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Community-Based Disaster Management in Kuala Lumpur

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Abstract

The goal of this study is to explore how flood-affected communities in Kuala Lumpur use their community-based organisation (CBO) in dealing with their vulnerability. Data was collected for this study through interviews, survey questionnaire, document analysis and field observation. The study finds CBO has a crucial responsibility in managing disasters affecting their communities especially in ensuring community members are ready for any eventualities and reducing their vulnerabilities. This research also found that the urban poor are the group that is hit the worst in most flooding incidents and the experience that they shared have shaped how they lead their lives.

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1. Introduction

The rapid urbanization process in many developing countries have exacerbated processes of environmental degradation and contributed to disasters such as flooding. Malaysia is facing the same problem with many of its river-lined communities. This is due to the brisk growth of its many urban centres resulting in environmental problems together with built-up of impermeable surface areas for residential, commercial and industrial purposes. The indiscriminate dumping of garbage into rivers made the matter worse as it affects their handling capacity. Malaysia must address this issue immediately as 75 percent of its population expects to live in urban areas by the year 2020 (Federal Department of Town and Country Planning, 2010). The goal of this study is to explore how the flood-affected communities use their community-based network or community-based organisation (CBO) in dealing with their

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vulnerability (Obrist *et al.* 2010; Twigg, 2007). This study looks into the problem of flood-prone squatter communities in the Segambut parliamentary area of Kuala Lumpur since the common theme in vulnerability studies proposes that the urban poor being the group most affected by hazards (Quarantelli 2003; Hardoy *et al.* 2001). The site selected was a flood-prone area within the capital city and more than 2,000 squatter residents were evacuated to safety in one flood incident just prior to the data collection exercise for this research.

2. Methodology

Data was collected for this study through interviews, survey questionnaire, document analysis and field observation. The respondents involved in this study include the leaders/committee members (gatekeepers) of the study area's CBO, members of the flood-affected communities and officials from agencies involved in flood management. Data were gathered from households in the study area through survey questionnaires. The main objective of this survey was to investigate how these communities cope with the recurrent flood hazards with the assistance of the CBO[†]. Documents analysis (including reports, periodicals, news articles and publications linked to flood hazard management agencies comprising of the local authority, the Department of Irrigation and Drainage, and the Malaysian Red Crescent Society) enabled the investigator to trace both factual and interpretive information about the implementation processes. The researcher paid close attention to the interactions among the community members and physical damages caused by the flooding as part of his field observation. All of the gathered data were triangulated to give credibility and internal validity to the research findings.

3. Literature review

3.1. Community-based disaster management

A few literatures on social vulnerability in cities highlight the role of a local-based body that helps in increasing the resilience of a community in dealing with disasters. Pelling (2003: 64) proposes that 'a supportive institutional framework social capital can be transformed into social organization to build (local) adaptive potential'. This is supported by Obrist (2006), arguing that social organisations shaping the allocation of, access to and use of resources at the household level (such as the CBOs) are vital for establishing resilience. Chen *et al.* (2006) discuss on community-based disaster management program in Taiwan where community residents learned how to analyze vulnerable conditions, discover problems, develop solutions, and establish an organization to implement disaster management tasks. They also continuously improve their emergency response capability through a participatory process. The scheme is called Integrated Community-Based Disaster Management Program and initiated in 2001 to empower the community to take actions in hazard mitigation, emergency preparedness and emergency response. The aim of this program is to strengthen community resilience due to the country's vulnerability to earthquakes, typhoons, landslides and debris flows.

[†] In Malaysia generally, and in the Malay society specifically, meeting the leaders or those in authority, in other words, the 'gatekeepers' (usually one of the leaders within CBO), is the polite and diplomatic way of accessing the community to be studied. On this issue, Creswell (1994: 148) suggests that it is imperative "to gain access to research or archival sites by seeking the approval of the 'gatekeepers'" [4]. As with squatter communities, the sense of distrust of strangers or outsiders is even more prevalent as they are usually under pressure to move elsewhere as they are occupying the land illegally and they are also being blamed by the neighbouring communities for various problems.

Community-based disaster management is one example of a programme that comes into existence as a 'reaction' to a problem. Shaw and Goda (2004) espouse that the major earthquake in Kobe of 1995 led to an increase in voluntary and non-government activities, and the enhancement of cooperation between local government and CBO in managing disasters. They add that the local network is effective in collective decision-making and to represent the voice of the community in dealing with Japan's various disasters. On the other hand, Yodmani (2001) suggests that the failure of a top-down management in addressing the needs of vulnerable communities has brought about the alternative; involving the vulnerable people themselves in the planning and implementation of mitigation measures. He believes the affected communities are the best judges of their own vulnerability and can make the best decisions about their well being (see also Marcillia and Rohno 2012).

