



The 2014 International Training Workshop on Post-disaster Recovery
27 -31 October, 2014
Taipei, Taiwan

Community adaptive strategies in the aftermath of Typhoon Morakot

Yi-Chung LIU (Gloria)

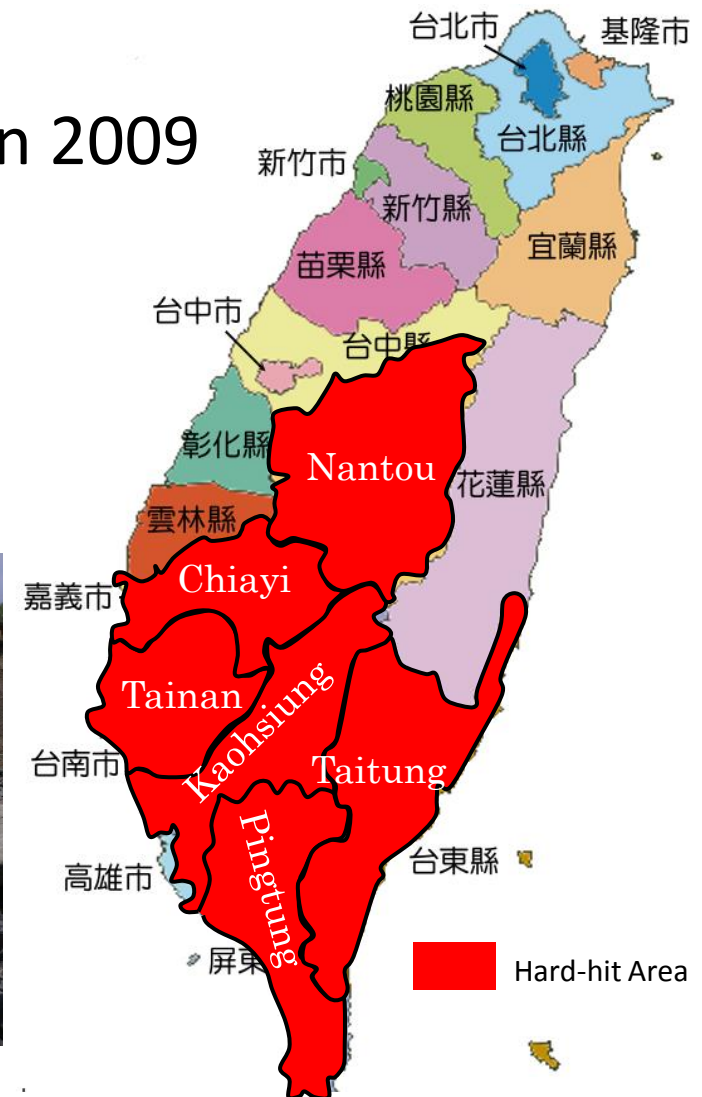
Senior Assistant Research Fellow, National Science and Technology Center for Disaster Reduction

Ph. D. candidate, Dept. of Real Estate & Built Environment, Univ. of National Taipei University

Introduction

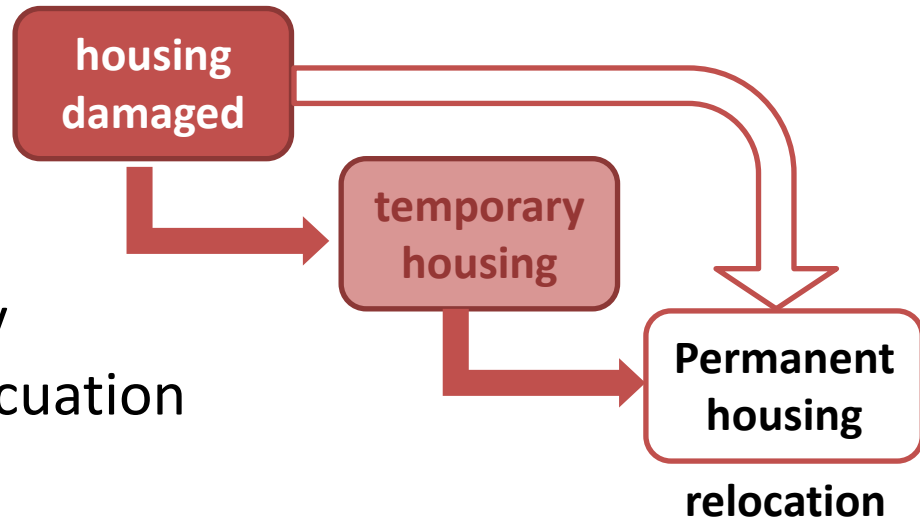
The devastating Typhoon Morakot in 2009

- death toll: 699
- Landslides: 1,349
- debris flow: 46
- total loss: US\$ 6.66 billion



