〈特集論文〉

Aged People's Evacuation Decisions in Response to Typhoon Warning:
Case Study of a Rural Southern Village in Thailand

Parichatt KRONGKANT

Introduction

Natural disasters have become an increasing global challenge for all population sectors. Some say that disasters affect people equally. Such a statement leads to a uniform pattern of disaster preparedness and relief arrangement for all sectors of the population whether they are men, women or aged people.

Generally, men are in a superior position to women due to their decision-making power in society, social status and the cultural context of their particular society. All these factors may benefit men in terms of better preparedness and faster recovery from a disaster.

Aged people meanwhile constitute a significant proportion of those at risk from natural disasters due to their reduced physical ability and other impairments. Evidence shows that aged people account for a high number in the death toll from natural disasters. For example, in the European heat wave disaster of 2003, there was a high concentration of mortality rate in elderly people due to health vulnerability owing to cardiovascular, cerebrovascular and respiratory causes (Haines et al., 2006); forty-nine percent of the victims of Hurricane Katrina in 2005 were people aged 75 or older (Brunkard, J. et al, 2008); in Cyclone Nargis of 2008, among the dead and the suffering survivors were many aged people and children (HelpAge, 2008).

This article has particular focus on the aged people and their decision to perform evacuation when threatened by typhoon. For Thailand, disaster preparedness at the community level is just developing, and survival depends on self protection and adaptation.

This article aims to explore the preparedness behaviors and factors responsible for the evacuation decision of aged people. The area of study was a multi-disaster prone community in Chumphon province, Southern Thailand[1].

1．Disaster Preparedness and Evacuation

There are three paradigms in disaster study. The "dominant" paradigm emphasizes individual human response behavior such as the study of risk perception as a predictor of protective action; namely, preparedness and evacuation (Gaillard, 2008). The second paradigm focuses on the structural construction of risk by looking at factors that construct the vulnerability of society and individuals to hazard impact such as demographics: age, ethnic minority and education, social inequality and political

ecology, especially economic and political marginalization in developing countries (Bolin, 2006). The third paradigm focuses on social domain, where ideas and practices concerning risk and disaster are exchanged, shared and organized in the ways references are made to disaster and risk (Hilhorst, 2004).

Disaster preparedness is one of the results of disaster experience and learning ability. Communities and individuals psychologically and physically prepared will be less vulnerable and more resilient in disaster events (Kreps, 1991; Mileti, 1999 cited in McGee, 2003). Social research has identified the socio-demographic factors responsible for preparedness as age, disability, marital status (Miceli et al., 2008), income and education (Russell et al., 1995; King and MacGregor, 2000 cited in McGee, 2003), home ownership (Mulilis, Duval and Bovalino, 2000 cited in Miceli et al., 2008, Charnkol, 2006). Social, human and cultural capital are identified as critical resources for disaster preparedness (Jakes et al., 2003; Mayunga, 2007). McGee (2003) found that social network, previous experience, culture of self-reliance, characteristic of community and social cohesion contribute to the preparedness behavior of rural communities. Studies on disaster preparedness look at several factors such as time allocation in preparedness (Los and Schut, 2008), knowing how to prepare (Rosenkoetter et al., 2007), and having a plan and supply kit (Horney et al., 2008). Providing people with information on a hazard and its impact will influence people's preparedness (Paton, 2006). Even though preparation is important, understanding of warnings and knowing how to prepare is left to the individual. However, studies show that a high level of preparedness is one of the predictors for evacuation behavior (Hodler, 1982 and Perry and Lindell, 1986 cited in Raid, 1998).

The term "evacuation" refers to the withdrawal of threatened people from a specific area to a safer place due to anticipated hazard impact. The major factors responsible for increasing the likelihood of evacuation are physical cues, social cues, perceived risk, knowledge of the hazard, education, presence of family members, family size, number of kin relations, age, community involvement, socio-economic status, gender (Enarson, 1999), number of children in family, personal warning, proximity to threat, message specificity, message frequency, message consistency, message certainty, message source credibility and source familiarity (Mileti and Peek, 2000). Factors responsible for evacuation are, but not limited to, risk perception, preparedness and social influence (Riad and Norris, 1998). In the post-tsunami study of evacuation behavior in the south of Thailand, six factors influencing speed of evacuation among tsunami-hit communities were identified: education level, house ownership, disaster knowledge, number of family members, exposure of house to hazards and status as a permanent or transient resident (Charnkol and Tanaborinboon, 2005). However, it was also found that social connections both facilitated and hindered evacuation decisions (Eisenman et al., 2007).

2. The Vulnerability of Aged People During Disasters

According to the United Nations definition, aged people are those 60 years old and above. According to the World Disaster Report (2007), 26 million aged people are affected by natural disasters every year and this number is set to double by 2050. Aged people are vulnerable to disaster in social, psychological and physical dimensions. Aged people suffer more long-term psychological distress and somatic symptoms than younger victims (Phifer, 1990 cited in Mayhorn, 2005). HelpAge (2005) reports that aged people are often left behind in the rush to escape a disaster and cannot reach distribution centers. Aged people are slow in responding to their surroundings including disaster threat, warning interpretation and evacuation order. Poor health also affects aged people's ability to move and increases their risk for illness-related complications during and after a disaster (Rosenkoetter et al., 2007). Aged people face age-related changes in perceptual and cognitive ability (Craik and Salthouse, 2000; Park and Schwartz, 2000 cited in Mayhorn, 2005). Thus, in an emergency situation, aged people may not be prompted for evacuation.

