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Editor's Note

The Journal of Public Affairs and Development (JPAD) is a double-blind peer-reviewed journal that is published annually by the College of Public Affairs and Development (CPAf), University of the Philippines Los Baños (UPLB). It accepts research articles, research notes, and policy papers. Original research articles on development studies and governance, particularly on agrarian and urban development, agricultural and extension education, community development, development management and governance, education management, and strategic planning and public policy are given priority. Submission of research notes highlighting commentaries on the application of specific methodology/model, methodological innovations, theoretical insights from the analysis of data, or preliminary empirical findings that merit immediate publication are also encouraged. The Journal also welcomes papers that analyze policy issues, which are based on a policy-oriented research.

Preferred are papers from research and model applications at the community and institutional levels that blend scientific disciplines and integrate social and technical knowledge. The JPAD emphasizes the transdisciplinary approach in development studies, consequently catering to readers from a wide range of disciplines, including scientists, practitioners, administrators, policymakers, and students in social sciences, natural sciences, and related fields.

This volume contains seven research articles. Five articles evaluate different issues or concerns (i.e., service delivery; community capitals management practices; water governance; knowledge, attitudes and practices of dog owners; and persistence of poverty) in a specific community. One article explores the influence of social network approach in transferring policy, while the remaining article is on the social and economic benefits of organic agriculture.

Amores and **Querijero** assessed the service delivery in Makati Homeville (MH), Calauan, Laguna, focusing on the Makati Social Welfare and Development-Extension Office's collaborative capacity. The results indicated that despite the collaborative initiatives taking place in MH, some basic services needed improvement, particularly access to livelihood, electricity, and potable water.

Focusing on two villages in Thailand, Nongtakhem in Buriram province and Somboon in Surin province, **Suwannakam** and **Dizon** analyzed the community capitals management for household well-being. Findings of the household survey conducted showed that both villages practiced all the community capitals management strategies (group membership, family planning, sufficiency economy, savings plan, household accounting, and secondary occupation) except family forest management, which was practiced only in Somboon.

Dayo et al. examined the various water governance roles of state and non-state actors within the Santa Cruz Watershed (SCW) in the Province of Laguna, Philippines amidst increased competition for water use due to rise in population and urbanization. Results of the focus group discussions and key informant interviews with state and non-state actor groups indicated that both state and non-state actors positioned themselves to support their respective interests. In times of water shortage, local governments at the village and the municipal levels coordinated and negotiated among themselves for access to water sources.

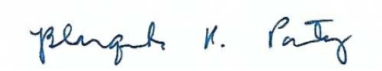
Meanwhile, **Piamonte** and **De la Cruz** assessed the knowledge, attitudes, and practices on rabies among dog owners in the Municipality of Los Baños, which is also located in the Province of Laguna, Philippines. The results of a survey of 418 dog owners in three barangays of Los Banos showed that although most of the respondents knew about rabies, their knowledge was limited. The bulk of respondents practiced regular feeding, dog grooming, and vaccination, but only a little over half of the dog owners interviewed confined their dogs at home. Registration of dogs was done by just a minority.

The article of **Lapitan** and **Palis** explored the different measures of embeddedness within a social network of mayors in the Province of Bohol, Philippines, and examined whether policy transfer mechanism hinge on the social network approach (SNA). Results of the survey of 24 mayors in Bohol indicated higher incidence of policy attitude similarity between a mayor and his immediate (ego) network peers compared to the similarity with peers in the broad network.

Madlangbayan and **Rola** evaluated the empirical support of the health and environmental benefits of organic agriculture by generating data from a survey of rice farmers and focus group discussions in rice farming communities. The results implied that farmers failed to identify social benefits with economic benefits that they could derive from

adopting organic agriculture practices. Future policy research using multidisciplinary approaches is recommended where technical data can support the socio-economic analysis.

The last article by **Usman** and **Baconguis** studied the contributory factors why poverty persists among the poorest communities in Tawi-Tawi, Philippines: the Badjaos. Results revealed that conditions of deprivation that keep the Badjao people poor include low educational background, lack of skills, low aspirations, low income, lack of assets, poor nutrition and health conditions, poor social and political capabilities, and poor access to limited services. A collaborative and culturally sensitive model of program intervention for the Badjaos is proposed. The components of which are participative, informative, and formative, and the proposed model involves the networking of various institutions.



BLANQUITA R. PANTOJA
Editor-in-Chief

TABLE OF CONTENTS

The Journal of Public Affairs and Development
Volume 3, Numbers 1 & 2, 2016, pp. 1-31
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Toward Building Collaborative Capacity: Assessment of Service Delivery in Makati Homeville, Laguna, Philippines

CHRISTIE C. AMORES[1*] and NELSON JOSE VINCENT B. QUERIJERO[2]

ABSTRACT. This study assessed the service delivery in Makati Homeville (MH), Calauan in Laguna, Philippines. Specifically, it analyzed the perceived strength of the collaborative capacity of the Makati Social Welfare and Development-Extension Office (MSWD-EO) in the areas of accountability, outcomes, delivery and alignment, and proposed mechanisms by which service delivery can be scaled up to ensure sustainability. The Collaborate and United Nations Development Programme's Collaborative Capacity Framework was adopted to examine key areas of public service delivery where collaboration could be strengthened to ensure better outcomes. The perceived strength was measured by computing the mean scores of respondents' numerical rating for each statement. The data from qualitative sources were used to validate numerical data and track the historical development of MH. It was revealed that despite the collaborative initiatives taking place in MH, some basic services needed improvement, particularly access to livelihood, electricity, and potable water. The perceived strength of MSWD-EO's collaborative capacity was "strong" across key areas of service delivery. A closer examination of qualitative data, however, revealed some weak areas in the design (outcomes), risk (alignment), innovation (delivery), and transparency (accountability). Putting collaborative framework at work would require mobilizing substantial resources and overcoming constraints in project management. It is necessary that a framework for inter-local government relations governing off-city resettlement is formulated, approval of House Bill 5144 is secured, and a memorandum of agreement be signed between Makati and Calauan Local Government Units.

Keywords: *collaborative capacity, service delivery, collaborative capacity framework*

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INTRODUCTION

The rapid growth of urban population exacerbated by the insufficient capacity of the government to provide effective social and economic infrastructures has brought forth a number of development concerns in the Philippines. One of the most evident outcomes is the mushrooming growth of slums or informal settlements in urban areas (Lagman, 2011; Navarro, 2014; Ooi & Phua, 2007; Watkins, 2013). Approximately 51 percent of the total number of informal settler-families in the country are scattered in Metro Manila. These families settle in areas often classified as danger zones, such as riverbanks, railroad tracks, bay coast, and under the bridges. Their lack of legal claim over the land that they occupy expose them to deplorable conditions given the unsanitary environment, congestion, poor access to basic services, and inadequate urban infrastructures (Gilles, 2012; National Economic Development Authority; UN Habitat III, 2015).

In an attempt to manage urban population and ensure the safety of informal settlers, the Philippine government has largely concentrated on relocation measures within and outside the central cities (Choe & Laquian, 2008; Laquian, 2008; Peña, 2014)[i]. Numerous policies have been enacted to ensure that socialized resettlement programs are carried out in observance of the standard conditions set forth by the international human rights law. It is, for instance, stipulated in the Local Government Code of 1991 (Republic Act [RA] 7160) that the local government units shall provide "low cost housing and other mass dwelling" for homeless families.

The Housing and Urban Development Act (RA 7279) and Comprehensive and Integrated Shelter Finance Act (RA 7835) set forth the mechanism for comprehensive housing program and urban development as well as regular increase of annual appropriation for national shelter program, respectively. These policies also strongly recognize the role of civil society, communities, and private sectors in securing the delivery of basic services by collaborating with the government for short-term and long-term development projects. However, there have been no

[i]Administrative and economic measures to manage or counter urban population growth vary across Asian countries. As part of the City Cluster Development Strategy in China and Vietnam, for instance, they follow an internal household registration system called "hukou" that restricts migration of rural dwellers to cities. There are also certain social and economic services that are limited to bonafide urban residents (Choe & Laquian, 2008). Similar to India, Pakistan, and Thailand, the Philippine government focuses on relocating informal settlers to other areas, often suburban.

clear stipulations as to the roles of implementing and receiving local government units (LGUs) in case of near-city or off-city resettlement. The Philippine Congress is yet to approve amendments to RA 7279 requiring "the local government unit that implements the relocation or resettlement and the concerned national government agencies…provide the other basic services and facilities[ii]… to the recipient local government unit where relocation or resettlement is located" (p.9).

In Ballesteros and Egana's (2012) review of the National Housing Authority (NHA) resettlement program (2007-2011), they noted that on the average, NHA had allotted 79 percent of its annual budget for the resettlement of informal settlers in Greater Manila Area (94%) and outlying provinces (6%). This clearly suggests that on a per program basis, resettlement had been a priority over other NHA's housing programs, such as slum upgrading, sites and services, completed/ core housing, and medium rise housing. Resettlement expenditure is mainly divided into project development (including housing support), land acquisition, and other project-related capital outlay. By providing decent and affordable housing, adequate social services and livelihood opportunities, it is expected that the overall conditions of families in resettlement areas would be improved (Ballesteros & Egana, 2012).

However, from the review of news articles and development studies published online, contrary evidence emerged undermining service delivery in government-owned relocation sites.

The existing policies seemed to be futile as many relocatees within or outside metropolitan areas complained about: a) forced eviction from original abode to resettlement areas without proper transition; b) lack of consultation with affected families prior to relocation; c) poor facilities in relocation sites; d) poor access to livelihood opportunities; e) insufficient social services; f) limited financial assistance to maintain and improve housing projects; and g) environment-related concerns such as infectious diseases, flooding, and unsafe and unsanitary environment (Condeza, 2014; Brown, 2009; Dominguez & Ito, 2014; Ellao, 2013; Gonzales, 2013; Magkilat, 2014; Rodriguez, 2015; Ruiz, 2015; UN Habitat,

[ii]The other basic services and facilities include "health, education, communications, security, recreation, relief and welfare".

2007). These problems were usually attributed to the limited capability of the government to fulfill its legal obligations, create long-term solution to poverty, and provide necessary facilities for the integration of relocatees in their new community. The local government, on the other hand, often complained about financial constraints making the provision of adequate social and economic services an elusive work plan. In effect, some relocatees opted to return to their original settlements where they could find better livelihood opportunities for their families.

This study generally sought to assess the quality of service delivery in the context of a resettlement area in Calauan, Laguna. Makati Homeville (MH) is a 40-hectare property owned and operated by the City Government of Makati. The Makati Social Welfare Department - Extension Office (MSWD-EO) serves as the primary delivery channel of government programs and services in the area. The perceived strength of MSWD-EO's collaborative capacity in service delivery was analyzed particularly in the areas of accountability, outcomes, delivery, and alignment. The need to scale up its collaborative capacity in each of these four areas was also examined based on the data gathered from quantitative and qualitative sources.

With reference to the testimony of Calauan Mayor Buenafrido Berris during the Senate hearing dated 5 May 2015, MH is classified as an LGU-owned property within another LGU. There is no memorandum of agreement (MOA) signed between the City Government of Makati and the Municipal Government of Calauan as to the role of each unit in the development of MH and its residents. Yet, despite the confusion over jurisdiction of MH, Mayor Berris claimed that they assume responsibility over all residents seeking assistance from the local government (whether registered voters or not). They also conduct compliance monitoring in MH with reference to the development plan submitted to them by the Makati City government.

Presently, MH shelters a total of 1,031 families evicted from danger zones (waterways) and illegal settlements in different areas of Makati in 2009 (MSWD-EO, 2013). Apart from the housing units, the entire compound has two-storey elementary school building, two-storey high school building, communal rest rooms, chapel, government office, and a covered court for recreational purposes. It also has an ample unfilled space suitable for farming and community gardening.

Almost 60 percent of the total number of households in MH were living with a monthly income of PhP3,000.00 and below. To help augment

their income, MSWD-EO provided livelihood projects and financial assistance including Food for Work, Cash for Work, Rice for Work, health insurance programs, cash gifts for senior citizens, medical/dental missions, burial assistance, and annual *Pamaskong Handog* (Christmas gift package). It also forged partnership with other organizations offering assistance that is aligned with its own development agenda. Thus, apart from MSWD-EO initiated programs, the relocatees were also receiving assistance from its service partners in public and business sectors and non-profit organizations (MSWD-EO, 2013). Yet still, there are multiple and complex issues in the community that necessitate forging wider cross-sectoral collaboration. More than one-third was compelled to leave their houses unoccupied and rent a small space in Manila so they could be closer to work and other potential sources of livelihood (MSWD-EO, 2013). Some of them are called the "weekenders" as they only go home to MH during weekends after a 5-day work in Metro Manila. This persists despite the number of on-going livelihood projects, social services, and financial assistance provided by the MSWD-EO and its partner organizations. Even more alarming is the alleged incidence of prostitution (sex for food), drugs and other criminal activities (e.g., stealing) involving children in the area due to poverty (Cinco, 2015). The residents also demand for a more reliable source of potable water and electric supply.

MSWD-EO would not be able to measure up to the demands of relocatees without effectively engaging stakeholders, innovating different areas of service delivery and forging strong collaborative networks. A systematic assessment of MSWD-EO service delivery in line with its collaborative capacity could lead to an understanding of its strengths as well as the areas that can be scaled up to ensure sustainability. This study was premised on Collaborate and United Nations Development Programme's (UNDP) recently launched framework in public service delivery, which takes collaboration at the core of reform initiatives, particularly in the areas of "accountability, outcomes, delivery, and alignment" (Kippin, 2015, pp.2-3).

Considering the nature of issues confronting the Makati Homeville project, the framework's emphases on promoting accountability, engaging the citizens throughout the cycle of service delivery, ensuring congruence of values among partner agencies, and prioritizing the needs and aspirations of the citizens were applicable in assessing the current state of public service delivery in the area. A comprehensive account of forces that either thwart or accelerate service delivery would significantly aid in aligning their actions to a path closer to

collaboration. The strategic lessons derived from on-going interventions could be instrumental in making necessary actions to effectively secure the needed social and economic infrastructures in the community. These could also help lay down the groundwork for sustaining MH toward becoming a strong and resilient resettlement community.

Theoretical Framework

This study adopted Collaborate and UNDP's Collaborative Capacity Framework in assessing the public service delivery in Makati Homeville. A well-functioning public sector that advocates strong collaboration and delivers adequate services aligned with the needs of the community is at the core of this delivery framework. This is premised on the assumption that the public sector cannot deal with the variety of community issues on its own. From the consolidated cases of collaboration among the government, private sectors, non-profit organizations and local communities in United Kingdom, Collaborate is able to map out crucial areas of public service delivery where collaboration has to take place and identify sets of factors (called enablers) supporting it. The framework is specifically designed to optimize the delivery of UN Sustainable Development Goals (SDGs), particularly those working in the local level. Kippin (2015) noted that this "can be discussed, adapted, and applied internationally" and can be further tailored by "those who want to make it happen on the ground" (p.4). It is, therefore, highly adaptive to match local conditions in countries like the Philippines where collaborative undertaking has already started its course. MSWD-EO had to deal with a range of complex issues in MH such as shifting government leadership, budget constraint, and increasing demand for services by the relocatees, which may have detrimental effects on the development process. The Collaborative Capacity Framework could be strategically operationalized to respond to these emerging complexities by working through the enablers in each of the four cyclical areas of service delivery (i.e. outcomes, alignment, delivery, and accountability).

The term "outcomes" pertains to the extent by which the end targets are co-developed by citizens putting their needs and aspirations ahead of other concerns. It specifically focuses on generating insights, brokering relationships, and designing interventions to achieve the set end target. Alignment, on the other hand, looks into how service providers innovate ways of working together with other service partners across sectors. It covers the role that new perspectives on "risk, incentives, and resources play in building effective delivery partnerships" (Kippin, 2015,

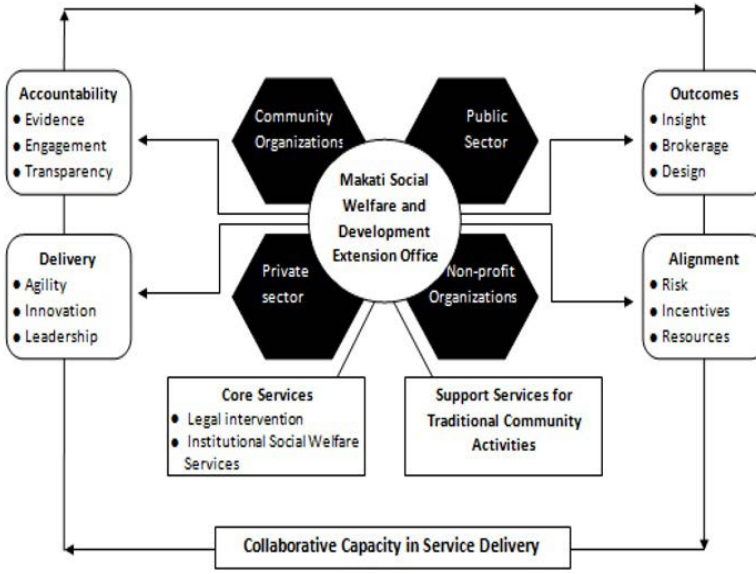

Figure 1. Collaborative capacity in public service delivery framework
(adopted from Collaborative Capacity Framework for Public Service Excellence by Kippin, 2015)

p.7). Delivery focuses on the extent by which public services are delivered while ensuring that the actual process is aligned with the service goals. The framework maintained that "innovation, agility, and great leadership characterize the best and most sustainable delivery partnerships" (p.7). Lastly, accountability pertains to the ability of the service provider to share power with the citizens, disclose vital information and account for its own actions. It explores how collaboration in public service delivery can be sustained by evidence, engagement, and transparency. Kippin (2015) argued that effective collaboration could be cultivated in these four areas to secure better service delivery outcomes.

In examining the perceived strength of collaborative capacity, emphasis was given on MSWD-EO's core and support services. The core services were further divided into two: a) legal intervention service for criminal cases involving children and minor community disputes; and b) institutional social welfare and development services. The support services were those initiated by service partners within and outside MH requiring assistance (i.e., manpower, monitoring) from MSWD-EO.

While it cannot be argued that collaboration was already taking place, there was a need to examine the quality and extent to which it was observed within and across different areas of service delivery. The study explored how MSWD-EO managed to sustain partnerships with different organizations from the government, business, and civil society (community and non-profit organizations). By stimulating and sustaining its collaborative capacity, it was assumed that MSWD-EO would be able to further multiply its lever in service delivery leading to improved outcomes. This would also result to a more empowered community, as relocatees are no longer considered mere recipients but active participants of service delivery.

METHODOLOGY

Location of the Study

This study was conducted in Makati Homeville (MH), a 40-hectare relocation site located in Barangay Dayap, Calauan (72.5 km away from Makati) in Laguna, Philippines. The site is divided into three phases with a total number of 56 blocks. Each enlisted informal settler-family was awarded a lot covering an area of 40-60 m^2. A total of 263,305.90 m^2 has been allotted for residential structures, which can accommodate more than 6,000 families. The MSWD-EO was established at Phase III near the elementary and high school buildings. It serves as the center for community activities in the site.

Data Collection

Data were collected through documentation review, interviews, focus group discussion (FGD), and self-administered survey. Two sets of self-administered questionnaires were used. The first questionnaire was designed for MSWD-EO, while the second questionnaire was for the 30 MH Home Owners' Association (HOA) officers, block leaders, and members. For the collaborative capacity scale, each of the four areas of service delivery had 15 activity statements or a total of 60 (five for each of the three enablers per area) statements. Each statement corresponded to the description of the specific enabler in the Collaborative Capacity Framework. The respondents were asked to put a check under the number that corresponded to how frequent the MSWD-EO performs the given activity statement (i.e., 5 - always; 4 - often; 3 - sometimes;

Figure 2. Community Map of Makati Homeville (Ladon, 2014)

2 - rarely; 1 - never; and 0 - I do not know). The documentation review, interview, and FGD were used to generate in-depth data and validate information obtained from the self-administered survey.

Data Analysis

The perceived strength of collaborative capacity was analyzed based on the computed average score of all activity statements corresponding to the enablers of each key service delivery area. Average scores were interpreted as follows: 1:00 - 1:80 = very weak, 1:81- 2:60 = weak, 2:61- 3:40 = moderate, 3:41- 4:20 = strong, and 4:21 - 5:00 = very strong. A higher score suggests stronger collaborative capacity.

The data collected from different sources were cross-examined to validate the accuracy of findings. The perceived strength of MSWD-EO's collaborative capacity was validated by comparing the results of both surveys with the data derived from FGDs and interviews. The latter allowed for a more interactive inquiry and discussion unfolding complex issues in the community that were not adequately covered, if not hidden, in survey findings. Data triangulation was also done to strengthen the research findings and amend inadequacies in one source.

RESULTS AND DISCUSSION

Historical Development of Makati Homeville

Makati Homeville, popularly known as "Binay Compound," is a resettlement project for the informal settler-families living in high risk and government-owned areas in Makati city. The entire area is estimated to accommodate more than 6,000 families (Cinco, 2015; Frialde, 2015). There are 56 blocks from phases one to three but only 12 blocks have been occupied up to date. Included in the functional amenities that can be found in the area are MSWD-EO building, covered court, chapel, a building with eight communal comfort rooms and eight communal bathrooms, day care center, and school buildings both for elementary and high school levels (MSWD-EO, 2013).

Construction of the relocation site. In 2007, the Makati City government procured parcels of land in Barrio Santol, Barangay Dayap for the development of its socialized housing program. The total cost of site development was estimated at PhP140 M. Informal settler-

families began to transfer to the area in 2009 but most of them had to build their own makeshift houses as the construction of houses was not part of the city government's initial plan (Frialde, 2015). A review of existing documents revealed that development (i.e., physical, social, economic) was slow in the area for the first four years of operation. They lacked basic services including water and electricity. They had to rely on alternative sources like building water pump and tapping electricity from an outside source. The site was also far from the public market and health center. The financial assistance provided by MSWD-EO was not enough to sustain the needs of the relocatees and their families forcing more than 30 percent of them to live off-site. The City Government of Makati constructed 395 units of houses up to 2013. Around 235 families, however, are still living in makeshift houses as house construction in Phases 1 and 2 are not yet completed (Abad et al., 2014; Cinco, 2015).

Partnership and community building. In 2012, MSWD-EO started implementing livelihood trainings but these did not really lead to the creation of sustainable livelihood enterprises due to lack of strong market partners and insufficient start-up capital (Abad, 2014). To broaden their resource base and improve service delivery, MSWD-EO further forged partnership with different organizations in Laguna and Makati. The community, on the other hand, took an active turn by organizing "traditional" events including the celebration of the feast of Our Lady of Guadalupe, Simbang Gabi (Evening Mass), Christmas Party, and Youth Camp. These events have become the much-awaited annual festivities in the community up to this date.

It was not until 2014 when the MSWD-EO intensified its campaign to encourage relocatees to file official residency in Calauan, Laguna so they may avail the social services provided by the government in both municipal and provincial levels (Cinco, 2015). Ms. Maribel Lumang, former Makati City Social Welfare Development officer, explained in an interview with Philippine Daily Inquirer correspondent, Ms. Maricar Cinco, that it took a couple of years for some relocatees to register in Calauan, because they probably did not want to cut their residential ties with Makati.

Issues on inter-local governmental relations. When asked who has the jurisdiction over MH, Area Coordinator Rommel Ducay said openly, "This is now under the jurisdiction of Calauan but they still benefit from the services of Makati." There had been no clear agreement as to the joint legal responsibility of Makati and Calauan Local Government Units (LGUs) in the development of MH. The implementing

rules and regulations of RA 7279 has no specific provisions on the legal procedures involved in off-city or near-city relocation. Calauan Mayor Berris, during the Senate hearing last May 2015, expressed his confusion over inter-local government relations and requested the legislators to clarify standard rules to follow when an LGU has a property in another LGU. He reported that Makati LGU ignored the moratorium that they issued on MH in 2011 due to poor compliance to the development plan (i.e., supply of water and electricity) and still opted to send relocatees in the area. There was even an instance when he was not allowed to enter MH premises without clearance from Makati LGU.

Provision of basic services. The Makati City LGU secured the needed permits for the electrification of Makati Homeville during the last quarter of 2014. All areas covered by Phase 3 had ready access to electricity. Street lights had also been established replacing the solar street lights provided by Malayan Colleges Laguna in 2013. The Makati Engineering Office already conducted a pre-evaluation of housing units in Phases 1 and 2 for the power supply installation. A water line system design had also been installed in two housing units but was still subject to the approval of the Makati City engineer.

In response to the allegations that MH relocatees were severely neglected by Makati LGU, former MSWD Officer-in-Charge Ryan Barcelo claimed that they strictly adhere to the provisions of Urban Development and Housing Act (RA 7279). He explained in an interview with The Philippine Star correspondent Mike Frialde that the city government has been providing them livelihood skills training, financial assistance, leadership, values formation seminars, and other social welfare and development programs since they transferred in 2009 (Frialde, 2015). The then incumbent Vice President Jejomar Binay, on the other hand, went even further, asserting that the Makati Homeville project is a "model in the housing sector" (Macas, 2015). The long delay in the electrification of area, according to him, was due to the negligence of Twin Leaf Group Inc., the project's contractor allegedly owned by the former Makati Vice Mayor Ernesto Mercado. Calauan Mayor Berris claimed that the Twin Leaf Group did not coordinate with the local government of Calauan properly in the actual development of Makati Homeville. Consequently, Twin Leaf Group, Inc. violated certain rules and regulations in the construction of functional amenities in the site. It also failed to pay 80-percent contractor's tax as mandated by the Local Government Code (Frialde, 2015).

A total of 3,476 persons (630 families) were living in the area as of 2013. The average household size was six. Majority of the relocatees had low educational attainment and relied on low paying jobs. Ninety percent of them worked as drivers, construction workers, vendors, and house painters, while the remaining 10 percent was employed in government and private companies in Metro Manila, if not overseas (MSWD-EO, 2013). Other problems indicated in MH Comprehensive Plan that the community had been facing include: a) non-operational high school building, b) lack of household water connection, c) out-of-school youth, d) frequent incidence of theft, and e) gaps in security measures. Some families were still living in makeshift houses waiting for their opportunity to be provided with cemented housing units by the local government.

While these issues remained unresolved, there had also been notable changes taking place in the community through time (2012-2015). These were: a) establishment of MH Homeowners' Association (MHHOA) and block officers; b) strengthening of a cooperative; c) establishment of functional day care and elementary school; d) formation of *tagapamayapa* or peace officers; and e) implementation of various social, health, family, and livelihood services by MSWD-EO and partner organizations. The relocatees believed that the participation of business and public sectors and non-profit organizations outside MH presented ample opportunities for community development (MSWD-EO, 2013).

Figure 3 shows the authors' analysis of developments done in MH. The phases of development in MH was influenced by the resources allotted by the MSWD-EO and its partner organizations. There was a need to clarify the inter-local government relations of Makati and Calauan to ensure proper coordination of delivery of public services. Despite the changes that had occurred through time in different aspects of community life, MSWD-EO had to continuously meet the complex demands of the relocatees and solve problems as they arise. Poor access to viable employment and livelihood opportunities undermined other development services that MSWD-EO and its partner organizations were providing for the community. Almost 60 percent of the total number of households were still earning below PhP 3,000.00 every month. Any attempt to make MH a sustainable community would be futile without generating adequate sources of livelihood and improving the living conditions in the area. As a local social welfare and development agency, it was the primary role of MSWD-EO to formulate measures that would provide livelihood opportunities and improve living conditions of poor families in MH.

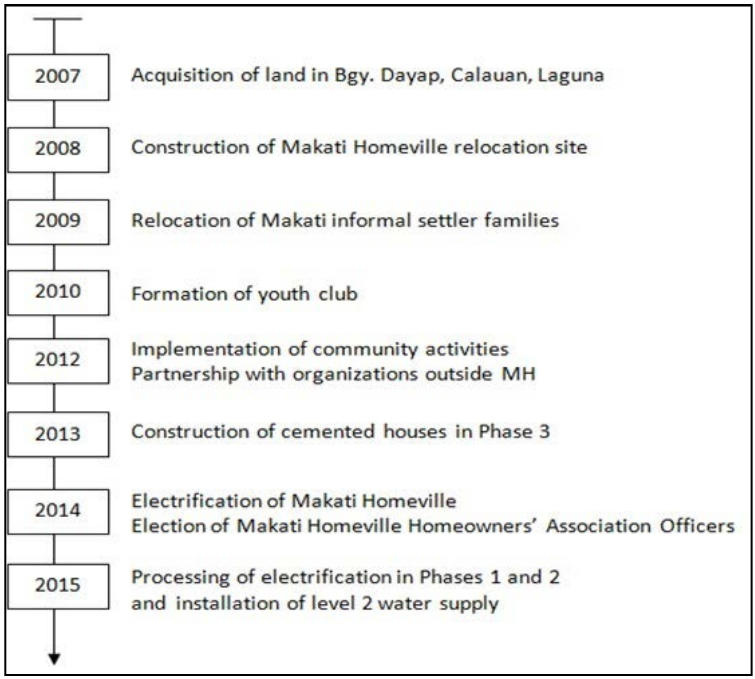

Figure 3. Timeline of On-site and Community Development in Makati Homeville (Source: Authors' Analysis)

Profile of Makati Social Welfare and Development Extension Office and its Partner Organizations

The Makati Social Welfare and Development Extension Office **(**MSWD-EO) was established in 2008 primarily to provide the needed assistance and facilitate development process in Makati Homeville. It is tasked to carry out social and development services until such time that the relocatees and their community are capable of meeting their own needs. MSWD-EO is under the Informal Settlers' Section of MSWD. As mentioned earlier, the services provided by MSWD can be generally classified into two: core services and support services. The core services pertain to institutional services initiated and managed by MSWD-EO for the benefit of the relocatees with the help of partner institutions. These services can be further divided into social and development services and legal intervention.

