster Subgroup	Disaster Type	Number of Events	% from Total Events	Number of People Killed	% from Total Killed	
Natural Disaster	Geophysical	Earthquake (seismic activity)	36	24.32%	173596	97.20%	
		Volcano	10	6.76%	2	0.00%	
	Meteorological	Storm	2	1.35%	4	0.00%	
	Hydrological	Flood	59	39.86%	2784	1.56%	
		Mass movement wet (Landslide)	26	17.57%	1012	0.57%	
	Climatological	Drought	1	0.68%	0	0.00%	
		Wildfire	4	2.70%	0	0.00%	
	Biological	Epidemic	10	6.76%	1190	0.67%	
	Total			148	100.00%	178588	100.00%

2.1 Increasing of occurrences of earthquakes

Table 3 presents the trends of earthquake bigger than 6 Richter scale all over the world between 1980 and September 2009. It can be seen that the number of big earthquake rose significantly during the last three decades, especially 8.0-9.9 earthquake magnitude. This group has been triple from 4 occurrences in 1990-1999 to 13 occurrences on last decade. Indonesia also experiences these phenomena. Number of big earthquakes has increased significantly since the Aceh giant earthquake in 2004. It was recorded that after the 2004 earthquake, there has been 32 big earthquakes compare to just only 15 earthquakes between 1992 and 2004 (USGS, 2009).

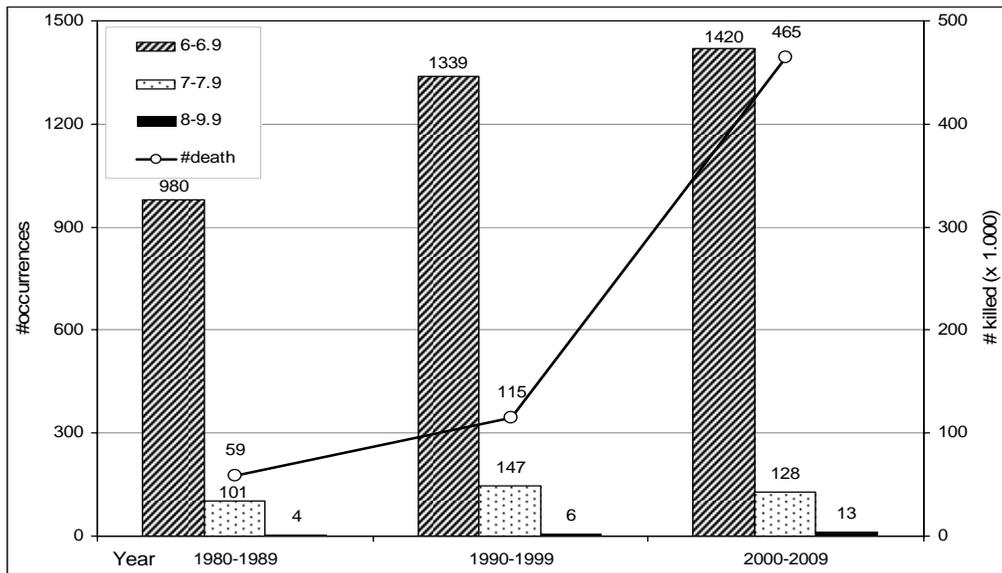


Figure 4: Earthquake occurrence in the world and estimated death (source: after USGS, 2009)

If we look at the top ten fatalities on natural disaster in Indonesia in the last thirty years, earthquake is the major threads (Table 2). Top six of the top ten fatalities come from earthquake and five of them happened after 2004. The severity of earthquake is not just in terms of fatalities, but it also took significant numbers of damage to houses and economic losses. Aceh earthquake in 2004 and Nias earthquake in 2005 has made 120.000 new houses are needed by people and economic losses were US\$ 4.1 billion. Yogyakarta (Central Java) 6.3 Richter scale earthquake in 27 May 2006 destroyed 157.000 houses and estimated economic losses was US\$ 3.1 billion (BAPPENAS et al., 2006). The most recent two earthquakes in Tasikmalaya (7.0 Richter scale), West Java, in 2 September 2009 damaged 65.700 houses and took 81 lives, and in Padang (7.6 Richter scale), West Sumatera, in 30 September 2009 killed 1117 people and left 135.000 houses heavily damaged. With the increasing of earthquake occurrences and considering their affect to people and houses, then it becomes clear, a good strategy in housing reconstruction has to be developed. One options of procurement method to do a housing reconstruction is by doing a community based housing reconstruction.