3. Gender Situation in Thailand

Gender is a socially constructed definition of women and men. It is not the same as sex (biological characteristics of women and men). Gender is determined by the conception of tasks, functions and roles attributed to women and men in society and in public and private life (Gender in practice, Swiss Agency for Development and Cooperation). The Thai government is in compliance with the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in 1985, the Beijing Declaration and Platform for Action and the Millennium Declaration. Under the 2011 Gender Inequality Index, Thailand's score is 0.382 (69th out of 146 countries). The Royal Thai Government (RTG) increasingly emphasizes addressing gender equity, both within its own Ministries and Thai society as a whole. The Disaster Prevention and Mitigation Department (DDPM) as the nodal agency for disaster management promotes gender equality in disaster management by identifying a gender focal point and setting up a policy framework and operational guidelines for gender equality.

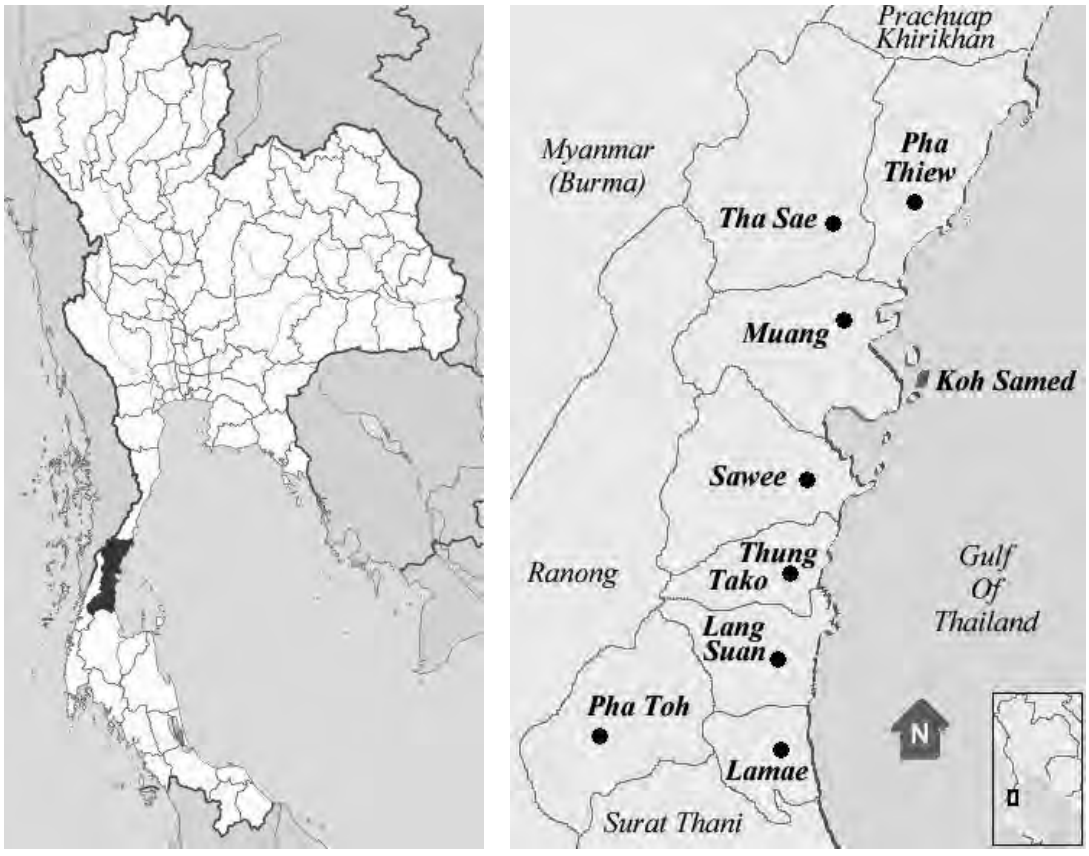
The Manual on Disaster Management: Gender Aspect, developed by gender-related organizations and NGOs and supported by the DDPM, gives guidelines for the participation of men and women in community-based disaster risk reduction and gender equality in relief and rehabilitation. These were developed as a collective effort to tackle the issue of gender in relief and rehabilitation. However, the implementation of gender-based projects is still limited to some NGOs and a few Ministries.

4. The Study Area

The study area is a rural traditional Buddhist Thai community in Chumphon, a southern province of Thailand. The culture in the south is different from other regions in Thailand. The southerners value honor, dignity, camaraderie, kinship and the patronage system (Pongpaiboon, 2004). Southerners act in a straightforward way and are unrefined in their speech. The personality of southerners in-

volves decisiveness, fast action, firmness, single-mindedness and courage to take risks. For southerners, daily life is conducted in a way appropriate to one's status, gender and age. Seniority is to be respected and social position is well-observed (Pongpaiboon, 2004). The community under this study features all the attributes of southern culture described by Pongpaiboon (2004) and can be considered a close-knit community because there are no new settlers from outside, except from marriage to community members. They were all relatives descending from a few original settlers. The presence of visitors was observed by community members with caution. The people are tied to their land. No one in this village sells their land to outsiders. All land ownership is in the form of a deed which requires a long process to acquire, especially in agricultural areas. This is one of the reasons for land attachment. Another outstanding characteristic of this community is the Village Head, who is elected to hold the position for fourteen years in a row. The Village Head is a single mother who was born and lived in the village. She has the characteristics of a good coordinator. Her team of assistants consists of men and women, but there are more women than men. She knows the names of all the villagers by heart and she is aware of everyone's situation. She plays an active role in organizing the community's activities with the local government and other stakeholders.

