



Factors influencing flood preparedness behaviour: case study of Ayutthaya community, Thailand *

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Overview ITP Program

Institution partner: Faculty of Architecture and Planning,
Thammasat University, Thailand

Duration: July 22nd, 2011 – Sept 22nd, 2011

Schedules:

- Developing research design (22/7/2011 – 12/8/2011)
- Tsunami field survey in Phuket (18/8/2011 – 21/8/2011)
- ITP International Workshop (23/8/2011 – 30/8/2011)
- Flood field survey in Ayutthaya (5/9/2011-8/9/2011)
- Guest lectures (15/09/2011)
- Data analysis and report writing (8/09/2011-21/9/2011)

Introduction

- Thailand devastating flood 2011 has been causing 816 people dead, affecting 8 million people (DPMD, Bangkok Post 2011) and damaging economic losses (as of December 1, 2011) THB 1,425 Bn (US\$ 45.7 Bn) (World Bank, 2011);
- Structural-flood protections → costly and take time, non-structural measures should be considered;
- Although efforts have been made to encourage people to get ready on flood, they do not take a proper action;
- Previous researches → single factor influencing preparedness (risk perception, self-identity, critical awareness, & place attachment) & rarely apply in the cultural heritage settings;
- Present study is to explore comprehensively personal and environmental factors in influencing protective behavior on flood and identify source of information used by community.

Source: Bangkok, 2011

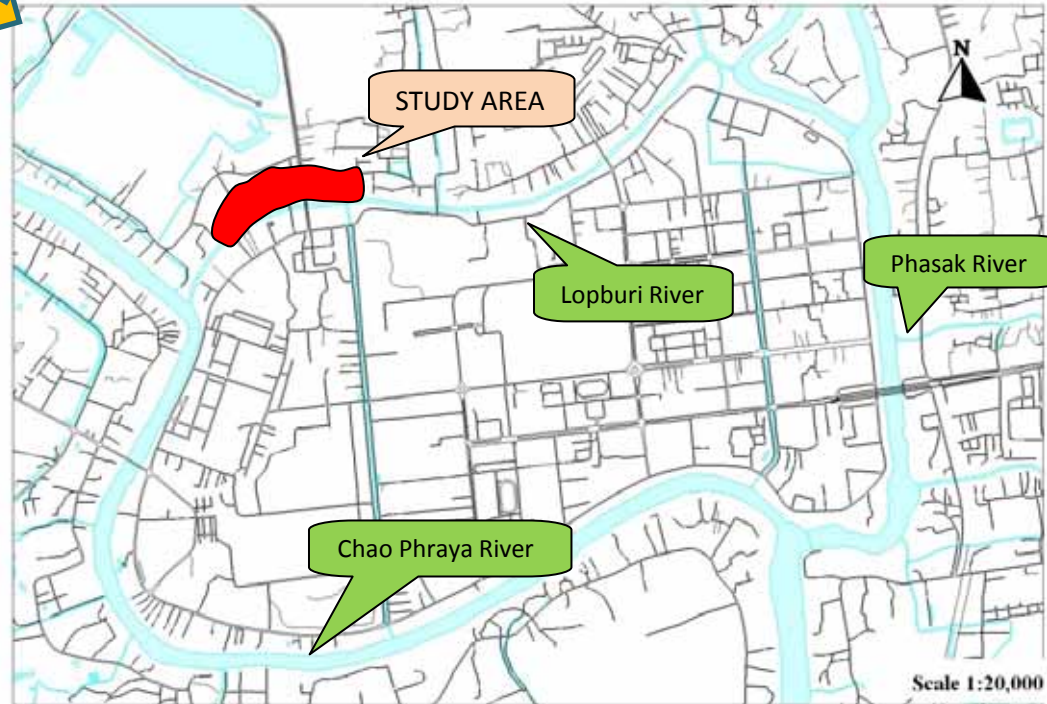


Study site

Ayutthaya Historical Park is one of the world heritage sites registered by UNESCO in 1991 that bring about the economic and social benefits for community surrounding areas, yet suffering from flood causing physical and psychological disruption