Social and development services pertain to those that are regularly offered to the relocatees to help them meet their needs and uplift their living conditions. These include Day Care Center, Cash for Work, Yellow Card (health card)[iii], Blue Card (for senior citizens)[iv], *Damayan (mutual aid)*, and *Pamaskong Handog* (Christmas gift package). The values formation, skills training, and livelihood seminars initiated by MSWD-EO are also included in this category. The legal intervention service, on the other hand, points to their authority to mediate and settle disputes and problems involving children, their families, and the community at large (e.g., juvenile delinquency, family conflicts, loan disputes).

The support services pertain to those that are initiated by the partner-organizations which require the assistance of MSWD-EO. The decision of the MSWD-EO to approve the proposed services primarily depend on the required manpower to carry them out and, more importantly, to the extent by which these are aligned with the identified priority concerns of the community.

In 2013, MSWD-EO formulated seven pillars of community development (Table 1) that served as specific guidelines in their development work in Makati Homeville. Each guideline is carried out through a number of institutional services catering to all relocatees in the area.

The Cash for Work is offered to a maximum of 300 families every year. The beneficiaries receive cash assistance in exchange for the work that they render for the community. Some of these include cleaning up the streets and school, construction of community centers, and planting crops and ornamental garden plants. In 2014, MSWD-EO decided not to offer Rice for Work and Food for Work, and focus on Cash for Work instead since the relocatees preferred direct financial assistance. Food procurement and repacking also normally took longer time considering the required governmental process that had to be followed. Apart from the above-cited services, the relocatees also benefit from Day Care Center, Yellow Card, Blue Card, *Damayan*, and *Pamaskong Handog*. Yet Mr. Ducay noted that they need financial assistance from other organizations to sustain these activities, especially those related to livelihood, health, values formation, and capability building.

[iii]Yellow Card gives Makati residents access to free hospitalization in Makati. They are only required to give PhP200 as donation if hospital bill exceeds PhP5,000.00.

[iv]Blue Card holder in MH receives cash gift twice a year from the City Government of Makati.

Table 1. MSWD-EO seven pillars of community development and the corresponding institutional services

PILLAR OF COMMUNITY DEVELOPMENT	INSTITUTIONAL SERVICES
1. Strong community organizing	▪ Monitoring of Makati Homeville Homeowners' Association and block officers' general monthly meeting
2. Participatory governance	▪ Cash for work ▪ Food for work ▪ Rice for Work
3. Livelihood and access to market	▪ Livelihood trainings (e.g., trainings on beauty care, wellness massage, paper briquette making, rug making, straw bag making, and pineapple jam making) ▪ Establishment of cooperative
4. Gender sensitivity	▪ Responsible parenting seminar
5. Ecological sustainability	▪ Implementation of Zero Plastic Policy ▪ Establishment of materials recovery facility (MRF) ▪ Street beautification
6. Food security	▪ Organic farming
7. Health (hygiene and sanitation)	▪ Feeding program

For eight years, MSWD-EO has worked together with ten organizations/institutions within and outside Makati Homeville. The key players for inter-sectoral collaboration prescribed by Collaborate and UNDP's Collaborative Capacity Framework are all represented in MSWD-EO's list of partner institutions: a) two community organizations, b) one from the private sector, c) two from the public sector, and d) five non-profit organizations.

Forging collaboration with organizations within and outside Makati Homeville is not without problems. Issues encountered are often due to unclear agreements when it comes to project monitoring and reporting in which, if not properly addressed, lead to strained relationships among partners or even termination of joint projects. In fact, of these 10 partners, only six have remained active as of January 2016.

Perceived Strength of MSWD-EO Collaborative Capacity

In the self-administered survey, the respondents were asked to check the number that corresponds to how frequent they think MSWD-EO performs the given activity statements. This part was further divided into four thematic areas with three enablers each. Five activity statements for each enabler were given, adding to a total of 60 statements. The results were analyzed based on the computed average score of each activity statement. A higher score was an indication of stronger collaborative capacity. These were validated through the data obtained from interviews and FGD. The discussion below and Table 2 present the strength of collaborative capacity for each thematic area as perceived by MHHOA officers, block leaders, and MSWD-EO Area Coordinator.

Table 2. Perceived strength of MSWD-EO's collaborative capacity in the four areas of service delivery

THEMATIC AREA	ENABLER	AVERAGE SCORE	INTERPRETATION
Outcomes	Insight	4.04	Strong
	Design	3.88	Strong
	Brokerage	4.35	Very Strong
	General average	*4.09*	*Strong*
Alignment	Risk	3.54	Strong
	Incentive	3.87	Strong
	Resources	3.68	Strong
	General average	*3.71*	*Strong*
Delivery	Agility	4.06	Strong
	Innovation	3.91	Strong
	Leadership	3.76	Strong
	General average	*3.91*	*Strong*
Accountability	Evidence	3.71	Strong
	Engagement	3.95	Strong
	Transparency	3.61	Strong
	General average	*3.75*	*Strong*

Outcomes. The respondents' perceived strength of MSWD-EO collaborative capacity in promoting outcomes was "strong" (4.09). All the three enablers fell within the "strong" interval scale.

Of the three enablers, "brokerage" was perceived to be the enabler where MSWD-EO demonstrated the strongest collaborative capacity (4.35). This was consistent with data obtained from interviews and FGD. The MSWD-EO organizers, based on their extensive knowledge of the community, examined first whether or not the people were willing and able to participate in the proposed project before embarking into collaborative partnership. Mr. Ducay, for instance, declined the proposed feeding program of a non-profit organization knowing that the community officers could not meet its demands. The community officers were invited to participate whenever partner-institutions presented their proposed projects and detailed out the process involved in the implementation. They were also given opportunity to provide alternative measures if they were not amenable to the established plan. An informant from the private sector-partner, for instance, recalled that they had to change the initial layout of solar street lights installation because the community volunteers could not understand the blue print that the engineering students prepared for them. The volunteer carpenters preferred the traditional way of setting up structures, which they were accustomed to do.

MSWD-EO organizers also continuously looked for partner institutions or individual donors to help them improve the delivery of existing services. They created opportunities wherein the relocatees could work together with those from the other blocks in community activities (e.g., organic farming, sports events).

"Insight" got the second highest average score (4.04) in this thematic area. It basically looked into the capacity of MSWD-EO to explore deeply into the needs and aspirations of the people. The result can also be considered consistent with the data obtained from other sources. The Office was required to prepare census and needs assessment report for submission to DSWD-Makati before launching institutional services. Since Mr. Ducay was a beneficiary of the program and lives within the community, it was relatively easy for him to know the personal needs, wants, and aspirations of his fellow relocatees. He can go into the minute details of their personal lives even those that are already beyond the realm of public service. When he learned about what happened to the three victims of illegal recruitment, for instance, he immediately acted upon it even if it is no longer the responsibility of social welfare service.

MSWD-EO also conducted asset and resource mapping which they used in building the community further.

Although "design" got the lowest average score (3.88) in this area, it was still rated "strong" by the respondents. The results, however, were not consistent with the data obtained from interviews with MSWD-EO and partner institutions. In reality, MSWD-EO and partner-institutions did not conduct pilot-testing of the programs and services. When asked to discuss the common process they observed in conceptualizing and implementing their services, Mr. Ducay made no mention putting them first into small-scale trial. The same observation can be derived from interviews with representatives of its private and community organization partners. The relocatees had no participation in the initial design of programs and services launched by MSWD-EO and their partner institutions.

The design of institutional programs and services offered by MSWD-EO normally came from the main office in Makati. The partner-institutions usually come to the community with a concrete design plan for their proposed projects. The participation of the community was limited on the final presentation and consultation. It is, therefore, surprising that the beneficiaries rated MSWD-EO strong in this enabler. The relocatees may have equated participation in public consultation with involvement in project design.

Alignment. Similar to "outcomes," the respondents believed that MSWD-EO had shown "strong" (3.71) collaborative capacity in innovating ways to work together with service partners across sectors. Each of the three enablers also fell within the "strong" interval scale.

The Office was perceived to be strongest in creating incentives for collaboration (3.87). The result was consistent with the information obtained through qualitative sources. MSWD-EO ensured that collaborative partnerships would be beneficial to the community. It was also important for them that the core values of the partner organizations were aligned with their own and that they were moving toward the same goal. When a non-profit organization-partner, for example, decided to limit the number of their relief goods to 300 partner-families, Mr. Ducay strongly objected knowing that there were more than 600 affected families in the area (based on his survey after the typhoon). After a series of discussions, Mr. Ducay was able to convince the partner-organization to provide relief goods to all affected families. The MSWD-EO also

provided partner-organizations equal opportunity to make decisions on how projects must be carried out. Upon closer scrutiny, however, it was revealed that MSWD-EO still has no clear incentive schemes for service partners. Community volunteers were usually just given food and gifts for assisting in the implementation of projects. For service partners outside MH, what they could offer mainly were technical and manpower support in implementing their proposed project.

It was in generating resources that the Office got the second highest score in building collaborative capacity. Based on interviews, FGDs, and review of existing sources, it can be said that the results for this enabler category were keenly observed by MSWD-EO in practice. The organizers actively looked for service partners and explored various means to get the people involved in community projects. In cases where the emergent need was not supported by the main office, Mr. Ducay and some volunteers would find other sources of funds on their own. To encourage volunteerism and active participation of relocatees in community activities (e.g., Zumba, organic farming, formation seminars), they guaranteed that doing so would be greatly beneficial to them and their families.

Risk got the lowest average score in this area. The respondents, nonetheless, rated MSWD-EO "strong" (3.54) in terms of promoting collaboration in managing risk. Upon closer scrutiny, this unfortunately can be considered the most neglected enabler of alignment in terms of collaborative practice. An informant from its private sector-partner, for instance, admitted that they did not disclose and examine potential risk of partnership with MSWD-EO (or vice versa) before entering an agreement with them. She never expected that the City Government of Makati would go through such a political crisis affecting the implementation of some of their projects. The installation of solar-powered water pump designed by engineering students, for example, had been put into a halt while waiting for the approval of the Makati City Engineering Office. Even the MSWD-EO Coordinator admitted that potential risks of collaboration were not brought up in their meetings/discussions with the service partners.

Delivery. With a general average of 3.91, MSWD-EO was perceived to have "strong" collaborative capacity in service delivery. None of the enablers got an average score below 3.91; thus, all were rated "strong".

Of the three enablers in this area, the Office got the highest score in "agility" (4.06). As mentioned earlier, the organizer usually conducted network mapping in an attempt to broaden their resource base for the community. With the political crisis in the city government, shifting leadership, and security of tenure in the balance, there was a strong pressure for Mr. Ducay to cope with the changes in policies. He had to report to Makati for more than a week for a debriefing immediately after the unanticipated relief of his supervisor. Yet, he managed to continue the operation and delivery of services in Makati Homeville even in the absence of a support staff. MSWD-EO and service partners also explored innovative ways in improving public service delivery in MH. However, these were largely limited by the support provided by the main office. Even if the priority areas of concern were clearly stipulated in MSWD-EO reports, the decision on what project to prioritize was determined by the administrators of MSWD. For instance, although water and electricity supply was identified as a priority concern, it could not be considered a priority program without the approval of the main office.

For innovation, MSWD-EO was still rated "strong" by the respondents in terms of its capacity to collaborate. Data gathered through qualitative sources, however, proved otherwise. The programs and services currently offered by MSWD-EO were largely the same as those they were providing three years ago. As earlier noted, the line of services provided for MH largely depended on the approval of MSWD administrators. This inevitably limited the capacity of the community organizers to conceptualize innovative services they deemed fit for the relocatees. Moreover, their desire to challenge the old and established ways of service delivery was also largely constrained with what was considered appropriate by the main office.

The "leadership" enabler got a rating of 3.76 in this area. The perceived strength of collaborative capacity in all activity statements were consistent with the actual events in the field. Although monitored, MSWD-EO gave the community organizations ample opportunity to work on their own projects. Emerging community and personal issues could not be settled without bringing them first to the attention of people concerned. In case of theft involving youth, MSWD-EO gathered both parties and acted as mediator to help them arrive at a common decision.

Accountability. Similar to the three thematic areas mentioned earlier, the respondents believed that the MSWD-EO demonstrated "strong" (3.75) collaborative capacity in promoting accountability. All three enablers were also rated "strong" with average scores ranging from 3.61 to 3.95.

It was in "engagement" where MSWD-EO demonstrated the strongest collaborative capacity in this area. Only the response from one statement - they follow a specific procedure in forging public-private partnership in public service delivery - seemed to be inconsistent with the actual collaborative practices observed by MSWD-EO. The Office had not yet established a standard system in forging strong "public-private partnership". MSWD-EO collaborated with other organizations based on the personal knowledge and acquired experiences of staff in development work. Surprisingly, this statement was rated strong by the respondents.

Mr. Ducay managed to maintain close relationship with the residents and mobilized them to participate in community activities. There were also elected community officials who helped him lead in the delivery of public service. When issues arose, MSWD-EO normally settled the problem by gathering the concerned people together to know more about their needs and aspirations. Not all people, however, would say the same thing about MSWD-EO. Some claimed that the Office favored one group of people over the other. This was one big challenge that also appeared in another sub-section of this research warranting proper attention.

The "evidence" got the second highest average score (3.71) in this area. The perceived strength of collaborative capacity in most activity statements was consistent with the information derived from qualitative sources. Upon examination of how project assessments were conducted by the MSWD-EO and its partner-organizations, it can be said that they did not practice collaborative assessments during and after project implementation.

Only the two non-profit organization-partners that provided feeding programs and educational assistance involved the beneficiaries in assessing the outcomes of the intervention. Most organizations performed mid and post assessments on their own without engaging the beneficiaries.

Of the three enablers, it was "transparency" that got the lowest score (3.61) in this thematic area. While MSWD-EO clearly announced their limits in decision-making and explained to the community the primary considerations in the decision that they made, the public had no ready access to pertinent documents concerning the progress taking place in Makati Homeville (e.g., electrification, water supply). There was no official area where people can have access to financial reports, summary of accomplishments, development plans, and other documents showing the current condition in Makati Homeville and what the Makati LGU through MSWD-EO was doing about it.

From the consolidated information obtained from survey, interviews, documentary reviews, and focus group discussion, it can be said that MSWD-EO collaborative capacity was strongest in "outcomes" and weakest in "alignment." In all thematic areas, however, there were also specific enablers that require immediate attention by the MSWD-EO such as design (outcomes), risk (alignment), innovation (delivery), and transparency (accountability).

Applying Collaborative Capacity Approach in Scaling-Up MSWD-EO's Public Service Delivery

The Collaborate and UNDP's Collaborative Capacity Approach was developed to improve public service delivery based on rising consumer demand. For this subsection, emphasis is given on how MSWD-EO public service delivery can be strengthened by building collaborative capacity in all the identified four elements and their enablers.

Outcomes

Insight. MSWD-EO has to respond immediately to emerging suspicions that they are not giving equal treatment to all. It can be done by scheduling frequent visits to each block and listening to their viewpoints and concerns. Due to resource constraint, MSWD-EO cannot deliver services to all relocatees. Hence, they have to involve the community leaders in creating criteria for selection of beneficiaries. The approved criteria must be properly communicated to all. The formulated strategies for service delivery must produce outcomes that are meaningful to the relocatees and their community.

Design. The Office should conduct pilot testing of programs and services with the community officers so they will know certain aspects that require improvement. It is also crucial to include the beneficiaries in the entire phase of program design. Unlocking their collaborative skills can be obtained by empowering them to make decisions for their lives. Collaborative capacity approach puts the relocatees at the core of service delivery; thus, they should have specific decision making roles in every phase of the program cycle.

Design-related thinking capability must be developed among MSWD-EO organizers. This is basically about creating value on public services through regular interaction with the community concerned.

Brokerage. The MSWD-EO should continue monitoring the conduct of regular meetings of MHHOA officers, block leaders, and all working committees. These meetings/consultations serve as their shared space where people can set aside their differences, work collaboratively, and set common outcomes for the group. There has to be a specific office area allotted for MHHOA and block officers (instead of using different rooms in the school building). MSWD-EO should develop in them the necessary skill-set for institutional entrepreneurs. They also have to strengthen the Youth Club in the community to assist them in organizing events.

Alignment

Risk. MSWD-EO and its partner institutions must be willing to adopt a culture of risk readiness. Instead of avoiding risk, both parties must be honest and open to discuss it so they can have a planned response that can minimize, if not eliminate, its adverse effects in the community.

Risk identification must be an integral part of the initial discussions before forging partnerships. In the planning process, it would be helpful to conduct Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis involving all stakeholders. SWOT analysis could be an effective planning tool evaluating the possible effect of both internal (SW) and external (OT) environment.

Incentive. The Office must create a strong incentive scheme that will motivate organizations and service users to collaborate with them. The general welfare of the relocatees based on information gathered from personal interaction with them must always be the ultimate priority when making agreements with other organizations.

Resources. Although MSWD-EO has shown diligence in looking for service partners, what they usually target are those who can give them immediate assistance for their projects. What they need to develop is the skill to forge and sustain long-term collaborative partnership that will have a significant impact in the community. They have to expand their reach not only in Laguna and Manila but also abroad.

Delivery

Agility. The flow of service delivery must not be delayed or halted by the frequent changing of administrations. However, any attempt to innovate ways to improve service delivery will be in vain without the support of those in the top management. The Office must be able to communicate with the relocatees about their priority programs to avoid confusion and conflict.

The flow of communication with the Informal Settlers' Section including MSWD-EO must be improved allowing each one to openly articulate one's thinking without the fear of being ridiculed.

Innovation. Challenging the old ways to get things done and creating new ways to achieve outcomes can only have significant impact insofar as this is supported by the main office. Mr. Ducay has to systematically think about how he will communicate his planned change in service delivery to his superiors to finally win their support. Yet they should always be willing to talk about the potential risk of planned change.

Leadership. When issues with project partners arise, MSWD-EO must persistently ask for regular consultation and discussion with them until everything is settled. A collaborative leader is willing to share power with service partners in program implementation. He also has to acquire essential skills (e.g., mediating, influencing, engaging) and show consistency in building and sustaining partnerships across sectors.

Accountability

Evidence. A real-time multi-methodological approach must be followed in gathering the needed data in the community. The beneficiaries must always be involved in all phases of project assessment. MSWD-EO must continue gathering information from the community to improve service delivery. It is also crucial to clarify conflicting information about an issue in the community by evaluating sources and arguments along with the people concerned.

Engagement. The citizens are at the core of collaborative approach. Hence, they must be involved in every stage of the project management cycle. The relocatees, though cooperative in community activities, are often divided by ethos, interests, place of origin (i.e. barangay) and ways of doing things. Without proper intervention, this may lead to unproductive alliances. This can be addressed by allowing them to engage in activities or projects that require working with those outside their sub-groups. In establishing private-public partnership, however, a clear standard procedure must be set to minimize risk and ensure effective management of joint projects.

Transparency. MSWD-EO should be able to publish or post financial reports and other relevant documents that will help the participants check the real status of development work in the area. In the final interview with Mr. Ducay, he recommended the setting up of bulletin board in the lobby of the office where he can post announcements, reports, and other pertinent records of MHHOA, block leaders, and MSWD-EO.

CONCLUSIONS AND RECOMMENDATIONS

The study primarily sought to assess the service delivery in Makati Homerville focusing on MSWD-EO's collaborative capacity. Numerical data revealed that the perceived strength of MSWD-EO's collaborative capacity across the thematic areas and enablers was "strong" with a general average of 3.87. Its collaborative capacity was highest in "outcomes" and lowest in "alignment". However, when survey data were triangulated with different sets of qualitative data, there emerged certain weak areas requiring immediate attention from MSWD-EO. These include design (outcomes), risk (alignment), innovation (delivery), and transparency (accountability).

Putting collaborative framework at work would require mobilizing substantial resources and overcoming a lot of constraints in project management (i.e., budget, time, manpower.) It is imperative that the relocatees be at the center of all key areas in public service delivery. Forging a strong collaboration, however, warrants a great deal of commitment from all stakeholders across sectors, particularly the service users (relocatees). Equally important, the service providers and service users must share closer level of personal relationship, sense of responsibility, and high level of trust. The framework needs a pool of empowered citizens who are willing and capable to go beyond their personal concerns and work together with fellow citizens and service providers. In the case of MSWD-EO, enhancing their collaborative capacity requires serious rethinking on how they package their institutionalized services. Despite the perceived political instability in Makati in 2015, MSWD-EO, as a mediator between relocatees and the Makati LGU, can still earn a high level of trust from the relocatees by improving transparency in governance and increasing their visibility and interaction with them. Once a high level of trust is built between MSWD-EO and relocatees, it will be easier to raise the involvement of the latter in service delivery. MSWD-EO must also ensure continuous monitoring of MHHOA and elected block leaders' meetings and community activities, and employ concrete incentive scheme for participation. In the process, this will create a ripple effect across key areas of public service delivery.

The assessment of service delivery in Makati Homeville revealed inherent issues in the existing policies covering government-owned socialized housing projects. It is thus recommended that policy makers, service providers and other sectors concerned take the following into consideration:

1. Formulate a legal framework for inter-local governmental relations in off-city resettlement projects. The Implementing Rules and Regulations of the Local Government Code of 1991 (Administrative Order No. 270) merely sets the procedures for entering into inter-local government cooperative undertaking putting other related matters into contention. There must be a separate framework covering the principles, functions, powers, and rules when a local government unit establishes a property in an area outside its jurisdiction. As earlier cited, Calauan Mayor Berris raised the question of jurisdiction over relocation sites in his locality during the Senate hearing in May 2015. Both Makati LGU and NHA violated the moratorium that he issued on relocation. He then called for the review of inter-local governmental policy to avoid similar problems in the future.

2. Secure the approval of the House Bill 5144 or the "On-site, In-City, Near-City Resettlement Act." The Urban and Housing Development Act (RA 7279) primarily focuses on in-city resettlement overlooking the complexities of off-city or near-city resettlement projects. There is no clear provision on the process involved in implementing the latter – a problem that House Bill 5144 seeks to address. The pending bill amends RA 7279 by specifying the legal responsibilities of sending and receiving LGUs over the relocated informal settler-families, making them active partners of the local government and providing for the development and implementation of "People's Plan," among others. Considering the complex issues surrounding resettlement projects, this must be considered as one of the priority bills in the Philippine Congress.

3. Develop memorandum of agreement between the Local Government Units of Makati and Calauan. To clarify the roles of both local government units in the Makati Homeville project and avoid any further confusion, it is recommended that the Local Government Units of Makati and Calauan begin negotiating the terms and conditions of their partnership. These will have to be embodied in a memorandum of agreement. Such agreement also has to set forth the scope of their responsibilities in delivering public services for Makati Homeville.

In the end, it must be emphasized that service delivery reforms promoting inter-sectoral collaboration should be anchored on the principle of participatory governance. Making decisions in enabling areas where MSWD-EO was observed to be weak warrants broad and active participation of stakeholders particularly the relocatees. As espoused in all other participatory developmental approaches, Collaborative Capacity Framework requires that service delivery be "citizen-based" where decision is reached through extensive negotiations and agreements. While issues inevitably arise in the process, these can be minimized by creating greater opportunities where stakeholders can set aside divisions, identify possible risks of partnerships, promote innovation, and ensure that vital information in service delivery is available to all. These largely ensure that services are delivered for the maximum benefit of the community.

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Community Capitals Management for Household Well-being: Case Studies in Two Communities in Surin and Buriram Provinces, Thailand

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ABSTRACT. This study was conducted in two villages in Thailand, Nongtakhem in Buriram province and Somboon in Surin province. It analyzed the community capitals management for household well-being. Data were gathered through household survey, key informant interviews, field observation, and review of related data. For the survey, 64 households were selected from Nongtakhem and 54 households from Somboon through simple random sampling. Descriptive statistics and t-test were used in the data analysis. Findings show that both villages practiced all the community capitals management strategies (group membership, family planning, sufficiency economy, savings plan, household accounting, and secondary occupation) except family forest management, which was practiced only in Somboon. The benefits acquired from group membership were diverse, but majority of the households in both villages accessed financial assistance from membership groups. Meanwhile, the t-test results show that the households who had members in the Buffalo and Cow Bank in Nongtakhem earned high-average monthly income than the households who did not. The households who were non-members of the Consumer Cooperative in Somboon earned higher monthly income than those who were members. For the difference in household debt, the households in Nongtakhem who were members of the groups had higher mean debt than those who were not because they were able to access sources of credit. For the other strategies, the secondary occupation practiced in Nongtakhem enabled the members to increase household income. For the difference in the household debt, the sufficiency economy strategy was effective in both villages, and the family planning strategy was effective only in Nongtakhem.

Keywords: *Community capitals, community capitals management, household well-being*

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INTRODUCTION

Thailand's National Economic and Social Development Plan (NESDP), from first to seventh (1961-1996), focused on economic growth of the country, which significantly affected the structure of agricultural production.

With the modernization of agriculture in Thailand (Lianchamroon & Thankitjanukit, 2005), the country experienced changes in the economic structure, society, and culture (McGregor, 2006, 2008). Therefore, the new model of holistic "people-centered development" was adopted in the Eight Plan. As a result, the National Economic and Social Development Board (NESDB, 2004) reported findings of qualitative studies showing that those elderly who did not have access to national welfare experienced considerable suffering and anxiety. Aging parents worried of being left alone in the house because all their family members had become economic migrants. Widows and single mothers were also vulnerable, and the poor and marginalized people were not protected and served. Moreover, while the life expectancy of the Thai people has been improving, their physical and psychological well-being have deteriorated. This is partly due to the increasing incidence of diseases of affluence. To improve its national economic and social development plans, the Thai government included the concept of well-being in the Ninth to Eleventh Plans (Promphakping, Klangseang, Pankham, Sriphom, & Wong-Arsa, 2007; Promphakping, 2012).

Significantly, the Eleventh Plan period emphasized building resilience at the family, community, society, and national levels under the sustainable development concept, the Philosophy of Sufficieny Economy. According to the Community Development Department (2013), there were 6,269 sufficient economic model villages in Thailand. It also noted that the specific development factors are based on human, social, physical, financial, natural resource, environmental, and cultural assets (NESDB, 2011). One of the goals is to utilize these assets to improve the well-being of the people. Many communities in Thailand realized that they need to manage themselves and determine the appropriate development strategies based on existing community capitals. As a result, some communities were successful in community capital management, which became a development model at the national level. Unfortunately, the development model is not applicable in some communities because of the difference in context.

In Surin and Buriram provinces, Somboon and Nongtakhem villages realized that they need to manage their capitals such as natural, human, financial, physical, and social. Somboon village was able to conserve the family forest[i], covering 837 rai[ii] (133.92 ha). Likewise, the people in Nongtakhem village have managed well their community capitals, thereby becoming the model for sufficient economic village at the national level. The two villages have different capitals, thus, this paper argues that the communities have different potentials in solving a problem because success is dependent on the capitals that the communities have and the facilitating factors.

In general, the study aimed to analyze community capitals management for household well-being in two villages in Thailand such as Nongtakhem and Somboon in Surin and Buriram provinces, respectively. Specifically, the study aimed to:

1. describe the characteristics of the study areas in terms of community capitals;
2. discuss the community capitals management strategies of the study areas;
3. identify the organizations that facilitate community capitals management; and
4. analyze the outcomes of community capitals management in terms of household well-being.

Conceptual Framework of the Study

The conceptual framework (Figure 1) shows how household well-being is achieved through access to a range of community capitals and conduct of different community capitals management strategies. The Community Capitals box shows the five capitals that are normally found in the community, i.e., social, human, natural, financial, and physical capitals. Meanwhile, the box of Community Capitals Management Strategies of Households shows the strategies that each household has adopted. All strategies are based on existing community capitals. These capitals, when combined, allow various strategies to be pursued and different outcomes to be achieved. Further, the box of Organizations Facilitating Community Capitals Management includes the external organizations that facilitate

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[i]Family forest is the conservation area of each family that comprises diversity of trees and natural food, which is necessary for the livelihood of the people in a community.
[ii]A rai (Thai) is a unit of area equal to 1,600 m^2 (40 m × 40 m) and used for measuring land area.

community capitals management strategies. Lastly, the box of Household Well-being shows the outcomes of community capitals management at the household level including some variables modified from the well-being indicators of the NESDB Office. The identified outcomes are based on the five community capitals.

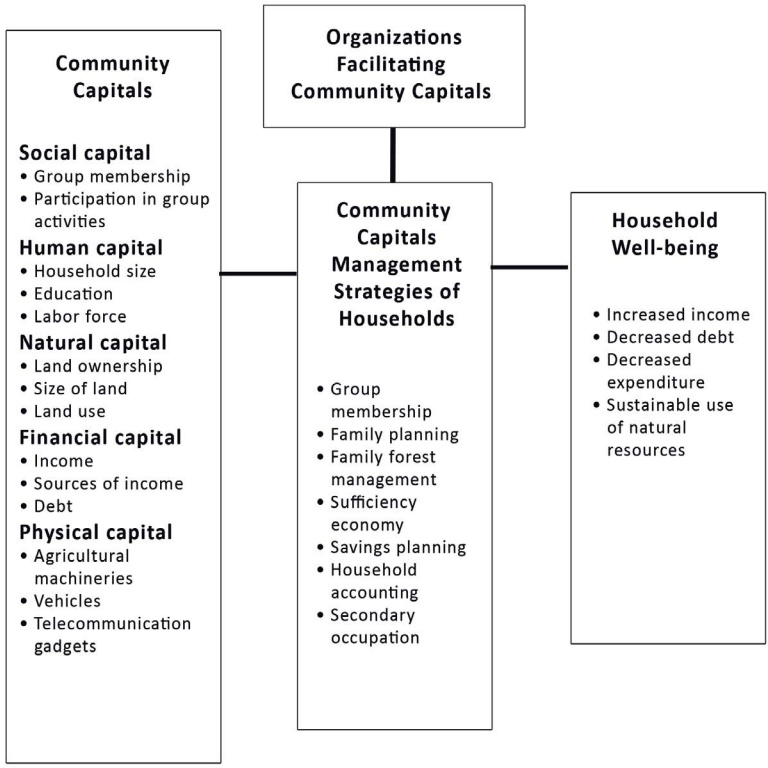

Figure 1. Conceptual framework of the study

METHODOLOGY

Respondents and Sampling Design

Somboon and Nongtakhem villages were selected as the study areas because of the diversity of community capitals as compared with the other villages in their respective sub-districts. The total number of the respondents from each village was determined by using the Slovin's formula at 10 percent margin of error:

> Slovin's formula: $n = N/(1+Ne^2)$; where n = sample size, N = total number of households in each village, and e = desired margin of error at 10 percent.