Figure 1: Map of Thailand and Chumphon Province



Thailand Chumphon Administrative Area

Chumphon province lies in the path of tropical cyclones. The community experienced one typhoon hit in 1989, and has had four other typhoon threats in the past twenty years. Floods are a seasonal disaster because the community lives at the junction of two rivers in the Ta Tapao basin. The community does not have warning tools. There are no typhoon or flood shelters. The community members seek shelter in the temple, meeting hall and elementary school building if necessary. Most of these structures were built more than forty years ago. The main concrete road that divides the village into two is used as an escape route as it is on higher ground and does not flood. However, the arteries branching from this road into the villages are small dirt paths that turn into mud in the rainy season. Public announcements from television and radio are trusted sources of weather information for the community, but the messages are generally national weather forecasts rather than region specific. The messages are in the form of a weather report rather than a warning. Evacuation orders are to be decided by the concerned authority. As per the Civil Defense Master Plan, mandatory evacuation will be conducted only when necessary and without psychological effects (Tha Kam Civil Defense Plan, 2007).

The local authority has limited resources in terms of manpower, transportation and budget. In this community, the disaster budget is allocated at USD 1,400 per year for the whole sub-district of 6,855 people in 2,077 households (2008). Moreover, the local authorities perceive that providing relief and services is a popular policy that would create a state of dependency for residents. Similar to the community values, the local authority thinking is that people must help themselves instead of waiting for someone to help, and help from the government is always disappointing. But should this policy apply to everyone including aged people?

5. Findings

The community under this study is vulnerable in three ways: geographically, because they live in hazard-prone areas; socially, because they are rural marginalized and thus poor in protective structure; and politically, because they lack a participation process, and the disaster policy and administration does not support evacuation. Having a lack of resources, this community relies on individuals' and households' adaptation capacity and learns to take control over uncertainty. In the case of typhoons and flash floods, those who are vulnerable are taken to a safer place in the community described as being on higher ground, free from high floods and strong enough to withstand the force of the wind. Any houses of such characteristics would be turned into improvised shelters for those who need help.

Out of a total of 141 aged people aged 60 and above in this community, 114 participated in the questionnaire survey. Table 1 shows the characteristics of the aged people. Among the respondents, the gender balance is equal. The minimum age was 60 years and the maximum age was 100 years. Most had lived in this community since they were born. Around 49 percent had lived in this community for between 60 and 79 years. Most of them can read and write. The majority still had good mobility as measured by their ability to walk around without assistance. Hearing ability was reported to

be declining. Unclear vision or problems with eyesight was a major complaint.

Table 1: Characteristics of aged people in this study

Variables	Conditions	Number	Percentage
Age	■ 60-69 years	44	38.6
	■ 70-79 years	49	43.0
	■ 80-89 years	20	17.5
	■ Old than 90 years	1	0.9
Sex	■ Male	56	49.1
	■ Female	58	50.9
Variables	Conditions	Number	Percentage
Literacy level	■ Can read and write	97	85.1
	■ Cannot read and write	17	14.9
Self-reported health status	■ Normal physical movement	98	86
	■ Normal eyesight	66	57.9
	■ Normal hearing	81	71.1
Living condition	■ Live alone	11	9.6
	■ Live with spouse only	59	51.8
	■ Live with family of their children	45	38.6
Years of living in this community	■ Less than 19 years	2	1.8
	■ 20-39 years	6	5.3
	■ 40-59 years	40	35.1
	■ 60-79 years	56	49.1
	■ Longer than 80 years	10	8.8
Typhoon experience	■ Direct experience of typhoon	113	99.1
	■ No direct experience of typhoon	1	0.9
Evacuation Experience	■ Evacuated in a typhoon emergency at least once	73	64
	■ Never evacuated in a typhoon emergency	41	36
Typhoon Risk Perception	■ Think that typhoon is life-threatening hazard	114	100
	■ House is not safe for the next typhoon	91	79.8

The aged people described their relationships with others as, "I live on my own and others also live on their own." On the one hand, this statement may suggest that aged people in this community prefer privacy, but on the other hand, it may be a way to deny the state of social isolation due to their disengagement in economic activities. Thus, social interaction is limited to family members, next door neighbors and community grocery shop owners, respectively. Aged people pay visits to each other mostly in case of sickness or during festivals or Buddhist ceremonies, of which there are around five a year. Women gather with women and men gather with men. These aged people come from a generation when men and women must maintain their interaction in a proper manner. In addition, the topics of discussion between men and women are different.

In terms of family life, around half of the respondents live with their spouses. Thus, aged people are taking care of each other. This can be seen as a vulnerability factor as the aged people may have physical limitations and health problems which affects their understanding and interpretation of warn-

ings. In Hurricane Katrina, examples of old couples being victimized were documented (Cookman, 2007; Fussell, 2006; Cutter, 2006; Bytheway, 2006). It is observed that in this community, wedded sons or daughters usually build their house on their parents' land. This is a mutual advantage because they can provide care to parents and also have privacy for their own families. Social ties with neighbors and relatives were observed. In normal times, neighbors, family members or relatives help take aged people to hospital and the market, providing food and doing some small errands such as going to the bank.