Table 2: Top 10 natural disaster in Indonesia sorted by numbers of killed from 1980-2009 (source EMDAT, 2009)

No.	Disaster	Date	People Killed
1	Earthquake (seismic activity)	26-Dec-04	165,708
2	Earthquake (seismic activity)	27-May-06	5,778
3	Earthquake (seismic activity)	12-Dec-92	2,500
4	Earthquake (seismic activity)	30-Sep-09	1,117
5	Earthquake (seismic activity)	28-Mar-05	915
6	Earthquake (seismic activity)	17-Jul-06	802
7	Epidemic	13-May-98	777
8	Drought	Sep-97	672
9	Epidemic	Jan-98	672
10	Epidemic	01-Jan-04	658

2.2 Impact of disasters on Developing Countries

Natural disaster has greater impact on poorer countries (Guha-Sapir et al., 2004, UN-ISDR, 2007). It hit poor communities hardest, both in terms of numbers immediately affected, and through prolonged suffering during reconstruction (Lloyd-Jones, 2006). Among type of natural disaster, earthquake occurrences is the least predictable. According to Guha-Sapir, et al. (2004) the interval between an earthquake threat and occurrence is the briefest. Partly due to this, earthquakes lead the scale of immediate mortality and structural destruction.

Mortality rates and level of destruction on houses by earthquake are vary from country to country, especially when comparing between the developed and the developing countries. This is primarily because of the differences in building codes, styles and the density of settlements. Guha-Sapir et al. (2004) illustrates that the strong tremors of the recent Bam earthquake in Iran destroyed close to 90% of the city's buildings, killing 26,796 people. Four days earlier, an earthquake of the same intensity, 6.6 on the Richter scale, struck the city of San Simeon in California. This earthquake left two dead and 40 buildings damaged.

2.3 Disaster management cycle

Scholars have developed different model and stages on disaster management cycle (Alexander, 2002, Amin et al., 2008, Shaluf, 2008, Lettieri, et. al., 2009). However, it generally consists of four main stages: mitigation, preparedness, response and recovery or reconstruction. According to Lettieri, et. al. (2009), there are three different temporal (and logical) stages of disaster management, pre-crisis is the period that goes before the occurrence of a disaster, crisis is the aftermath of the disaster and post-crisis is the period between the fading of crisis and the return to a normal condition. Based on this, we can develop a disaster management cycle as seen on Figure 5.

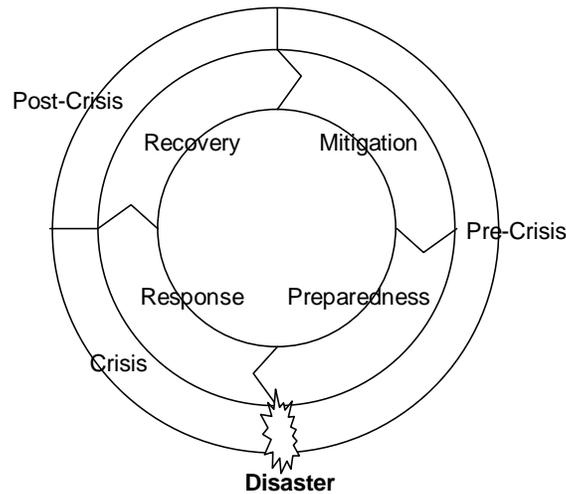


Figure 5: Disaster management cycle

Although disaster management can be grouped into 4 main stages, it is not a step by step approach, it could be an overlap among stages. FEMA (2006) cited Shaluf (2008) states that disaster management cycle is an open-ended process, they can be operative concurrently, because those stages are interrelated, they are not independent with one stopping and the next following. This implies that the long time planning do not have to wait for disaster take place or after the crises ended. Llyod-Jones (2006) states the planning for medium and long-term recovery can occur before and after a natural disaster. However, its implementation is not easy as it requires inter-disciplinary strategies, tools and approaches (Haigh and Dilanthi, 2010).

