

The Role of Social Capital on Farmers'Infrastructure Recovery after Typhoon Mangkhut in the Philippines

Linnel Ballesteros (Ph.D. Student, 1st Year, Civil Engineering, Emphasis: Construction Engineering and Management)
Advisor: Dr. Cristina Poleacovschi (Assistant Professor)

Overview and Methods

Practical Problem

In disaster management, mitigation and preparedness in the agricultural sector are difficult. Existing studies propose mitigation solutions that prepare farmers before the disasters¹. However, due to limited resources of low-income farmers, the suggested mitigations have not been adopted by most farmers yet. Thus, we look into the immediate response of farmers after a disaster. It is important to know what resources are handy for disaster recovery when respondents have not reached their areas yet. Moreover, it is important to understand if social capital channels those identified resources.

Goal

- To determine the accessible resources of a low-income agricultural community that influences resilience in a disaster.
- Improve the understanding of how a certain community characteristic, social capital, impacts the process of disaster recovery.

Research Questions

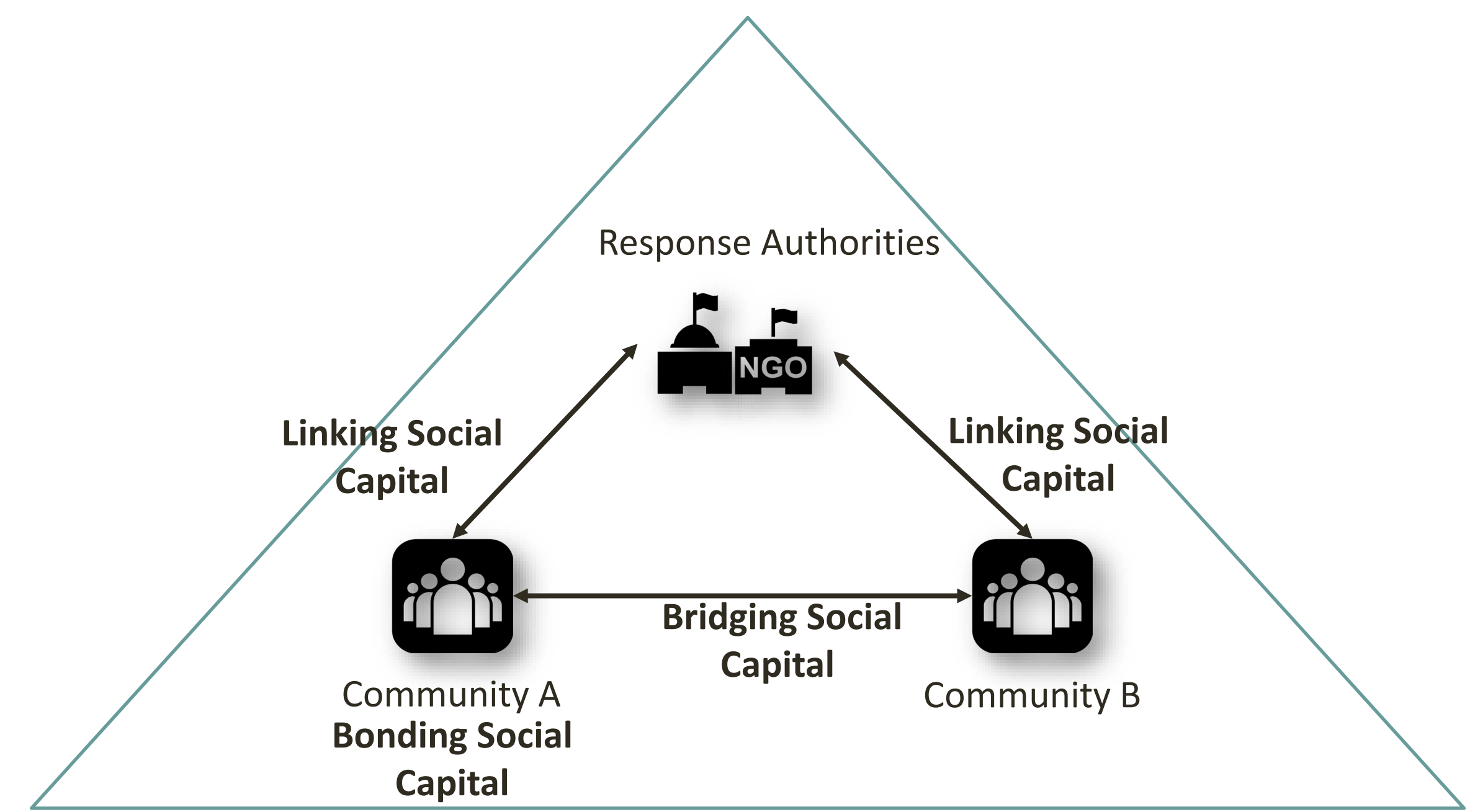
- How does social capital influence infrastructure recovery and access to resources in farming communities in the Philippines?
- What infrastructure are immediately addressed immediately after a disaster?

Context

- Farms that grow produce for the majority of the Filipino consumers are found in the rural mountainous areas of the Cordillera Administrative Region in the Philippines.
- On September 15, 2018, Typhoon Mangkhut made landfall in the said region.
 - Floods and landslides had significantly damaged the farms, affecting the food supply in the country.
 - Landslides blocked access of Halsema Highway from farms to the trading posts.