Introduction

- Recovery principle:
 - short-term recovery
 - collective relocation
 - discourage in-situ recovery
 - large-scale mandatory evacuation



Introduction

- The relocation policy had adverse effects to community recovery, such as livelihood, culture, access and landownership.
- Impacted communities are exposed to landslide, yet attempt to enforce in-situ recovery instead of relocation

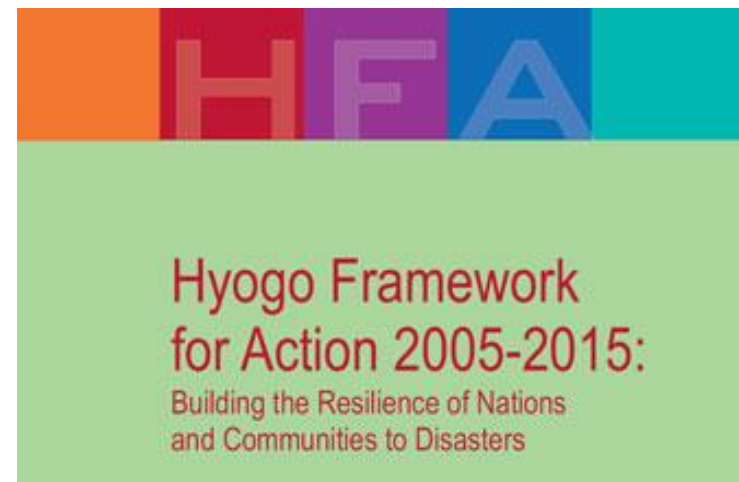
Adaptive Strategy



Hyogo Framework for Action 2005-2015

“building disaster resilience community”

- ... disaster risk reduction are mutually supportive objectives, ..., accelerated efforts must be made to build the necessary capacities at the **community** and national levels to manage and reduce risk.
- The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the **community level**, that can systematically contribute to building resilience to hazards.