Risk perception can be conceptualized as a process encompassing both cognitive and affective aspects (Slovic et al., 2004 cited in Miceli et al., 2008). Loewenstein (2001) argued "they (people) evaluate the risk cognitively and respond to it emotionally" (Miceli et al., 2008 p. 165). In this study, southern aged people's feelings towards typhoons were "fear" and "extreme fear"; they referred to floods as "stresses," "difficult" and "boring." While annual floods are just an additional "difficulty in daily activity" which is an extension of everyday hardship, typhoons are "a matter of life and death" meaning critical and life-threatening. This affective reaction to typhoons or the feeling of risk resulted from their first typhoon encounter in 1989, which established a social meaning that was strong enough to change perceptions and behavior towards the typhoon hazard. Thus, risk perception generates from experience of extreme events. Their response to typhoons was anxiety-driven associated with affective aspects of risk perception. We found that their memory of Typhoon Gay in 1989 was still fresh among both men and women. All of the aged people were able to recall their success story of survival as well as the scenario on that particular day. Individual experience of a natural hazard event was meaningful, especially for women who seem to articulate their fear of typhoons more than men. Typhoon Gay has left a psychological impact on many. To one woman, the experience has turned into a psychological insecurity about hearing the term "Pa-yu[2]." Many aged women reported that they feel a "shivering in their heart" and "light hearted." Some men also said that their hearts would "shake" or "beat like a trembling drum." One woman also said that if she feels that a wind is getting stronger, she wonders if it will become "another typhoon" and "another flight [for my life]." However, the survey also found that there are a few aged men who reported with confidence that they were not afraid of typhoons too much and believed that they would be able to help themselves if there was a typhoon again. This finding supports many studies that women seem to perceive disaster events or threats as more risky. Women report a higher level of fear or concern even though men have hazard awareness.

Due to their first shocking experience fueled by several typhoon threats during the past twenty years together with several floods, aged people, both men and women, have a high risk perception about typhoons and are prompted to preparedness mode in a typhoon emergency. As Perry (2000) notes, perception is crafted by the way that previous experience with natural hazards is interpreted (Peacock et al., 2005 p. 123). Moreover, it has been found that experiencing damage from a disaster is positively related to risk perception (Windham et al., 1977; Perry and Lindell, 1990; Norris et al., 1999;

Raid et al., 1999 cited in Peacock et al. 2005). We found similarities with western research in the formation of risk perception.

In terms of the cognitive aspect, older persons accumulate their knowledge from socialization, observation and personal experience. An old man of 70 noted that "'I remember aged people in this community telling us about a severe storm that will come every sixty to seventy years" and another woman remembered that "her parents told her that normally a storm would last for an hour but that Typhoon Gay came with eight hours of strong wind." A 65-year-old woman noted that her parents told her that they had "never experienced such a severe wind as Typhoon Gay in their lives." It is found that aged people were able to demonstrate their knowledge about the characteristics of typhoon wind, its impact on physical structures and trees, and how to protect themselves amidst typhoon wind. They could also identify vulnerable areas and infrastructure in their locality. This is in correspondence with research that finds a positive relationship between affective risk perception and experience such as the findings of McGee (2003) in local preparedness for bushfires in Australia and Miceli et al. (2008) in the study of flood perception and preparedness in Italy and the study of Charnkol (2006) in a tsunami-affected province in Southern Thailand.

6. Typhoon Preparedness and Evacuation Intention

The scope of preparedness in this study focuses only on preparedness in response to a typhoon warning regardless of the warning channel. In reaction time research, preparedness time is used as an indicator to predict evacuation behavior (Los and Schut, 2008). However, this measure may be misleading because shorter preparation time also results in successful evacuation (Horney, J. et al., 2008). Our research does not emphasize a preparedness time but rather a pattern of preparedness behavior. Table 2 shows the list of preparedness activities of aged people in response to a typhoon warning.

Table 2: Preparedness behavior upon typhoon warning

Preparedness behavior	Frequency	Percentage
1. Take care of myself (eating enough rice, go to toilet and prepare betel nuts)	114	100
2. Close window and door	104	91.2
3. Move furniture to escape flood	79	69.3
4. Think about personal safety	32	28.3
5. Seek help from neighbors or relatives	30	26.3
6. Take livestock to safe place	10	8.8
7. Don't do anything, prepare to leave the house	3	2.6
8. Seek more information	2	1.8
9. Prepare transportation	1	0.9

From the study in the United States, consistent and repeated experiences with hurricanes have elevated both understanding and more realistic perception of risk (Cross, 1990 cited in Drabek, 1999).

Frequent flood and typhoon threats shape the pattern of preparedness in this community and knowledge has been handed down from one generation to another resulting in uniform patterns of preparedness. Aged people at high risk for flood and in low risk flood areas prepare for typhoons in a similar manner. Preparing for typhoons is important to everyone in this community, which means that people look for maximum protection from available resources to maintain their normal course of life in an unstable post-disaster situation. This is because "after a disaster, even if you have money, there is no rice for you to buy," said one respondent. "Sometimes you have money but food is too expensive" and "help from the government has never been sufficient for everyone." The scarcity of food and hardship after a disaster is the basis orientation of preparedness goals. From the way people respond to natural hazards, aged people as well as community members are action-oriented. The preparation can be divided into two parts. First is the preparation oriented towards securing belongings and property to prevent damage; second is preparation for evacuation. The most important aspect of preparation is to prepare the body and mind for the approaching typhoon. Taking care of oneself is the first priority, which by definition is to have taken food before the typhoon strikes because one does not know when the next meal will be. As one woman noted, "The last time I heard from the radio that a typhoon was coming towards this district, I got up at four in the morning to cook and ensured everyone's stomach was full before the typhoon hit because we did not know how long the wind would last and it was difficult to take care of eating during the storm." An old man in his late seventies also said that his daughter prepared a big pot of curry to last for a few days for a family of five. She said that, "It was difficult to do anything during the heavy wind and rain. The flood may reach the kitchen and soak the food and fuel."