3.2. *Vulnerable communities*

Mileti and Gailus (2005) suggest the urban poor and the marginalised are the vulnerable communities often involved in risk communication when responding to hazards. Risk communication means exchanging of information about health risks caused by environmental, industrial or agricultural processes, policies, or products among individuals, groups, and institutions (Glick, 2007). Risk communication often attempts to establish persuasive strategies to persuade the public in adopting a particular view regarding some risks. Low-income people in many countries try to survive in flood-prone locations because they have few alternative livelihoods; therefore they are forced to put themselves at risk since they have no other option (Wisner *et al.*, 2004). Meanwhile, it has been opined that the vulnerability of the urban poor migrants stem from their limited opportunity and lack of access to the structure of power while their hazard response is limited due to their lack of access to knowledge and resources. Additionally, Mileti and Gailus (2005) propose that the vulnerability of the poor can be considered 'self-inflicting' since these sectors of society have knowingly chosen to occupy a hazardous area due to the limited resources they have. Some of the actions or behaviours they exhibit can worsen the situation further.

With reference to Malaysia, the migration of the poor from rural to urban areas in peninsular Malaysia is an important dimension of urban growth and it is this group of people who more often than not occupying the less safe squatter settlements on flood plains (Chan and Parker, 1996). For instance, the implementation of the New Economic Policy (NEP) in Malaysia in the 1970s has encouraged the traditionally rural Malays to participate in urban economies but difficulties in buying or renting affordable houses in the cities led to the opening of new areas as squatter settlements, including flood-prone areas along the rivers (USM, 1999).

4. Findings and discussion: Roles of CBO in the flooding of the study area

This section highlights the findings from this study and simultaneously discusses the role of CBO in assisting the members of the affected community in dealing with flood hazards. Following Chen *et al.* (2006), this section is categorised into three: before, during and after the flooding.

4.1. *Prior to flooding*

4.1.1. *Warning system*

A flood warning system is one of the most vital adaptations in communicating to the public in preparing for the impending flooding (Seng, 2012; Wisner *et al.* 2004). Officials of Kuala Lumpur City Hall and the Department of Irrigation and Drainage acknowledged that one way of relaying to the public

at large the message about imminent flooding were through the installation of early warning system. According to these officials, a number of flood early warning systems were deployed at various spots in Kuala Lumpur. These include areas next to the Independent Square and several river-side communities near the city centre. However, none are available in the study area of Segambut. The absence of flood warning system in Segambut squatter communities was probably because the area was not considered as a priority locality since it was not occupied by permanent residents with legally-owned properties.

With the lack of formal flood warning system, the CBO of the study area took the initiative of utilising the public announcement system at the prayer hall (*surau*) to alert their members about any imminent risk of flooding. The public announcement system was also used to instruct the affected residents to evacuate their houses and move to temporary shelters for safety and to receive assistance. The respondents reiterated that the public announcement system has helped tremendously especially when the flooding occurred on few occasions in the past late at night when most of the residents were fast asleep. The use of the public announcement system in alerting the communities and giving out safety instructions is another instance of adaptation of risk communication by the CBO in responding to flood hazard within the communities (see Sheppard *et al.* 2012).

Information gathered from the CBO and squatter residents revealed that the absence of flood warning system means that most of them personally monitor for signs of flooding. This is based on past experience shared among them which is one aspect of community-based risk communication. The most common method is for them to pay close attention to prolonged heavy rain (ranging from one hour to three hours in duration) and observations of the water level of the rivers. They also usually observe the rain that falls in the surrounding areas, such as in the city centre of Kuala Lumpur and the neighbouring communities of Kepong and Jinjang. Heavy rain in these areas will usually result in overflowing of the river banks in Segambut and may lead to flooding in the neighbouring communities. According to a number of respondents, whenever it rains upstream, the water in the two rivers in the study area would usually flow faster than normal and this is regarded as a sign of impending flood.

4.2. Preparing for flood

The research also investigates steps taken by the CBO and community members as a precaution to prepare for flood. Based on the feedback from the respondents, after experiencing the many flooding events affecting the communities, they have taken several precautions that are common knowledge among themselves. The CBO also share this knowledge with those who are new to the community. Among the precautions that they took in preparing for flooding are as the following:

- Ensuring that the children are in a safe place (especially the neighbouring children if the parents/adults are away at work when flood occurred),
- Placing their belongings at higher levels within their house,
- Completely relocating some of their belongings to a safer location (e.g. relative's or friend's house in areas not prone to flooding),
- Constructing shelves above the ceiling to accommodate their belongings and to prevent them from being stolen when the occupants temporarily evacuated their houses,
- Coming home early from work when the rain falls heavily in the city,
- Refraining from buying expensive furniture as this is one of the most common items usually damaged in any flooding, and
- Not leaving the house for an extended period of time such as during long holidays.