It is a fact that disaster brings a lot of negative impact to community. However, it also brings positive aspect. Disaster can be shown as an opportunity to build a better condition than the past. Labadie (2008) states that recovery and reconstruction efforts can help to mitigate possible future disaster effects by making the community more sustainable and more survivable. Hence, the policies on reconstruction have to be developed towards this goal and taken by all those involved in reconstruction.

The next section shows the reconstruction problem in Aceh and Nias.

3. Reconstruction problem

Different models of housing reconstruction strategies after earthquake disasters have been implemented around the world. Hayles (2010) suggests that it must find a balance between affordability, technical feasibility and quality of life. In Indonesia, considering the scale of destruction in Aceh and Nias after earthquake and tsunami, in 2005, Government of Indonesia established the Reconstruction and Rehabilitation Agency of Aceh and Nias (BRR). This agency, established by

Presidential decree, was tasked to restore livelihoods and infrastructure and strengthen communities in Aceh and Nias by directing a coordinated, community-driven reconstruction and development program (BRR, 2006). From a total of 120,000 houses, BRR has a target to construct 48,000 houses and responsible for coordinating the construction of 72,000 units built by NGOs and international agencies (BRR, 2007). During Aceh and Nias reconstruction, generally there are two procurement methods adopted, contractor based approach and community based approach. However, even though Government of Indonesia had appointed BRR to speed up the reconstruction phase, the housing reconstruction was facing a lot of problems.

UNHCR (2007) reports that the permanent shelter operation in Aceh experienced a lot of problems and delivery has been far lower from the original targets. BRR (2007) admits that the target to construct 120,000 houses on the half of term of its assignment has not been achieved. As per 31 March 2006 only 41,730 houses have been constructed, rose to 57,000 units at the end 2006 and as per April 2007 the number reached almost 65,000 units.

The delay on housing delivery is caused by many factors. It cause by shortage of human resources, logistical problems, bureaucratic and institutional problems, and difficulties in coordinating the multitudes of organizations (Vebry et al, 2007), land acquisition problems, particularly for the relocation villages (ACARP, 2007), and lack of road access (OXFAM , 2006).

BRR (2007) has understood that it was not easy to keep all housing beneficiaries fully and equally satisfied. It has been realised that some housing construction implementing agencies have their individual construction standard leading to a coordination problem. Due to the lack of uniform standards, the housing construction programme is imbalance either in the completion or quality aspects. According to BRR (2006), in general, the low contractor capacity and poor supervision has led to poor construction quality. However, low contractor capacity can not be seen as the only factor to be blamed. In 2006, Greenomics Indonesia quantitatively assessed the constraints on the Aceh reconstruction based on performance of all parties involved in the reconstruction process, BRR, the central government, international organisation, and the Aceh administration. It reveals that the level of constraints originating from BRR took first place at 31,43%, followed by central government, international organisation and Aceh local government at 28,57%, 22,86% and 17,14% respectively (Greenomics, 2006). These results imply that the reconstruction problems also arise from the executing agency, government organisations and also international organisations.

The reconstruction of Aceh and Nias involved more than 100 organisations. Vebry et al (2007) states that many NGO's active in Aceh were originally humanitarian organizations without any relevant experience in housing reconstruction. Lured by huge donations, hundreds of NGOs jumped into the reconstruction process without any supporting background, knowledge and experience in post-disaster housing reconstruction and rehabilitation, and many of them did it for the first time (Dercon and Kusumawijaya, 2007 and Vebry et al, 2007). Dercon and Kusumawijaya (2007) adds that many organisations, especially the smaller ones, started building without a clear overall concept. They worked in the limelight and often failed. In the best of cases, they then dropped out, halted or stopped their programmes. Other postponed their start-up endlessly and the worst cases they built many bad houses and had to acknowledge costly defeats.

ACARP (2007) finds that the most common complaint on the reconstruction has been over delays in housing delivery, followed by issues of quality and design, often worsen by poor coordination and poor communication between the housing providers and intended beneficiaries. In few communities, families have refused to move into their new houses because they believe they were promised superior models, or because they find the design unacceptable.