It is also noticed that in the preparation to take livestock such as cattle, pigs and donkeys to a safer place or higher ground, men are the ones who take this responsibility. Women take care of the cooking and preparing the necessary items in the house. Despite limited literature in gender and preparedness, there is some indication that women prepare their families for disaster more than men. Szalay et al. (1986) found that men are more concerned than women with specific and technical aspects of any preventive or protective measures.

Further interviews found that social norms play a role in preparation. As dignity is valued among southerners, therefore, self-responsibility is a way to demonstrate individual dignity. It was expressed by several people, old and young, that "One should not beg from someone else because everyone is in trouble." Not to ask for help is a way to show dignity and it is also a way to prevent disappointment or embarrassment when help cannot be rendered. In this study, only 26.3 percent, especially women, reported that they need help from neighbors. The rest may also need help but do not voice their need, especially men. As southern people tried to remain self-dependent, "being a burden on others is a shame," said many aged people. One old man said that one must help oneself first because others were also busy helping themselves. Many aged people believe that it is important for one to be ready with personal belongings such as clothes and food when they take shelter at someone's house, even though the shelter belongs to family members or relatives. When considering items prepared for put-

ting in a supply kit, aged people put emphasis on preparing rice and dry food, clothes, drinking water, valuable items and money, medicine, and candles or torches, respectively. Thus, in terms of personal responsibility, there is no significant difference between men and women. This finding is supported by Turner et al. (1986), who discovered that men and women do not differ in preparedness.

Table 3: Items aged people prepared in supply kit

Item	Justification	Frequency	Percentage
1. Food (Rice, canned or dry food, and betel nuts)	The village will be disconnected in floods and typhoons for a couple days or a week. Stockpiling of food is a solution.	93	81.6
2. Clothes for 2-3 days	In typhoons, wind and rain can be expected. Dry clothes are needed to protect against illness.	91	79.8
3. Drinking water	Water will be contaminated in flooding.	52	45.6
4. Valuable items and money	For their protection, and to purchase necessary items	46	40.4
5. Medicine	To maintain care of health condition	14	12.3
6. Lanterns, candles, torches, matches and batteries	Electricity supply cut is expected in heavy rain and floods. Temporary lighting is needed as are batteries for the radio.	10	8.8

7. Evacuation Intention

More than half of aged people in this study (64 percent) evacuated from their houses in the past typhoon disaster (Table 1). The majority of them expressed their intention or willingness to evacuate in the event of another typhoon. About 81.6 percent (93 persons) intend to evacuate to a safer place; a minority of 14.9 percent or 17 persons are not certain if they would evacuate or not; 3.5% or 4 men are determined not to evacuate. For those men who did not want to evacuate, they reported that they were confident that they could survive in their houses. This may be explained by the psychological impact of disaster experience because men are likely to be less upset by disasters than women. The overall finding differs from the study of Sorensen and Richardson (1984) which found aged people are less likely to evacuate and from the study of Fussell (2006) in Hurricane Katrina who found that the aged people who are in bad health or disabled were less likely to evacuate. We found that aged people intend to evacuate while the younger adults are not certain whether evacuation is needed for them. This group of people who are not certain about evacuating may prefer to take the chance. For aged people who intended to evacuate, the reasons for such a decision were, in their words, "there is no place to stay (at home)," "cannot stay," "escaping is a must" and "staying means dead."

Table 4: Frequency distribution of factors responsible for evacuation intention

		I will evacuate	I will not evacuate	I am not sure	Total
Age	60-69 years	32	2	10	44
	70-79 years	46	1	6	53
	80-89 years	15	1	0	16
	Over 90 years	0	0	1	1
Total Frequency		93	4	17	114
Total Percentage		81.6	3.5	14.9	100

8. Factors Responsible for Evacuation Decision

Even though the majority of respondents reported that they intended to evacuate before a typhoon hit, there are several situations that lead them to evacuation. The first choice that best determines their evacuation decision is an evacuation order. The second set of factors to influence the evacuation decision is neighbors and family members. These three choices confirm that aged people tend to be conventional in complying with the collective decision (evacuation order) and to rely on social actors (neighbor and family) for collective action. This finding is similar to the study of Cutter and Barnes (1982) that evacuation of neighbors and friends is a major influence on the decision to evacuate (Drabek, 1999).

As they are aware that their physical ability, houses and community are vulnerable and exposed to typhoon destruction, their preparation is aimed toward protection of these assets in order to have personal control and avoid the state of dependency during disaster. Thus, it is seen that some aged people, despite the awareness of typhoon threat, try to bargain with nature by investing their efforts in limitation of time to reserve personal control over property and belongings and wait until the last minute to leave the house for a safer place as most of the aged people said that if possible, they would like to finish packing their belongings before leaving the house.