Thus, for Somboon where N = 118, n = 54 and for Nongtakhen where N = 178, n = 64.

Utilizing simple random sampling, a total of 118 households were selected for the household survey. The respondents, who may or may not practice community capitals management, were any adult member of the household.

Key informant interviews (KIIs) were conducted to get additional data that supported the survey questionnaire. The key informants were the village head, the village council members, and head of important groups in the village (e.g., savings group, flower growing group, organic fertilizer group, and weaving group).

Data Collection

A series of field works was conducted from May to June 2014, including orientation meetings with eight researcher-enumerators, personal interviews of household respondents, KIIs, and field observation. Secondary data were also reviewed.

Data Analysis

Survey data gathered were processed using the Statistical Package for the Social Sciences (SPSS) program. Descriptive statistics such as frequency counts, percentages, means, and ranges were used to describe the socio-economic characteristics, community capitals,

community capitals management strategies, organizations facilitating community capitals management, and outcome of community capitals management.

The test of means of independent samples was used to determine the difference between household income and debt of the households who had members of community groups, and those who either practiced or not the community management strategies.

RESULTS AND DISCUSSION

Socio-demographic Characteristics of the Respondents

Table 1 shows that majority of the respondents from both Nongtakhem and Somboon were female farmers with an average age of 53 years old for Nongtakhem and 49 years old for Somboon. Likewise, most of them finished primary school (Grades 1-6) and commonly held the position of ordinary members in the village.

Characteristics of Community Capitals

As shown in Table 2, there were diverse groups and each had different purposes in both communities. The results indicate that majority of the household members from both villages had membership with the village fund group. It implies that the members were able to access the financial capital they needed for investing in their occupations; the amount of loan was sufficient for the members; and the regulations of the group were acceptable such as low interest rates and yearly money returns. Expectedly, most of the group members were female farmers (Table 1) who mostly spent their time in the paddy field. Therefore, the time constraint affected the frequency of participation in the group activities (e.g., meetings, trainings). Moreover, traditionally, women had to take responsibility of the household chores and take care of the children.

The average household size of Nongtakhem was four persons, while that for Somboon was five persons (Table 3). It is still larger than the average household size of three in Thailand (National Statistical Office of Thailand [NSO], 2010). This is probably because the households need additional labor force to work in their agricultural farms. In terms

Table 1. Socio-demographic characteristics of the respondents in Nongtakhem and Somboon

CHARACTERISTICS	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Sex				
Male	10	15.6	11	20.4
Female	54	84.4	43	79.6
Age				
< 30	1	1.6	7	13.0
31-40	8	12.5	12	22.2
41-50	18	28.1	8	14.8
51-60	27	42.2	13	24.1
61-70	6	9.4	10	18.5
>71	4	6.2	4	7.4
Mean	*52.81*		*48.69*	
Range	*29-78*		*21-80*	
Educational attainment				
Primary (Grade 1-6)	49	76.6	33	61.1
Secondary (Grade 7-9)	9	14.1	13	24.1
Secondary (Grade 10-12)	6	9.4	6	11.1
Bachelor's degree	-	-	2	3.7
Main occupation				
Farmer	51	79.7	50	92.6
Self-employed	2	3.1	2	3.7
Employee	1	1.6	-	-
Laborer	8	12.5	-	-
Government officer	-	-	1	1.9
Did not specify	2	3.1	1	1.9

Table 1. Socio-demographic characteristics...(Continuation)

CHARACTERISTICS	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Position in the community				
Sub-district Administrative Organization (SAO) deputy chief executive	-	-	1	1.9
SAO council member	-	-	1	1.9
Village head	1	1.6	-	-
Assistant village head	1	1.6	-	-
Village council member	4	6.2	3	5.6
Village member	57	89.1	48	88.9
Group head	1	1.6	-	-
Village health volunteer	-	-	1	1.9

Table 2. Group membership of household members

GROUPS*	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Village fund group	48	75.0	51	94.4
Buffalo and Cow Bank	28	43.8	7	13.0
Consumer Cooperative	1	1.6	27	50.0
Family forest group	-	-	23	42.6
Flower growing group	28	43.8	-	-
Organic fertilizer group	17	26.6	27	50.0
Savings group	40	62.5	18	33.3
Vegetable growing group	19	29.7	3	5.6
Village Development Bank	48	75.0	-	-
Weaving group	27	42.2	2	3.7
Women's group	41	64.1	9	16.7
None	1	1.6	1	1.9

*Multiple responses

Table 3. Households' human capital

CHARACTERISTICS	NONGTAKHEM		SOMBOON	
	No.	%	No.	%
Household size	(n=64)		(n=54)	
1-3	31	48.4	13	24.1
4-6	31	48.4	31	57.4
7-9	2	3.1	8	14.8
> 9	-	-	2	3.7
Mean	*3.64*		*5.06*	
Range	*2-8*		*2-13*	
Labor age force	(n=233)		(n=273)	
< 15	32	13.7	54	19.8
15-60	186	79.8	175	64.1
>60	15	6.4	44	16.1
Level of education of household members	(n=233)		(n=273)	
Kindergarten	3	1.3	24	8.8
Primary school	112	48.1	124	45.4
Lower secondary school (Grade 7-9)	47	20.2	57	20.9
Upper secondary school (Grade 10-12)	53	22.7	37	13.6
High vocational certificate	-	-	2	0.7
Bachelor's degree	14	6.0	17	6.2
No formal education	1	0.4	2	0.7
Did not specify	3	1.3	10	3.7

of labor force in the households, majority of the household members in both villages belonged to the workforce age (15 – 60 years old). This implies that they were able to generate income for the households. Further, majority finished primary school (Table 3).

Table 4 shows that all households in Nongtakhem owned land averaging 14 rai (2.24 ha). Meanwhile, 92 percent of Somboon household respondents owned a farmland, which has a mean size of 26 rai (4.16 ha). Majority of them allocated land for paddy field because the main source of their income was rice farming.

Natural capital is crucial for both communities' livelihood and well-being. The growth of other capitals can be delayed or stopped if there is lack of access to natural capital. It would also be difficult to overcome poverty if natural resources are depleted and are not reinvested (Flora & Thiboumery, 2005). However, the natural capital is only one capital that is not created by humans and is thus the most difficult to manage. Both Nongtakhem and Somboon residents allocated land for their livelihood, especially for paddy field.

The average land size of Somboon was larger than that of Nongtakhem, so the paddy field size of Somboon would be larger than that of Nongtakhem. Therefore, the farmers in Somboon might need to use resources such as water, labor force, and finance for agricultural activities more than those in Nongtakhem.

The average monthly household income of Nongtakhem was 14,309 Baht, while it was 10,247 Baht/household for Somboon (Table 5). If the total household income is divided by the household size (Table 3), Nongtakhem (4 persons) and Somboon (5 persons), the households from Nongtakhem would earn a monthly income of 3,577 Baht/person and 2,049 Baht/person for Somboon. It would be above the stated poverty line: 1,678 Baht/person/month (NSO, 2010).

Majority of the respondents in Nongtakhem (91%) and Somboon (92%) incurred an average debt per household of 62,845 Baht and 159,300 Baht, respectively from the Bank of Agriculture and Agricultural Cooperatives (BAAC). Considerably, the average amount of debt of both villages was lower than the average debt in the provincial level: 196,381 Baht for Surin and 161,895 Baht for Buriram (NSO, 2011).

Meanwhile, the purposes of each household in borrowing money from financial sources varied. For example, some would take a loan to invest in their occupation (e.g., to buy fertilizer, agricultural machinery,

Table 4. Households' natural capital

CHARACTERISTICS	NONGTAKHEM		SOMBOON	
	No.	%	No.	%
Land ownership	(n=64)		(n=54)	
Yes	64	100.0	50	92.5
No	-	-	4	7.4
Size of land (Rai)	(n=64)		(n=50)	
< 10	42	65.6	5	10.0
11-20	17	26.6	17	34.0
21-30	1	1.6	13	26.0
31-40	-	-	5	10.0
41-50	4	6.2	9	18.0
> 51	-	-	1	2.0
Mean	*13.55*		*25.74*	
Range	*0.1-165*		*5-52*	
Land use[a]	(n=64)		(n=50)	
Habitation	64	100.0	50	100.0
Paddy field	53	82.8	49	98.0
Pond	9	14.1	16	32.0
Cash cropping	33	51.1	5	10.0
Family forest	-	-	13	26.0
Rent	1	1.6	-	-
Did not specify	9	14.1	-	-

[a]Multiple responses

seeds). Therefore, it is possible that the households in Somboon would borrow money from financial sources to buy large tractors with an estimated unit value of 1,433,300 Baht.

The main income source of both villages was rice farming, but the average yield from Surin province (366 kg/rai) was a little lesser compared with that from Buriram province (375 kg/rai) (Office of Agricultural Economics, 2012). Table 5 shows that although income sources in Somboon were more diverse than in Nongtakhem, Somboon respondents incurred higher debt. Their average income was lower

Table 5. Households' financial capital

CHARACTERISTICS	NONGTAKHEM		SOMBOON	
	No.	%	No.	%
Monthly income of household (THB)[a]	(n=64)		(n=54)	
< 5,000	6	9.4	13	24.1
5,001 - 10,000	30	46.9	20	37.0
10,001 - 15,000	9	14.1	10	18.5
15,001 - 20,000	5	7.8	7	13.0
20,001 – 25,000	4	6.2	4	7.4
25,001 – 30,000	3	4.7	-	-
> 30,001	7	10.9	-	-
Mean	*14,309*		*10,247*	
Range	*2,500-48,000*		*1,500 - 23,000*	
Sources of income[b]	(n=64)		(n=54)	
Rice farming	54	84.4	47	87.0
Cash cropping	24	37.5	-	-
Self-employed	38	59.4	7	13.0
Private employment	4	6.2	3	5.6
Government officer	2	3.1	3	5.6
Hired laborer	49	25.3	4	7.4
Pig raising	-	-	1	1.9
Rice mill	-	-	1	1.9
Salon	-	-	1	1.9
Remittance	-	-	4	7.4
Old age allowance	-	-	11	20.4
Did not specify	4	6.2	1	1.9

[a]1 USD = 32.74 THB
[b]Multiple responses

Table 5. Households' financial...(Continuation)

CHARACTERISTICS	NONGTAKHEM		SOMBOON	
	No.	%	No.	%
Debt	(n=64)		(n=54)	
Yes	58	90.6	50	92.6
No	6	9.4	4	7.4
Amount of debt (THB)[a]	(n=58)		(n=50)	
< 50,000	34	58.6	21	42.0
50,001 - 100,000	13	22.4	9	18.0
100,001 - 150,000	6	10.3	6	12.0
150,001 - 200,000	4	6.9	3	6.0
200,001 – 250,000	1	1.7	3	6.0
> 250,001	-	-	8	16.0
Mean	*62,845*		*159,300*	
Range	*10,000-250,000*		*10,000-1,000,000*	
Sources of debt[b]	(n=58)		(n=50)	
Village fund group	35	60.3	20	40.0
Village Development Bank	13	22.4	-	-
Savings group	3	5.2	1	2.0
Flower growing group	1	1.7	-	-
Neighbor	0	0.0	2	4.0
Bank of Agriculture and Agricultural Cooperatives (BAAC)	37	63.8	29	58.0
Krung Thai Bank Public Company Limited (KTB)	-	-	1	2.0
Anamai Surin Savings and Credit Cooperative Limited	-	-	1	2.0
Agricultural cooperatives	-	-	8	16.0
Did not specify	-	-	1	2.0

[a]1 USD = 32.74 THB
[b]Multiple responses

than that of the respondents from Nongtakhem. Only few of them were engaged in other income generating activities such as pig raising, rice milling, and running a salon.

In terms of physical capital, the hand tractor was more prevalent in both villages compared with other agricultural machineries because it was the cheapest. Majority of the household members used the motorcycle as their transport vehicle as it was convenient for travelling based on the travelling route, and it was not expensive. Only one respondent from Nongtakhem owned a truck. The crucial telecommunication gadgets in both villages were television and telephones/cellphones (Table 6).

As shown in Table 7, the large tractor as agricultural machinery had the highest estimated value in both villages: about 566,670 Baht for Nongtakhem and 1,433,300 Baht for Somboon. Somboon respondents owned more agricultural machinery and had larger lands as compared with Nongtakhem respondents.

Table 6. Households' physical capital

CHARACTERISTICS[a]	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Agricultural machinery				
Hand tractor	9	14.1	30	55.6
Large tractor	3	4.7	3	5.6
Rice mill	2	3.1	7	13.0
Vehicles				
Motorcycle	63	98.4	45	83.3
Car	20	31.2	12	22.2
Truck	1	1.6	-	-
Telecommunication gadget				
Television	62	96.9	52	96.3
Computer/laptop	31	48.4	12	22.2
Telephone/cellphone	63	98.4	50	92.6

[a]Multiple responses

Table 7. Estimated value of the household respondents' physical assets

CHARACTERISTICS	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	Average Number	Average Value	Average Number	Average Value
Estimated value (THB)[a]				
Agricultural machineries				
Hand tractor	1	23,333	1	48,067
Large tractor	1	566,670	1	1,433,300
Rice mill	1	50,000	1	46,714
Vehicles				
Motorcycle	2	50,619	2	67,922
Car	1	460,600	1	600,250
Truck	1	650,000	-	-
Telecommunication gadget				
Television	1	5,377	1	7,226
Computer/laptop	1	18,710	1	14,270
Telephone/cellphone	2	8,599	2	5,557

[a]1 USD = 32.74 THB

Community Capitals Management Strategies

Community capitals management strategies such as group membership, family planning, sufficiency economy, savings plan, household's accounting, and secondary occupation were practiced by both villages. Meanwhile, only Somboon practiced family forest management. The intensiveness of each strategy in both villages differed depending on their context of the facilitating factors.

Group membership. About 69 percent of the households in Nongtakhem acquired benefits from the village fund group. The rest of them acquired benefits from the savings group (53%), Village Development Bank (38%), women's group (36%), vegetable growing group, among others. Likewise, only one household member in Nongtakhem did not get any benefit from any group because he/she was not part of any group.

In Somboon, majority (83%) acquired benefits from the village fund group, while the others received benefits from the organic fertilizer group (35%), Consumer Cooperative (30%), savings group (28%), family forest group (22%), and other groups. Like in Nongtakhem, only one household member did not get any benefit because he/she was not also a member of any group in Somboon.

Family planning. Family planning is the practice of controlling when to have children by means of birth control techniques. More than half (56%) of the households in Nongtakhem and about two-thirds (65%) in Somboon practiced family planning.

Family forest management. Family forest management, a strategy to conserve the forests that are owned by the families, was practiced in Somboon, which has 837 rai (133.92 ha) of family forest. However, only 44 percent of the households in Somboon practiced family forest management. This can be explained by the fact that there were more households that did not own forests as compared with those who owned. Meanwhile, Nongtakhem respondents did not practice family forest management because there was no family forest in the village.

Sufficiency economy practice. Almost all (98%) of the households in Nongtakhem and majority (78%) in Somboon practiced sufficiency economy. The sufficiency economy practice became popular because it is one of the concepts in the Eleventh NESDP (2012-2016). Nongtakhem practices sufficiency economy more intensively than that of Somboon because it is one of the sufficiency economy villages in Thailand.

Inspired by the late King Bhumibol Adulyadej's philosophy of sufficiency economy, the Eleventh NESDP emphasized building resilience at the family, community, society, and national levels. According to the Community Development Department, Ministry of Interior (2013), there were 6,269 sufficient economic model villages in Thailand, and Nongtakhem was one of them.

Savings plan practice. All of the households in Nongtakhem practiced savings plan. On the other hand, almost half (48%) of the respondents in Somboon did not have a savings plan practice because of the following reasons: insufficient income (46%), unstable income (46%), and no monthly household income (42%). As previously discussed, majority of the respondents from both villages relied on rice farming for their income (Table 5). The households would get income

after selling rice, which is actually once a year. The households' lack of monthly income resulted to their inability to save.

Household accounting practice. Only four households (6%) did not practice household accounting in Nongtakhem because they have no time to practice it. Meanwhile, more respondents (33%) in Somboon reported that they did not practice household accounting. Among the 18 households in Somboon, majority (89%) said that they also had no time to practice it, while two households (11%) replied that they lacked knowledge in household accounting.

Secondary occupation practice. Majority (84%) of the households in Nongtakhem practiced secondary occupation while 16 percent did not. In Somboon, more than half (57%) of the households practiced secondary occupation and 43 percent did not. This indicates that some households have diverse sources of income while some relied solely on their main occupation. If something affects negatively the main occupation of the households who do not have a secondary occupation, it would make them vulnerable in terms of income.

Organizations Facilitating Community Capitals Management

The organizations that supported or facilitated the community capitals management in both villages were government organizations and nongovernment organizations (NGOs). Majority of the households in Nongtakhem identified the following: 1) District Agricultural Extension Office, which provided them facilitation assistance in terms of group membership and participation as well as secondary occupation practice; 2) Three-generation Center to Strengthen the Family Love Bond in family planning; and 3) BAAC in household accounting. Meanwhile, most Somboon households reported receiving support from: 1) NET Foundation in group membership and participation as well as family forest management; 2) Tambon Health Promoting Hospital in family planning; 3) Sub-district Administration Organization in secondary occupation practice; and 4) agricultural cooperatives in household accounting.

In terms of sufficiency economy practice, majority of the households in Nongtakhem and Somboon received support from the District Agricultural Extension Office because majority of them work in the agricultural sector. Meanwhile, half of the households in Nongtakhem and Somboon did not identify the organization that provided them assistance in terms of savings planning. It is possible that they did not

remember the name of the organizations that helped facilitate financial capital.

Outcomes of Community Capitals Management in Terms of Household Well-being

Increased household income. Almost all (97%) of the households in Nongtakhem claimed that the sufficiency economy strategy enabled them to increase their household income. Meanwhile, more than half attributed their increased income to their savings plan (55%) and household accounting (55%). Others considered group membership (53%), secondary occupations (53%), and family planning (50%) as factors that contributed to their increased income (Table 8).

In Somboon, most (72%) of the households affirmed that the sufficiency economy strategy was able to increase their income. Other factors considered were group membership (65%), secondary occupation (61%), family forest management (56%), family planning (28%), savings plan (20%), and household accounting (18%).

Table 8. Strategies that increased household income

STRATEGIES[a]	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Group membership	34	53.1	35	64.8
Family planning	32	50.0	15	27.8
Family forest management	n/a	n/a	30	55.6
Sufficiency economy practice	62	96.9	39	72.2
Savings plan	35	54.7	11	20.4
Household accounting	35	54.7	10	18.5
Secondary occupation	34	53.1	33	61.1

[a]Multiple responses
n/a - not applicable

Decreased household debt. Table 9 shows that majority (95%) of the households in Nongtakhem cited that practicing the sufficiency economy strategy enabled them to decrease household debt. Other strategies considered responsible for their decreased debt were household accounting strategy (59%), family planning (50%), savings plan (50%), secondary occupation strategies (50%), and group membership (48%).

Table 9. Strategies that decreased household debt

STRATEGIES[a]	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Group membership	34	48.4	4	7.4
Family planning	32	50.0	4	7.4
Family forest management	n/a	n/a	9	16.7
Sufficiency economy practice	61	95.3	19	35.2
Savings plan	32	50.0	12	22.2
Household accounting	38	59.4	16	29.6
Secondary occupation	32	50.0	42	77.8

[a]Multiple responses
n/a - not applicable

In Somboon, majority (78%) of the households agreed that the secondary occupation strategy helped decrease their household debt. Meanwhile, other strategies were sufficiency economy strategy (35%), household accounting (30%), savings plan (22%), family forest management (17%), group membership (7%), and family planning (7%).

Decreased household expenditure. As shown in Table 10, majority (89%) of the households in Nongtakhem mentioned that the household accounting strategy helped decrease household expenditure. Other strategies cited were sufficiency economy practice (69%), group membership (50%), family planning (48%), and savings plan (50%). In Somboon, about 67 percent of the households agreed that the family planning strategy helped decrease household expenditure. Also, other strategies considered were sufficiency economy practice (56%), family forest management (37%), and household accounting (32%).

Table 10. Strategies that decreased household expenditure

STRATEGIES[a]	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	No.	%	No.	%
Group membership	32	50.0	2	3.7
Family planning	31	48.4	36	66.7
Family forest management	n/a	n/a	20	37.0
Sufficiency economy practice	44	68.8	30	55.6
Savings plan	31	48.4	0	0
Household accounting	57	89.1	17	31.5

[a]Multiple responses
n/a - not applicable

Sustainable use of natural resources. In Table 11, all households in Nongtakhem affirmed that practicing sufficiency economy led them to use natural resources in a sustainable way because the sufficient economic agriculture encouraged them to avoid any chemical substance. In Somboon, almost all (98%) agreed that practicing the sufficient economic agricultural strategy led them to use the natural resources in a sustainable way. Likewise, majority (91%) said that the family forest management led to the use of natural resources.

Table 11. Strategies that led to the household's sustainable use of natural resources

STRATEGIES[a]	NONGTAKHEM (n=64)		SOMBOON (n=54)	
	F	%	F	%
Family forest management	n/a	n/a	49	90.7
Sufficiency economy practice	64	100.0	53	98.1

[a]Multiple responses
n/a - not applicable

Difference in household income, expenditure, and debt. Based on test of means, as presented in Table 12, there was a significant difference of household income between the households who were in group membership (Mean = 17,261 Baht) and non-membership (Mean

= 12,014 Baht) in the Buffalo and Cow Bank at 0.1 level of significance in Nongtakhem. In other words, group membership in the Buffalo and Cow Bank was effective. Based on the mean value, the households who were members of the Buffalo and Cow Bank earned monthly income more than the households who were not. Therefore, to increase household income, membership in the Buffalo and Cow Bank should be continued and supported.

Table 12. Difference in the household income of member and non-member in community groups

GROUPS[a]	NONGTAKHEM (n=64)			SOMBOON (n=54)		
	Mean (THB)		Sig. (2-tailed)	Mean (THB)		Sig. (2-tailed)
	Members	Non-Members		Members	Non-Members	
Buffalo and Cow Bank	17,261	12,014	0.092*	13,286	9,825	0.179
Consumer cooperative	8,000	14,410	0.591	8,751	11,796	0.076*
Family forest group				10,274	10,274	1.000
Flower growing group	16,789	12,381	0.136			
Organic fertilizer group	17,171	13,274	0.242	9,933	10,615	0.696
Savings group	15,028	13,112	0.470	11,656	9,583	0.259
Vegetable growing group	15,647	13,744	0.556	12,333	10,153	0.566
Village Development Bank	14,504	13,725	0.820			
Village fund group	13,690	16,169	0.467	10,408	8,000	0.526
Weaving group	15,944	13,116	0.343	12,750	10,179	0.577
Women's group	14,785	13,461	0.667	13,011	9,726	0.156

[a]Multiple responses
*There is a significant difference at 0.1 level (2-tailed)
THB - Thai Baht

In Somboon, there was a significant difference of household income between the households who had group membership (Mean = 8,751 Baht) and non-membership (Mean = 11,796 Baht) in the Consumer Cooperative at 0.1 level of significance. However, based on the mean value, the households who were not members of the cooperative earned monthly income higher than the households who were members because more of the non-member households owned land than those who were members. Moreover, their sources of income were more diverse.

Table 13 shows the difference in the household debt. The households in Nongtakhem who were members of the organic fertilizer group, vegetable growing group, Consumer Cooperative, weaving group, and flower growing group incurred debt higher than the households who were not members because majority of them borrowed money from these groups to invest in their occupations (e.g., to buy agricultural machineries, fertilizers, seeds). In Somboon, group membership was not effective in any group.

For the other strategies in Nongtakhem, the secondary occupation strategy should be supported because it enabled the households to increase their household income. For Somboon, there was no effective strategy.

For the difference in household debt, the sufficiency economy strategy should be supported in both villages because the amount of debt of the households who practiced the sufficiency economy strategy was less than the households who did not. Moreover, the family planning strategy was effective only in Nongtakhem although the increase in income was not significant.

CONCLUSIONS

Community capitals in Nongtakhem and Somboon villages comprised social, human, natural, financial, and physical capitals. First, in social capital, majority of those who were in group membership in both villages were female. They were traditionally assigned to manage assets or resources in the household level, especially finance. Being in group membership encouraged the households in accessing diverse resources, namely loan, natural food, organic fertilizer, and other materials. For participation in group activities, traditional ceremonies, village development, and natural resource conservation were the activities that most of the households did together. Second, in human capital, the

Table 13. Difference in the household debt of members and non-members of community groups

GROUPS[a]	NONGTAKHEM (n=58)			SOMBOON (n=50)		
	Mean (THB)		Sig. (2-tailed)	Mean (THB)		Sig. (2-tailed)
	Mem-bers	Non-Members		Mem-bers	Non-Members	
Buffalo and Cow Bank	74,923	53,031	0.133	104,290	168,260	0.482
Consumer Cooperative	150,000	61,316	0.091*	175,000	144,810	0.633
Family forest group				189,770	135,360	0.391
Flower growing group	81,179	45,733	0.009***			
Organic fertilizer group	87,765	52,512	0.060*	157,120	161,670	0.943
Savings group	68,838	52,286	0.207	109,120	185,150	0.251
Vegetable growing group	84,158	52,462	0.067*	156,670	159,470	0.983
Village Development Bank	65,702	50,636	0.247			
Village Fund group	67,533	46,615	0.107	165,100	20,000	0.366
Weaving group	84,680	46,303	0.008***	42,500	164,170	0.449
Women's group	66,171	54,824	0.454	254,440	138,410	0.154

[a]Multiple responses
*There is a significant difference at 0.1 level (2-tailed)
***There is a significant difference at 0.01 level (2-tailed)
THB - Thai Baht

average size of household was four persons for Nongtakhem and five for Somboon. Majority of the household members were 15 – 60 years old and finished primary school. Third, in natural capital, almost all of the households owned land averaging 14 rai (2.24 ha) for Nongtakhem and 26 rai (4.16 ha) for Somboon. Majority of them allocated the land for habitation and paddy field. Fourth, in financial capital, the households earned a monthly income of 14,304 Baht for Nongtakhem and 10,247 Baht for Somboon, and incurred debt amounting to an average of 62,845 Baht for Nongtakhem and 159,300 Baht for Somboon. The main source of loan was the Bank of Agriculture and Agricultural Cooperatives. Fifth, in physical capital, majority owned hand tractor as their agricultural machinery, used motorcycle as their transportation, and had television sets, and telephones/cellphones as telecommunication gadgets. Large tractor as the agricultural machinery had the highest estimated value.

Seven strategies were applied to manage the community capitals such as group membership, family planning, family forest management, sufficiency economy, savings planning, household accounting, and secondary occupation. The intensiveness of each strategy in both villages differed depending on their context of the facilitating factors. Both villages acquired benefits from group membership, especially village fund group, and practiced family planning. However, only households from Somboon practiced family forest management because there were were no forests in Nongtakhem.

The sufficiency economy practice became popular in both villages because it is one of the concepts in the Eleventh National Economic and Social Development Plan. Nongtakhem practices sufficiency economy more intensively than Somboon because it is one of the sufficiency economy villages in Thailand. All of the households in Nongtakhem practiced savings planning, but only half of households in Somboon did because income was insufficient. Majority of the households in Nongtakhem practiced household accounting and secondary occupation, while 67 and 57 percent of the households in Somboon practiced these strategies, respectively.

For outcomes of community capitals management, most of the households in both villages accepted that the sufficiency economy strategy enabled them to increase their household income. However, only the majority of households in Nongtakhem affirmed that the strategy led to the decrease in household debt. In contrast, the secondary occupation strategy was effective in Somboon in decreasing household

debt. In terms of decreased household expenditure, majority of the households in Nongtakhem mentioned that the household accounting strategy helped decrease expenditures, but about 67 percent of the households in Somboon mentioned that the family planning strategy did. For sustainable use of natural resources, majority of the households in both villages affirmed that practicing sufficiency economy led them to use natural resources in a sustainable way because the sufficient economic agriculture encouraged them to avoid any chemical substance.

Moreover, for the test of means, the households in Nongtakhem who were members of Buffalo and Cow Bank earned higher monthly income than the households who were not. For Somboon, the households who were not members in the Consumer Cooperative earned higher monthly income than the households who were members. Moreover, the households in Nongtakhem who had membership in organic fertilizer group, vegetable growing group, weaving group, flower growing group, and Consumer Cooperative incurred debts higher than those who were not members. This is because the households borrowed money from these groups, investing the money in occupations.

In Somboon, there was no effective group in terms of household debt. In Nongtakhem, the households who practiced secondary occupation and sufficiency economy earned higher monthly income than the households who did not. In Somboon, the households who practiced sufficiency economy earned higher monthly income than the households who did not.

For the sustainable use of natural resources, all households in Nongtakhem and almost all (98%) in Somboon agreed that practicing the sufficiency economy led them to use the natural resources in a sustainable way. Likewise, majority (91%) in Somboon said that the family forest management did the same.

For organizations facilitating community capitals management, various government organizations and NGOs were identified. The organizations focused on the different community capitals management strategies depending on their policy and context. These organizations had crucial roles in supporting both Nongtakhem and Somboon villages.

RECOMMENDATIONS

In the light of the findings of the study, the following recommendations are forwarded:

1. Group membership should be supported and extended to other community members because it enabled the households to access financial capital and improve their household well-being, particularly in increasing household income and decreasing household debt.