Community-Based Disaster Management

<http://www.youtube.com/watch?v=kFZ5jz8H17c>

防災社區 防災まちづくり

Community-Based Disaster Management

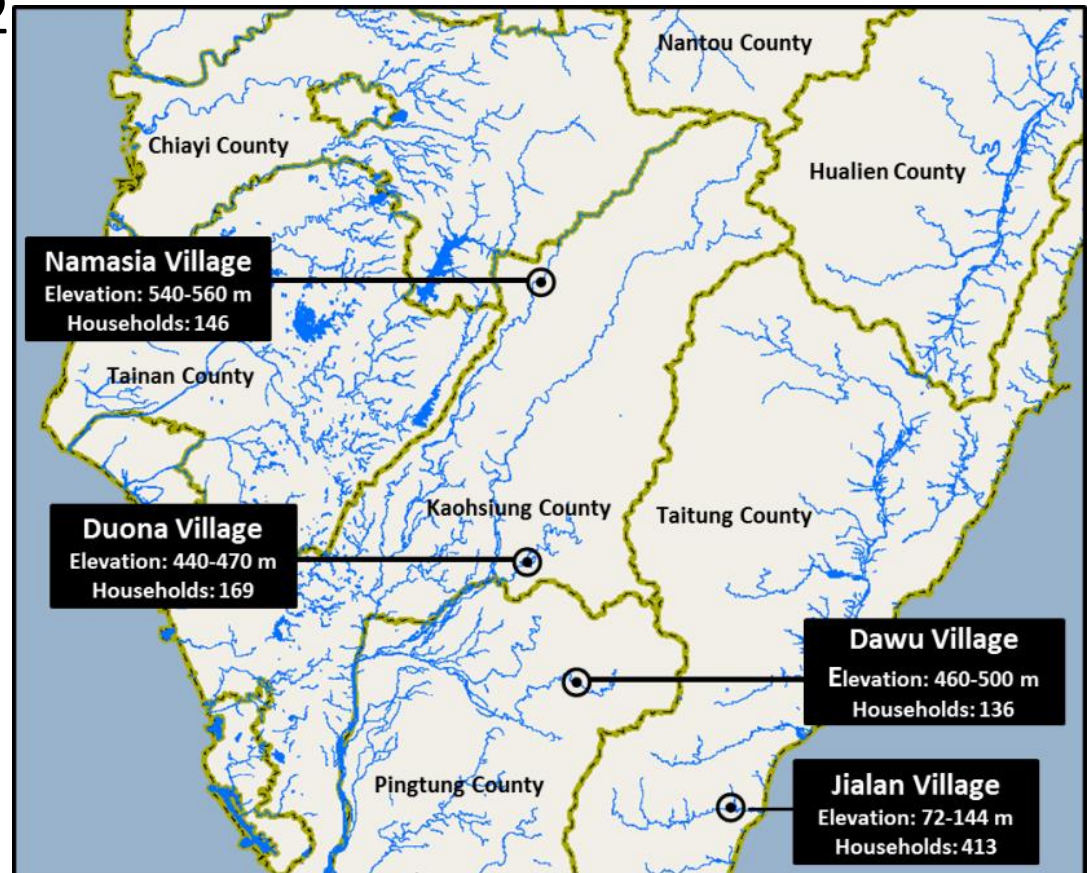


國家災害防救科技中心

National Science and Technology Center
for Disaster Reduction

Four case studies

- **Method:** Participatory research methodology
- **Study period:** 2010~2012



* C: Casualty; H: House; I: Infrastructure ; ◎: severe damage; ○: mild damage

Four case studies: *Duona* (多納)

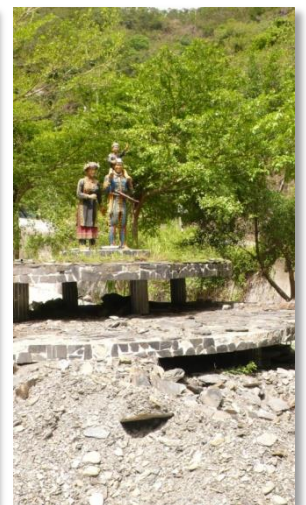
General characteristics

- A hilltop village (elevation: 440 m ~ 470 m)
- Surrounding by a river and a creek
- Households: 169 / Population: 576
- Livelihood: tourism by hot spring



Typhoon Morakot's effects

- 11 commercial buildings were damaged
- Officially announced as a “safe” village
- No need to relocate



Four case studies: *Duona* (多納)

The CBDM project

- Initiated by CCRA & NCDR in 2010
 1. field survey
 2. hazard mapping
 3. team organization
 4. typhoon scenario exercise
 5. basic disaster response skills
 6. hazard awareness campaign



Four case studies: *Jialan* (嘉蘭)

General characteristics

- Located on the upper ground and low-lying ground adjacent to the Taimali River (elevation: 72 m ~ 144 m)
- Households: 413 / Population: 1349
- Livelihood: agriculture and handicraft

Typhoon Morakot's effects

- 56 damaged houses
- Officially announced as an “unsafe” village
- In-place relocation on the upper ground



Four case studies: *Jialan* (嘉蘭)

The CBDM project

- Initiated by WVT in 2011
 1. field survey
 2. hazard mapping
 3. community contour model
 4. team organization
 5. typhoon scenario exercise
 6. in-situ emergency evacuation plan



Four case studies: *Nasalu* (南沙魯)

General characteristics

- A hillside village (elevation: 540 m ~ 560 m)
- Located at the confluence of two rivers
- Households: 146 / Population: 845
- Livelihood: agriculture and handicraft

Typhoon Morakot's effects

- 35 deaths / 130 damaged houses
- Officially announced as an “unsafe” village
- Be relocated in a collective permanent housing site (40 km far away)



Four case studies: *Nasalu* (南沙魯)

The CBDM project

- Initiated by WVT in 2011
 1. field survey
 2. hazard mapping
 3. typhoon evacuation plan



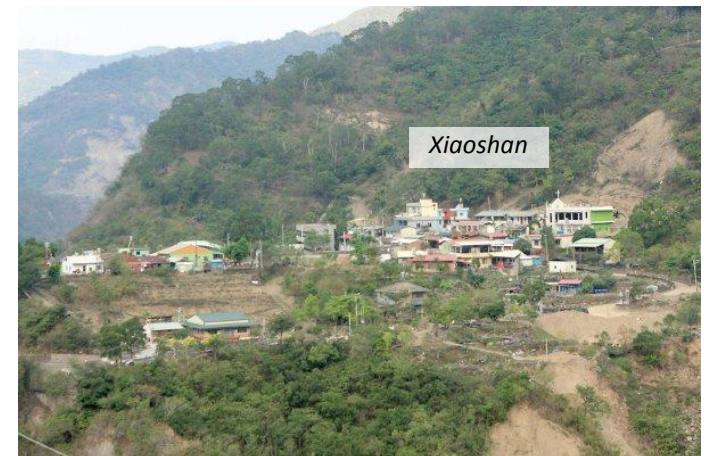
Four case studies: *Dawu* (大武)