Based on these feedbacks it can be understood that the residents are under tremendous pressure whenever it rains heavily. They need to consider many elements, primarily the safety of their family members and their belongings. It can also be observed that frequent flooding also affects their lifestyles as

flood hazards even restrict the choice of appliances or furniture that they acquire, while leaving their homes for a long duration is another risk that they may have to contemplate. This is one example of Beck's (1990) 'risk society' where risks play an important part in people's daily life in the modern world.

4.3. Familiarisation with higher grounds and evacuation centres

One of the preparations that the Segambut squatter settlements' CBO made in order to address flooding is to ensure that residents are familiar with the location of temporary shelters as well as places that are on slightly higher ground within the communities. After experiencing a number of flood hazards and with the guidance by the CBO, the squatter residents are already familiar with the measures that they should take whenever floods occur; but they were also reminded to ensure that their neighbours were alerted as well. This is an example of using the flood victims as valuable resources in risk communication and disaster management; by empowering the people in order to help themselves (McEntire and Myers, 2004). In addition to empowering the flood victims, strong local support networks together with a willingness to act collectively may have also increased the level of social resilience of these squatters. The behaviour of these flood victims is an example of the marshalling of social capital with the prevalence of collective action and evidence of social bonds that formed an important part of the community's adaptation as a response to environmental hazards, involving trust, reciprocity and common objectives (Pelling, 2003).

4.4. During flooding: Evacuation and temporary shelters

The communication between the affected residents and the relevant government agencies is crucial, particularly during a flood event, as services such as evacuation and rescue operations, and the setting up of temporary shelters for the victims, must be established immediately. The Malaysian Red Crescent Society (MRCS) was usually among the first organisations to arrive at the flooded squatter communities as they need to co-ordinate the evacuation of the residents and to operate the temporary shelters. The gatekeepers of any hazard-prone communities would usually have in their possession the contact numbers of several MRCS officers whom they can call at any time of the day whenever necessary. This is an instance of the availability of risk communication network as a precaution for any eventualities, and in this case it is between the CBO and the responsible agencies. Other than being assisted by the above government agencies, the evacuation exercise was also co-ordinated by the CBO. In addition, the residents also informed the researcher that they would also look after the safety of their neighbours during the evacuation, especially the elderly and the children, an example of a strong social network offering support to its members.

It can be observed that the squatter communities of Segambut have a strong sense of togetherness as they have been through trying times on many occasions in the past. The respondents were concerned not only for his family, but also for the safety of his neighbours during the calamity. This idea of social capital was very prominent in the discussion with respondents from the squatter settlements as most of them have been together for quite a substantial period of time and felt that they could rely on their neighbours for assistance whenever needed. They were quite confident that while they were very willing to assist the others when disaster struck, the reverse would also be the same, and probably expected.

4.5. Post-flooding

4.5.1. Damaged properties and compensation

Even though various precautions have been made in order to minimise the impact of flooding, there are still damages to property that were observed in the inundated communities. As highlighted earlier, one flood incident caused considerable damage to the affected squatter settlements in Segambut which led to the evacuation of more than 2,000 residents and this is another area probed in this study. The CBO helped to distribute and collect application forms for compensation from the victims and forwarded them to the Welfare Department for its consideration. This is another initiative by the community leaders in informing the residents on the availability of avenue for seeking compensation as not everyone are familiar with the bureaucracy of disaster management. Based on the forms submitted, the application for compensation from the affected households ranged from RM430.00 to RM19,750.00. In most cases, the victims were claiming for costs of repairing their houses and vehicles, and damage to their belongings that include refrigerators, televisions and computers. However, there were other damages for which there was no financial compensation. For example, no compensation was given for damaged legal documents such as birth, marriage and academic certificates or items like photographs or souvenirs that are of sentimental value and irreplaceable. The residents of the affected communities also confirmed that each family that had been evacuated and relocated to the temporary shelters was normally given a financial aid of RM200.00 by the Welfare Department when they registered themselves at the temporary shelter.

Coming from low-income background, the squatters considered that their losses were high as they had lost items that to them are essential assets. For instance, losing a vehicle, such as a bicycle or motorcycle, may mean that the victim might not be able to go to work. Therefore he may suffer loss of earnings for each working day missed. At the same time, the victim would need to set aside a budget to repair his damaged vehicle, which would further deplete him financially. The loss suffered by these squatters is an example of Beck's (1992) idea that the poor attract more risks, or are more vulnerable to risks as their living arrangements are more precarious. It takes longer for the poor to recover from their misfortunes and they are also the group that suffers the most from any disasters.