2. Households relied on rice farming for income. Thus, the government organizations should consider formulating policies to improve rice production and encourage households to create diverse sources of income.

3. Since majority of the households incurred debts, they should be able to apply the appropriate strategies to manage household debts. Moreover, the knowledge concerning debt management should be provided by involved organizations.

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Watershed-based Water Governance: Role of Actors in Santa Cruz Watershed, Laguna, Philippines

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ABSTRACT. Water governance at the micro watershed scale has not been popularly studied. However, as population increases and urbanization sets in, water conflicts may arise due to increased competition in use. This paper examines the various water governance roles of state and non-state actors within the watershed. While users make decisions and take actions that define the processes by which water is accessed and controlled, discussion and analysis of the interactions of key actor groups: households, farmers, enterprise, and local government were framed from the understanding of resources, mechanisms of access, and outcome. Focus group discussions and key informant interviews with specific actor groups (state and non-state) were conducted in the upstream and downstream villages of the Santa Cruz Watershed (SCW), Laguna, Philippines to generate the needed data. Results suggest that both state and non-state actors positioned themselves to support their respective interests. In times of water shortage, local governments at the village and the municipal levels coordinated and negotiated among themselves for access to water sources. The study concludes that within the watershed, water governance is polycentric and creates spaces for mutual cooperation among state and non-state actors, especially during times of water scarcity. The authors recommend, among others, that in areas where there are conflicts in water access and use, a polycentric approach can be considered to include both customary and formal rules in the water governance.

Keywords: *state actors, non-state actors, water governance, Santa Cruz Watershed, Philippines*

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INTRODUCTION

Various forms of water governance have emerged in response to contemporary water issues, particularly pertaining to water rights and water management at various scales. These new governance mechanisms are mostly informal,community based and participatory (Tropp, 2007). The transformation that is seen is due to the increasingly complicated water management leading to the search for alternative forms of organizations (Marquardt & Russell, 2007; Yu, 2014). Emerging concepts such as integrated water resources management (Global Water Partnership Technical Advisory Committee, 2000) and river basin management (Allee, 1986) are examples of the governance transformation.

Water governance transformation from the highly centralized to a more decentralized one now ties national to local development objectives. According to Yu (2014), communities have roles to play especially when the situation calls for polycentric (Ostrom, 2010) forms of governance. Such governance mechanism is an expression of highly decentralized governance that gives power to local actors.

Investigating water governance at the micro-watershed is a representation of governance at the lowest level. According to Bruns (2005), the application of participatory approaches for improving such scale of water governance is consistent with the participatory nature of common property resource management, such as community based natural resources management. For Marquardt and Russell (2007), locally used technologies such as water-storage and water-sharing schemes are examples of water management strategies that are attuned to local interests and needs. Community-based legislations and participatory planning and other local governance strategies that address community priorities are also deemed more effective as water rights are negotiated (Bruns, 2005).

Water decision-makers and managers have not been able to realize new forms of governance such as facilitating inclusive decision-making processes, coordination, and negotiated outcomes (Lundqvist, 2004). The reason for this could be the lack of knowledge on the water governance mechanisms, especially at the local level. An actor-based assessment can explain stakeholder networks and negotiations at the sub-watershed level. Governance 'partnerships' among local governments and organized interest groups can be unbundled by this scale of analysis. In particular, this kind of investigation can also address

issues on integrating very local strategies in a very complex and macro and multi-level water governance sphere (Lundqvist, 2004).

The Philippines will be an interesting case study of community-based water governance in the context of multiple and layered national, sub-national, and local agencies that are concerned with water (Malayang, 2004), which do not have vertical nor horizontal linkages (Rola, Abansi, Arcala-Hall, & Lizada, 2016) and where water rights are unclear (Hall et al., 2015).

This paper explores the dynamics of water governance among the various actors in a watershed context. Specifically, the paper describes the physical and socio-economic characteristics of the Santa Cruz Watershed; determines the roles of both state and non-state actors in the water management and governance; identifies water access mechanisms of upstream and downstream communities; and discusses the environmental and livelihood outcomes as a result of the current governance mechanisms. It uses the framework developed by Cleaver and Franks (2005) to assess the various actors' resources and mechanisms of water access to arrive at expected outcomes.

Case Study Framework of Analysis

The analysis of water governance in a watershed context proceeds from the framework proposed by Franks and Cleaver (2007), encouraged by two points raised by the authors, namely: 1) that the concept of "governance" must be contextualized and localized towards a meaningful understanding; and 2) that pro-poor governance is not necessarily good governance. The authors take off from the definition that sees governance as comprising of "the mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their rights, meet their obligations, and mediate their differences" (Cleaver & Franks, 2005, p. 3). In this sense, governance involves decision-making by all actor groups at different levels in a society. This definition underlies the framework for analyzing water governance proposed by Cleaver and Franks (2005) and is employed in this study of water governance in a sample Philippine watershed.

The framework in Figure 1 shows that the processes of management and practice by actors/agents are defined by the interactions among three key elements: 1) resources, 2) mechanisms of access, and 3) outcomes.

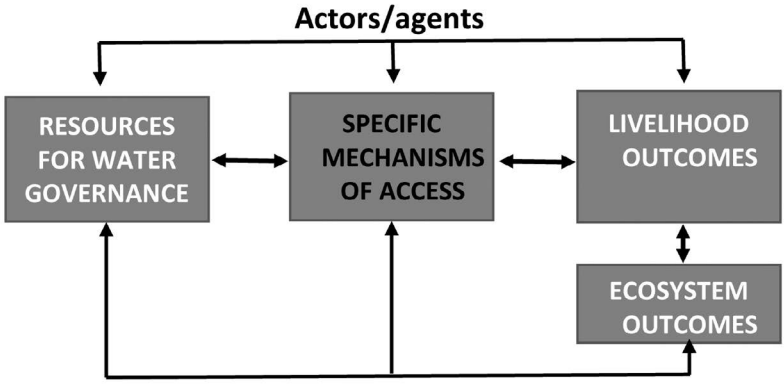

Figure 1. An actor-based framework for water governance (Source: Cleaver & Franks, 2005)

Resources are the material or non-material properties of social systems through which power is exercised, referred to by Giddens (1984) as "allocative" and "authoritative" resources, respectively. "Allocative resources derive from human dominion over nature", while "authoritative resources result from the dominion of some actors over others" (Giddens, 1984, p. 374). Adapting this, Cleaver and Franks (2005) suggested institutional resources, social structures, rights and entitlements, financial resources, human capabilities, the natural environment, and technology as the key resources on which water governance is built.

Actors draw on the resources available to them to develop mechanisms of access and "covers a variety of mediators of access ranging from formalized institutions to technologies that may overlap and inter-relate." Such mechanisms include formal institutions, socially embedded institutions, family relations and kinship groups, customary and modern land and water rights, payments for rights, payments and contributions for maintenance, water control structures, and access points for surface flows. Cleaver and Franks (2005) further suggest that the different actors may develop such mechanisms consciously or unconsciously, as many of them arise out of the practice of actors' daily lives.

Outcomes result from the deliberate and routine actions involved in water governance. Outcomes as described by Cleaver and Franks (2005) may be positive or negative. For the poor, outcomes can include access to basic supplies, support for livelihoods, structures of social cohesion and exclusion, political voice, and representation. From the perspective of the ecosystem, outcomes can be described in terms of the pattern of flows and levels of water in the catchment and downstream. In this paper, these outcomes are based on the perceptions of the actor groups.

Around these key elements, both state and non-state actors make decisions and take actions that define the processes of management and practices, and through which water governance is manifested. This paper considers the premise that water governance, as an emergent concept, should take into account a multi-stakeholder participation in shaping the public affairs in the water sector and helping the government function better. It starts with the assumption that water governance is indeed nested and interlocking (Rola, 2011), as well as multi-layered (Malayang, 2004). The framework allowed for an assessment of each actor group's water governance mechanisms at each stream by looking at the resources accessible to each actor group, how these are organized into mechanisms of access, and the resulting livelihood and ecosystem outcomes.

METHODOLOGY

The previously discussed framework was used to understand water governance within the Santa Cruz Watershed, Laguna, Philippines from upstream to downstream — from the perspective of the state and non-state actors. The latter is comprised of households, farmers, and commercial enterprises.

Qualitative data were generated from 18 focus group discussions (FGDs) conducted from February to June 2013 (Table 1), and supplemented by key informant interviews (KIIs) and secondary data. Initially, the participant-respondents were selected from three sections of the Santa Cruz Watershed in Southern Luzon, Philippines: upstream, midstream, and downstream; and from four respondent types: state actors or members of the local government units (LGUs), households, farmers, and enterprises. However, in the course of assessing the environmental setting, it was determined that only upstream and downstream environs provided distinct characters of a watershed.

Table 1. Number of actor-based focus group discussions (FGDs) in the upstream and downstream sections of Santa Cruz Watershed, Laguna, Philippines

LOCATION	HOUSEHOLDS	FARMERS	ENTERPRISES	STATE ACTORS
Upstream	Three FGD groups	Two FGD groups of vegetable farmers	One FGD for resort owners and operators; Two FGDs with hog raisers and food processors	Two FGD groups for municipal and village *(barangay)* local government units (LGUs)
Downstream	Two FGDs	Two FGDs with rice farmers	One FGD with small quarry operators *(pala-pala)*	Three FGDs with provincial, municipal and village LGUs, IAs, NIA, LLDA, SCRISA

Note: IAs = Irrigators' Associations, NIA = National Irrigation Administration, LLDA = Laguna Lake Development Authority, SCRISA = Sta. Cruz River Irrigation System Association

The research team invited FGD participants in coordination with the municipal government coordinator, who assisted in identifying villages. Each FGD consisted of a homogenous group of actors (e.g., households, farmers, enterprises, and LGU representative) drawn from one to three villages in the stream section. The general criteria for selecting participants for each actor type include the abilities to represent and to articulate the perceptions, ideas, and situation of their respective actor group, especially with regards to water use.

Guide questions revolved around the three key elements affecting the processes of management and practice by actors/agents: resources, mechanisms of water access, and outcomes. Under resources, groups were asked about their beliefs, norms, and practices on water; notions of water rights; organizations in their communities; decision-making processes; and communication patterns. Discussion points on mechanisms of access explored knowledge of existing water-related organizations; water sources, access structures, and how these are paid and sustained; ordinances and norms related to water use; and socially

embedded institutions that relate to water. Data on outcomes were generated through questions on perception of water quality, links to livelihoods, and water conflicts.

The researchers trained FGD moderators and documenters using a training manual developed to guide the conduct of the discussions. Actual FGDs were conducted as part of the training. These sessions were critical to ensure a common understanding of the guide questions and to maintain a standard of uniformity in questioning and asking follow-up questions. FGD responses were transcribed and encoded by actor group and by watershed section. Response themes were identified.

RESULTS AND DISCUSSIONS

Biophysical Context of Santa Cruz Watershed (SCW)

The Santa Cruz Watershed or SCW (Figure 2) has a drainage area of 148.35 km^2 that straddles five municipalities at 215-2,149 masl. It has an area of about 15,000 ha covering the Municipalities of Liliw, Nagcarlan, and part of the Municipality of Magdalena in the upstream section; and Santa Cruz, Pila, and part of Nagcarlan in the downstream area. This study covered the Municipalities of Liliw, Nagcarlan, Santa Cruz, and Pila.

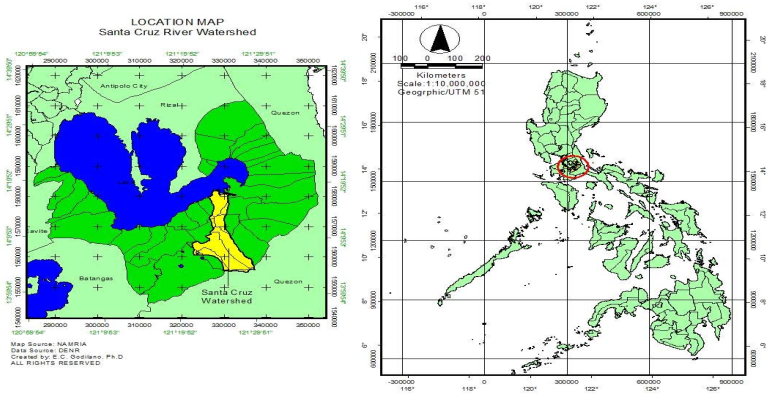

Figure 2. Location of Santa Cruz Watershed relative to Laguna province

One of the river systems draining to Laguna de Bay, the Santa Cruz river system contributes about 15 percent freshwater of the total water of the lake (Laguna Lake Development Authority [LLDA], 2012). The watershed's basin is about 25 km that extends from its watershed divide to the outlet that is considered as a coastal zone of the Laguna Lake. The watershed has five rivers, namely: San Diego, Liliw, Maimpis, Talahebeng, and Tipacan, whose surface waters pass through Nagcarlan, Liliw, Pagsanjan, Pila, Magdalena, Rizal, and Santa Cruz. The watershed discharges at the mouth of Santa Cruz River. Surface water emanates from the headstream at Mount Cristobal, an edifice of the Mount Banahaw that has a height of 1,470 m (ERDB 2015).

Two provinces embrace the watershed — Laguna and Quezon. Portions of Laguna, namely Liliw, Nagcarlan, and Santa Cruz, occupy the largest proportion of land with an aggregate area of 11,304.8 ha. This represents 75 percent of the watershed, encompassing the most number of villages within the watershed. Magdalena, Majayjay, and Rizal account for about 2,453.5 ha or 16 percent of the entire watershed area. Meanwhile, Candelaria, Dolores, Sariaya, Tayabas, and Lucban are parts of Quezon.

Among the three largest municipalities covering the watershed, Liliw and Nagcarlan are endowed with many springs. Liliw has 8 springs, while Nagcarlan has 49. The populace benefits from the springs as water source for domestic use, irrigation, and home businesses, e.g., food processing, livestock, pool for resorts, and vegetable farming.

The Santa Cruz Watershed belongs to Type IV category of the Philippines Climate Corona Classification, indicating more or less evenly distributed rainfall throughout the year — a condition that benefits farming activities. In terms of land use, within the Santa Cruz Watershed are secondary forests, arable and cultivated lands dominated by coconut plantations and irrigated rice as well as built-up areas.

Socio-economic Conditions

Population. Laguna province had a household population of more than 2.6 million as of 2010, with 98.5 males to 100 females. The population of the province may be considered "young" because nearly 60 percent of the population was less than 30 years old. Moreover, more than one-third of the population belonged to 'dependency burden' age groups (below 15 and above 65 years old). In 2015, dependency ratio was 53.1, with 47.6 young dependents.

Among the municipalities within the SCW, Santa Cruz (downstream section) had the highest population and number of households. This was followed by Nagcarlan and Liliw at the upstream section. Annual population growth rate in the SCW ranged from 1.9 percent (Rizal) to 2.3 percent (Liliw and Nagcarlan). This implies that the populations of these two upstream municipalities grew faster than the downstream municipalities.

As of 2010, Santa Cruz was the most populous in the province having a density index of 2,874.9, yet its poverty incidence by 2012 was at 5.3 percent, which was less than that of Liliw and Nagcarlan. Liliw was the next most populated at 865.8-density index with 9.9 percent poverty incidence. Next to Liliw, Nagcarlan's population density was 764.7. Nagcarlan also had the highest poverty incidence among the three municipalities at 10.0. With the higher growth rates in the communities in the upstream section of the watershed, population is expected to increase by at least 2.3 percent annually. Moreover, poverty incidence was noted to be relatively higher in the upland communities than those at the midstream and the downstream municipalities.

Given the higher poverty incidence and population growth rates in the upstream municipalities compared with other municipalities in the watershed, use and demand for water resources are expected to increase. These may have implications on the access to water resources by downstream communities.

Local economy. The agricultural activities influence the demand for water as well as the quality of water in a watershed. Major crops in the SCW were coconut, paddy rice, and corn, while fishing, livestock, and poultry raising were the major industries. Mango and banana were also cited as major commodities of the Province. In terms of hectarage, areas planted to coconut and palay were the largest (Table 2).

Land use. Agriculture was the major land use (about 75 percent of the SCW) and source of income of the residents. The major agricultural land use was exhibited for the production of rice, vegetables, coconuts, fruit trees, and pasture/grassland. Livestock production was one major source of income in both backyard and commercial scales. Land use for other purposes comprised the next major land use or about 14 percent. This includes forestland, quarry, river and water bodies, among others. The remaining 11 percent was devoted to built-up areas, such as residential, commercial, institutional, recreational, road and infrastructure, and industrial areas. The area was also known for its small-to-medium scale food manufacturing industries, namely: bread, candies, delicacies, and meat products.

Table 2. Top five agricultural crops and livestock, Laguna province

CROP/ LIVESTOCK	2011		2012		2013	
	Area (has)	Pro-duction	Area (has)	Pro-duction	Area (has)	Pro-duction
Crop (mt)						
Palay	30,672	126,108	29,895	120,953	29,779	128,905
Corn	1,156	2,622	1,242	1,156	1,219	2,804
Coconut	62,248	109,186	62,248	114,450	62,248	119,271
Mango	187	516	187	498	187	506
Banana	7,074	85	7,074	19,509	7,074	20,086
Livestock (head)						
Carabao		37,320		36,079		
Cattle		39,850		39,874		
Goat		16,963		20,708		
Chicken		3,016,510		2,962,198		
Duck		91,755		92,678		

Source of basic data: Philippine Statistics Authority, 2015

Water Resources

An important discussion of this study focuses on how water as a resource was appropriated by different actors in SCW at two important sections: upstream and downstream rural communities.

Actors' natural environment. The SCW is comprised of five rivers and 57 identified springs. These known rivers and springs served as the major sources of irrigation and drinking water. Surface flows through streams were also important sources for rice fields, as well as for household daily domestic uses. Perceived as "water is life" and a "basic necessity," the natural water resources were appropriated by the many state and non-state actors. They stood prominently in governing water rights and access. The actors exploited the natural environment based on the extent and the manner by which they accessed these water resources.

Institutional resources. The institutional resources include water organizations or village-level people's organizations that address water issues and concerns. These organizations ensured equitable access to water resources. In the upstream communities, the state actors employed legal instruments such as tax declarations and land titles as forms of ownership. On the other hand, the non-state actors were non-government organizations, households, and farmers' organizations. Table 3 presents a summary of how each of the state and non-state actors exercised their functions.

FGD results showed that the state actors or institutions, by the nature of their functions, had applied legal instruments to compel water users to pay taxes for its access, even when water resources are located within private land. Similarly, the same state actors intervened on behalf of household users when water resources are located in a private lot and are being accessed by the community. The Local Government Code (LGC) emphasizes that the local government can intervene on behalf of the majority, "to negotiate with the land owner for water access at a minimal compensation."

Table 3. Institutional roles of state and non-state actors by watershed

	STATE ACTORS	NON-STATE ACTORS
Upstream	Provide legislation, conduct monitoring of water resources, collect revenues/ water fees, manage water distribution	Employ tax declaration and land titles vis-a-vis land ownership
Downstream	Manage water resources, decentralize water quality monitoring, implement water payment policies, formulate and implement water-related ordinances down to the village level to formalize into policy guides	Provide labor force for the establishment of local infrastructure for water distribution, communicate directly with the village captain or officers of the *Sangguniang Barangay* (village council) for water-related concerns

Some water institutions in the watershed had a semi-government character such as the Nagcarlan Waterworks and the Barangay Water Works and Sanitation Associations (BAWASA). These are the formal organizations for piped water distribution. The BAWASA is managed by the *Sangguniang Barangay* (village council) officials, and engages the *purok* leaders for collection. Volunteers from the different civic organizations are involved for security and routine maintenance. Other institutions such as the Tourism Office support the resort enterprises, while the Philippine National Police provides security. On the other hand, with regard to cost of maintenance of water resources, the local government units draw on the Internal Revenue Allotment (IRA), combined with revenues from water user fees and from contributions and donations of volunteer groups, private citizens, and some politicians. The village council, headed by the village chief, has a very important role in representing the interest of water users. The council served as the voice of the community at the higher levels of government decision-making body. Public consultations with respect to water concerns were held through the village assembly meetings.

Other actors within the upstream of SCW were non-government organizations, farmers, entrepreneurs, and households. These non-state actors were using their indigenous knowledge in protecting the environment. In the upstream communities, there were two prominent non-state actors perceived to be stewards of environmental protection for water resources. These were the *Bantay Bayan* (Community Watch) and the *Luntiang Alyansa ng Bundok Banahaw* (LABB) or Alliance of a Green Mt. Banahaw. The *Bantay Bayan* is involved in river cleaning, while LABB helps in restoring the mountain landscape of Mt. Banahaw and Mt. San Cristobal.

The households as key non-state actors both at the upstream and downstream communities drew on a range of internal institutional resources that serve their respective interests and demands. In addition, farmers relied on morning dew as additional water source in a natural environment that offers fresh, clean, and abundant springs from Mt. Banahaw for their vegetable farming. Their upland crops include root crops, pechay baguio beans (*Brassica rapa*), cucumber, bitter gourd, chili, cabbage, tomato, sweet potato, and chayote, which are popular vegetables in the area, though low valued.

Aside from vegetable farming, entrepreneurs also invested large capital to access and develop water resources for recreational business activities, i.e., resorts in the upstream. Both resort owners and farmers

upstream also accessed water through the same pipe system. Resort owners, in some instances, provide their own polyvinyl chloride (PVC) pipes to get connected to the piped system, which is managed by the village waterworks.

Socio-cultural Resources: Actors' Beliefs, Norms, and Social Structures

Socio-cultural resources are social structures, customary rights, and entitlements of specific members of a community. Upstream and downstream communities, formal and socially embedded institutions such as the local government unit (village councils), waterworks systems office as well as civil society organizations were present where civic and legislative efforts are applied to manage the municipal water systems.

For example, with regard to households without their own respective connections, they could go to communal faucets that are usually located along the roadsides. These facilities were provided by LGUs and sometimes by private citizens. The study indicated that water can be accessed by anyone who needs it, and this was remarkably illustrated in terms of payment of water dues. Water was also obtained by paying for water services through the waterworks systems. In the upstream communities, they were implementing a very flexible monetary water payment scheme, depending on the village's accessibility to the main sources and capital outlays, so that users pay at various rates ranging from as low as PhP6.00 for the first 10 m^3 to PhP30.00 per first 25 m^3. Households were paying a minimal fee to cover maintenance of the village water system.

Households accessed their drinking water from seasonal surface water from springs. Meanwhile, villagers accessed rivers for laundry purposes. This practice exemplify the general notion that water is free, and is built on customary and modern land and water rights on the premise that everyone has a right to water because it comes from nature.

Actors' Technology and Practices

Rice farmers requiring irrigation for their crops in downstream communities sourced their water from the irrigation system managed by the National Irrigation Administration (NIA) in coordination with the

irrigators' association. The irrigators' association taps water from the river. These canals are connected to an irrigation dam that serves as a reservoir for the river flow. The source of water for the agricultural area is a smaller spring as compared with the spring used as water source for the household. This small water spring supports 85 ha of agricultural land. The farmers in the area decided to build water well where rainwater can be stored. This stored water is used for irrigation, while spring water is used for other purposes such as laundry and drinking. The Bureau of Soils and Water Management funded the construction of the water well.

In agriculture, the "hose" technology for irrigation is also used. Rustic methods of water collection, such as dug wells and rooftop tubs for rainwater collection, augmented the water supply for vegetable farms during shortages. Farmers dug pits (4m x 5m in size) or improvised catchment tub on the roofs of their houses to collect water. When some farmers were unable to collect water in their wells, other farmers were very willing to share their water supply.

Otherwise, water from their homes was transported and brought to the farm by means of a horse, motorcycle, or on foot (head loading for women or hand carrying for men). Water wells on rooftops or on the ground adequately augmented the supply from the piped water system for irrigating the vegetable farms. With these systems to assure access to supply for agriculture/livelihoods, there were no conflicts among farmers. Each farmer maintained a homemade water reservoir for farming operations. Farmers near rivers and streams had better access to irrigation water. Farmers also followed a schedule in accessing water so that there would be no conflicts.

For households downstream, the water from the spring goes to the water tank for distribution through the water pipes. Some villages connect to the tanks/spring sources (through pipes) located in other nearby villages when there is no source within the village. Spring sources were enclosed in a cemented tank like a dam, and water was tapped for use by the community through a 6-inch pipe through which water flows by gravity from the tank to the town. Distribution lines to the villages consisting of 3-inch pipes were then connected to this main line. Each barangay had a specific water line from the source.

Household and commercial water was mainly accessed from the tap through the piped water system. Other households downstream used jetmatic pumps for groundwater extraction, while others had pitcher pumps to draw ground water for domestic, commercial, or agricultural uses. To cope with the water shortage, especially during the dry season,

downstream rice farmers made use of gas-powered shallow tube wells to draw groundwater for irrigation.

Households upstream, without piped water or pumps, usually walked to the source of water. Travel time depends on the distance of the water source. In cases when typhoon or other natural elements damaged or broke the distribution pipes, some households fetched water from their neighbors' water pipes, or they went directly to the spring to fetch water.

Water becomes a problem, especially during the summer. As water supply becomes scarce, farmers shared the rainwater collected in their individual dug pit or *"balon."* When no water was collected from this pit, domestic water was transported in containers and brought to the farm on backs of horses.

The FGD respondents said that there was no need to improve access to water, but potable water was described to be problematic due to accessibility, especially during summer.

In times of water scarcity, participants looked for additional source of water by putting up more containers for water especially during typhoons, when water from springs becomes muddy. In areas where there is no waterline directly connected to the spring source, some households installed water pumps. For villages without access to a spring source, the local officials entered into an agreement with a neighboring village or town for them to build a water tank at the source in the neighboring village, to supply their own village. The Municipal Health and Sanitation Office gave advice on drinking water quality.

Actors' Socio-Political Resources, Rights and Entitlements

There are no distinct water rights issues with respect to certain actors, recognizing that "water is free and abundant" and everyone has a right to water. However, one compelling issue emerged when the relations of productive resources such as water and land are connected, challenged the factors of production. For example, land rights and water rights are intertwined. Actors appropriate water rights through formal instruments of land ownership, such as tax declarations and land titles. Thus, resort owners' access and develop natural springs within their property. However, the property rights over land do not extend to the water resources within it.

In cases where water resources are sourced outside the administrative boundaries of a village or town, the LGU usually enters into an agreement with another village group or local government unit for a way to access water for a community without water resources. A scheme similar to land swapping is usually adopted.

There are springs in privately owned lands developed by the municipal government, if the village has no funds for the development of the spring water to supply the community. This practice was recognized as a legitimate way to access water from a different village for various uses.

Mechanisms of Water Access

Upstream. State actors, represented by the local government units, led in providing water supply upstream, but the non-state actors also faced important roles. At the *barangay* level, decisions concerned with water governance rest within the local officials, through the *Sangguniang Barangay* or village council. While the council formulated the local resolutions and ordinances, fees and payment schemes were developed in consultation with different non-state actors. Water system maintenance relied solely on a plumber, who was tasked to correct technical problems in the waterworks.

Families and households likewise contributed to water system maintenance through community action. The *bayanihan* system or cooperative volunteer work was very much alive in the upstream. Farmers and regular volunteers alike engaged in the spirit of *bayanihan* for the common goal of repairing and maintaining the water and irrigation system.

The Municipal Water Works, on the other hand, managed the water system in the town proper and took charge of collecting water fees. The generated income, in addition to the internal revenue allotment (IRA) from the municipal government, would serve as an additional fund for the water system conservation. Once seen as a form of kind donation, cash payments had ultimately shifted to becoming an obligation. However, sanctions for delinquent payors were rarely implemented. This is due to the ongoing problem of faulty water distribution, especially to those residing at very high, remote areas or hamlets (*puroks)*. The payment for environmental services (PES) were given by land owners to support natural resources conservation efforts in the watershed as a way to mitigate the environmental impact of resorts.

Upstream communities held on to customary rites and religious faith as socially embedded manners to safeguard their water resources. Farmers offered prayers and light candles at spring source areas, as well as participated in cleaning and tree-planting operations. Farmers also prayed to Saint Anthony for the first rains in the summer. The first rains are believed to make plants grow well. Other residents of the community also joined in growing trees and cleaning up of rivers to help maintain the watershed.

Downstream. Downstream Santa Cruz Watershed had three types of water providers: LGU-based (BAWASA), local water district, and community-based water system. The BAWASA was managing the water distribution in the village, supported by the municipal government. The Laguna Water District, meanwhile, was the major water distribution system downstream. The municipal and village government units allocated part of their funds for the local waterworks systems. Volunteer groups and individuals also gave support when considerable cash outlay is needed for repairs and maintenance, especially after calamities.

A few interesting cases also arose downstream. For instance, some homes got their water supply from one household that has a legal connection to the main line of the village. By law, multiple connections are prohibited, but this practice was generally tolerated to allow the disadvantaged access to basic supplies. These households, usually connected by kinship, had their own arrangement in paying their water bills. In some cases, each connecting household contributed to the payment of a single bill, while others took turns paying the water fees. Meanwhile, in areas where drinking water supply was contaminated, buying bottled water was increasingly practiced. Mechanisms of water access by enterprises were mediated by institutional interventions such as registration in government units to ensure water is available all the time.

One of the most prominent state actors downstream was the National Irrigation Administration (NIA). As part of the agency's irrigation management and development, NIA provides water allocation to different irrigation systems including the Sta. Cruz River Irrigation System (SCRIS) that covers the Municipalites of Pila, Victoria, Nagcarlan, Liliw, and Santa Cruz. Services include the irrigation canal maintenance, operation of water dams, and knowledge transfers with respect to farm production practices. Water allocations were scheduled, including adjustments to accommodate the needs of lowland farmers affected

by flooding or water shortages. The payment schemes, discounts, and incentives composed the financial decisions of NIA officials. These agreements were made in cooperation with the irrigators' associations and local government officials in the agricultural sector. The NIA also sought the help of the Banilad Farmers' Association, a non-state actor, in the management of the Sta. Cruz Irrigation System for decisions regarding rice irrigation.