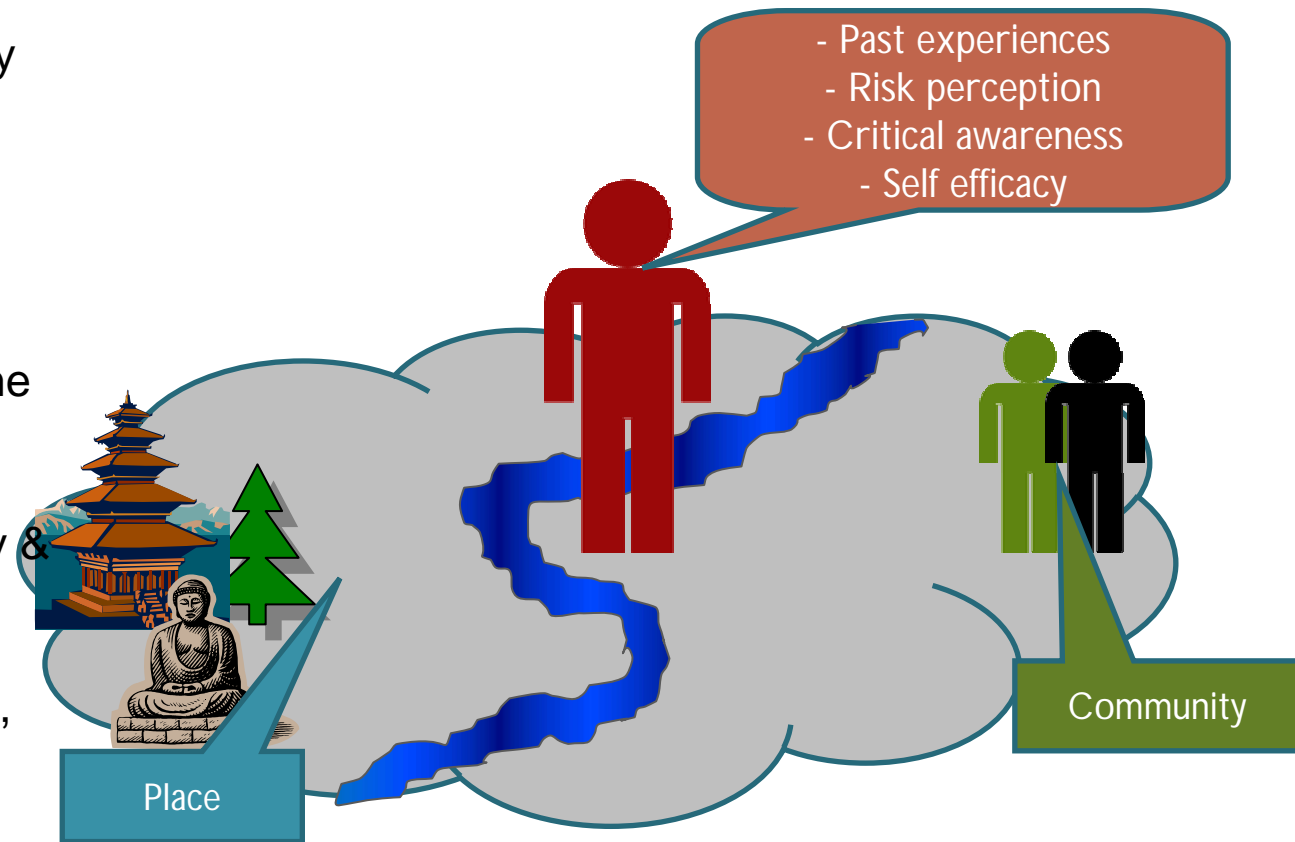
- Involving 150 household respondents & govt. officers;
- Door to door - questionnaire survey and in-depth interview;
- SPSS was used to analysis data.



Source: Department of Public Works and Town and Country Planning, Ministry of Interior, Thailand 2002

Theoretical framework

- Human behaviour is basically determined by personal factors and environmental factors (Bandura, 1986).
- Literatures & previous studies suggested some such sub-factors determined disaster preparedness (Krimsky & Golding, 1992; Paton, 2003; Sarason, 1974; Tanaka, 2005; Kapucu, 2008 ; Mishra, 2011).



Hypothesis:

Past-flood experiences (frequency, inundation level, property loss), self efficacy, critical awareness, risk perception, sense of community and place attachment determine the level of flood preparedness.