4.5.2. Structural adaptation

During fieldwork observations, it was noted that one of the ways that the residents have adapted in dealing with flooding is by modifying their houses. The first modification witnessed was the construction of a low wall at the entrance of the house, while the second was replacing timber wall with concrete blocks. A number of respondents stated that these are some of the adaptation that they have implemented after learning from the CBO and other residents who had started to construct it with some success in preventing floodwater from entering their homes. However, one of the residents of the area explained that the low wall has not been able to block the water of major floods, but served its purpose in the past when the floodwater level was lower.

It was also observed that while timber was the most common material utilised for the houses in these squatter settlements, quite a number of them are using the costlier concrete blocks for the lower portion of their walls. These concrete blocks were used as they prevent or reduce the amount of floodwater coming into these houses (refer to Fig. 1). The construction of the low wall, using concrete blocks and building a raised platform were examples of structural adaptations that these flood victims have implemented based on the experience of dealing with past flooding and possibly by sharing experience with their neighbours or flood victims elsewhere. These adaptations were something that these squatters have "socially constructed and negotiated" (Grothmann and Patt, 2003). This is probably the only adaptation they could afford as concrete and concrete blocks are much more expensive than timber. This is the most likely

reason that they only used the concrete blocks for the lower half of their walls as utilising these blocks for the entire wall would be financially difficult for them.



Fig. 1. An example of structural adaptation depicting a house with concrete lower wall

The structural adaptation with the intention of reducing the impact of flood hazards has also been discussed by Chan and Parker (1996) who state that the traditional Malay house design in Malaysia's rural areas has been adapted to recurrent flooding by being raised on stilts. By adapting this design, it enables these groups of people to be located on flood plains next to the rivers and engaging in farming and fishing activities. However, it is acknowledged that this design is gradually being discontinued because of increasing rural to urban migration, the modernisation of architectural styles and state policies which now promote terrace-type of housing estates.

4.5.3. *Moving out from the communities*

Relocating to another area is another type of response for some of the flood-affected squatter communities who feel they can no longer live with the problem. Resettling away from the unsafe site is another option in dealing with hazards (Blaikie *et al.*, 1994). For example, according to several respondents of the study area of Segambut, a number of families have moved out of the squatter settlements as they could not endure the recurrence of floods and upon learning from the experiences of their former neighbours who have relocated to a safer place (refer Fig. 2). In this instance, the CBO helped those opting to relocate by introducing them to agencies dealing with public housing. However, many have opted to stay as relocating elsewhere would cost a lot financially and there are other priorities that they need to consider. Other than the financial implications, the residents may also decided not to relocate due to the long relationships that have been established among them. The feeling of togetherness among the residents as shown in many instances above is quite common for a community that had been through a lot collectively, especially after a shared unpleasant experience such as the recurrence of floods or any other disaster.



Fig. 2. A flood-damaged house whose owner has moved out of the study area

5. Conclusion

The study finds that the CBO has a crucial responsibility in managing disasters affecting their communities. Their main responsibility is ensuring their community members are ready for any eventualities and reducing their vulnerabilities. Furthermore, this study has also shown that as highlighted by many authors discussed above, the urban poor are the group that is hit the worst in most flooding incidents and the experience they shared have shaped how they led their lives. The vulnerability of these squatters can be considered as 'self-inflicting' since they have knowingly chosen to occupy a hazardous area but this choice may have been a function of limited resources. These links between human factors and vulnerability, where disasters are primarily the consequence of human actions can be seen as an 'actualisation of social vulnerability'. However, in responding to these geo-hazard events, the squatter communities have adapted ways that they derived from their strengths, which are their sense of belonging, their networking among themselves as well as with government officials, and also by adapting a number of structural modifications that they could afford. It is through the involvement of the CBO, their communications and sharing of knowledge with members within their communities, as well as guidance by the responsible government agencies, in other words - their use of risk communication, that they are able to share lessons from their experience in order to lessen or overcome their vulnerabilities to the hazards presented in their daily lives. In most cases, 'actionable risk communication' was very prevalent as imparting of experience and knowledge came from within the community itself benefitting those who are less prepared. With the help of the CBO, the affected communities learnt of strategies or change in behaviours that they need to adapt from those who have managed to reduce the impacts from the recurrence of flooding. This has not only further strengthened the bonds between the neighbours, but has also helped to enhance the sustainability of these communities.

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