Theory

Social capital is a feature in a community that helps to improve the ability and efficiency to produce the desired outcomes of society-facilitated efforts through their coordinated actions ^{2,3}



Methods

Data collection

- In the valley of La Trinidad lay hectares of strawberry and vegetable farms, developed by the Department of Agriculture and Benguet State University. Through the Department of Agriculture, the municipality opened its gates for the authors to interview further farmers in the valley.
- 33 one-on-one interviews were conducted in Benguet Agri-Pinoy Trading Center (BAPTC), the trading post where wholesalers transact businesses with the local farmers, whose produces are coming from all areas of the Cordilleras.

Analysis

- Data was analyzed using narrative analysis
- Axial and Open Coding



Strawberry farm in La Trinidad



Author's sketch of a map indicating the vicinity of the respondents' farms



The author, originally from the Philippines, interviews a farmer who is repacking his potatoes in BAPTC.



Author joining a farmer on his coffee break on a foggy afternoon in La Trinidad.

Tables and Results

		Resources				
		Financial Support	Human Labor	Relief Goods	Spiritual Support	
Bonding	Family	21%	64%	3%	0%	
	Neighbor	6%	58%	3%	0%	
	Church	9%	3%	6%	45%	
	Tribal Group	0%	0%	0%	0%	
	Finance Cooperatives	12%	0%	0%	0%	
	Other memberships	6%	0%	3%	0%	
Bridging	Village	0%	6%	0%	0%	
	Church	0%	15%	0%	0%	
	Tribal Group	0%	12%	0%	0%	
	Finance Cooperatives	3%	0%	0%	0%	
	Other groups	0%	3%	0%	0%	
Linking	Local Government	0%	3%	6%	0%	
	Municipal Government	3%	0%	9%	0%	
	Provincial Government	3%	0%	0%	0%	
	National Government	0%	0%	0%	0%	
	NGO	3%	0%	6%	0%	
N= 33						

Table 1. Type of resources acquired through the use of social capital

		Infrastructure				
		Agricultural Materials	Water & Irrigation	Road Access	Shelter	Others
Bonding	Family	30%	0%	3%	9%	0%
	Neighbor	9%	6%	24%	9%	0%
	Church	3%	0%	0%	0%	0%
	Tribal Group	0%	0%	0%	0%	0%
	Finance Cooperatives	0%	0%	0%	0%	0%
	Other memberships	6%	0%	0%	3%	0%
Bridging	Village	3%	0%	3%	0%	0%
	Church	3%	0%	6%	0%	6%
	Tribal Group	9%	9%	0%	0%	0%
	Finance Cooperatives	0%	0%	0%	0%	0%
	Other groups	3%	0%	0%	3%	0%
Linking	Local Government	9%	0%	9%	0%	0%
	Municipal Government	9%	0%	12%	0%	0%
	Provincial Government	3%	0%	9%	0%	0%
	National Government	0%	0%	0%	0%	0%
	NGO	3%	0%	0%	0%	0%
N= 33						

Table 2. Type of infrastructure immediately addressed after the disaster

Result 1

The most immediate resource is human labor coming from their families.

Result 2

Agricultural infrastructure has benefited the most from the social capital-channeled resources through financial support and manual human labor from their families.

Discussion and Importance

Bonding Social Capital

Out of the respondents, 21% said they have relied on the family bonding social capital for recovery of financial support, 64% on human labor, and 45% on spiritual support. 30% of them said they benefited from bonding social capital for the agricultural infrastructure recovery and 24% on road access.

"Through teamwork, like *Bayanihan*. When they were done helping me, we moved on to the next ones who needed help, and it went on and on."

- A farmer in Strawberry Farm, La Trinidad

Bridging Social Capital

Among the respondents, 15% said that they received help from churches of different religions through human labor. The farmers recovered their agricultural infrastructure (9%) and water irrigation (9%) by receiving help from other tribal groups.

"...we have five *sektas* so we just help each other... I'm glad and thankful that those from other *sektas* are helping together... it's typical because we don't take things personally."

-Vegetable farmer from Bakun, Benguet

Linking Social Capital

Most of the farmers got help from the government on the Municipal level for relief goods (9%). Linking social capital helped the farmers recover the road infrastructure (12%) through the help of the municipal government.

"...because the people asked help from the mayor... so they provided equipment, vehicles, and bulldozers to open up the road... it's great!"

- High-Value Crops farmer from Buguias, Benguet

Practical Contribution

- Addresses the immediate lack of resources right after a disaster when the community becomes inaccessible to disaster response authorities.
- Empowers the community to become resourceful when resources are scarce.
- Useful learning resource for Disaster Management frameworks to be able to assign community members tasks when the community becomes inaccessible right after a disaster.

Theoretical Contribution

- An improved understanding of the contextual impacts of social capital during disaster recovery
- Refines the theory of social capital through features among farming communities

Future Work

- Understand how social capital impacts communities using cross-country comparison (i.e., US Midwest Flooding).
- Conduct surveys and use to analyze quantitative data on the farming communities' recovery duration and number of connections correlation

Reference

- ²Aldrich, D. P. (2012) Building Resilience: Social Capital in Post-Disaster Recovery
³Field, J. (2008) Social Capital
¹Jordan, G.,NORA, M. (2012) Resilience, Pathways and Circumstances: Unpicking livelihood threats and responses in the rural Philippines

Acknowledgment

The authors would like to thank Benguet Agri-Pinoy Trading Center, The Department of Agriculture-CAR, and The Municipality of La Trinidad for opening their gates for our researchers. Most importantly, the authors would like to acknowledge the citizens of the Philippines whose spirit and resiliency remains impressive and is the motivation of this work.



(Above) A vegetable farmer, wearing a shirt that says "sigla"; Sigla is a Tagalog word that means "zeal".



(Left) Author surrounded by the staff of Benguet Agri Pinoy Trading Center.