We found that the scenario of danger is important in probabilistic judgment. Most of the aged people, even if they had an evacuation intention, prefer the "wait and see" strategy. About 71.1 percent would evacuate if they saw that their house could not withstand the force of the wind. This is weighted fairly equally as a social factor influence (Table 5). This means that their perception of evacuation is not based on early evacuation which will reduce the risk of injury and death. The contextual factor of time is associated with a disastrous scenario and the evacuation decision. Almost half (48.2 percent) may not evacuate if the typhoon happens at night. This is because the physical environment is too dangerous and dark at night time. Thus, staying inside their houses would be safer than taking the risk of evacuation to another safer place. Almost half (45.6 percent) of all the aged people admitted that they needed help in evacuation although they seemed to be self-reliant and self-responsible in preparedness. This factor was emphasized in several studies on aged people evacuation (Gibson, 2006; HelpAge, 2006; Fernandez et al., 2002; Magnum et al., 1989). Aged people need support in the evacuation process such as with transportation and finding shelter. This finding also

implied that perception, preparedness and evacuation intention may not influence evacuation action because evacuation action depends on social context and how stressful people find a disaster at that particular moment. 65.7 percent intend to evacuate before a typhoon arrives but the actual evacuation would happen upon other conditions. Table 5 shows the situational context in making the evacuation decision.

Table 5: Frequency distribution of factors responsible for evacuation decision
Source: Field survey, May, 2008

Statements	Frequency	Percent
1. I will evacuate before the typhoon arrives	75	65.7
2. I will evacuate if there is an official evacuation order	93	81.6
3. I will evacuate if I see my neighbor evacuates	83	72.8
4. I will evacuate if my family members want me to do so	82	71.9
5. I will evacuate if my house cannot withstand the force of the wind	81	71.1
6. I will evacuate only during daytime	55	48.2
7. I will evacuate if I get help from others	52	45.6

Table 6 shows the concern for uncertain decision makers. Among the 17 respondents who could not decide to evacuate in the case of the next typhoon, it was found that the concerns were divided into two aspects: resource dependency such as on the availability of protective infrastructure, and psychological dependency such as personal feelings of concern with regard to privacy, comfort and subjective values associated with being "aged." The resource-dependent decision can be explained as the community does not have a typhoon shelter but uses available buildings to be a place of protection, those who could not decide on evacuation see the equal chance of risk between leaving and staying put. Moreover, there is no evacuation route while the roads in the village are covered by bushes amidst oil palm trees, rubber trees, coconut trees and other big trees. These trees could be damaged and turned into harmful flying branches by the force of the wind. This is the interpretation from the lack of the early evacuation concept, knowing their environment and perceived exposure to greater risk.

The psychological-dependent decision was demonstrated in the aged people's concern for privacy and comfort and the duration of stay in the shelter (Table 6). The other concern was the subjective value reflecting the self-perception of aged people as a burden. This is similar to the perception of society toward aged people. In the study of Hurricane Katrina, aged people were perceived as an extra burden to society (Bytheway, 2007). Thus, in evacuation, the threat from natural hazards may not be the only factor that triggers an evacuation decision.

Table 6: Frequency distribution of factors responsible for uncertainty decision.
Source: Field survey, May, 2008.

Statements	Frequency	Percent
1．I am concerned about my safety during evacuation	11	9.6
2．I am concerned about my comfort in the shelter	7	6.1
3．I am concerned about how long I have to be away from home	7	6.1
4．I do not want to be a burden on others	7	6.1
5．I am concerned about my privacy in the shelter	6	5.3
6．I am concerned about transportation to the shelter	6	5.3
7．I am concerned about my physical limitations	5	4.4

9．Discussion

Taking the cultural approach from Hofstede's often cited research, Thailand was classified as one of the most collectivist cultures among the countries he studied (Shannon, 2005; and Mandhachitara, 2005). Collectivism is positively associated with uncertainty avoidance; therefore, collectivists are more likely to avoid uncertainties and to evade events that may have an adverse impact on their harmonious way of life. In unpredictable and uncertain threats such as typhoons, collectivists become more interdependent with their in-group such as family, kin, tribe, and community in giving priority to the goals of their group above personal goals, shape their behavior on the basis of group norms and behave in a communal way (Mills and Clark, 1982; Hofstede, 1983 cited in Kongsomphong, 2005). Kongsomphong (2005) studied the behavior of Thai southerners affected by the Indian Ocean Tsunami and found that people affected directly by the disaster become more collective and less materialistic. Those affected by disasters showed a strong tendency to harmonize relationships, give support and avoid conflict with group members. Similarly, McGee and Russell (2003) found that characteristics of rural agricultural community including self-reliance, social networks, and experience with disaster, encourage preparedness (McGee and Russell, 2003).

Humans function best when they can maintain an integration of their cognitive, emotional and behavior capacities (Zautra, 2003 cited in Reich, 2005). Many aged people said that the first thing to do when they learn about a typhoon warning is to prepare their mind. Preparing their mind is a psychological mechanism to reinforce control over stress and fear. They believe that once the mind is stabilized enough, they will be able to clearly take appropriate actions in line with their choices: preparing and readying to leave for a safer place in the village. This way of thinking can be found in the Buddhist way of "sa-ti" (clear mind) and "pun-ya" (clear thinking). This reflects a risk perception that is placed alongside emotional or affective aspects. In contrast with Drabek's finding that the initial response to any warning is threat denial (Drabek, 1999), the older persons under this research respond to warnings by preparing their mind and ensuring their belongings are secured in a safe place. This can be explained by the fact that older persons are long familiar with flood and typhoon threats. Awareness and risk perception play an important role in protective action.