Measures

Independent Variables:

- **Risk perception:** how flood is likely happened and how it is severely affected (4 items, alpha=.749).
- **Critical awareness:** to extend that people thinking and discussing the flood in family and community (3 items, alpha=.853).
- **Self-efficacy:** perceived ability to cope with floods (4 items, alpha= .837)
- **Sense of community:** feeling similarity and interdependence with others (3 items, alpha = .846).
- **Place attachment:** feeling affective bond to the residential environment (3 items alpha = .846).
- **Past-flood experiences:**
 - Level of inundation in average (metre) (1 item)
 - Frequency of flood within last 5 years (1 item)
 - Properties loss (THB)

Dependent Variables:

- **Flood preparedness:** any action to prevent and reduce the impacts of flood (8 items, alpha = .748)



Source: Bangkokpost, 2011

Findings (1)

Profile of respondents:

- Gender (N=150): Male 38% and Female 61%;
- Year Living (N=150): <15 years (34%) & >16 years (66%)
- Boat ownership (N=150): Yes 91 (61%), No 56 (38%)
- Age (N=150): 15-25 (9%), 16-35 (10%), 36 - 45(25%), 46-55 (20%), 56-65 (14%) and 65 over (23%);
- Education (N=): No education 8%, Elementary 34%, Secondary 21%, Senior HS 17% and University 19%;
- Income (N=147): <2500 THB (10%), 2501-5000 (35%), 5001- 7500 (28%) and > 7500 THB 40 (27%)
- House's ownership (N=150): owner (85%), and renting (11%)
- Living with children/elderly (N=150): Yes 108 (72%) & No 40 (26%)
- House's distance to river (N=142): min 1 m & max 1200 (M=330 m)
- Television/radio ownership (N=150): Yes 147 (98%) & No 3 (2%)
- Mobile phone ownership (N=150): Yes 143 (95%) & No 6 (4%)
- Received THB 5000 compensation (last year)= Yes (71%), No (14%) and Don't know (15%)



Findings (2)

Table 1

Amount & source of information used:
Preparedness (Before) and warning

**Amount & Source of Information related -flood
(7 point scale, Never → Very much)**

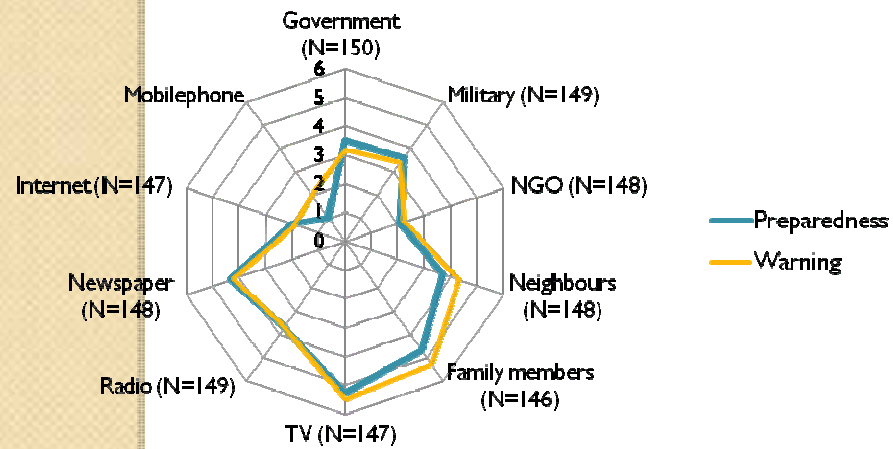
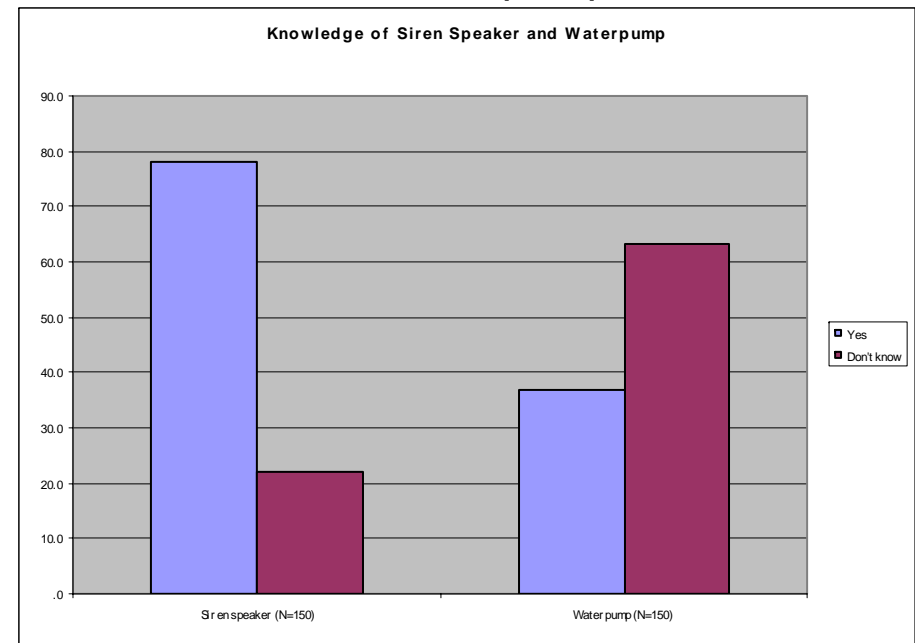