Volunteer self-help groups of rice farmers established in the seven key sitios or sub-villages, where the major springs are located, actively addressed maintenance problems in the irrigation canals. Outside the NIA system, a rotational water distribution for irrigation water was enforced where there are no payments, particularly during water shortage.

Water Governance Outcomes

Upstream. In the upstream areas, where water was perceived to be abundant and of good quality, water issues revolved around accessibility. During the summer, there were long queues of up to 30 persons in communal faucets and pumps, indicating the insufficiency of the current system for basic water supply. Communities located at a higher elevation than the source experienced extreme water shortages.

Water scarcity in the upstream affected women heavily, as they were the ones at the forefront of domestic as well as productive activities such as vegetable farming. Women are at a disadvantage when their water source for domestic use is not easily accessible. Laundry was easier for women near rivers and streams, while others would have to travel some distance on foot or pay someone to fetch water for them. Generally, women bore the burden of accessing water for the household.

Contamination of water upstream gave rise to water-related diseases. When some pipes break, contaminated floodwater enters the pipes. However, previous water testing showed that their water quality was comparable to commercial bottled water. This is true especially for the headwaters area of the river. During the start of the rainy season, water flow became weak because pipes are damaged.

Water supply was insufficient during summer, when irrigation water do not reach the lower and farther farms. Because of this, 10 percent of rice farmers in one village sufferred, resulting in a 25 percent loss of rice farming income. A rotational water distribution for irrigation

water was enforced during water shortage, without any payments. Conflicts in the agricultural sector were easily settled among farmers themselves.

Areas far away from the main pipes suffered inadequate water supply. Moreover, water was wasted due to improper maintenance, further decreasing water supply in the outer fringes of the distribution system.

Pollution discharges from piggeries and garbage continue to threaten the water supply through contamination of drinking water and clogging of irrigation canals. Contamination from farming activities was also seen as a potential threat to safe drinking water.

Downstream. Downstream areas are well placed to take advantage of the gravity flow of water from the abundant sources upstream. Groundwater is also available. Thus, the water system downstream is well developed.

Recently, water shortage has become a normal occurrence downstream for household, institutional, and commercial users. Water supply in many communities has become erratic and discontinuous. It has been predicted that in 10 years, water conflicts will intensify given the exponential increase of population.

Small-scale mining activities downstream have been blamed for the reduced flow in irrigation canals. Rice farmers claimed that the widening of the rivers due to these activities was one cause of the reduction. Another view states that dredging was beneficial to prevent flooding. However, quarrying activities near the dam for irrigation could also weaken its foundation.

Rice farmers in downstream Santa Cruz benefitted from the river flows fed by the upstream sources. Wastefulness of users near the source negatively affected those at the farther end of the distribution system.

Downstream, most women are more fortunate as piped water is available in almost every household. Water contamination came from human activities such as swimming at the water source, improper garbage disposal from households and industries as well as farm activities. These factors have led to an increase in demand for bottled drinking water as the supply of potable water declined.

Water for domestic and agricultural uses have also been affected by pollution from garbage disposal. Even if there is supply in some areas downstream, the stock of potable water might be limited. The resorts upstream have also been partly blamed for the reduced flows downstream due to the volume of water they use.

Enterprises and households downstream had better access to the piped water system than upstream communities. While upstream communities experienced relative water scarcity, downstream communities were experiencing declining water quality.

Cheap water will be particularly attractive for swine production, resorts, and candy making. Expansion of both may have positive impact on livelihoods of the poor, but care must be taken to ensure that waste is properly managed. Resorts and large-scale swine production are capital intensive and are therefore for big entrepreneurs to engage in.

Expansion in these areas can be potentially threatening to the poor because these enterprises are believed to be heavy water users. Inappropriate water pricing or taxation can lead to overuse and inequitable distribution of the water resources of Santa Cruz. In addition, adverse effects on water supply and livelihoods downstream are possible.

Finally, artisanal mining represents women's opportunity for additional income. However, this activity threatens the water supply, which supports rice farming and livelihoods downstream by damaging the dam that supports the irrigation system.

CONCLUSIONS AND RECOMMENDATIONS

This paper analyzed the roles of state (particularly local government) and non-state (i.e., households, farmers, and commercial enterprise) actors in water governance within the watershed context. The results show that the elements of good water governance such as participatory and inclusive decision-making processes, coordination, and negotiated outcomes existed within the upstream and downstream study communities, contrary to the observation of Lundqvist (2004). Formal and socially embedded institutions, such as the local government unit (*barangay* councils), waterworks systems office, and civil society organizations were present where civic and legislative efforts were applied to manage the water systems.

The dynamics between the state and non-state actors in both streams were found to be collaborative at best, also illustrating that a polycentric governance mechanism (Ostrom 2010) existed in the study villages. In both types of villages, state and non-state actors positioned themselves to support their respective interests. At each stream, state actor networked and linked with the lowest level of peoples' organizations for inclusive decision-making. As cited in this research, the village council, headed by the village chief, served as the voice of the community at the higher levels of government decision-making body. Public consultations with respect to water concerns were held through village assembly meetings.

The resources available in the villages facilitated water access. In the upstream barangays, the state actors or the LGUs provided the water at minimal fees; the households helped maintain the water system. At the municipal level, the water access was more formal where water fees were paid and maintained by the Municipal Water Works. Cash payments, which were once just donations as water is deemed not a commodity, became an obligation.

Upland communities held on to customary rites and religious faith as a socially embedded manner to safeguard their water resources. Other residents of the community also joined in growing trees and cleaning up of rivers to help maintain the watershed. Water payments were also used for watershed conservation. Households upstream without their own water connections could go to communal faucets provided by the LGUs and sometimes by private citizens. Households paid a minimal fee to cover maintenance of the village water system. These practices exemplify the general notion that water was free in the study areas, and was built on customary and modern land and water rights where everyone has a right to water because it comes from nature.

Both resort owners and farmers upstream also accessed water through the pipes set up by the LGUs. For villages without access to a spring source, the local officials entered into an agreement with a neighboring village or town for water access. It was further observed that farmers maintained a homemade water reservoir for farming operations in the upland villages. Water wells on rooftops or on the ground adequately augmented the supply from the piped water system for irrigating the vegetable farms. Water sharing was practiced with an agreed schedule for accessing water. Conflicts among farmers were not observed.

A more formal water governance system was observed in downstream municipalities of the watershed. Downstream Santa Cruz had three types of water providers: LGU-based (BAWASA), local water district, and community-based water system. Mechanisms of water access by enterprises were mediated by institutional interventions, e.g., registration in government units to ensure water is available all the time. The municipal and village government units allocated part of their funds for the local waterworks systems. Volunteer groups and individuals also gave support when considerable cash outlay is needed for repairs and maintenance, especially after calamities. Financial agreements of NIA, one of the important state actors downstream, were made in cooperation with the irrigators' associations and local government officials. The NIA also sought the help of non-state actors in the management of the Sta. Cruz Irrigation System for decisions regarding rice irrigation.

The quality of governance was put to a test during episodes of water scarcity. Village-based technology and other devices were observed to be part of the solution. The state actors established a system of organized water supply rotation through the use of technology (valves) in the main pipeline system to connect everyone during water scarcity. Similarly, non-state actors employed a rotational water distribution scheme for irrigation water during water shortage. At the village level, water storage and water-sharing regimes were observed. Downstream areas took advantage of the gravity flow of water from the abundant sources upstream. Local governments at the village and the municipal levels coordinated and negotiated among themselves for access to water sources.

However, there were observed challenges as outcomes of the current water governance system. In general, upstream communities experienced relative water scarcity, while downstream communities observed declining water quality. Water scarcity in the upstream affected women heavily, as they were the ones at the forefront of domestic as well as productive activities. Women were at a disadvantage when their water source for domestic use is not easily accessible. Contamination of water upstream gave rise to water-related diseases. Pollution discharges from piggeries and garbage continued to threaten the water supply through contamination of drinking water and clogging of irrigation canals. Contamination from farming activities was also seen as a potential threat to safe drinking water.

At the downstream, water shortage has become a normal occurrence for household, institutional, and commercial users. Water contamination supplied from human activities such as swimming at the water source, improper garbage disposal from households and industries as well as farm activities. These factors have led to an increase in demand for bottled drinking water as the supply of potable water declined.

Water for domestic and agricultural uses have also been affected by pollution from garbage disposal that even if there is supply in some areas downstream, the stock of potable water might be limited. The resorts upstream have also been partly blamed for the reduced flows downstream due to the volume of water they use.

The stricter regulations on the access and allocation of water across the watershed are seen as future governance challenges. Both formal and customary rules have to address both the scarcity and the pollution problems that were not as distinct in the past. In some parts of the watershed, water was still abundant and clean, but the problems began to set in at the populated areas. The evolving institutional arrangements and intergroup learning for adaptive collaborative water governance (see David, Rola, & Pulhin, 2016) can create more spaces for mutual cooperation among the various actors. The authors recommend that in areas where there are conflicts in water access and use, a polycentric approach can be considered to include both customary and formal rules in water governance.

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Rabies-related Knowledge, Attitudes, and Practices of Dog Owners from Three Barangays in Los Baños, Laguna, Philippines

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ABSTRACT. Rabies continues to be a health concern in the Philippines. In 2015, only 10 municipalities and one province were added to the list of rabies-free zones in the country, making a total of 35 rabies-free areas since 2008. This study was carried out to build a community-based study on rabies in three selected *barangays* (villages) in Los Baños, Laguna, Philippines. Specifically, it aimed to assess the knowledge, attitudes, and practices on rabies among dog owners. Through snowball sampling, 418 dog owners from the three *barangays* were identified and interviewed. Descriptive measures were carried out to attain the objectives of the study. It was found out that majority of the respondents have heard about rabies. However, there was an indication of limited knowledge on rabies among the dog owners, but those with higher education had relatively better knowledge on the issue. Further, attitude scores demonstrate that across personal characteristics, dog owners had a very strong positive attitude toward rabies prevention. In terms of practices, majority of respondents practiced regular feeding and dog grooming. Also, more than half of the respondents have vaccinated their dogs and confined their dogs at home, while only a quarter reported that their dogs were registered. The researchers highly recommend strengthening information, education, and communication campaigns of the municipality by having public fora and integrating the issue in health classes among educational institutions. Policies concerning pet confinement and registration must also be strengthened by integrating the issue in communication campaigns.

Keywords: *rabies, knowledge, attitudes, practices, Los Baños*

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INTRODUCTION

Rabies is a viral infection transmitted from animals to humans (Yousaf et al., 2012). It is primarily transmitted through saliva and other forms of direct contact from rabid animals such as dogs, cats, bats, and other mammals. Rabies is highly preventable, but it becomes fatal once it infects both animals and humans. Domestic dogs remain to be the most reported rabies reservoir among developing countries (Krebs, Smith, Rupprecht, & Childs, 2000). This is also true in the Philippines. A retrospective study by Dimaano, Scholand, Alera, and Belandres (2011) revealed that dog bites were more common than cat bites among patients diagnosed with rabies.

Mortality due to rabies in Africa and Asia was estimated to be 55,000 per year, with 44 percent of these occurring in Asia and in rural households (World Health Organization, 2005). In the Philippines, rabies is considered as a significant public health concern it accounts for the death of 200-300 Filipinos per year (Garg, 2013). The National Rabies Prevention and Control Program of the Department of Health (DOH) envisions the Philippines to be rabies-free by the year 2020. Different local government units (LUGs) and non-government organizations (NGOs) are taking part in the said program to eliminate human rabies by the target year.

Celebrated every September 28, the World Rabies Day (WRD) was established in 2007 as a response to raise awareness and mobilize resources towards the alleviation of rabies. Medina et al. (2016) reported that WRD events in the Philippines had been rising from 10 related events in 2012 to 76 events in 2015. These events focused on veterinary services such as deworming and consultations as well as information, education, and communication (IEC) activities (e.g., seminars, media forum).

Republic Act No. 9482 or the "Anti-Rabies Act of 2007" commissions the control and elimination of human and animal rabies. It also mandates the National Rabies Prevention and Control Program, a multi-sectoral committee headed by the Bureau of Animal Industry and implemented by the DOH, Department of Agriculture, Department of the Interior and Local Government, Department of Education as well as LGUs with the assistance of the Department of Environment and Natural Resources, NGOs, and people's organization.

In the Municipality of Los Baños, Ordinance No. 2015-1449 ("An Ordinance Adopting the Republic Act 8485 otherwise known as the 'Animal Welfare Act of 1998' in the Municipality of Los Baños") is the body of all of the initiatives undertaken pertaining to animal welfare.

In terms of programs, the Local Government of Los Baños conducts free vaccination annually for each barangay. Also, a caravan bringing public address system roams around the municipality. Previously, roaming dogs were caught and housed at the dog pound. However, due to the limited number of cages, this could not be conducted at present. There is only one recorded case of rabies in Los Banos in the past five years. This occurred in April 2017.

Only a few localities in the country were declared rabies-free as of 2015. From 2008 to 2015, the following zones were declared as rabies-free: Siquijor in 2008; Batanes and Apo Island (Dauis, Negros Oriental) in 2010; Malapascua Island (Cebu) and Camotes Island (Cebu) in 2011; Biliran (Limasawa, Southern Leyte), Marinduque, and Camiguin in 2012; Guimaras, Olympia Island (Negros Oriental), Busuanga, Culion and Coron (Palawan), and Boracay Island (Aklan) in 2013; Alabat (Quezon), Socorro (Surigao del Norte), and Linapacan, Kalayaan, Cagayancillo, Magsaysay, Araceli, and Cuyo (all in Palawan) in 2014. The following were added in 2015: Tingloy Island in Batangas; Agutaya in Palawan; Basilisa, Cagdianao, Dinagat, Dinagat, Libjo, Loreto, San Jose, and Tubajon in Dinagat Islands; and the Province of Dinagat Islands (Bureau of Animal Industry, 2015).

Generally, this research aimed to build a community-based study on the issue of rabies. More specifically, this study was geared toward determining the level of rabies-related knowledge, attitude, and practices of dog owners in three selected lakeshore *barangays* (villages) in Los Baños, Laguna, Philippines.

METHODOLOGY

Research Site

Three adjacent lakeshore villages in the Municipality of Los Baños, Laguna, Philippines were considered as research locales. These were Barangay Mayondon, Barangay Bayog, and Barangay Malinta. Because the study only focused on these three *barangays*, the findings are not conclusive of the knowledge, attitude, and practices of all dog owners in Los Baños.

Figure 1. The research site of the study (Source: Google Maps)

Respondents

Due to the unavailability of a list of all dog owners at the Los Baños Municipal Office, snowball sampling was utilized for this study. Interview respondents were identified through referral from their acquaintances and neighbors, who are dog owners. Four hundred and eighteen (N=418) dog owners from the three *barangays* willingly participated in the research.

All interviewees had the right to withdraw at any stage of the data collection procedure. They were assured that their identity and answers would be strictly kept anonymous and confidential.

Data and Method

Survey method was used to collect data from the respondents. An interviewer-assisted structured questionnaire served as a guide. The survey instrument was divided into four parts: socio-demographic characteristics, knowledge on rabies, attitudes on rabies and roaming dogs, and dog care practices. Prior to the conduct of the survey, the questionnaire was pretested to ensure that potential respondents would

have a clear understanding of the questions. The survey instrument was presented in English with Filipino translation. Finally, experts from the veterinary field were consulted to establish the validity of questions.

The measure of knowledge on rabies was divided into symptoms (ten items), modes of transmission (three items), reservoirs (eight items), and measures of prevention (three items), or a total of 24 items on knowledge. Grouping the scores equally into three yielded three categories. Scores from 0 to 8 denote low level of knowledge; 9 to 16 indicate moderate level; and 17 to 24 indicate high level of knowledge. Respondents were asked directly what they know about the disease in terms of these parameters.

Dummy choices, which are those that are not true to the disease, were also added in order to eliminate response bias. Selecting the dummy choices yield to incorrect response.

Five statements were presented to measure attitudes on rabies and roaming dogs. The respondents chose an appropriate response category that best described their opinion on the given statements. Answers ranged from one to five: 1 - strongly disagree, 2 - disagree, 3- neither agree nor disagree, 4 - agree, and 5 - strongly agree.

Lastly, practice of dog caring was measured by asking directly the participants if they regularly feed and confine their dogs at home, and if they have already registered and vaccinated their dogs.

Analysis of Data

One limitation of non-random samples is that statistical inferences cannot be estimated (Banerjee & Chaudhury, 2010). Lájer (2007) concluded that inferential statistics do not provide reliable results when applied to non-random samples. Since non-random sampling was employed due to the absence of a sampling frame, the study is limited to the use of descriptive measures in analyzing data.

Frequencies and proportions were computed to identify knowledge gaps, while means were computed to determine differences in the knowledge scores. Pearson correlation coefficient was performed to identify correlates of knowledge scores. Median was used as measure of central tendency to identify average attitude scores. Spearman rho was computed for correlates of attitude scores, while proportions were computed for practices.

RESULTS AND DISCUSSION

Socio-demographic Profile of Respondents

The socio-demographic characteristics of the 418 dog owners, who took part in the study are summarized in Tables 1 and 2. Frequency distributions of categorical variables are presented in Table 1, while means and standard deviations of numerical data are shown in Table 2.

More than half (57%) of the respondents were female. Mean age was 43 years old (SD=15.35) indicating that the respondents were generally middle aged. Moreover, about one-third (32%) of the respondents attained high school education. More than half (55%) of the respondents were employed. Average household size was five (SD=2.32).

Table 2 shows that the number of dogs owned by the respondents ranged from one to seven dogs with an average of two dogs (SD=1.19). The number of years the survey participants have been raising dogs spanned widely from one month to 62 years with eight years being the average (SD=9.51).

Reasons for keeping dogs at home varied among the owners. Forty-four percent said that they keep dogs to guard the family's house. Twenty-eight percent reported that aside from having a guard for the house, they also keep dogs as pets. Meanwhile, 26 percent said that they keep dogs only for pet purposes. Finally, very few indicated that aside from these reasons, they also keep dogs for business (e.g., selling them).

Knowledge on Rabies

Majority (95%) of the respondents have heard about rabies. The community was found to be the primary source of information on the said issue (58%), followed closely by media with a very slight difference (58%). Less than half (42%) of the respondents chose family members as sources of information. A relatively low percentage was recorded for the government (21%), schools (18%), veterinary clinics (14%), and hospitals (13%). The interviewees were also asked if they have heard about dog registration in their municipality, and about 69 percent gave an affirmative response.

Table 3 shows the choices from which the respondents were asked to pick the correct symptoms, transmission, and prevention of

Table 1. Respondents' socio-demographic characteristics

VARIABLE	NO.	%
Sex		
Male	179	42.9
Female	238	57.1
Education		
Never attended	3	0.8
Elementary level	9	2.2
Elementary graduate	40	10.0
High school level	51	12.7
High school graduate	129	32.2
College level	91	22.7
College graduate	78	19.4
Employment		
Employed	228	54.9
Unemployed and non-gainfully employed	187	45.1

Note: Total frequencies differ due to the No Response item or missing data

Table 2. Mean and Standard Deviations of age, household size, number of dogs owned, and number of years raising dogs

VARIABLE	MEAN	STANDARD DEVIATION
Age	43	15.35
Household size	5	2.32
Number of dogs owned	2	1.19
Number of years raising dogs	8	9.51

Note: Total frequencies differ due to the No Response item or missing data

rabies as well as the corresponding frequencies and percentages of respondents who picked the items correctly.

Only excessive salivation (70%) and aggression (62%) were recognized by the majority as symptoms of a rabid dog. Most of the respondents did not indicate overeating and overdrinking as symptoms of rabies, which imply that majority of the dog owners were knowledgeable that these are not symptoms of rabies.

Only a bite from an infected dog was the popular choice (92%) as mode of transmission for rabies. In addition, dogs are the most popular rabies reservoir among the choices with majority of the respondents (87%) identifying correctly the animal. With a slight difference, cats were also recognized by majority (83%) as potential carriers of rabies. In addition, the dummy item was correctly answered by majority (84%) of the respondents indicating that they know snakes cannot transmit rabies.

Lastly, about 76 percent and 68 percent, respectively, knew that having vaccines and preventing dog bites are means of rabies prevention. However, less than half (41%) of the respondents stated that confining pets at home helped in preventing rabies transmission.

Differences in mean knowledge scores are presented in Table 4. Over all, the respondents demonstrated a moderate level of knowledge regarding rabies ($\bar{x}$=10.18, s=3.38). A very slight difference on the average number of correct items identified can be observed between sexes and employment statuses. Specifically, females had slightly higher score ($\bar{x}$=10.24, s=3.34) than males ($\bar{x}$=10.12, s=3.47), while employed dog owners had slightly better knowledge score ($\bar{x}$=10.19, s=3.33) than those who were unemployed and non-gainfully employed ($\bar{x}$=10.17, s=3.43). However, the differences can be considered as negligible.

Across educational attainments, dog owners who never attended schooling had the lowest knowledge score ($\bar{x}$=4.66, s=4.04). On the other hand, those who were more knowledgeable about rabies were respondents with college degrees ($\bar{x}$=10.87, s=3.61), followed by respondents who only earned some units in college with a very slight difference ($\bar{x}$=10.84, s=3.54).

Table 3. Frequency counts and percentages of correct answers per item

ITEMS	NO.	%
Symptoms		
Aggressive	259	62.0
Restless	151	36.2
Biting	137	32.8
Strange howling	62	14.8
Overeating[b]	391	93.5
Overdrinking[b]	366	87.6
Seem to look normal (asymptomatic)	43	10.3
Trembling	63	15.1
Depressed	68	16.3
Excessive salivation	291	69.6
Transmission of rabies		
Bite from infected dog	385	92.1
Lick on open wound	185	44.4
Scratch	74	17.7
Rabies reservoir		
Dogs	363	86.8
Cats	346	82.8
Carabaos	7	1.7
Snakes[b]	350	83.7
Pigs	12	2.9
Rats	162	38.8
Bats	45	10.8
Cattles	6	1.4
Prevention of rabies		
Prevent dog bites	285	68.2
Vaccines	320	76.6
Confine to home	172	41.2

[b]Dummy choices

Table 4. Mean knowledge scores of respondents

ITEMS	$\bar{x}$	s
Over-all	10.18	3.38
Sex		
Male	10.12	3.47
Female	10.24	3.34
Education		
Never Attended	4.66	4.04
Elementary Level	9.88	3.30
Elementary Graduate	9.32	3.39
High School Level	9.58	3.09
High School Graduate	9.74	2.73
College Level	10.84	3.54
College Graduate	10.87	3.61
Employment		
Employed	10.19	3.33
Unemployed and Non-gainfully Employed	10.17	3.43

Table 5. Correlation matrix of numerical variables and knowledge score

ITEMS	AGE	NUMBER OF DOGS OWNED	NUMBER OF YEARS RAISING DOGS	KNOWLEDGE SCORE
Age	1.000			
Number of Dogs Owned	0.005	1.000		
Number of Years Raising Dogs	0.037	0.249	1.000	
Knowledge Score	-0.027	-0.092	-0.028	1.000

Table 5 presents the numerical correlates of knowledge scores. Observed correlation coefficients denote negative linear relationships among variables. Knowledge score was negatively associated with age (r=-0.027), number of dogs owned (r=-0.092), and number of years raising dogs (r=-0.028). However, the values were near zero, which means that the strength of correlation coefficients was very weak and might be considered negligible (Mukaka, 2012).

Attitudes toward Rabies and Rabies Prevention

Table 6 indicates median attitude score regarding statements on rabies and rabies prevention. Median scores show that all the interviewed dog owners had strong agreement attitudes on the statements provided. As indicated by the median values, the interviewed dog owners strongly agreed on the importance of informing others about the risk of rabies. They also had a very strong evaluation of rabies as a public health issue. Moreover, dog owners had a very strong positive stance toward roaming dogs being captured and reported. Results were consistent across different characteristics; thus, no difference in the attitudes could be found between sexes, employment statuses, and across highest educational attainments.

Meanwhile, Table 7 presents the correlation matrix between attitude scores and age, number of dogs owned, and length of raising dogs in years. Spearman rho coefficients illustrate very weak linear correlations between median attitude scores and respondent characteristics except for number of years raising a dog and attitude towards capturing roaming dogs (r=0.254) as well as number of dogs owned and attitude about informing others on the risks of rabies (r=0.222). A relatively stronger linear relationship can be illustrated as compared with other correlation coefficients. Specifically, dog owners who have more experience in raising dogs agreed more that roaming dogs must be captured, and those with more dogs had a more positive stance about informing others on the risks of rabies. Similar to the correlates of knowledge scores, many values were very close to zero and might be considered negligible (Mukaka, 2012).

Table 6. Median attitude scores of respondents

	It is a must to inform others of rabies' risks.	Rabies is a public health concern.	Roaming dogs must be captured.	Roaming dogs must be reported.	It is a must to inform officials of dog biting incidence.
Over-all	5	5	5	5	5
Sex					
Male	5	5	5	5	5
Female	5	5	5	5	5
Education					
Never Attended	5	5	5	5	5
Elementary Level	5	5	5	5	5
Elementary Graduate	5	5	5	5	5
High School Level	5	5	5	5	5
High School Graduate	5	5	5	5	5
College Level	5	5	5	5	5
College Graduate	5	5	5	5	5
Employment					
Employed	5	5	5	5	5
Unemployed and Non-gainfully employed	5	5	5	5	5

Table 7. Correlation matrix of numerical variables and attitude scores

	Age	Number of dogs owned	Number of years raising dogs	It is a must to inform others of rabies' risks.	Rabies is a public health concern.	Roaming dogs must be captured.	Roaming dogs must be reported.	It is a must to inform officials of dog biting incidence.
Age	1.000							
Number of dogs owned	0.106	1.000						
Number of years raising dogs	0.161	0.315	1.000					
It is a must to inform others of rabies' risks.	-0.125	0.222	0.120	1.000				
Rabies is a public health concern.	0.191	0.089	0.149	0.280	1.000			
Roaming dogs must be captured.	-0.066	0.136	0.254	0.372	0.573	1.000		
Roaming dogs must be reported.	0.005	0.087	0.097	0.283	0.468	0.690	1.000	
It is a must to inform officials of dog biting incidence	0.103	0.080	0.196	0.347	0.388	0.475	0.667	1.000

Practices on Dog Care

Table 8 presents the frequency distribution of various dog care practices. Majority of the owners practiced regular dog feeding (99%) and dog grooming (90%). Meanwhile, a lower percentage reported dog vaccination (69%) and dog confinement (51%). Lastly, dog registration (27%) was the least performed dog care practice.

Table 8. Summary of frequencies and percentages on dog care practices

PRACTICES	NO.	%
Dog feeding (N=401)	396	98.8
Dog grooming (N=401)	360	89.8
Dog vaccination (N=409)	284	69.4
Dog confinement (N=406)	209	51.5
Dog registration (N=411)	111	27.0

Note: There are different Ns because of the No Response item.

Discussion

Rabies is an important health problem that needs attention. To the knowledge of the researchers, this is the first study that dealt with the knowledge, attitude, and practices of Los Baños dog owners toward rabies.

The dog owners demonstrated a moderate level of knowledge about rabies. No large differences on knowledge between various personal characteristics was found except on educational attainment. Those who had college units and college degrees were more knowledgeable on rabies relative to those who never attended school. Similar studies also yielded the same result that those who had greater education are more likely to have better knowledge about rabies (Haimbodi, Mavenyengwa & Noden, 2014; Sambo et al., 2014). Dog owners who have attended schooling longer may have had the opportunity to learn further about rabies.

Only aggression and excessive salivation were highly recognized as symptoms of rabies. The finding that most of the respondents did not know that rabid dogs can still look normal is alarming because it can put them at risk whenever they interact with dogs that seem to look normal. Rabies can also be transmitted through scratches (Hankins & Rosekrans, 2004). However, many participants failed to recognize this mode of transmission; thus, another knowledge gap must be filled. Also, it should be noted that only mammals can transmit rabies (Klosterman, 2008). Among the enumerated rabies reservoir, the dog owners only recognized dogs and cats as potential reservoir but not the other mammals presented on the questionnaire.

On the other hand, respondents across different personal characteristics displayed a strong positive attitude toward rabies prevention. Interestingly, respondents strongly agreed that roaming dogs were annoying and should be captured and reported; yet only about half reported to be confining the dogs at home. This is a clear violation of Section 5 of the Anti-Rabies Act of 2007. In the said section (Responsibilities of Pet Owner), all pet owners are required to not allow the dogs to roam in public without a leash.

Furthermore, among the pet care practices, dog registration was the least practiced, which indicates that something needs to be done in terms of pet registration. Part of the responsibilities of pet owners is to submit the dogs for mandatory registration. In addition, the low prevalence of the practice can be attributed to the finding that only a moderate percentage of dog owners had heard about it.

CONCLUSIONS AND RECOMMENDATIONS

Good knowledge on the dynamics of rabies, positive attitude toward rabies prevention, and proper pet care practices of the community members will help the Municipality of Los Baños strengthen the Anti-Rabies Act of 2007. Particularly, these will help attain the mandate of the act, such as to control, prevent, and eradicate human and animal rabies.

However, there is an existing knowledge gap among the dog owners on the issue of rabies, particularly on its symptoms. Major sources of information pertaining to the issue are the community itself and the mass media, but not the government and schools. In addition, the pet owners generally had a strong positive attitude toward rabies

prevention. In terms of practices, dog registration was the least practiced where only a quarter reported to have done so.

Results of the study thus point to the following recommendations:

First, the authors suggest that a database of dog owners be established through the Municipal Agriculture Office for monitoring purposes. Furthermore, it will allow random selection of participants for future surveys; thus, generalization of research results will be possible.

Second, since findings indicate that the government and schools ranked low among the sources of information about rabies, the researchers recommend that responsible pet ownership in general and rabies prevention, in particular should be integrated in health classes among educational institutions. Moreover, having community education on rabies, strengthening governmental advocacy and policies, and following effective information dissemination programs are recommended.

