ADAPTATION PRACTICES OF SMALL ISLANDS IN THE PHILIPPINES

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CASE STUDY

Bohol, Philippines





Cilometers

8

Ubay

Batasan

Source: Project Seahorse (2015)



Tubigon, Bohol, Philippines



Note: Population data from Community-Based Monitoring System (CBMS) Census 2014-2015 of the Municipality of Tubigon



TIDAL FLOODING

Onset of tidal flooding



Note: Islands rarely experienced flooding before earthquake

Causes of tidal flooding:

- Local: earthquake (2013)
- Global: accelerated sea level rise

Social impacts of flooding



ADAPTATION STRATEGIES



350 Pacific

Adaptation in Tubigon, Bohol



Permanent relocation to mainland



Challenges

Municipal Government struggling:

- Main reason: <u>no funds</u>
- No construction yet
- No livelihood assistance
- Temporary solution: <u>Evacuation during</u> <u>hazards mandatory</u>

Community reluctant to move

- Main reason: <u>Livelihood</u> based on fishing
- Relocation site also prone to disasters: river flooding, and tidal flooding

Temporary evacuation to mainland

	Before Earthquake	After Earthquake
Evacuation practice	Rarely evacuated	Readily evacuates to designated area on island or mainland
Risk information	Typhoon strength	 Typhoon strength Tide level Timing: Peak tide vs expected landfall
Decision criteria	Strong typhoon is destructive	Weak typhoon during high tide is destructive

Challenge to implementation

Current early warning systems do <u>not</u> provide tidal info

Effectiveness against tidal flooding

Prevented loss of lives during the passage of several typhoons

Ecosystem-based adaptation

Challenges

Reefs

 Ability of corals as natural wave barriers <u>not well-known</u> by communities
 Were <u>mined</u> instead



Mangroves

- Ability of mangroves <u>well known</u>, being <u>planted</u> eagerly
- ➤Variety of <u>planted mangroves not as resilient</u> against waves (Villamayor et al, 2016)



Coastal engineering

Island	Seawalls
Batasan	No seawalls, but want to build one on Habagat* side
Ubay	Habagat*side functional (35m), Amihan* new (9m)
Pangapasan	Habagat* side functional (24m), Amihan* collapsed (20m)
Bilangbilangan	Habagat* side collapsed (220m), Amihan* none

*Note: Habagat = Southwest monsoon, Amihan = Northeast monsoon

Damaged (Bilangbilangan)



Challenge: old seawalls damaged

Damaged seawalls offer <u>reduced protection</u> against waves

Environmental risk: Seawalls (damaged or not) can <u>accelerate coastal erosion</u>

	Maladaptation	Successful Adaptation	
	Adaptation-maladaptation continuum		
acar	Towards more vulnerable, inequitable laptation that increases risk for humans ad ecosystems, has mitigation tradeoffs	Towards equitable and effective adaptation with human, ecosystem and mitigation co-benefits	
Benefits to humans	Increases social vulnerability and/or causes unintended harm to humans	Decreases social vulnerability; build adaptive capacity to new disturbances	
Benefits to ecosystem services	 Increases climate-related impacts on ecosystems and ecosystem services 	Reduces climate-related impacts on ecosystems and ecosystem services	
Equity outcomes	Worsens present and/or future condition of the poor, low-income, ethnic groups and/or females	Highly beneficial to the poor, low-income, marginalized ethnic groups and/or females	
Fransformation potential	Does not facilitate or unintendedly inhibits deep, systemic change	Contributes to deep, systemic change of norms, practices, behaviors	
Reduced GHG emissions	Causes additional GHG emissions	Does not increase GHG emissions OR has mitigation co-benefits (e.g. sequesters CO2)	

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