In 2005, BRR encouraged Universitas Syiah Kuala (UNSYIAH), the Banda Aceh based State University, to provide 3rd party monitoring and evaluation on housing reconstruction. The survey which conducted from 2005 until 2006 monitored settlement recovery of 805 homes of about 61 organizations in 161 locations. It uses 3 key indicators to benchmark the success of each project, they are construction quality index (0 to 4), satisfactory index (-9 to 9), and accountability index (0 to 10). The accountability index and satisfaction index are based on the beneficiaries opinion of their benefactor, whereas the construction quality is measured through direct on-site observation with a building inspector, architect and civil engineers, that refer and comply to the Aceh Building Code standard. All results were made public in full. The average result was construction quality index was 2,58, satisfaction index was 1,2 and accountability index was 6,0 (UNSYIAH and UN-HABITAT, 2006).

Looking at those results, it becomes clear that the Aceh reconstruction has faced serious problem in construction quality, satisfaction and accountability. The most poignant was the satisfaction index. Since the satisfactory index is closely related to the community participation, it means that the reconstruction fails to meet the beneficiaries needs, which also means less participation of community.

Having discussed about the reconstruction problems, the following section presents the meaning of community and the success evidence of community based post disaster housing reconstruction.

4. Community based reconstruction

4.1 Meaning of community

The word 'Community' has different meanings and people define it in different ways. Hillery (1955) cited Kumar (2005) states that ninety-four different definitions of community in the scientific literature had been found. All definitions used some combination of space, people and social interactions. McMillan & Chavis's definition is the most influential among theories of psychological sense of community and is the starting point for most of the recent research on psychological sense of community (Wright-House, 2009). According to McMillan and Chavis (1986) community is a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together. They states that there are four elements of sense of community, membership, influence, integration and fulfilment of needs, and shared emotional connection.

The other term of community which proposed by Abarquez and Murshed (2004) states that it can be used to refer to groupings that are both affected by and can assist in the mitigation of hazards and reduction of vulnerabilities. Hence, in the context of disaster risk management, Abarquez and Murshed (2004) defines community as a group that may share one or more things in common such as living in the same environment, similar disaster risk exposure, or having been affected by a disaster. Common problems, concerns and hopes regarding disaster risks may also be shared.

4.2 Community participation

Chambers (1983) in Kumar (2005) states that it was primarily in 1980s with the emergence of participatory methods, that the focus on community started gaining importance. The popularity of community participation is evident from the proliferation of participatory projects since 1980s onwards. However, it was ironical as Midgley et al. (1986) in Kumar (2005), pointed out that even though it was central to the issue of participatory development, the concept of community was poorly defined. Kumar (2005) adds that community participation projects are also often found to be vague, whether the community is meant to be a means or end to the development programme. It was also easier said rather than implemented (Davidson et al., 2007).

To explain the level of participation of community, Arnstein's theory could be referred to. Arnstein (1969) created eight levels of citizen participation which called 'A Ladder of Citizen Participation'. The ladder consists of eight rungs. The bottom rungs of the ladder are rung 1 (Manipulation) and 2 (Therapy). These two rungs describe levels of nonparticipation where power holders have power to educate or cure the participants. Rungs 3 (Informing), 4 (Consultation) and 5 (Placation) progress to levels of tokenism where citizens may indeed hear, be heard or give advice. Further up the ladder are levels of citizen power, rungs 6 (Partnership) that enables them to negotiate and (7) Delegated Power and (8) Citizen Control where citizens obtain the majority of decision-making seats, or full managerial power.

The Arnstein's model was later modified by Choguill (1996) to fit into underdeveloped countries. Choguill (1996) classifies a ladder of community participation into neglect, rejection, manipulation and support. Later on, Davidson et al. (2007) combines these two theories to suit into community participation in housing reconstruction project (Figure 6). It can be seen that the level of control of community reduces from the top ladder to the bottom ladder. If the level of participation goes to the bottom rung of the ladder, community has little or no power to control or manage the reconstruction. In this case, they may be consulted about what their needs and expectations with no assurance that these concerns will be taken into account, or merely informed about the shape the housing project will take or even manipulated into taking part in the project (Davidson et al., 2007).