The municipality can also utilize Rabies Educator's Certificate (REC), an online free course about rabies issued by the Global Alliance for Rabies Control. As of May 2017, there are only about 600 REC graduates in the country. The Local Government of Los Baños can recommend it to university professors, school nurses, and health workers to disseminate life-saving information regarding the disease. Finally, policies concerning dog confinement and registration must also be strengthened by informing the community about the importance and mandatory implementation of these practices.

Hence, this study concludes with the hope that the Municipality of Los Baños will pursue strong local government interventions including wide information dissemination to address knowledge gaps and strong policy implementation to ensure proper dog care practices. With these, Los Baños may consequently be declared as a rabies-free municipality by 2020.

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Embeddedness and Policy Attitudes: An Exploratory Study Involving a Social Network of Mayors in Bohol, Philippines

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ABSTRACT. This paper is an exploration of the different measures of embeddedness within a social network of mayors in Bohol, Philippines. Inquiry was perched on the prospects of elucidating policy transfer mechanism through the social network approach (SNA). SNA was applied in the characterization of embeddedness traits of the mayors. Results of the survey indicate higher incidence of policy attitude similarity between a mayor and his immediate (ego) network peers compared to the similarity with peers in the broad network. The paper paints an intriguing picture of local policy transfer dynamics from a network perspective whereby interactions beyond local jurisdictional boundaries can be examined for possible influence on policy attitude similarities. It submits recommendations for further application of SNA in local policy process research and practice.

Keywords: *social network, mayors, policy transfer, attitudes, Philippines, organic farming*

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INTRODUCTION

At any level of government, policy processes do not occur in a vacuum. Communities often deal with issues that others simultaneously face and it is more often the case that solutions subscribed to are not unique. In a world where the flow of information is more fluid than ever, it would be difficult to imagine the absence of any transfer mechanism at work when local governments formulate means to address issues in their respective communities. Policy transfer embodies how goals, content, instruments, programs, institutions, ideologies, ideas, attitudes, and even negative lessons in one policy setting become external inputs to the formulation of policies in another (Dolowitz & Marsh, 1996). Exchange and processing of information across policy communities often lead to voluntary emulation through either learning or leadership example (Grupp & Richards, 1975). As in the case of British local authorities, neighbor-influence can explain policy transfer (Wolman & Page, 2002). Moreover, personal interactions between key officials have many times been depicted in literature as channels of emulation (Walker, 1969; Gray, 1973; Balla, 2001).

Owing to decentralization reforms that came with the 1990 Local Government Code (LGC), local governments in the Philippines have been exercising greater direct authority over the delivery of devolved public services in their localities. The devolution counted on local government units (LGUs) to effectively assess local conditions and directly respond through a more autonomous system of governance. However, local determinants only partly explain policy choices of these subnational governments. As argued in policy diffusion research (Berry & Berry, 2007), external influences also matter to policy adoption through the process of policy transfer. To date, however, the extent to which policy transfer influences policies in the Philippine local governance system has yet to be explored.

With increasing awareness of interlinked policy communities and actors, the social network approach has been gaining ground in policy transfer research. Studies on information systems and innovations adoption exhibit the utility of social networks in explaining interdependent attitudes in organizational settings (Ahuja, 2000; Inkpen & Tsang, 2005; Powell, Koput & Smith-Doerr, 1996). The approach has also proven to be useful in explaining policy innovation via transfer processes since social ties can serve as conduits of policy learning between adjacent jurisdictions (Wellman, 1983; Rogers, 2003; Adam & Kriesi, 2007). Other studies have applied SNA to performance and knowledge transfer, focusing on the relevance of tie strength within

networks (Granovetter, 1973; Granovetter 1982; Burt, 1992; Krackhardt, 1992; Hansen, 1999). Villadsen's (2011) investigation of the relationship between the structural embeddedness of mayors and policy isomorphism in Danish municipalities most closely illustrates the applicability of SNA in explaining local policy processes.

This paper investigated the utility of the network approach in making out local policy transfer mechanisms in terms of municipal mayors' policy attitudes, which are crucial to the adoption and implementation of policy innovations. Using social network data from participating mayors in the island-province of Bohol, it explored measures of social network embeddedness, considering the extent of their prominence in the web of relations shared with fellow mayors, as well as the efficiency of those social ties. It also considered the possible influence of social embeddedness on the similarities of mayors' policy attitudes.

The role of mayors as consumers of information and the network relations that rendered them as conduits of ideas across municipal boundaries are highlighted in this research. This study demonstrates how social networks may be tapped for the improved understanding of the dissemination of new local policy initiatives. Mayors were the focus in the study because they are the most influential policy and governance actors in their localities, providing executive leadership over the daily affairs of the LGU and exerting extensive influence on the local legislation process through powers of agenda-setting, persuasion, and veto. This study has offered an alternative take on policy transfer research in terms of three aspects.

First, the study concentrated on policy attitudes as targets of socially influenced policy learning process. Inquiry into policy attitudes has shed light into intermediate outcomes of an ongoing policy transfer process en route to the realization of policy actions. Secondly, it directed investigation toward the role of social influence in the policy transfer process. It adapted the social information processing theory (Salancik & Pfeffer, 1978), which has been used much in organizational innovation research, to local policy process research. Finally, this study presented a decentralized developing country perspective to the inquiry on policy transfer processes. Earlier studies have had tendencies toward pluralist assumptions and empirical bias for industrialized country settings (Dolowitz & Marsh, 1996; Benson & Jordan, 2011), leaving out the context of countries like the Philippines.

This paper is organized to, first, lay out the arguments about how embeddedness may be linked to policy learning. It then proceeds to discuss the different measures of embeddedness that were used to characterize embeddedness traits of surveyed mayors. The paper also reports the policy attitude similarities between the mayors and peers. Subsequently, it considers how embeddedness characteristics and the policy learning may be linked. Finally, the paper concludes with some final insights and recommendations for future work.

Embeddedness and Policy Learning

The social information processing model posits that the social environment is an important source of information and normative cues for forming individual attitudes (Salancik & Pfeffer, 1978). Correspondingly, this study generally argues that social relations have a significant bearing on local policy learning and transfer processes such that embeddedness in the social network can influence the incidence and extent of similarities between a mayor's policy attitudes and that of his mayor-peers. Be it due to coercive, normative, and mimetic pressures, or lesson-drawing (DiMaggio & Powell, 1983; Rose, 1993), policy attitudes among interacting local officials are expected to become more alike. Researches on policy diffusion (as reviewed by Berry & Berry, 2007) and a more recent study on policy isomorphism (Villadsen, 2011) refer to such dynamics in explaining adoption behavior arising from socially mediated influences from other jurisdictions.

Most valuable in elucidating the mechanism of social influence on policy attitudes is the social network perspective. Formal and informal mayoral ties make up a social network in which knowledge, beliefs, values, and norms are exchanged between mayors through direct personal interactions. This study directed attention to the traits that characterize a mayor's embeddedness in social networks. Embeddedness has been largely applied to how economic behavior is influenced by social relations (Granovetter, 1985). Later on, the concept became popular in organizational research as determinant of exchanges and performance (Borgatti, 2003).

In the simplest sense, embeddedness in this study referred to a mayor's position in a social network brought about by repeated interactions with other mayors. It is proposed here that embeddedness of mayors in the social network affects how policy-related information are transferred and processed by local government officials. Such

influence can manifest in the incidence and extent of similarity between a mayor's attitude and the collective attitudes of his fellow mayors, which is illustrated here using the case of selected local executives in the province of Bohol. This paper examined two groups of embeddedness measures: prominence in the broad network and the structural holes in an ego network.

Prominence refers to one's visibility to other actors in the network and is differentiated into centrality and prestige (Knoke & Burt, 1983; Wasserman & Faust, 1994). Centrality is an actor's degree of involvement with other actors in the network regardless of whether he is an initiator or receiver of that relation. On the other hand, prestige is the degree to which one is at the receiving end of positive social relations. Prestige in the network connotes status as an object of attention and deference. This measure is closely related to the concept of power, which is inherently relational and a consequence of relationships (Hanneman & Riddle, 2005). Prestige provides an actor with opportunities to exert social influence on fellow actors in the network. An actor who enjoys a status of prestige can be an object of emulation and a trusted conduit of ideas by peers.

On the other hand, a network may be composed of strong and weak ties. Strong ties point to greater cohesion between actors as a result of repeated interactions while weak ties are associated with bridging roles to crucial information in the network (Granovetter, 1973). Burt (1992) qualifies the bridging role of weak ties in the transfer of information between groups separated by structural holes, that is, the absence of a relationship between individual and subgroups of network actors. A mayor who has weak ties reaching over structural holes has an advantage in obtaining information from other subgroups in the broad network. Having more of these non-redundant ties in one's ego network may lead to greater chances of exposure to information exchanges in the broad network.

Hanneman and Riddle (2005) describe such relations as highly efficient because reaching a wider network would require less effort from the actor. Having less efficient ties in a network implies that the actor has more connections who are themselves interacting with each other. Social capital is higher in an ego network where redundant ties give way to uninterrupted flow of information because there are more alternative means of access to one contact (Burt, 2001). When a mayor's contacts share ties with each other, it can become difficult to eliminate the mayor's connection to a contact even if his or her direct ties to that

individual were cut off. Forms of social capital that can be associated with this kind of network are improved levels of trust, norms, reciprocity, and other values, which serve both information and material exchanges among actors (Putnam, 1995; Coleman, 1988; Granovetter, 1985). When a mayor has more of these redundant ties, his or her network ties may be considered less efficient, and this becomes a constraining property to the mayor's ego network as more of the same set of information flows toward the focal actor.

Using social network data from Bohol, this study characterized the dimensions of embeddedness discussed above. Further, it considered how these measures may be useful in understanding policy learning at the local level.

METHODOLOGY

Social network data were generated from a survey of participating Boholano mayors in 2012. From the survey questionnaires initially sent to local executives in all 47 municipalities, a total of 24 interviews were completed for the study. A network map of the mayors was drawn from the responses and the scores for centrality, prestige, and ego network efficiency scores were derived from the map. Respondents' perceptions about the benefits of organic farming and its promotion in the locality were also gathered.

In the network map, ties exist if either respondent named another mayor as one of his/her most frequent interactions. Such information is based on a mayor's response to the question to name a maximum of three other mayors with whom he/she most frequently interacts. Given the phrasing of the question, the relations identified by each respondent are interpreted as strong ties.

The use of fixed number of choices in social network surveys is criticized for the risk of introducing measurement errors in the analysis of some network properties of subgroups (Wasserman & Faust, 1994). This study makes an exception for two reasons: 1) letting respondents name more than one mayor-cohort provided for existence of similarly frequent relations, and 2) limiting the responses to a maximum of three compelled the respondent to try to first assess ties and identify the most relevant mayor-cohorts in the province. As to whether a response limit greater than three would have excluded some relevant ties, this did not turn out to be a concern because only one of the respondents named three ties.

Recognizing that an actor's prominence in the network is perceived in different aspects, centrality was measured in terms of four specifications. Wasserman and Faust (1994) and Rusinowska, Berghammer, De Swart, and Grabisch (2011) served as guides for the derivation of the first three centrality measures. For the specification of the fourth measure, the number of mayor's connections along with the number of connections of other mayors with whom he/she is connected was considered (Hanneman & Riddle, 2005). The centrality measures used in this study are as follows:

i) The degree centrality indicates how well one (or a node) is connected in terms of direct ties, and it is an index of the node's communication activity (see Figure 1). A mayor's degree centrality corresponds to the number of direct ties to other mayors in the province. The sum of such ties is standardized by the maximum number of possible connections with other mayors.

ii) Closeness centrality is based on proximity and measures how easily an individual (or a node) can reach other actors (nodes) in a network. It is kind of a measure of the node's independence or efficiency. Closeness centrality is measured in terms of the inverse of the total distance to all other actors in the network, standardized similarly as degree centrality.

iii) The betweenness centrality is based on how important an individual (or a node) in terms of connecting other actors in the network. It is useful as an index of the potential of an actor for control of communication. Betweenness centrality indicates a mayor's role in controlling or mediating relations between other non-adjacent mayor-actors in the network. It is the sum of the ratios of the shortest paths or geodesics between two mayors that contain a third mayor, to the total number of geodesics between the first two mayors, standardized by the maximum value of their possible connections with other actors.

iv) The specification of the fourth measure, Bonacich centrality is a modification of the degree centrality approach. It measures centrality and power as a function of the connections of the actors in one's neighborhood. The more connections the actor in a neighborhood has, the more central the actor is. Also, the fewer the connections in a neighborhood the actor has, the more powerful the actor is. Bonacich centrality score was derived as the sum of all connections

to other mayors in the network weighted by the centralities of those other mayors iteratively in consideration of the degree and direction of dependence between them.

Prestige in the network is closely related to the concept of power, which is inherently relational and a consequence of relationships (Hanneman & Riddle, 2005). Mayoral prestige was based on responses to the survey question, "Is there a municipal mayor in the province whose opinion you value most in terms of policy and program implementation decisions?" Prestige score, which is the sum of in-degrees or peer-votes for an actor, standardized by the maximum number of possible connections with other actors in the network (Wasserman & Faust, 1994), was first derived for each of the mayors. Only about half of the respondents were nominated and there was very little variation in the computed prestige scores of those who were named as such. While the scores were useful in preliminary comparisons of the mayors' prominence in the network, it appeared that the best way to test the influence of prestige on policy attitude gaps and similarities was by operationalizing it as a status.

Prestige status was hence defined here as a binary valued variable representing a position that enjoys any level of positive regard from other mayors in the network. This variable was assigned a value of "1" if a mayor has a non-zero prestige score and "0" if otherwise.

The ego network model was applied to compute efficiency of each mayor's ties (Burt, 1992). Such measure of structural holes in the ego network treats each mayor as an ego and considers each mayoral ego network as separate from the rest of the broad network. Efficiency was measured as the effective ego network size, that is, the number of alters minus the average degree of alters within the mayor's ego network (not counting ties to ego network), divided by the number of alters in the ego network. Scores for network efficiency, along with centrality and prestige were derived using the SNA tools in UCInet (Borgatti, Everett, & Freeman, 2002).

Policy attitude was defined in the study as the level of a mayor's receptiveness toward the prospective local policy of organic farming promotion. Scores for this variable were drawn from seven-point Likert-scale responses indicating respondents' levels of agreement to statements about the benefits of organic farming and its promotion. Statements about perceived benefits of organic farming were aggregated into three main categories: environmental and health benefits, economic

or income benefits, and combined environmental, health, and income benefits of the technology. Statements pertaining to perceived municipal government's motivations for adoption of the policy were reported under the aggregated category for political motivations. An over-all measure of policy attitude toward the promotion of organic farming was created. To quantify mayors' policy attitudes, corresponding response scores for survey statements aggregated under each category were averaged. The over-all policy receptiveness score was treated as the mean of the response scores in all twelve survey statements. Preliminary summary of scores indicated the number of mayors falling into the same category score.

RESULTS AND DISCUSSION

Embeddedness of Mayors

Figure 1 is a simple representation of the mayoral social network of the Boholano mayors, who participated in the study. Dark-colored nodes signify survey participants while the white nodes correspond to non-participants. The size of nodes indicates the Bonacich centrality scores, which are reported in Table 1, along with other computed centrality scores. Since mayoral interactions and relationships tend to shift over time, the network graph is a mere snapshot of the network from the perspective of respondents at the time of the survey.

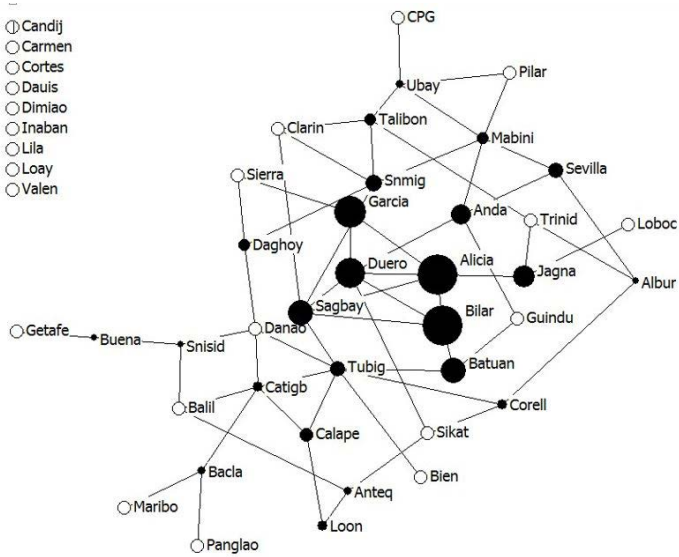

Figure 1. Social network of surveyed mayors and their peers

The scores reported in Table 1 reveal the different aspects of centrality by which a mayor's embeddedness in the broad social network may be appreciated. Degree centrality, which is the most straightforward measure, points to a mayor of Tubigon as the most embedded in terms of the number of direct ties to other mayors. The trait coincides with having the highest closeness centrality score, validating that having the most direct ties in the network enables a mayor to depend least on intermediaries for information access and other transactions. Betweenness centrality scores also show the same mayor as positioned in the path of the most mayor-pairs, demonstrating that having more direct ties can come with greater opportunities to perform mediating roles in the network. Thus far, these embeddedness measures indicate the strategic opportunities for consuming and bridging information available to a centrally positioned mayor in a social network.

On the other hand, Bonacich centrality scores show that when the centrality of one's contacts is considered, the mayor who has more well-connected peers, such as those of Bilar and Alicia in the network, may be considered better embedded than the one with the most number of direct ties. Applying the second half of a popular adage — "it's who you know…", the value of a mayor's Bonacich centrality provides alternative ways of viewing strategic actors in a policy learning and transfer network.

Prestige scores were computed from the relations that place the mayor at the receiving end of a specified tie — being an object of respect and emulation. For this measure of prominence, a non-respondent of the survey may turn out to be a key actor, as in the case of the mayor of Maribojoc (labeled 'Maribo' in Figure 2) who got the highest score. Figure 2 illustrates the same network of interactional ties among the mayors, with prestige status marked by a red ring around the node and the prestige score indicated by the node size. What can also be gleaned from the network is that centrality does not necessarily come with enjoying a status of prestige as evidenced by the case of Bilar's mayor who was not nominated at all as object of respect or emulation but was among those who had more direct ties in the network. In the case of Loay's mayor, it can be noted that enjoying a status of prestige does not necessarily come with sharing a direct tie with a fellow mayor. Finding very little variation in the prestige scores, the binary variable for prestige could be used in the subsequent analyses to signify the "status of prestige" as the more meaningful representation of this type of prominence measure.

Table 1. Network centrality scores of mayors in Bohol, 2012

MUNICIPALITY	DEGREE	CLOSENESS	BETWEENNESS	BONACICH
Alburquerque	0.065	0.304	0.040	0.004
Alicia	0.109	0.347	0.060	3.269
Anda	0.087	0.329	0.050	1.264
Antequera	0.065	0.289	0.029	0.145
Baclayon	0.065	0.270	0.069	0.177
Batuan	0.065	0.320	0.028	1.822
Bilar	0.087	0.327	0.011	3.269
Buenavista	0.065	0.224	0.035	0.014
Calape	0.065	0.309	0.021	0.673
Catigbian	0.109	0.350	0.121	0.374
Corella	0.065	0.329	0.050	0.376
Dagohoy	0.065	0.320	0.070	0.465
Duero	0.130	0.377	0.081	2.266
Garcia	0.065	0.296	0.014	2.463
Jagna	0.065	0.289	0.042	1.459
Loon	0.043	0.255	0.002	0.302
Mabini	0.109	0.333	0.076	0.561
Sagbayan	0.130	0.392	0.140	1.822
San Isidro	0.065	0.285	0.072	0.018
San Miguel	0.109	0.361	0.099	1.024
Sevilla	0.065	0.298	0.013	0.821
Talibon	0.087	0.312	0.046	0.465
Tubigon	0.152	0.407	0.215	0.818
Ubay	0.087	0.285	0.042	0.218

About one-third of the ego networks form a center-periphery structure in which the other contacts pass through the ego (Figure 3). Such ego networks are composed of non-redundant ties and exhibit optimal efficiency, with the focal mayor (labeled as E for 'ego') linked to the peers (labeled as A for 'alter') solely through direct ties to them (Table 2). In this type of network structure, a mayor is at the intersection of communication exchange, a position of learning advantage.

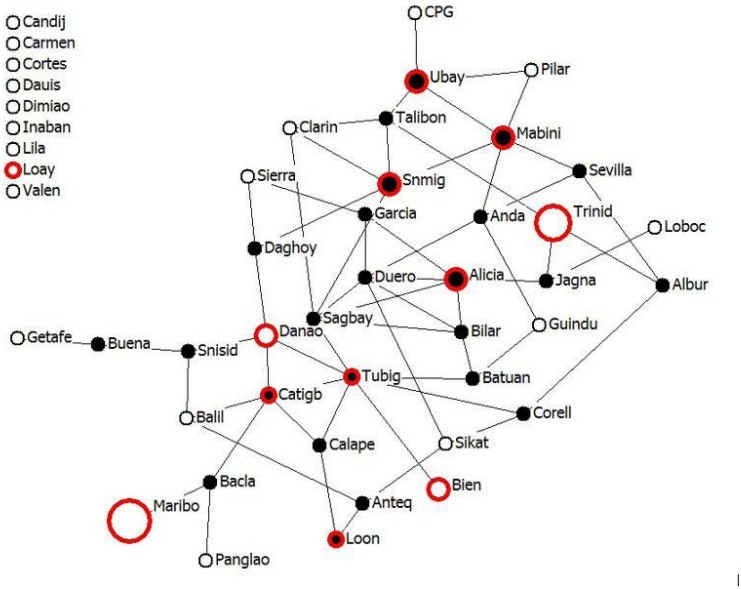

Figure 2. Social network of surveyed mayors and other peers by prestige status and score

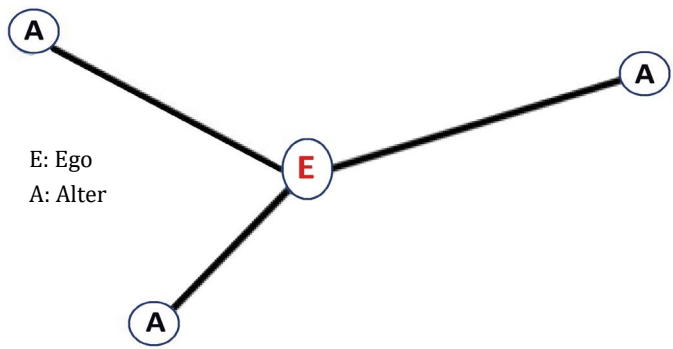

Figure 3. Ego network structure with optimal efficiency score

Table 2. Ego network traits for surveyed mayors (n=24)

EGO NETWORK	NO. OF ALTERS	REDUN-DANCY	EFFEC-TIVE SIZE	EFFI-CIENCY	CONS-TRAINT	HIE-RARCHY	SHAPE
Loon	2	0.000	2.000	1.000	0.556	0.278	D
Buenavista	2	0.000	2.000	1.000	0.556	0.278	D
Alburquer-que	3	0.000	3.000	1.000	0.333	0.000	A
Antequera	3	0.000	3.000	1.000	0.333	0.000	A
Baclayon	3	0.000	3.000	1.000	0.333	0.000	A
Batuan	3	0.000	3.000	1.000	0.333	0.000	A
Corella	3	0.000	3.000	1.000	0.333	0.000	A
Dagohoy	3	0.000	3.000	1.000	0.333	0.000	A
Jagna	3	0.000	3.000	1.000	0.333	0.000	A
San Isidro	3	0.000	3.000	1.000	0.333	0.000	A
Calape	3	0.667	2.333	0.778	0.611	0.052	C
Garcia	3	0.667	2.333	0.778	0.611	0.052	C
Sevilla	3	0.667	2.333	0.778	0.611	0.052	C
Anda	4	0.500	3.500	0.875	0.406	0.055	B
Ubay	4	0.500	3.500	0.875	0.406	0.055	B
Talibon	4	0.500	3.500	0.875	0.406	0.055	B
Bilar	4	0.857	3.143	0.786	0.571	0.125	F
San Miguel	5	0.750	4.250	0.850	0.387	0.146	K
Catigbian	5	0.800	4.200	0.840	0.382	0.091	G
Mabini	5	0.800	4.200	0.840	0.400	0.023	I
Alicia	5	1.417	3.583	0.717	0.560	0.152	E
Sagbayan	6	1.125	4.875	0.813	0.388	0.072	J
Duero	6	1.214	4.786	0.798	0.432	0.168	H
Tubigon	7	0.500	6.500	0.929	0.227	0.088	L

Mayors' Policy Attitudes

The policy idea used in this study pertains to the promotion of organic farming aligned with Republic Act 10068, also known as the "Organic Agriculture Act of 2010" (OAA). OAA defines organic agriculture according to ecological, social, economic, and technical standards. It discourages the use of chemical fertilizers, pesticides, and other synthetic inputs in lieu of the practice of soil fertility management, varietal breeding and selection under chemical and pesticide-free conditions, and the use of ecologically sound biotechnology and other cultural practices. OAA calls for the development and dissemination of organic farming technology through the National Organic Agricultural Program (NOAP) and the formation of local technical committees (LTCs) at the local levels for the implementation of NOAP. At the time of the study, only about 20 percent of municipalities in the Philippines have formed LTCs in accordance with OAA guidelines (Department of Agriculture, 2012).

The provincial government of the island-province of Bohol has been openly promoting organic agriculture (Chatto, 2011). However, none of the Bohol municipalities have formed LTCs or signified formal commitments to the OAA through local policy adoption by 2012. A welcome progress was the effort of the Bohol Integrated Area Development (BIAD) V, an economic cluster of rice-producing municipalities, to position these localities in the organic rice market (LGSP-LED, 2013). Some municipalities have also embarked on isolated projects involving use of organic technology such as the promotion of backyard vegetable farming and operation of vermiculture composting facilities (Department of the Interior and Local Government, 2013). These observations show growing local awareness of the idea of organic technology promotion without definitive act of municipal-level policy adoption. Such developments aptly correspond to this research's focus on policy attitudes toward organic farming promotion as objects of transfer mechanisms.

The respondents were generally receptive to the use and promotion of organic farming. Unsurprisingly, incidences of shared policy attitudes between mayors and their peers were more prevalent in the ego networks than in the entire network (Figure 4). Such trend demonstrates advantage of direct ties in closing gaps in policy attitudes. When it comes to the environmental and health benefits of organic farming, none of the mayors were at the same attitude level with broad network peers. On the other hand, over half of the mayors shared the attitude of peers in their ego networks with regard to this category. In

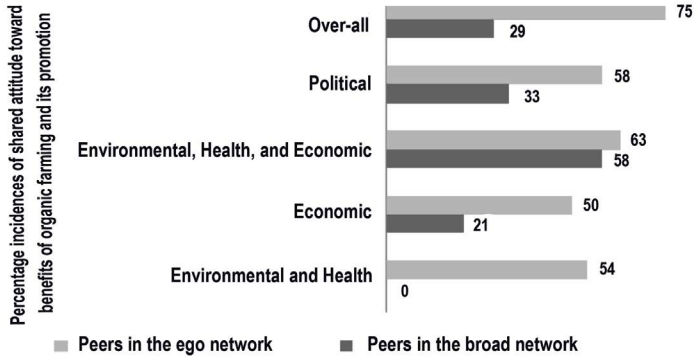

Figure 4. Percentage of mayors sharing similar attitudes with network-peer

terms of economic and combined benefits (economic, environmental, and health) of the technology and the political motivations for its promotion, the proportion of mayors who shared the same attitude level with other mayors in their respective ego networks were consistently higher than those of mayors in the entire network. The same pattern holds for over-all receptiveness to the policy, with an overwhelming 75 percent of the respondents sharing the same attitude level with other mayors in their ego networks. The lower proportions of mayors who shared the same attitudes with other mayors at the broad network level hint at the early stage in the process of information exchange pertaining to the policy idea. Such trend shows how the smaller ego networks with more direct ties and shorter paths than the broad network can coincide with relatively higher incidences of shared policy attitudes.

Network Traits and Policy Transfer

Observations from the network of mayors mapped in this study present some points for reflection regarding the influence of social embeddedness on policy learning transfer. For one, the higher incidence of policy attitude similarity found between mayors and their respective immediate ties (e.g., ego networks) corroborates the advantage of direct ties in effecting "like-mindedness". Moreover, the structure of the ego network can enlighten the relational dynamics that each mayor directly faces, thereby, making sense of transfer mechanisms being referenced.

Going back to the embeddedness traits earlier described, the number of direct ties represented by degree centrality renders the measure as a key determinant that can be considered in linking policy attitude similarity with embeddedness. A comparable measure to degree centrality is closeness centrality, the use of which can facilitate interpretation of embeddedness in terms of the dependence on other peers to reach others in the network. On the other hand, direct ties were also closely related to opportunities to play bridging roles in the network. Appreciating the role of embeddedness in policy learning and transfer can, hence, focus on the betweenness centrality measure as a more substantive measure in investigating intermediary functions of policy actors. Additionally, the mayoral social network mapped in this study exhibited how consideration of indirect ties by way of the Bonacich centrality can provide an alternative take on the meaning and relevance of embeddedness.

These centrality measures demonstrate that multiple direct ties can position mayors in paths that directly and indirectly enhance their access and involvement with fellow local officials in the network. However, while the existence of social ties may be deemed to serve as communication mechanism between mayors, it cannot be immediately assumed that consensus-building information exchange can bring about similarities in policy attitudes. The influence of centrality on policy attitude similarity as well as that of prestige, which in turn can be argued as working its influence through emulation and influence, has yet to be covered in a subsequent study.