Collectivism orientation views the group goal over the personal goal. In this community which

appears to be closely knit by kinship, preparedness is shaped by social norms and values. The norm of "self-help and self-reliance" makes people responsible for their own safety and ready for collective action. Aged people conform to norms and compromise their need for property protection if they are asked to leave by the village headman, family members or neighbors, as collectivists tend to avoid social conflict. However, many of them state similarly that "once the typhoon comes, I don't need anyone to tell me to leave, I make my own decision." Even though the decision to evacuate is made by the individual, the orientation of the decision is on collective survival and tied to the strong sense of community which is a characteristic of agricultural communities (Larson and Dearmon, 2002 cited in McGee and Russell, 2003). This is the behavior in a collectivist society where concern for social norms can intensify risk aversion (Kongsomphong, 2005).

The findings of this study confirm the importance of social capital as well as trust in the conventional stages of disaster including preparedness, response, recovery and mitigation (Dynes, 2002) and in the work of Jakes et al. (2003) and Miller (2007). It was found in many studies that the behavior of people during a disaster is to band together, to seek out others and to establish bonds even with strangers because human nature is social (Reich, 2005). Social ties together with the respect for aged people and gender gives a positive benefit to people in a disaster situation. The community we have studied develops social ties from shared commonness, self-responsibility value and their close traditional society under the umbrella of the southern culture of self-dependence.

Aged people refer to the community norm to make critical decisions. Most of them were comfortable with evacuation and can be prompted to evacuate when influenced by social actors. The most influential person for preparedness and evacuation in this community is the Village Head. This is a key factor to discuss. The Village Head is a woman and she is trusted to be the leader of the village for more than fourteen years. Studies found that men and women view disasters differently. Women perceive the threat from natural hazards as more serious and risky than men. Women are risk-avoiders while men are risk takers (Cutter et al., 1992). As women have a dominant role in taking care of family members, women perceive risk as more threatening if it affects their family members. A study of Morrow and Enarson (1994) found that women prepare more due to their heightened perception of risk. This can be linked to the efficient preparedness of the Village Head as the leader of disaster management efforts in this village. Her team of assistants, which includes groups of women, is very active in community engagement including flood preparedness because the village holds community development activities that involve flood mitigation on a yearly basis. This can be explained by the fact that the Village Head and her assistants work together through female friendship networks and because floods pose a serious threat to their family and communities. Disaster preparedness benefits from female leadership and membership, and it is recognized by the authorities because this village later received an award from the Department of Disaster Prevention and Mitigation as an example of a flood-preparedness village. Home-visits to aged people's houses by the Village Head and her team represents social influence and brings about trust among villagers, including aged people. Thus, the major factor in making the evacuation decision is compliance to an evacuation order which at village

level must be authorized by the Village Head.

However, in the case of a more severe typhoon threat where community safety cannot depend on availability and improvisation of community infrastructure, evacuation to other places such as evacuation across provinces may be needed. In such a case the outcome of the evacuation decision may be different. Aged people may not want to evacuate to a new place as they may refer to their previous experience of evacuation and shelter in their own community. They may not want to stay in unfamiliar shelters which will require more effort to adjust or adapt. A systematic evacuation plan and operation must take into account the physical and psychological need of older persons.

Conclusion

This study found that aged people in the typhoon-experienced community perceive their risk and prepared themselves in response to typhoon warnings based on resilient principles of self-responsibility and self-reliance. Aged people expressed an intention to evacuate in the case of a typhoon but their actual evacuation depends on social influence and availability of resources such as safe evacuation route, safe shelter and safe mode of evacuation, as well as the actual scenario of the typhoon threat. It seems that aged people need assistance in typhoon evacuation. Early evacuation of older persons is recommended.

The findings call for providing accessible, understandable, timely warning information and providing evacuation services such as transportation, and an appropriate response plan to reduce vulnerability and increase the resilience of aged people.

（くろんかんと・ぱりちゃーと／元JICA防災能力向上プロジェクト・コンサルタント）

Bibliography

Bolin, B. “Race, class, ethnicity, and disaster vulnerability.” in Rodriguez, H. Quarantelli, E. and Dynes, R eds. *Handbook of Disaster Research*. New York: Springer Press, 2006.

Brunkard, J. et al. “Hurricane Katrina Deaths, Louisiana, 2005,” Disaster Medicine and Public Health Preparedness, August, 2008. Available at http://www.dmphp.org/cgi/content/abstract/DMP.0b013e31818aaf55v1

Bytheway, B. “Evacuation of older people: the case of hurricane Katrina.” 2007. Available at http://understandingkatrina.ssrc.org/Bytheway/

Cannon, T. “Vulnerability, ‘innocent’ disasters and the imperative of cultural understanding,” *Disaster Prevention and Management*, 17. 3.（2008）: pp. 350-57.

Charnkol, T. and Tanaboriboon, Y. “Tsunami evacuation behavior analysis: one step of transportation disaster response” *IATSS Research*. 20.2.（2006）: pp. 83-96.

Cookman, C. “Older people and attachment to things, places, pets and ideas.” *Journal of Nursing Scholarship*. 28. 3.（2007）: pp. 227-31.

Drabek, T.E. “Understanding disaster warning response.” *The Social Science Journal*. 36.3.（1999）: pp. 515-23.

Dynes, R. “The importance of social capital in disaster response,” preliminary paper No. 327, Disaster Research Center, University of Delaware, New York, U.S.A. 2002.

Eisenman, D.P. "Disaster planning and risk communication with vulnerable communities: lessons from Hurricane Katrina." *American Journal of Public Health*. 97. 1. (2007) : pp. s109–s115.

Enarson, E. "Violence against women in disasters: a study of domestic violence programs in the US and Canada." *Violence Against Women*. 5. 7. (1999) : pp. 742–68.