At the top ladder, empowerment and collaboration can offer communities to have a control on the housing reconstruction project. These two levels should be the minimum level where housing reconstruction program could be called 'Community Based' or 'Community Driven' approach. In practical, beneficiaries can act as the owner, as the supervisor or even as the contractor of their own housing reconstruction project.

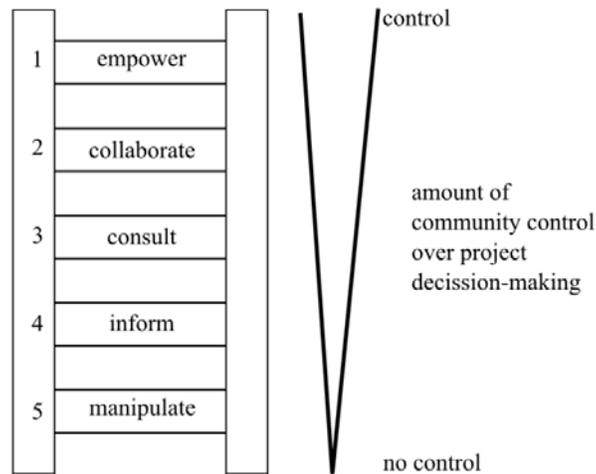


Figure 6: Ladder of community participation (Davidson et. al., 2007)

4.3 Success stories

It has been stated before that post disaster housing reconstruction in Aceh has face a lot problems, a delay in project delivery, poor quality, low satisfaction, low accountability, and less community participation. However there are some good practices that can be learned. The community based housing reconstruction has proven to be a better way in reconstruction compare to contractor based approach. Dercon and Kusumawijaya (2007) divided the findings of from third party monitoring survey on Aceh housing reconstruction by UNSYIAH (UNSYIAH and UN-HABITAT, 2006) into community organization program and contractor-built program and finds that the quality, satisfaction and accountability index of community participation was superior than contractor based approach (Table 3).

Table 3: Housing reconstruction index in Aceh (source Dercon and Kusumawijaya, 2007)

<i>Organisations</i>	<i>Construction Quality</i> (0 to 4)	<i>Satisfaction Score</i> (-9 to 9)	<i>Accountability Score</i> (0 to 10)
<i>All organizations in 2006</i>	2,58	1,2	6,0
<i>All community organizations program</i>	2,67	2,1	6,7
<i>All contractor-built program</i>	2,55	0,8	5,9

With respect to high construction quality, satisfaction and accountability, the housing delivery using community based approach is also faster than contractor based approach. ACARP (2007) reveals that few housing projects which involved homeowners in the construction process have been completed more quickly, with far fewer problems, than the majority of projects that took a turnkey approach. Moreover, Dercon and Kusumawijaya (2007) also states that in Aceh reconstruction the community

based approach has proven to be faster and to deliver results of higher quality and satisfaction than other reconstruction methods. MDF (2008) states that the community driven approach has proven an efficient means not only to rebuild houses but also to create a sense of ownership and pride among beneficiaries. The spirit in which the community-based approach was applied has resulted in a high level of beneficiary satisfaction.

In other country, Srilanka, a comparative study of Donor Driven vs Owner Driven Programme (ODP) in housing reconstruction after tsunami 2004 which done by Ratnayake and Rameezdeen (2008) finds that beneficiaries in owner driven programme (ODP) is more satisfied than the beneficiaries in donor driven housing programme. In ODP beneficiaries involved throughout inception design to construction stage of the reconstruction. Other study by Lyons (2009) also concludes that the Owner-driven Program (ODP) in Sri Lanka performed better than the Donor Assisted Program. The ODP produced more houses, more quickly, of better construction quality, and at less cost. Space standards were generally better, and the designs, layouts, and locations were more acceptable to beneficiaries.