CONCLUSION AND RECOMMENDATIONS

This paper has featured how a mayoral social network may be characterized in terms of various embeddedness measures. Comparison of prominence scores have shown that positional advantage in the network is not singly captured by the number of direct ties to or from an actor. Network structure can also fill-in the transfer mechanism dynamics at work among the mayors. The case of selected Boholano mayors surveyed in 2012 provide evidence of greater policy attitude similarities within mayors' ego networks compared to the broad network. Such result invites further inquiry into the link between embeddedness and local policy transfer.

There is much potential in engaging local policy research and governance in the application of social network perspective for enhanced understanding and handling of diffusion processes. Noting that this paper is largely exploratory, it is hoped to trigger the appropriation of SNA in scholarship tackling policy attitudes and processes at the local government level, especially as local policymaking has now become more autonomous in practice. The research presented here merely scratches the surface in presenting a social network perspective to understanding relative policy attitudes of local officials in the Philippines. The inquiry has yet to be expanded to include dynamic relationships affecting the patterns of local policy learning, convergence, and outcomes. Extension of research to other policy venues and toward a longitudinal focus is aptly the subject of a follow-up work. Research can also be stretched toward the social organization of other policy actors such as other elected officials, bureaucrats, and community group leaders. SNA stands to become an informative tool in the study of local policy processes in the Philippines.

Findings of this study point to the potential of tapping into mayors' social networks for the diffusion of new local policy initiatives. It demonstrated that SNA can be applied in the identification of strategically positioned policy actors who can become crucial agents in an area-wide dissemination of policy information. If mayors are to be encouraged to forge social ties that put them in the loop of information exchange, there is value in coupling such efforts with policy-focused discourse. The arena is not void of mechanisms for the exchange of policy ideas. The League of Municipalities of the Philippines, the Department of the Interior and Local Government, provincial governments, and non-government organizations are institutions in the country that have been fostering the development of interactions among local government executives. For example, Boholano mayors are organized into a provincial league that holds monthly meetings in the provincial capital.

Apart from pre-set assemblies, there are many other institutional settings in which these mayors have opportunities for various forms of interaction. Such occasions can serve as venues for activities, workshops, and other programs designed to educate mayors about the advantages of networking with peers and about the skills and approaches that help create strategic ties. Networks that can arise from these efforts are ones strategically formed for smoother exchange of information regarding current policy issues and initiatives as well as regional and national policy agenda.

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Farmers' Perception on the Health and Environmental Benefits of Organic Rice Production in the Philippines: Implications for Further Policy Research

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ABSTRACT. Conventional rice production with the use of chemicals was found to have negative externalities both to the farmers' health and the farming environment. Organic agriculture technologies were developed to minimize such impacts. This paper explores the empirical support of the health and environmental benefits of organic agriculture by generating data from a survey of rice farmers and focus group discussions in rice farming communities. The respondents came from rice farming areas in the country where early adoptors of the organic rice farming system were located. The results of the analysis suggest that farmers fail to recognize the relationship between the perceived social benefits with economic benefits that they could derive from adopting organic agriculture farming system. Future policy research using multidisciplinary approaches is recommended where technical data can support the socio-economic analysis.

Keywords: *organic agriculture, rice, farmer health, farming environment, Philippines*

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INTRODUCTION

Agricultural growth in the past five decades was mostly driven by the use of modern technologies including chemical inputs deemed to be harmful to both health and the environment. The rise of sustainable agriculture paradigm was basically to reverse the technological menu toward more health and environment-friendly technologies. Ikerd (2001) defined organic farming as farming for permanence, ensuring the sustainability of agriculture and eventually, the sustainability of human society through agriculture. Organic farming is seen to promote and enhance agri-ecosystems and human health. Organic farming systems rely on crop rotations, crop residues, animal manures, legumes, green manures, off-farm wastes, mechanical cultivation, mineral-bearing rocks, and aspects of biological pest control to maintain soil productivity; to supply plant nutrients; and to minimize insects, weeds, and other pests (Sullivan, 2003). In short, organic farming is a valid substitute for traditional farming, with the chemical technology found to have impacts on farmers' health (Rola & Pingali, 1993) and the environment (Pingali & Roger, 1995).

Based on the Research Institute of Organic Agriculture (FiBL) survey released in 2016, there were 172 countries with organic activities as of 2014. The largest organic agricultural land was registered in Australia with 17.2 million ha as of 2013. This was followed by Argentina with 3.1 million ha and the United States of America with 2.2 million ha in 2011. It was also reported that in 2014, there were 43.7 million ha of organic agricultural land, which includes in-conversion areas (Willer & Lernoud, 2016).

In 2015, developments were being encouraged by governments in Asia. Developments ranged from efforts to expand production areas to improvements in regulatory areas such as streamlining of certification rules. Lao PDR drafted its National Organic Development Strategy. Malaysia was resolving issues in its national organic labelling regulation. Thailand included organic agriculture agenda in its revamped Ministry of Agriculture and Cooperative (Ong, 2016).

In the Philippines, awareness of organic products came as an incidental by-product of a study conducted in the mid-1980s, which revealed the negative effects of the continued use of chemicals used to boost productivity in rice. In a United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) study in 2002, the Farmer Assistance Board, a non-government organization, published "Profits

from Poison", which revealed the negative impacts of chemical-based farming. This was followed by the publication of the book "The Miracle That Never Was", which showed that Filipino farmers were economically better off before the introduction of the Green Revolution in the 1960s. Green Revolution was a government-led program that introduced chemical-based agriculture in the country. Results of these studies spread that eventually led to the rise of a farmer-scientist partnership called MASIPAG, which is an acronym for *Magsasaka at Siyentipiko para sa Ikauunlad ng Agham Pang-Agrikultura* (Farmer-Scientist Partnership for Development) (UNESCAP, 2002).

Institutional Evolution of the Organic Agriculture Technology

Organic agriculture in the Philippines is a product of combined efforts from the private sector and the government. The private sector initiated the move towards establishing a certification body and unified set of standards for organic products in the country. The growing demand for organic products in the international market triggered the shift to organic products.

As early as 1996, a series of consultation meetings with the organic producers and prime movers of sustainable agriculture in the country had already been done. Through their efforts, the need to establish the Philippine National Standard for organic products and processing was recognized. The Philippine members of the International Federation of Organic Agriculture Movement-Asia (IFOAM-Asia), who attended the IFOAM Association in Korea, were also part of the consultation process.

In 1999, the Philippines hosted the 4th International Federation of Organic Agriculture Movement-Asia (IFOAM-Asia) Scientific Conference and General Assembly. The event was participated by 400 local producers and 90 producers from Europe and Asia. Through the conference, the need for a national certification and inspection body was identified. Likewise, the initial seed fund for the establishment of such body was created. During the IFOAM Scientific Conference in Basel, Switzerland in 2000, the core players in the local industry were able to negotiate for a consultancy support from FiBL and to develop the local capabilities in setting standards for inspection and certification also from FIBL.

Through the Organic Technical Working Committee (OTWC), the FiBL was commissioned to review the Organic Certification Standard of the Philippines. In June 2001, a workshop was held to finalize the "Certification Standards of the Philippines" and the certifying body was called "Organic Certification Center of the Philippines (OCCP)" (OCCP, 2012).

In December 2005, then President Gloria Macapagal Arroyo signed Executive Order 481 (EO 481), which calls for the promotion and development of organic agriculture in the Philippines. The following actors were identified: Department of Agriculture (DA), National Organic Agriculture Program (NOAP), and National Organic Agriculture Board (NOAB). DA and NOAP are primarily responsible for the formulation of regulations and guidelines; certification and accreditation; market promotion and networking; organic information for producers, handlers, and processors; and research, development, and extension. The NOAB is chaired by the DA secretary, while the secretaries of the Department of Trade and Industry (DTI) and the Department of Health (DOH) serve as vice-chairs. Other members of the Board include the secretary of other government agencies such as Department of the Interior and Local Government (DILG), Department of Environment and Natural Resources (DENR), and the Department of Science and Technology (DOST).

EO 481 also states that the NOAB shall appoint seven representatives who are engaged in organic agriculture. The representatives include, but are not limited to the following recommended sectors: a) three representatives from the private sector operating an organic farm, organic handling and processing, and establishment with significant trade in organic products; b) two from non-government organization (NGO)/people's organization (PO), who represent public interest or consumer interest; c) one from the organic certifying body (under Section 8 of EO 481); d) one from the academe with expertise in areas of environmental protection and resource conservation, toxicology, and biochemistry. Members of the Board have a fixed term of office of three years. A National Technical Committee (NTC) is likewise created to serve as the implementing arm of the policies and programs identified by the Board.

The Bureau of Agriculture and Fisheries Product Standards (BAFPS) serves as the Technical Administrative Secretariat of the Board and the NTC (EO 481, s. 2005). In June 2013, BAFPS was renamed Bureau of Agriculture and Fisheries Standards (BAFS) by virtue of Republic Act (RA) 10601, also known as the Agriculture and Fisheries Mechanization (AFMECH) law.

Another certification body accredited by the DA is the Negros Island Certification Services (NICERT) (formerly NISARD Certification). It offers inspection and certification services to organic producers, traders, handlers, processors, and retailers (NICERT, 2014). Based in Negros Occidental, Philippines, NICERT is one of the only two third-party certifying bodies in the country. The other one is the OCCP.

The concerted efforts of the various government, non-government organizations, and private institutions advocating organic agriculture gave rise to the eventual enactment of RA 10068, otherwise known as the Organic Agriculture Act of 2010.

Ara (2002) asserted that Filipino farmers can benefit from organic farming in two ways. First, organic farming can help alleviate poverty at the farm level since the cost of inputs in organic production is much lower compared to conventional farming. Second, organic farming can improve soil fertility, environment, biodiversity, water quality, and the health of farmers. In the same study, soil acidity, water pollution, and death of beneficial insects and animals were attributed to conventional farming associated with intensive use of chemical fertilizers.

While earlier studies focused on the benefits that can be derived from organic farming, there are also efforts to ascertain the level of awareness and the eventual acceptability of such undertaking. Piadozo et al. (2014) published a study on the level of awareness, acceptability, and implications of organic agriculture. Their study made use of a survey data collected in 2011. The study concluded that generally, there was a low level of awareness about the organic agriculture concept among rice farmers in major rice-producing regions in the Philippines. The main source of knowledge of the rice farmers were NGOs and private institutions. It was also mentioned that the lack of awareness and access to support services provided by both government and private agencies resulted in poor compliance to the Philippine National Standard for Organic Agriculture (PNSOA).

The Philippine government must invest in various support services to fully internalize the benefits of the organic agriculture program. Investments from international aid agencies in support of these activities would also play a vital role. These investment supports are similar to what governments and international aid agencies did when they supported the shift to chemical-based agriculture (Broad & Cavanagh, 2012).

The purpose of this research is to provide information on the perceived health and environmental implications of adopting organic agriculture in the Philippines. There is a need in the literature especially in the Philippines to explain these implications, which are unknown at this time, from a quantitative study of a larger sample of farmers. This study aimed to determine the indicative health and environmental benefits of practicing organic agriculture using farmer's perception. A structured household survey was conducted and followed by the conduct of focus group discussions with the members of the rice-farming community.

METHODOLOGY

The data collection was initially done in conjunction with the farm survey on the economics of organic agriculture (Pantoja, Badayos, & Rola, 2016). The survey included variables on technological practices, cost and returns analyses of organic rice farmers (ORFs) and conventional rice farmers (CRFs) and health and environmental benefits, and costs of using organic technologies. The quantitative data on the perceived health and environmental benefits of organic agriculture revealed that rice farmers were unable to quantify or translate their perceived benefits into monetary terms. A subsequent qualitative data collection using focus group discussion (FGD) was done and descriptive analysis was employed.

The study covered four provinces of the Philippines that have large rice production areas and observed early adoptors of organic agriculture (OA). Respondents were chosen from Camarines Sur, Iloilo, Negros Oriental, and Negros Occidental. Individual survey was conducted involving a total of 197 farmer-respondents. Out of these, 109 were ORFs and the rest were CRFs. The frequency of respondents per method of analysis and classification of farmers is listed in Table 1.

The FGD participants, particularly ORFs, also came from the same organization of farmers who are known to be practicing organic farming system. The CRFs were selected from the nearby municipalities where the ORFs were located. For the whole study, a total of 12 FGDs were conducted, distributed evenly across provinces and by respondent type. A total of 149 farmers attended the FGDs: 71 organic and 78 conventional farmers. To establish the existence of health and environmental benefits derived from organic rice farming in the Philippines, a comparison of perceptions and firsthand experiences of farmers was done.

Table 1. Frequency of distribution by type of rice grower, Philippines 2013

ITEM	ORGANIC RICE FARMERS	CONVENTIONAL RICE FARMERS	TOTAL
Focus Group Discussion			
Camarines Sur	29	31	60
Iloilo	42	47	89
Sub-total	71	78	149
Farmer Survey			
Camarines Sur	53	34	87
Iloilo	26	54	80
Negros Oriental	25	0	25
Negros Occidental	5	0	5
Sub-total	109	88	197
Total	180	166	346

Descriptive statistical analyses were used to analyze the primary data from the farmers' survey. Comparative qualitative analysis was done for the FGD data.

RESULTS AND DISCUSSION

Quantitative results. The individual survey which covered the farmers' perceptions on human health and environmental benefits of organic agriculture were analyzed using descriptive statistics.

Human Health

In the individual farmer survey, the ORFs and the CRFs were asked about their perceptions on the possible health hazards posed by the conventional farming system in rice production. Farmers were asked if they experienced any type of illness when they were still producing rice by conventional means. The survey revealed that 60 percent of the rice farmers covered in the study did not experience any type of illness. Only 54 percent of those who got sick consulted a medical doctor. Comparing the experience of ORFs and CRFs, 49 percent of the CRFs got

sick as compared to only 34 percent of ORFs. The ORFs reported that they got sick while they were producing rice by conventional methods (Table 2). Piadozo et al. (2014) stated that consumers not only benefit from eating organic products. The farmers and their families also benefit from organic farming practice by avoiding the ingestion or inhalation of chemicals that may cause serious ailments.

Table 2. Perceptions of organic and conventional rice farmers on health hazards of producing conventional rice, farmer survey results, Philippines 2013

PERCEPTIONS	ORGANIC (n=109)		CONVENTIONAL (n=88)		TOTAL (n=197)	
	No.	%	No.	%	No.	%
Experienced illness while producing conventional rice						
Yes	37	34	43	49	80	40
No	72	66	45	51	117	60
Type of illnesses[a]						
Cough	5	14	11	26	16	20
Asthma	9	24	4	9	13	16
Headache	5	14	6	14	11	14
Consulted with a medical doctor						
Yes	18	49	25	58	43	54
No	19	51	17	40	36	45
No response			1	2	1	1
Total	37	100	43	100	80	100

[a]Multiple responses, listed only the top 4 responses

Soil Condition

The survey results showed that 80 percent of the ORFs believed that OA farming practice has a positive effect on soil (Table 3). The CRFs registered a much lower number at 56 percent. This could mean that improving soil condition could be one of the indicators that motivated rice farmers to shift to OA. Soil improvements were seen in the form of changes in soil quality, structure and texture, and acidity. A much higher

percentage of CRFs (78%) as compared to ORFs (75%) were able to associate the improvements on soil condition with the cost of production. This means that while ORFs are aware of the physical or physico-chemical improvements brought about by adoption of OA as a farming system, they could not easily associate or translate such improvements into monetary terms.

The farmer survey also revealed that almost 70 percent of rice farmers (organic and conventional) believe that organic rice farming system has an effect on soil quality. The effect of organic rice farming system on soil comes in the form of changes in soil quality, fertility, structure and texture, and acidity.

The primary aim of organic rice farming is to effect change in the quality of the soil. This was also mentioned in the study done by Shepherd (2003), which stated that organic farmers pay attention to their soil as it is one of the primary principles behind organic farming. Majority of both ORFs (75%) and CRFs (78%) agreed that improvements in soil quality would allow them to save on costs (Table 3). However, further quantification on the details is still fuzzy at the moment as farmers find it hard to put values on these perceived savings. A more comprehensive economic valuation with technical parameters will be needed to do this. In India, similar findings were observed. Improved water holding capacity has allowed farmers to reduce the frequency of irrigation as well (Niggli, Early, & Orgozalek, 2007).

One of the observations considered as a sign of improved soil quality is the improvement in the water holding capacity of the soil. Giller et al. (2005) as cited in Niggli et al. (2007) reported that the macrofauna of the soil, referring to the existence of worms, ants, and termites, positively affects the water holding capacity of the soil. The soil macrofauna was also observed to have a positive effect on water infiltration, drainage, and soil aeration.

Altieri and Nicholls (2003) noted in their study that the ability of a plant crop to resist certain pest and diseases is related to the physical, chemical, and biological properties of the soil. It further stated that "soils with high organic matter content and active soil biology generally exhibit good soil fertility". The same observation was noted by Azadi et al. (2011), who stated that organic agriculture contributes positively in areas affected by soil degradation as an indirect result of the improvements in soil fertility. In addition, Niggli et al. (2007) pointed out that in the long run, application of organic manure influenced soil fertility at three different levels: biological, chemical, and physical.

Table 3. Perceptions of organic and conventional rice farmers on the effects of organic rice farming to soil quality, farmer survey results, Philippines, 2013

PERCEPTIONS	ORGANIC (n=109)		CONVENTIONAL (n=88)		TOTAL (n=197)	
	No.	%	No.	%	No.	%
With effect on soil quality						
Yes	87	80	49	56	136	69
No	22	20	38	43	60	30
No response	0	0	1	1	1	1
Effects on soil[a]						
Soil quality	55	63	23	47	78	57
Soil fertility	19	22	11	22	30	22
Soil structure and texture	10	11	5	10	15	11
Soil acidity	8	9	7	14	15	11
Perception on savings/costs						
Yes	65	75	38	78	103	76
No	13	15	9	18	22	16
No response	9	10	2	4	11	8

[a]Multiple responses, listed only the top 4 responses

Meanwhile, long term application of pesticides yielded negative effects. A study conducted by Hasegawa, Furukawa, and Kimura (2005) provided the information that fine tuning the nutrient input of organic fertilizers depend on the quality of the compost and the reallocation of chicken/cattle compost used among organic fields. Hasegawa et al. (2005) arrived on this conclusion in their study on on-farm amendments effect on nutrient status and nutrient use efficiency of organic rice fields in Northern Japan. The case study by Bitan (2009) reported that organic agriculture sequesters carbon from the air through crop rotation and use of cover crops. It was also mentioned that "biological nutrition sources pulls out carbon out of the atmosphere and store it in soils."

Pretty et al. (2001) stated in a study that agriculture produces both negative and positive externalities. It was also mentioned that there is no comprehensive method or framework to help put value on these externalities.

Water

The perceptions of ORFs and CRFs on the effect of organic rice farming on ground water and paddy water were likewise assessed. The farmer survey revealed that only 35 percent of the ORFs and 51 percent of CRFs perceived that OA has affected water quality. The perceived effect comes in the following forms: safe water for humans and for natural enemies of pests, and reduced chemical contamination. Other related positive effects mentioned were growth of plants in ditches, increased water table, and higher yield. A higher percentage of CRFs (75%) as compared to ORFs (63%) perceived that production costs/savings could be attained due to the perceived effects on water.

In order to quantify the claim on perceived costs/savings, the respondents were asked to give estimates. Only 19 from ORFs while only three from CRFs were able to give monetary estimates. These results show the inability of farmers to quantify or put monetary value on their perceived production costs/savings. Improvement of water quality may be an indicator that the ORFs considered when they shifted to OA but they are not yet capable of putting value on such improvement.

Both organic and conventional rice farmers had difficulty assigning monetary values to the observed changes in water quality. As a result, estimates of perceived savings and costs were arbitrary and with high variability (Table 4). Thus, there is a the need for such explanation in a subsequent analysis. These results are observed to be congruent with Niggli et al. (2007) who reported that organic agriculture helps remove pollutants in the aquatic environment as a result of the prohibition on the use of pesticides and inorganic fertilizers.

Biodiversity

Both ORFs and CRFs were asked about their perception on the effect of organic rice farming system through change in cropping patterns on biodiversity. Survey results showed that a higher number of ORFs (58%) believed that organic rice farming has an effect on biodiversity as compared to CRFs (47%) (Table 5). When the ORFs were asked on how rice farming affects biodiversity, the rice farmers said that the organic rice farming system allowed the presence of diverse kinds of animals and insects, prevents air pollution, and makes improvements in the overall ecosystem/environment/ecology. In terms of the cost estimates, rice farmers believe that they did not incur any cost when they shifted

Table 4. Perceptions of organic and conventional rice farmers on the effects of organic rice farming on water quality, farmer survey results, Philippines, 2013

PERCEPTIONS	ORGANIC (n=109)		CONVENTIONAL (n=88)		TOTAL (n=197)	
	No.	%	No.	%	No.	%
With effect on water quality						
Yes	38	35	45	51	83	42
No	71	65	42	48	113	57
No response	0	0	1	1	1	1
Effects on water[a]						
Safe water for humans and for natural enemies of pests	21	55	14	31	35	42
Reduction in chemical contamination	6	16	15	33	21	25
Other related (+) effects[b]	7	18	10	22	17	20
Perception on savings and costs						
Yes	24	63	3	75	27	64
No	11	29	1	25	12	29
No answer	2	5	0	0	2	5
Do not know	1	3	0	0	1	2
Estimated savings/cost (in Php)[c]						
No. of respondents	19		3		22	
Minimum value	0		500		0	
Maximum value	5,000		2,000		5,000	
Average	744		1,166		802	

[a]Multiple responses, listed only the top 3 responses
[b]Growth of plant in ditches, increased water table, higher yield
[c]Included 131 respondents only

Table 5. Perceptions of organic and conventional rice farmers on the effects of a change in cropping pattern on biodiversity, farm survey results, Philippines 2013

PERCEPTIONS	ORGANIC (n=109)		CONVENTIONAL (n=88)		TOTAL (n=197)	
	No.	%	No.	%	No.	%
Do you think there is an effect in biodiversity as a result of changed cropping pattern?						
Yes	63	58	41	47	104	53
No	46	42	46	52	92	47
No answer	0	0	1	1	1	1
Perceived effect on biodiversity?[a]						
Presence of diverse kind of insects/ animal life	19	30	17	41	36	35
Prevention of air pollution	9	14	4	10	13	13
Overall improved ecology/ ecosystem/ environment	6	10	5	12	11	11
Do you think that you are incurring costs in producing organic rice because of the perceived change in cropping pattern?[b]						
Yes	14	13	0	0	14	11
No	60	55	14	64	74	56
No answer	35	32	8	36	43	33
Sub-total	109	100	22	100	131	100

[a]Multiple responses, listed only top 3 answers
[b]Asked from 131 respondents only

to organic rice production. Benefits are not also quantifiable, according to them. Further, based on the farmer survey, organic rice farmers plant traditional rice varieties. These observations are attuned with the study results of Niggli et al. (2007) which concluded that organic agriculture promotes biodiversity "below and above ground." Bachman, Cruzada, and Wright (2013) in their study of MASIPAG organic rice farms noted that there is a higher diversity of crops, livestock, and rice varieties for full organic rice practitioners. It was also mentioned that conventional farmers on the average use 30 different crops, which is 15 crops lower than what an average organic farmer utilizes.

The use of traditional rice varieties are common for organic rice farmers. Given that these are traditional rice varieties, crop variety and climate resiliency relationship can also be a potential research opportunity.

Qualitative results. The paucity of the data collected from the individual farmer survey led to the creation of an instrument to guide the conduct of the FGD in the following areas of interest: human health, soil, water, biodiversity, and air. The perceptions of the ORFs and the CRFs were compared.

Human Health

The FGD results revealed that ORFs associated a number of health benefits to the practice of organic rice farming. Among the benefits attributed to organic rice farming were the following: avoidance of diseases, chance at a longer human life span, feeling younger in body and mind, practice of healthy lifestyle, and experiencing a positive "feel good" effect (Table 6). ORFs were once CRFs too. As such, their perception and experience with conventional rice farming was also asked.

ORFs who have devoted a portion of their land to organic production for home consumption also reported improved ability to maintain their perceived ideal weight. Others reported improved eyesight.

Given that the CRFs interviewed have not yet dabbled into organic rice farming, they were asked about the health effects of conventional rice farming to their health. CRFs attributed a number of illnesses to their farming practice ranging from low impact illness such as skin irritation to debilitating diseases (Table 6). These are similar

Table 6. Health effects of organic rice farming as compared with conventional rice farming by farmer type, FGD results, Philippines, 2013

TYPES OF FARMING/ RESPONDENTS	POSITIVE EFFECTS	NEGATIVE EFFECTS
Organic Rice Farming		
According to organic rice farmers	• Avoidance of certain diseases • Chance at a longer life span (human) • Promotes healthy lifestyle • Younger body and mind • "Feel-good" effect	
Conventional Rice Farming		
According to organic rice farmers		• Becoming unconscious after spraying • Experiencing asthma attacks lung problems, skin irritation, coughing • Feeling dizzy, extremely tired/over fatigue, vomiting after spraying • Suffering from cancer, diabetes tuberculosis, heart ailments • Death secondary to illness due to spraying
According to conventional rice farmers		• Causes cancer, asthma, ulcer, high blood pressure, over fatigue, pneumonia, rheumatism, dizziness, lung failure, heart failure, nausea, skin irritation, toenail deformation • Aggravate wound infection • Shorten lifespan of farmers

diseases that have previously been captured in the literature as a result of conventional or chemical farming (Pingali, Marquez, Palis, & Rola, 1995). The conventional farmers observed that their fellow farmers have shorter lifespan now than about a generation ago, despite the more modern medical technologies available at present. However, it should be noted that there are other factors that may have contributed to their observation such as the culture of not seeking a professional medical help at the onset of symptoms like fever. Another factor that may have contributed to this observation, but not covered in this study, is lifestyle diseases.

Safety measures in the application of synthetic chemicals have not been ingrained to most conventional farmers as one farmer related an incident where a fellow farmer with a moustache sprayed his rice, went home, washed himself but forgot to wash his face. He then prepared and drank a cup of coffee and became unconscious instantly thereafter. The simple explanation that was given is that the chemical-laden moustache got dipped in the cup of coffee which he drank. Other farmers related that prior to the introduction of organic farming, farmers in the field would drop to the ground "like flies" and they attributed this to the inhalation of insecticides.

Soil

Both organic rice farmers and conventional rice farmers associated negative effects to conventional rice farming, while positive effects were associated with organic rice farming (Table 7). This observation was also experienced by other researchers as noted in the study of Pretty (2001). The report discussed the agriculture's multifunctional nature and mentioned that agriculture, in general, also produces positive externalities.

Water

Organic rice farmers found it difficult to assess the impact on water quality due to the absence of a water quality test as revealed in Table 8. They deemed it necessary to have some indicators to qualify the changes. Nevertheless, both organic and conventional rice farmers attributed negative effects of conventional rice farming to water. Skin irritation from paddy water, and death of fishes and other microorganism

Table 7. Effects of organic rice farming as compared with conventional rice farming on soil by farmer type, FGD results, Philippines, 2013

TYPES OF FARMING/ RESPONDENTS	POSITIVE FFECTS	NEGATIVE EFFECTS
Organic Rice Farming		
According to organic rice farmers	• Lowers acidity/ improves soil pH • Absence of chemicals in the soil • Presence of helpful microorganisms • Increases water holding capacity	
Conventional Rice Farming		
According to organic rice farmers		• Makes soil acidic • Lowers water holding capacity
According to conventional rice farmers		• Makes soil acidic • Depletes soil nutrient (e.g., zinc deficiency) • Changes soil structure (low water holding capacity) • Results to low soil fertility

in the paddy water were reported. Likewise, the water from the surrounding deep wells were reported to have been contaminated by chemicals used in conventional rice farming. Some reported changes in the taste of the water from the deep well. Others shared that water seemed to exude bad odor as well. This particular finding is supported by the report done by Bachman, Cruzada, and Wright (2013), stating that high application rates of fertilizer led to nitrate contamination of water, streams, and ground water reserves.

Table 8. Effects of organic rice farming as compared with conventional rice farming on water by farmer type, FGD results, Philippines, 2013

TYPES OF FARMING/ RESPONDENTS	POSITIVE EFFECTS	NEGATIVE EFFECTS
Organic Rice Farming		
According to organic rice farmers	No effect was ascertained as water quality has not yet been tested	
Conventional Rice Farming		
According to organic rice farmers		• Water in the paddy caused skin irritation • Kills fishes in the paddy • Water from deep wells became salty • Water is believed to be contaminated with harmful chemicals at tolerable levels
According to conventional rice farmers		• Contaminated water causes skin irritation • Water from paddies upon reaching the lakes kills fishes and other micro-organisms • Bad odor of water from deep well • Salty taste of water from deep well

Biodiversity

This study revealed that the type of rice farming practice had an effect on biodiversity. As to the degree of the effect, the farmer-respondents both in the FGD and in the farm survey had difficulty assigning monetary values and other quantitative indicators. In the FGD results shown in Table 9, organic rice farmers associated positive effects to organic rice farming system, while both ORFs and CRFs attributed negative effects on biodiversity to conventional rice farming system.

Table 9. Effect of organic rice farming as compared with conventional rice farming on biodiversity by type of farmer, FGD results, Philippines, 2013

TYPES OF FARMING/ RESPONDENTS	POSITIVE EFFECTS	NEGATIVE EFFECTS
Organic Rice Farming		
According to organic rice farmers	• Promotes balance between harmful and beneficial insects • Less odorous rice bugs • Presence of spiders and other beneficial insects • Promotes ecological balance • Presence of inland fishes, frogs, and earthworms	
Conventional Rice Farming		
According to organic rice farmers		• Mutation of insects, develops high resistance to chemical insecticides • Eradicates beneficial insects • Insect pest resurgence • Eradicates dragon flies, spiders, earthworms, and inland fishes
According to conventional rice farmers		• Problem with rice bugs (needs a stronger chemical combination) • Kills beneficial insects • Disappearance of frogs, spiders, native fish, friendly insects, and earthworms

CONCLUSIONS

Health and environmental benefits of the organic rice farming practice remain to be an interesting field of study in the Philippines. There are available literature on the impact of conventional farming to farmer's health, but the positive benefits of organic agriculture remain to be a contentious issue. One of the motivating factors in transitioning to OA is the perceived health and environmental benefits. Despite this, adoption of OA in the country remained limited. In this study, the health

and environmental benefits of OA based on the perception of organic and conventional rice farmers were compared and analyzed. ORFs and CRFs attributed perceived positive health and environmental benefits to organic rice farming system. However, the inability of farmers to quantify and put monetary value on the perceived benefits that have been identified from the practice of organic rice farming is an indicator that rice farmers in general have yet to fully understand the values that organic agriculture espouses.