Fernandez, L.S. et al. "Frail elderly as disaster victims: emergency management Strategy." *Prehospital and Disaster Medicine*. 17. 2. (2002) : pp. 67-74.

Fussell, E. "Leaving New Orleans: Social Stratification, Networks, and Hurricane evacuation." (2006) Available at http://understandingkatrina.ssrc.org/Fussell/

Gillard, J.C. et al. "Living with increasing floods: insights from a rural Philippine community." *Disaster Prevention and Management*. 17. 3. (2008) : pp. 383-95.

Gibson, M.J. "We can do better: lessons learned for protecting older persons in disasters." Washington, D.C. *AARP public policy institute report*. 2006.

Haines, A. et al. "Climate change and human health: impacts, vulnerability, and mitigation," *Public Health*. 120. 7. (2006) : pp. 586-96.

Help Age International. "Aging and emergency: how disasters affect aged people," *Ageways*. 66. December. (2005) : pp. 4-5.

————. "Older people in disaster and humanitarian crises: guideline for best practice." London: U.K. 2006. Available at www.helpage.org

————. "Older people and Cyclone Nargis: a study of the situation of older people 100 days on," *Help Age International Asia/Pacific*. Chiangmai: Thailand. 2008. Available at www.helpage.org

Hilhorst, D.J.M. "Complexity and Diversity: Unlocking Social Domains of Disaster Response," in Bankoff G.F. and Hilhorst D.J.M. eds. *Mapping Vulnerability: Disaster, Development and People*, Earthscan, London: Routledge, 2004.

Horney, J. et al. "Factors Associated with Hurricane Preparedness: Result of a Pre-Hurricane Assessment." *Journal of Disaster Research*. 3. 2. 2008: pp. 143-49.

Kongsomphong, K. "Consumer Behavior Pre and Post the 2004 Tsunami." Paper presentation for the ANZMAT Conference 2005, Perth, Australia.

Lindell, M.K. et al. "Organizational communication and decision making for hurricane emergencies." *Natural Hazards Review*. 8. 3. (2007) : pp.50-3.

Local Administration Office. *The Population Statistics of Takham*.. Thailand: Local Administration Office Chumphon, 2007.

Long, N. "The Multiple optic of interface analysis," UNESCO background paper on interface analysis October 1999. Available at http://www.utexas.edu/cola/insts/llilas/content/claspo/PDF/workingpapers/multipleoptic.pdf

Los, S. A. and Schut, L.J. "The effective time course of preparation." *Cognitive Psychology*. 57. (2008) : pp. 20–55. Available at www.elsevier.com/locate/cogpsych.

Magnum W. et al. "Hurricane Elena and Pinellas Country Florida: some lessons learned from the largest evacuation of nursing home patients in history." *The Gerontologist*. 29. 3. (1989) : pp. 388-92.

Mayhorn, C. B. "Cognitive aging and the processing of hazard information and disaster warnings," *Natural Hazards Review*. 6. (2005) : pp. 165-70.

Mayunga, J.S. "Understanding and Applying the Concept of Community Disaster Resilience: A Capital-based Approach." Paper prepared for the summer academy for social vulnerability and resilience building, Munich, Germany, July 22–28, 2007.

Mileti, D. and Peek, L. "The social psychology of public response to warnings of a nuclear power plant accident." *Journal of Hazardous Materials*. Vol. 75, (2000) : pp. 181-94.

Miller, L.M., "Collective disaster response to Katrina and Rita: exploring therapeutic community, social capital and social control." *Southern Rural Sociology*. 22. 2. (2007) : pp. 45–65.

Peacock.W.G. et al. "Hurricane Risk Perception among Florida's Single Family Homeowners." *Landscape and Urban Planning*. 73. (2005) : pp. 120-35.

Paton, D. et al. "Preparing for bushfire: understanding intentions," *Disaster Prevention and Management*. 15. 4. (2006) : pp. 566-75.

Pongpaiboon, S. “Southern Thai Cultural Structures and Dynamic Vis-à-vis Development,” The Thailand Research Fund, Bangkok, Thailand. 2004.

Raid, J. and Norris, F. H. “Hurricane threat and evacuation intention: an analysis of risk perception, preparedness, social influence, and resources,” preliminary paper No. 271, Disaster Research Center, University of Delaware, Newark, Delaware, U.S.A.（1998）: pp.1–38.

Reich. J.W. “Three psychological principles of resilience in natural disaster.” *Disaster Prevention and Management*. 15. 5.（2006）: pp. 793–798.

Shannon, R. & Mandhachitara, R. “Private-label grocery shopping attitudes and behavior: a cross-cultural study.” *Journal of Brand Management*. 12. 6.（2005）: pp. 461-74.

Rosenkoetter M. et al. “Perceptions of old adults regarding evacuation in the event of a natural disaster.” *Public Health Nursing*. 24. 2.（2007）: pp. 160-8.

Sorensen, J.H., Shumpert, B.L, and Vogt, B.M. “Planning for protective action decision making: evacuation or shelter-in-place.” *Journal of Hazardous Materials*. 109.（2004）: 1–3, 1–11.

Tierney, K. “Disaster preparedness and response: research findings and guidance from the social science literature,” Disaster Research Center and Department of Sociology, University of Delaware, Newark, Delaware. Paper prepared for the U.S.-ROC Workshop on Natural Disaster Reduction, Taipei, Taiwan, June 24–26, 1993. Available at http://www.udel.edu/DRC/preliminary/193.pdf

---

1　This study was conducted in 2010.

2　Thai word for ‘storm wind’