Table 2

Information about siren speaker
and water pump



Findings (3)

Using the enter method, a significant model emerged ($F_{8,120}=13.570$, $p<0.000$). Adjusted R square= .456

Table 3: Regression Output

No.	Independent Variables (IV)	Mean (SD)	Coefficient Regression (b)	Sig
1.	Frequency of suffered flood	4.2 (1.16)	.308	.000
2.	Level of inundation (m)	1.1 (0.61)	-.166	.022
3.	Loss caused flood (THB)	6,851 (5,040)	.143	.051
4.	Risk perception	4,3 (1,21)	.067	.351
5.	Critical awareness	5,0 (1,31)	.444	.000
6.	Self-efficacy	4,3 (1,35)	.196	.007
7.	Sense of community	4.9 (1.52)	.158	.043
8.	Place of attachment	4.3 (1.69)	-.165	.023

* DV = preparedness (Mean: 3.9 and SD: 1.2). N = 121

Risk perception was not a significant predictor of the preparedness
Level of inundation & place of attachment negatively predict preparedness

Findings (4)

Flood preparedness items

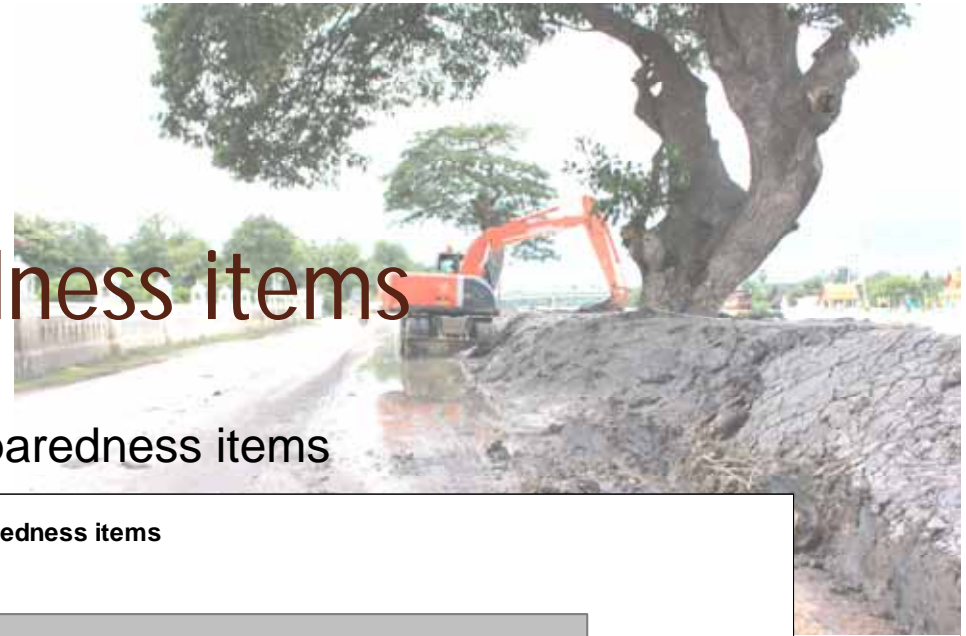
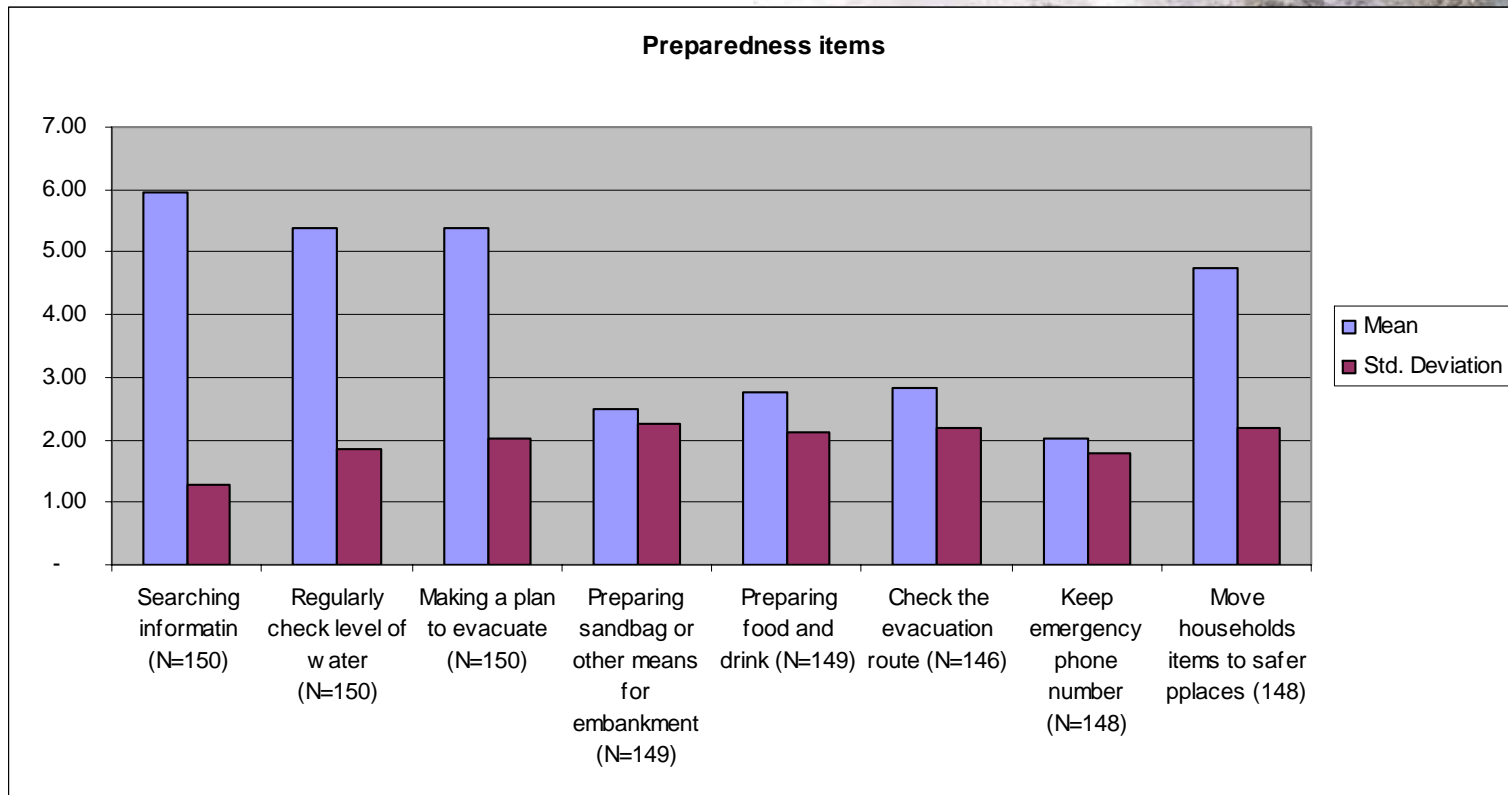


Table 4: Preparedness items





Discussion

- The government policies are focused on response rather than preventive approach;
- Level of flood preparedness was categorised as a low among community (M=3,9);
 - There was limited information from government;
 - People have limited knowledge how to prepare;
- Sense of community & critical awareness are important for community to cope with flood problem;
- Community depends on TV (instead of government) in obtaining knowledge of preparedness and early warning;
- (-) level of inundation & place attachment → people's "frustration" of un-solving problem of flood in their areas.

Conclusion

- Preparedness predictors → Environmental and personal factors are important;
- Level of preparedness → critical awareness, sense of community & place should be supported by appropriate knowledge and resources (eg. sandbag, evacuation information);
- Government policies → public education and campaign on disaster preparedness instead of responding action;
- Intervention → community based approach is required
- Risk communication strategies → TV (preparedness) and mobile phone (warning) are among suitable means for community → improving government management;
- Future research → the capacity of government in managing flood hazard and their relation with the community.