General characteristics

- A hilltop community (elevation: 460 m ~ 500 m)
- Including two villages, *Xiaoshan* (小山) & *Dongchuan* (東川)
- Households: 136 / Population: 427
- Livelihood: part-time labor (out of town)

Typhoon Morakot's effects

- **Disconnected with outside for months** (broken roads and bridges)
- Officially announced as a “**safe**” village
- No need to relocate



Four case studies: *Dawu* (大武)

The CBDM project

- Initiated by WVT in 2011
 1. field survey
 2. hazard mapping
 3. typhoon scenario exercise
 4. basic disaster response skills training



Adaptive strategies to typhoons

Village	Typhoon Morakot			post-disaster relocation	
	Impacts*		safety assessment		
	C	H	I		
Duona (多納)			◎	safe (isolation)	none
Jialan (嘉蘭)		◎	◎	unsafe (isolation)	in-situ relocation
Nasalu (南沙魯)	◎	◎	◎	unsafe (isolation)	collective relocation
Dawu (大武)		○	◎	safe (isolation)	partially relocation

* C: Casualty; H: House; I: Infrastructure ; ◎: severe damage; ○: mild damage

Adaptive strategies to typhoons

Village	Typhoon Morakot			safety assessment	post-disaster relocation	adaptive strategies
	Impacts*					
	C	H	I			
Duona (多納)			◎	safe (isolation)	none	<ul style="list-style-type: none">• no need to evacuate• rainfall monitoring• safety watch• emergency supplies

Risk reduction

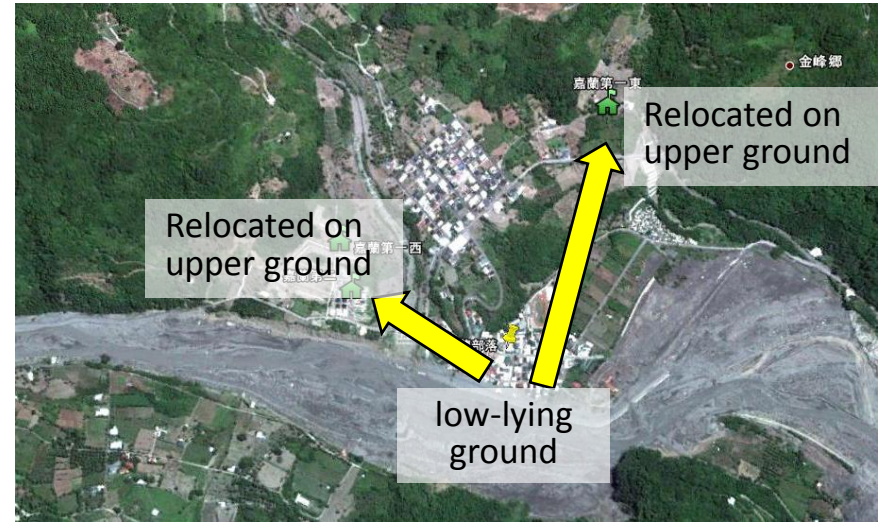
may be appropriate to communities with less vulnerable by reinforcing organization capability & evacuation plan.



Adaptive strategies to typhoons

Risk transfer

may be applied to communities with limited area exposed to substantial risk by rearranging the exposed area.



Jialan (嘉蘭)	◎	◎	unsafe (isolation)	in-situ relocation	<ul style="list-style-type: none"> • in situ evacuation • sheltering operation • rainfall monitoring • safety watch
Nasalu (南沙魯)	◎	◎	unsafe (isolation)	collective relocation	<ul style="list-style-type: none"> • small-scale emergency evacuation • sheltering operation
Dawu (大武)	○	◎	safe (isolation)	partially relocation	<ul style="list-style-type: none"> • large-scale emergency evacuation

Adaptive strategies to typhoons

Risk avoid

may be adopted by communities with vulnerable geographic condition (Nasalu) or vulnerable residents (Dawu).



	Safety watch					
Nasalu (南沙魯)	◎	◎	◎	unsafe (isolation)	collective relocation	<ul style="list-style-type: none">• small-scale emergency evacuation• sheltering operation
Dawu (大武)		○	◎	safe (isolation)	partially relocation	<ul style="list-style-type: none">• large-scale emergency evacuation• Temporary sheltering

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Thank you for your attention!