The housing reconstruction after Bam earthquake 2003 in Iran which took 30,000 lives, also adopted community participation method. Fallahi 2007 states that the key policy is where community active participation in the process of designing, planning and constructing units was strongly encouraged. Householders were given the ability to choose their own plans and layouts and act as the supervisors of their own projects, thus paving the way to establish a line of cooperation between designers and contractors. This approach also ensured that government loans resulted in the desired houses being built for the people (Fallahi, 2007). Moreover, Fallahi (2007) states there were two important factors contributing to the success of the Bam reconstruction program, that are the financial and construction material aid from the Housing Foundation, and the survivors' participation in the process of rebuilding. Active survivor participation in housing leads to operational cost and time reduction, and can reduce the negative psychological impact of earthquakes. Lawther (2009) also states that community participation in housing reconstruction after tsunami 2004 in Maldives is the key success of reconstruction programme.

In Gujarat India, following 2001 earthquake, Barenstein (2008) finds that owner-driven housing reconstruction was the most cost-effective, fastest and the most satisfactory approach according to the beneficiaries. The same studies also found that contractor based approach was infamous, where only 22.8 percent of the beneficiaries were satisfied. A small scale community participation in Duzne, Turkey after 1999 earthquake also shows its advantages compare to the majority of non community based approach (Arslan and Unlu, 2006).

From the above case studies of post disaster housing reconstruction projects, it can be seen that the community based approach could achieved high satisfaction among beneficiaries. Other benefit of it is that it can reduce construction cost compare to contractor based approach, faster time and better quality. Different model of community participation with different role has been adopted. The community could act as owner, consultant or even contractor of their own projects.

The rebuilding of houses for beneficiaries should not just attempt to build the house physically, other important objective is to build the social capital of the people. By involving community in

reconstruction process, it can help survival to relief the trauma, stress, depression and hopeless feeling that they suffered.

Based on their experience in Aceh, Dercon and Kusumawijaya (2007) states that community based housing reconstruction get high achievement because it respond quickly to urgent needs and thus can achieve relief at an early stage, mobilizes solidarity among the members of a community and therefore creates social capital, allows women to be a part of the reconstruction work, strengthens local institutions, achieves good planning which leads to high quality results, limit disaster vulnerability, and it can be done with good monitoring and thus achieve transparent accountability.

On addition, community based approach ensures the fund goes to the right person, to the one who really need it. This approach can reduce marginalisation among beneficiaries because every member of the community can participate in the reconstruction process. People also know what the best for them. They know best what their needs, their problem and how to solve it. In many countries, there are still many cultural considerations that have to be considered in building a house. It is vary from one country to another country, or even in one area to the adjacent area. Only community know such of thing. By working and planning together in the community based reconstruction, it can strengthen the community. It can increase the sense of belonging, togetherness, and make the beneficiaries more unite so they can come together face the problem that might arise.

Although the community based approach has get high achievement, of course its implementation was not always smooth and without problems. UNSYIAH 3rd party monitoring (UNSHIAH and UN-HABITAT, 2006) result shows that a few numbers of housing reconstruction which based on community approach could not achieved high mark on quality, satisfaction and accountability. According to Dercon and Kusumawijaya (2007), there are three important lessons from Aceh that need to be learned in implementing community based reconstruction: a need for a standard definition for the terms participation and community based as this can make confusion, implementer should provide enough time for the participatory process as giving short time can lead to failure, and as well as the shortage of facilitators. The lack of understanding on community participation also happened in housing reconstruction in Sirinkoy, Turkey, after earthquake in 1999 (Ganapati and Ganapati, 2009). There are also a doubt the success of community based post disaster reconstruction method if applied in the large scale (Dercon and Kusumawijaya, 2007).

5. Conclusion

The occurrence of large earthquakes has increased significantly in the last three decades. It has taken so many lives and damaged millions of houses. As a result a good procurement method in rebuilding houses in order to ensure the satisfaction of beneficiaries has to be established.

To be named as a community based housing reconstruction program, the level of participation of community should be at the level of collaborate or empower. The community has power to control the reconstruction project as they can act as an owner, a supervisor or even a contractor for their own houses reconstruction.

Community based approach has proven to be a better way on providing housing construction for the survivors. Compare to the contractor based approach it achieve high satisfaction among beneficiaries, delivering high quality project, faster, less problem, more cost effective, and the most important that contractor based approach could not provide is it helps community to gain back their confidence and ease the trauma they suffered. It builds the social capital of the survivor.

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