The benefits on human health, soil quality, water quality, and biodiversity remain as abstract concepts to all rice farmers whether they are organic rice farmers or conventional rice farmers. Organic rice farming is still in its infancy, and there seems to be low uptake on the technology. This could be attributed to the farmer's inability to recognize the relationship between these social benefits with economic benefits.

RECOMMENDATIONS

Multidisciplinary research investments will be needed to appreciate more the social benefits and costs of organic agriculture. These studies on the human health and environmental effects of organic farming should focus on identifying quantifiable indicators, but these would need an interdisciplinary research approach. The expertise of water quality specialist, soil experts, and biodiversity experts to come up with the technical coefficients are needed in the valuation of the benefits of organic farming in developing countries. For example, the improved soil quality attributed to organic farming and how this will increase or stabilize yields will need soil yield coefficient values. The increase in water quality due to organic farming contributing to better quality yields is also an interesting study. Investigating the effect on stability of yields due to higher biodiversity index can also be requisite studies towards an economic valuation of the impact of organic production.

Results of these research activities can also improve the certification process as well as the standards set by the certifying bodies by generating local information for the health and environment indicators.

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Persistence of Poverty among the Badjaos of Bongao, Tawi-Tawi, ARMM, Philippines

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ABSTRACT. The study sought to understand the persistence of poverty among the Badjao people in Tawi-Tawi, Autonomous Region of Muslim Mindanao (ARMM), Philippines. Considered the poorest in their communities, Badjaos are Sea Gypsies of Sulu and Celebes seas who are scattered in different coastal areas in Mindanao. Specifically, the study aimed to determine the educational background, psychological outlook, economic, nutrition and health conditions, political and social capabilities, and access to government services of the Badjaos. These factors are referred to as conditions that facilitate or hinder mobility in society. Thus, their absence can further bind people in a state of poverty or what is referred to as deprivation trap. Semi-structured questionnaires were used to investigate the socio-economic conditions of the respondents. Two gate keepers helped the researchers identify the respondents based on their availability and willingness to discuss their situations. The selected research sites were two villages in Bongao, Tawi-Tawi, which are known as Badjao communities. Results showed that respondents suffer from a deprivation trap, a condition that keeps people in poverty. A model for program implementation that is guided by collaboration, networking, and cultural sensitivity is proposed. Program components of the proposed model focus on informative, persuasive, participatory, and formative interventions.

Keywords: *Badjaos, indigenous people, poverty, deprivation trap, model for program implementation*

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INTRODUCTION

Poverty is an undesirable human state characterized by deprivation of essential assets and opportunities like source of income, shelter, health services, basic education, information, public utilities and sanitation (ADB, 2009). Easterly (2006) explains the multidimensionality of poverty and discusses that the Millenium Development Goals enumerated investments in public administration, human capital, and infrastructure to escape poverty. The 2015 Sustainable Development Goals expand the targets but essentially centers on improvements in human capital, infrastructure, and good governance.

While interventions have been forthcoming, the conditions of the Badjaos seem to have not improved since the time Nimmo (1968) published his study on the Badjaos. Macalandag (2009) summarized the descriptions of the Badjaos as marginalized, excluded, despised, and confined to the lowest rungs of the social ladder. Waka (2016) describes them as more disadvantaged than other economic groups. However, accurate statistics regarding the number of Badjaos remain elusive as census survey among this group is problematic given that they are out in the sea or looking for opportunities to earn (Maulana, 2017).

One of the poorest regions and provinces in the Philippines is the Autonomous Region of Muslim Mindanao (ARMM) and the province of Tawi-Tawi where Badjaos abound. The region also has the highest illiteracy rate in the country, the lowest participation rate in school, and the highest percentage of people with no grade completed (Philippine Statistics Authority, 2015). Historically, ARMM was created in 1990 to hasten the economic development of the Muslim areas. ARMM is composed of different Muslim and non-Muslim indigenous and ethnic tribes or communities, one of which is the Badjao indigenous people.

The Badjaos are called by many names, the most common of which is Sama Dilaut. Historically, the Badjaos were a highly mobile people leading a nomadic lifestyle and depended mainly on fishing for their survival (Nimmo, 1968). The Badjaos' lack of entitlement and poor condition have led some of them to move to urban areas looking for supplementary employment and income, most of them ending up as beggars because of their illiteracy, ignorance, and lack of skills.

An investigation of the conditions of the Badjaos can provide in-depth insights into dimensions of chronic poverty. To do this, the deprivation trap of Chambers (1983) was used to illustrate persistence of poverty conditions among the Badjaos. He discussed five clusters that interact and keep people bound in poverty: lack of assets, physical weakness, isolation, vulnerability, and powerlessness.

Lack of assets contributes to lack of food, small bodies, malnutrition, low immune response, inability to reach or pay health services, inability to pay the cost of schooling, lack of wealth (savings), and lack of socio-political influence or "voice." Physical weakness contributes to weak labor (inability to cultivate, work longer hours, and lower wages) and inability to overcome a crisis. Isolation means lack of education, remoteness, inability to access services, and lack of contact with political leaders or with legal advice. Vulnerable households are those who are powerless, unable to respond to unforeseen circumstances which can also be a result of lack of belief in the ability to address problems. Finally, lack of socio-political power means weak negotiating skills and lack of skills to compete in the job market. Psychological outlook was added as an area of investigation following Ray's (2002) discussion of aspiration failure that binds them to their vulnerable situations.

Specifically, the study aimed to: 1) describe the demographic, economic, nutritional and health, and socio-political conditions and psychological outlook of Badjaos in Bongao, Tawi-Tawi; 2) describe their access to government and non-government services; and 3)propose a poverty alleviation model for the Badjaos.

METHODOLOGY

Locale of the Study

The Badjaos are found in Zamboanga City, Basilan, Sulu, Tawi-Tawi, and even in the cities of Davao, Metro Manila, Cebu, Batangas, and some other areas in the country. Based on the census conducted in ARMM by the Philippine Statistics Authority, it was reported that the enumerators had a hard time counting boat dwelling groups, which makes it difficult to actually count and estimate the population of all sea faring groups, such as the Badjaos, in all areas of the country's territorial waters (Maulana, 2017). The National Commission for Culture and the Arts (2015) estimated that there were 30,068 Badjaos in Tawi-Tawi. The highest concentrations were in the Municipalities of

Sitangkai (1,075) and Bongao (660). Tawi-Tawi, where the study was conducted, is an island province in the southern Philippines located in the ARMM.

The Province of Tawi-Tawi shares its sea borders with the Malaysian State of Sabah and the Indonesian Kalimantan province. It is home to a large population of Badjaos. The study sites, Barangay Simandagit and Barangay Pag-asa, were recommended by officials of the Municipality of Bongao who identified these villages as heavily populated by the Badjaos.

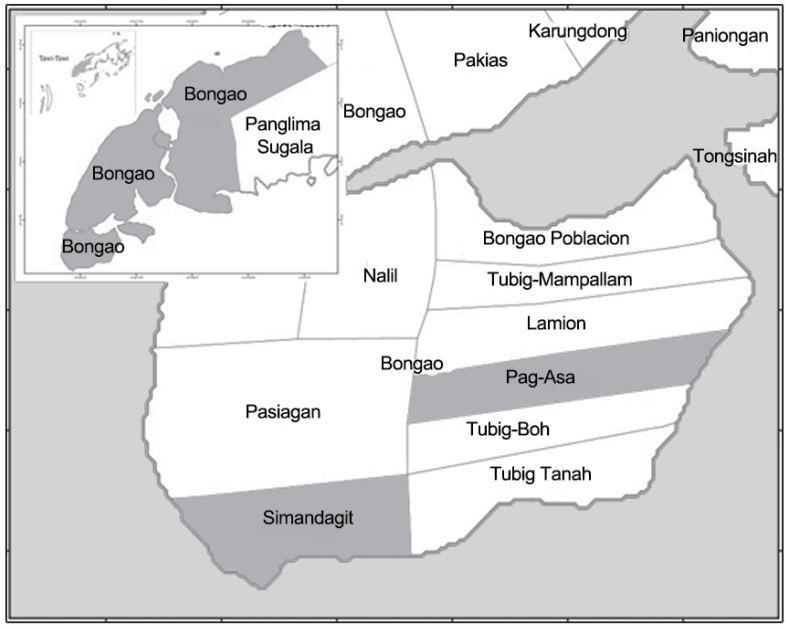

Figure 1. Geographical location of study site

Research Design

This study employed a mixed-method sequential explanatory research design. Quantitative data from survey was used in determining the over-all condition of households in the study area, while the qualitative data from two sets of key informants (KIs) was used to validate, substantiate, and qualify statistical results. Figure 2 outlines the procedures of the study as adopted from the mixed-method sequential explanatory design developed by Ivankova (2006).

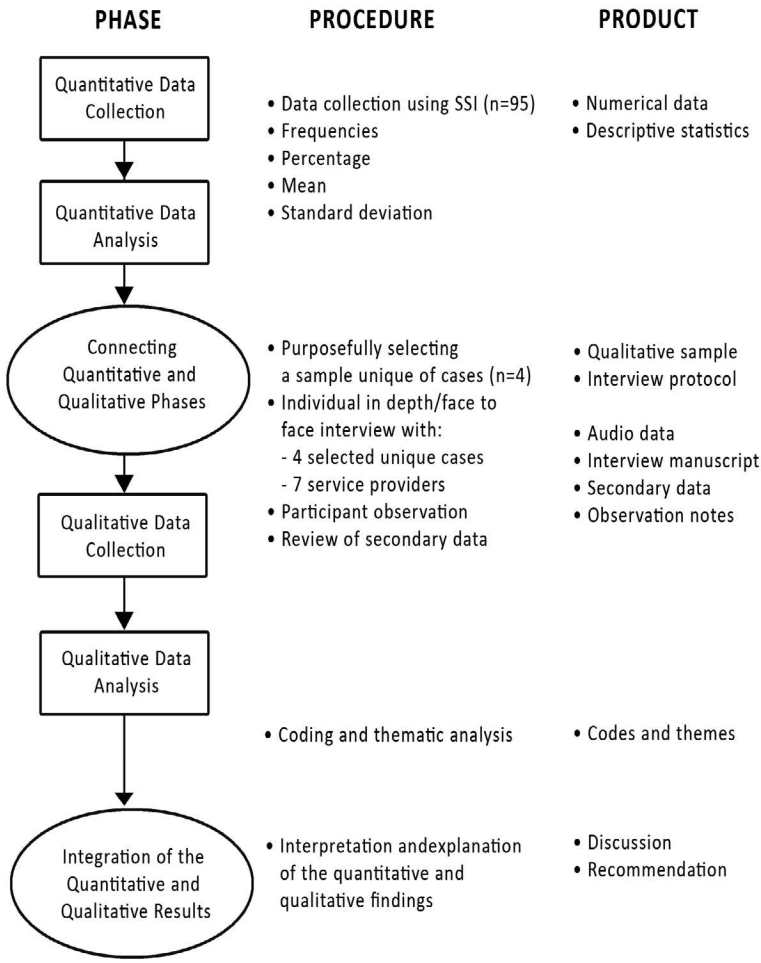

Figure 2. Visual model for mixed-method sequential explanatory procedure (Source: Ivankova 2006 as cited in Ivankova, Creswell, & Stick, 2006)

Results of the survey were analyzed using descriptive statistics. Responses of the key informants shared during the survey and follow-up interviews were likewise recorded, transcribed, and analyzed based on themes. Details of the transcriptions are reflected in the quoted statements in the results and discussions.

Respondents of the Study

Respondents of the survey were selected using purposive sampling from among adult Badjaos who signified interest and willingness to take part in the study. The study was confined in the two Badjao communities in Barangay Pag-asa (Luuk Banca) and Barangay Simandagit (Sama Kasulutan).

One of the problems encountered was the frequent travels or migration of Badjaos. The list coming from the barangay was also not updated. Hence, it was difficult to randomly select respondents from a list of residents, which led the authors to allocate a number of interviewees from each barangay. Initially, an arbitrary number of 50 respondents from each barangay was set.

Written letters were sent to local leaders who helped identify the respondents. Based on theoretical sampling, the number could go higher if there were answers that were different from what was already gathered and could therefore provide more insights to the study. The local contacts or "gate-keepers" informed all identified respondents of the interviews prior to the actual interview. The study aimed to interview 100 respondents from the two villages with 50 respondents each. Ultimately, 95 interviews were conducted as the five who initially signified willingness to be interviewed could not be located during the visits.

The number of respondents was deemed sufficient as stories shared by the key informants provided quality data to answer the research objectives. Key informants were selected based on their length of experience as members of the community and their willingness to be interviewed. Consent to be interviewed and to record the interviews were sought orally. Following the semi-questionnaire, the KIs elaborated on their life conditions and their insights on the Badjao community. The primary author, assisted by local researchers who spoke the local language fluently, conducted the interviews.

Structure of Semi-structured Interview (SSI)

A semi-structured survey (SSI) questionnaire was distributed to selected respondents in Barangay Pag-asa (46%) and Barangay Simandagit (49%) in the Municipality of Bongao, Tawi-Tawi. The same flow of discussion was followed for the KIs, but the discussion took hours as personal reflections and stories were investigated.

The SSI was divided into themes such as education, economic activities and assets, nutrition and health, psychological outlook, access to services, and participation to programs. These themes were derived from the deprivation trap discussions of Chamber (1983) who also discussed lack of assets, powerlessness, physical weakness, isolation, and vulnerability. In addition, the structure of the SSI is guided by the various discussions in popular and scholarly articles reviewed, the initial interviews with those who have worked in the area, and the concrete observations of the main author during the initial scanning of the area.

The questionnaire is reflective of nutritional status adapted from the Radimer/Cornell Questionnaire of Food Security (Swindale & Bilinsky, 2006). Answers to questions were measured with three-point scale responses of "never," "sometimes," and "always" coded as 3, 2, and 1 by the authors. "Always" referred to frequent encounter of the condition, which is the opposite of "never," while "sometimes" is in between "always" and "never."

RESULTS AND DISCUSSIONS

Socio-Demographic Profile of the Respondents

Almost all respondents were female. Men were responsible for earning a living and therefore, most of them were busy fishing or attending to other odd jobs at the local pier during the day and hence, could not be interviewed.

Respondents were between 17 to 65 years old. Few (10%) of the respondents were unable to indicate their age because their births were not registered with the local registry. Many of the respondents also admitted that they estimated their ages as they do not observe birthday celebrations and thus were unable to keep track of their age. Majority (86%) of the respondents were married.

Meanwhile, more than one-third (39%) of the respondents had 4-6 children. A majority (82%) of the respondents said their children are studying.

Illiteracy was prevalent among the respondents with more than half having no formal schooling. The data speak of the problems

Table 1. Socio-demographic profile of survey respondents

CHARACTERISTICS	NO. (n=95)	%
Sex		
Female	91	95.8
Male	4	4.2
Age		
17-24	14	14.7
25-34	30	31.6
35-44	22	23.2
45-54	15	15.8
54-65	5	5.3
Cannot determine	9	9.5
Mean	*32*	
Range	*17-65*	
Marital Status		
Married	82	86.3
Widow/Widower	7	7.4
Separated	5	5.3
Single	1	1.1
Highest Educational Attainment		
No formal schooling	55	57.9
Primary	20	21.1
Intermediate	9	9.5
High School Level	8	8.4
College Level	1	1.0
College Graduate	2	2.1
Number of Children		
0-3	31	32.6
4-6	37	38.9
7-9	22	23.2
10-12	5	5.3
Mean	*5*	
Range	*0-12*	

Table 1. Socio-demographic...(Continuation)

CHARACTERISTICS	NO.	%
Children studying		
Yes	78	82.1
No	17	17.9

besetting the community as many Badjaos are unable to read and write. However, the low educational attainment among respondents does not reflect the Badjao's valuation of education in general. With the four KIs, all were unable to attend any formal school yet they shared a common belief that education is important. One recognized that education is very crucial to avoid being deceived by others. However, due to economic hardships, they were unable to continue formal schooling. Referring to an adult literacy program that one of the KIs attended, she explained:

> *"I want to become literate and be able to read, write, and learn simple mathematics, so that we can be compared with other people and not easily fooled. That is why I am here now attending the class. Some of my children are studying now. But I do not know if they can finish their studies."*

Except for one single respondent, all respondents reported to have an average of five children per family. Based on the National Demographic and Health Survey, higher education is inversely proportional to number of children. Majority reported having children attending pre-school and elementary school (National Statistics Office, 2008). Results show a growing recognition among community villagers of the importance of education and improved access to schools within the community. One KI said:

> *"It is good the Sisters (referring to the Daughters of Charity) are helping our children in school. They have a feeding program. We have many kids from the barangay studying there because they do not take for granted the kids. School supplies are given for free, and they also have this feeding program. We do not worry much if our children are unable to eat at home before going to school because we know there is food in the center. Having been able to finish elementary will have a big impact on our lives. Not having been schooled at all is terrible."*

Economic Profile

Main sources of income. Most of the respondents derived their income from activities that do not require formal skills training such as fishing, selling goods in the streets, or working as *kargador* (porter). A sizable number (38%) of the respondents were fishermen (Table 2). Badjaos live in coastal areas and learned the trade from their parents. One respondent explained that since he was six years old, his father and mother would bring him along to go fishing, and now it is his main source of income. On the other hand, women performed fish vending or "lako." One KI spoke of the difficulty of fishing as a livelihood:

> *"I am only a fisherman. My livelihood is very difficult because we often stay in the open sea for two to three days trying to bear the heavy rains, big waves, or the scorching heat of the sun. What is worst is that we only bring in very minimal amount, the highest of which is PhP300. Sometimes it is PhP100 or PhP50, and there are times, there is none. With the PhP300, we still need to deduct from that amount our expenses and then divide what is left among us fishers. I do not have a pump boat that is why I go with neighbors who have pump boats. There are instances when we cannot go fishing due to a bad weather." (1USD =P50.00).*

To augment income from fishing, one female respondent sells *gamay* (seaweeds). If there are no available seaweeds to sell, she would look for coconut leaves in the area and make brooms to sell. Even with such alternatives, she earns only about PhP50-100 on a lucky day. As she explained:

> *"My income is very small. It could hardly feed our big household. It is not enough to meet our daily consumption… How much more to save? It is an advantage that my children can already help me earn income. They work as 'kargador' at the local pier and market."*

With their meager household income, adults resort to desperate efforts. Children who are supposed to be in school are pulled out from their classes and are encouraged to look for additional sources of income. A mother confessed that she used to advise some of her children to cut classes so that they could assist her in looking for means of survival. Such actions in turn compromise the schooling of their children and their hope for better life. Worse, the income generated from child labor is not even considerable. Most of the Badjao

Table 2. Main sources of household income

MAIN OCCUPATION[a]	NO.	%
Fishing	36	37.9
Laborer/*Kargador*	21	22.1
Fish vending	18	18.9
Housemaid	8	8.4
Mat weaving	5	5.3
Street food vending	4	4.2
Seaweeds/Shells vending	2	2.1
Scavenging	1	1.1

[a]Mulitple responses

children engage in begging or scavenging, which fetches very little income. Other options provide earnings that are not commensurate to the hazards involved. For instance, children would amuse passengers of sea vessels by asking them to throw coins which they would recover by diving.

Badjao men, specifically the younger ones, engage in low paying jobs like working as *kargador* or laborer at local pier and market, while daughters work as housemaids in nearby villages. Respondents see these activities as easy sources of income because they have neither special skills nor education to qualify for other professions. This condition is referred to in the deprivation trap as physical weakness and lack of assets leading to further isolation and vulnerability (Chambers, 1983).

While they are known for being skilled mat weavers, most Badjaos do not engage in this craft because it requires capital. It also takes time to sell finished products. Mat weaving is, therefore, not considered economical, as the Badjaos need to address immediate needs like food.

Estimated monthly income. Nearly half (42%) of the respondents reported to have income between PhP1,501-PhP3,000 (1USD = PhP50) per month, while 25 percent earned below PhP1,500. Very few (7%) earned income above PhP3,000, and very few (6.3%) also said that they could not estimate as they spend whatever they earn for the day and, in some instances, do not earn at all (Table 3). The

difficulty of looking for income on a day to day basis, resulting mostly from their physical labor, is translated into helplessness as reflected in one respondent's complaint:

> *"My work is very difficult, I need to find seaweeds and sell it in the market or streets. If there are no available seaweeds to sell, I look for alternatives like coconut leaves and make them into brooms. I have small paddled banca (boat), which I use for my livelihood activities. I want to get out from this burden of work. I feel that I cannot do this any longer. My physical body wants to give up."*

Table 3. Estimated monthly household income of Badjaos in Philippine Pesos (PhP)

INCOME	NO.	%
<1,500	24	25.3
1,501-3,000	40	42.1
3,001-4,500	7	7.4
4,501-6,000	10	10.5
6,001-7,500	4	4.2
Can not answer	6	6.3

Note: 1USD = PhP50

The unstable income is reflected in a degree of uncertainty among respondents. A female respondent who works as a laundry woman and earns around Php100 a day, whenever such work is available, narrated:

> *"One hundred pesos for laundry is already something very difficult to get for many of us. That amount can only buy a slice of cassava and few pieces of fish, and these are not enough for our day's consumption. My five children are all studying. Most of the time I cannot provide for their needs. Sometimes, I do not know what to do."*

> *"It is hard to find a good job when you have not finished your studies. This is the only work that I can do because I have never gone to school. I need to face the reality and suffer the consequences of my fate."*

The Philippine Statistics Authority (2015) calculates that for 2015, the monthly food threshold is pegged at PhP6,329 (1 USD=PhP50) for a family of five. Clearly, the income of the Badjaos, whose number of children ranged from 2 to 12 with an average of five, is insufficient to provide their basic family needs.

There are a few industries open to the Badjaos, and one of which is mat weaving. A typical mat weaver could earn PhP300 to PhP500 per mat. However, materials for making the mat are inaccessible. One female respondent said that she knows how to weave but could not engage in the craft. In order to gather pandan leaves, the raw material for the mats, one needs to ride a *banca* (boat) to another island. Mat weaving is a long process, and one cannot immediately earn money from it.

> *"It is difficult to make pandan mats. You need to cook the pandan leaves, place them under the sun to dry, then remove the upper portion of the leaves. It is really a long process and difficult to make. It takes weeks before you can make one mat. At the same time, we cannot find pandan near this place. We need to go to other places and ride a boat, which entails costs."*

This economic state could be attributed to a combination of lack of education, lack of skill, and lack of opportunities. As such, when people fall ill, there is no money to buy medicine. The interconnectedness of conditions of vulnerability as discussed in the deprivation trap is clearly evident in the Badjaos' lack of assets.

Housing Conditions

The lack of assets is visible to any outsider based on the nature of housing materials used by the Badjaos. Historically, Badjaos built bamboo and nipa huts elevated about 3 m from the sea by bamboo stilts. The elevation was meant to protect them during high tide and against hostile strangers. Fronting their houses are open platforms that serve as boat landing dock. More bamboo platforms would be built to connect the isolated houses to one another, which then formed a cluster of houses. Some Badjaos already built their houses on the shore. Nimmo (1968) explains that this practice may have resulted from the desire to easily sell fish catch and for the children to have better access to schools.

All respondents have houses made of light materials such as nipa or a combination of nipa and bamboo; wood and bamboo; nipa, sack, plastic, and cardboard paper. The Badjaos' residences are highly vulnerable during storms as the houses are on stilts. One respondent pointed out that his house has stilts about 15-ft high, but he still fears for their security. He narrated:

> *"Every time there is bad weather, we are worried because we cannot sleep the whole night. Early in the afternoon, we start packing our things and eat early. After everything is gathered, we vacate the house and stay under the coconut trees beside the cemetery. There are times when most houses are destroyed."*

While sharing his story, he pointed to some houses and continued sadly:

> *"We do not have any choice. We do not have other places where we can build a house. There is no land available for us."*

His nipa house is about 3x4-m big. The floor is a combination of wood and bamboo, and the wall is made of plywood. The house sits on top of a stilt about 15-ft tall from the sea ground. The house contains only the basic necessities: mat; pillow; clothes; few kitchen wares like plates, glass, and simple cooking wares; and a clay stove.

Majority (65%) of the respondents use kerosene or gas-operated lamps. A few (35%), those who are in the shoreline, use a combination of electricity and kerosene or gas-operated lamps. One respondent explained that having electricity is not a priority. Most are concerned about having meals on the table. Besides, most of them do not own appliances.

Almost the entire province of Tawi-Tawi uses rain as major water source. In the event that there is no rain or the rain water gathered runs out, residents would source water from communal pumps, open wells, and faucets.

Water supply has been a perennial problem for most Badjaos living in these areas. Despite the availability of a water facility, most of the residents could not afford to spend for the connections.

Most of the respondents' toilet facilities are open structures. A hole inside their house or beside the house serves as toilet bowl, and wastes are discharged directly to the sea. The hole is merely covered with cloth, cartoon, or sack.

Nutritional Status

The intent of this portion was to determine whether they are able to eat nutritious food on a regular basis as an indication of their nutritional condition. Results show that the Badjaos were always anxious having no food, being hungry, and being unable to serve nutritious food (Table 4).

The Badjaos choose to prepare daily viands with no condiments. For as long as there is a slice of cassava, they can cook it as "tompeh" or "sianglag" (roasted ground cassava). This serves as their main staple. Fish soup is prepared only by boiling lemon grass and salt. Due to low income, most of the Badjao families experience hunger which they consider "normal." One KI explained:

> *"We always run out of food. If I cannot bring home money or food in exchange for products, we cannot eat. We have to wait for my other children who also help in looking for other means of survival. Otherwise, we skip our meals and just drink water. There are times when we would borrow from the sari-sari store (local community store). Oftentimes, however, we would not be granted. What we usually do is just to sleep away the pain of hunger or beg from neighbors or other villages just so we can eat for the day."*

Another KI lamented:

> *"I let my children eat before I eat or I divide first the food before I call them to eat."*

Thus, this kind household level food anxiety and food depletion is reflected as well in what they serve their children. As one mother confirmed,

> *"I cannot provide nutritious food for my children. Most of the time, I serve only one kind of food like cassava."*

Results also indicate high food insecurity, lack of food variety, and high incidence of hunger in the study area. Majority of the children in the study area were also malnourished, underweight, or stunted. Official statistics (Philippine Food Security Information System, n.d.) recorded a high level of 45 percent children between 0-5 that were stunted in ARMM in the year 2015. Save the Children (2014) also estimated that 40 percent of the children who are underweight were in Sulu, Tawi-Tawi, Maguindanao, and Lanao del Sur. What is worse

Table 4. Percentage distribution of households by frequency of food insecurity experience

STATEMENTS	SOMETIMES		ALWAYS	
	No.	%	No.	%
Household Level: Food Anxiety				
I am worried that food will run out before I can buy.	25	26.3	70	73.7
I am worried that the food I will buy is not enough for my family.	39	41.1	56	58.9
The food that I buy easily runs out and I am always worried that I still do not have money to buy food again.	31	32.6	64	67.4
Household Level: Food Depletion				
I run out of ingredients that I would need to cook and have no money to complete all the seasoning.	32	33.7	63	66.3
Sometimes we feel hungry because we run out of money to buy food.	32	33.7	63	66.3
Household Level: Unsuitable Food				
We eat only few kinds of recipes because I normally run out of ingredients and I do not have money to buy all ingredients needed for the meal.	21	22.1	74	77.9
We normally do not eat 3x a day (breakfast, lunch, dinner).	12	12.6	83	87.4
I cannot provide nutritious food for my family.	17	17.9	78	82.1
Adult Level: Food Depletion				
I normally eat less because I am afraid that other members of the family cannot eat	10	10.5	85	89.5
Child Level: Food Depletion				
My children cannot eat enough.	46	48.4	49	51.6
Child Level: Unsuitable Food				
My children cannot eat nutritious food because I cannot afford to buy different types of foods with complete nutrition	16	16.8	79	83.9

is the fact that the Badjaos considered these conditions commonplace and normal. In fact, they are so used to scarcity that they believe that "mere presence of food does not entitle a person to consume it." While the lead author was conducting the interview with one mother, the neighbors' toddler son was crying frantically. She apologized shyly and said: "He has not eaten anything since yesterday." In the deprivation trap, this condition is referred to as physical weakness, a condition that complicates one's ability to perform well in school and further pushes them towards isolation.

Health Conditions

According to almost half (48%) of the respondents, stomach ache and ulcer were the most common illnesses in their community, affecting mostly children (49%). Fever and flu were also prevalent (40%), and adults (57%) were most affected. Tuberculosis, according to them, occurred very rarely (1%). Table 5 shows the common illnesses in the study area and their frequency among household members.

Table 5. Common illnesses in Badjao communities

ILLNESSES[a]	RESPONDENTS (n=95)		CHILDREN (n=95)		OTHER HOUSEHOLD MEMBERS (n=95)		TOTAL (n=285)	
	No.	%	No.	%	No.	%	No.	%
Stomach ache/ ulcer	45	47.3	47	49.4	44	46.3	136	47.7
Fever/Flu	54	56.8	35	36.8	24	25.2	113	39.6
Diarrhea	46	48.2	45	47.3	18	19.4	109	38.2
Headache	29	30.5	42	44.2	16	16.8	87	30.5
Skin diseases	21	22.1	32	33.6	13	13.6	66	23.1
Malaria	13	13.6	12	12.6	13	13.6	38	13.3
Chicken fox	11	11.6	14	14.7	7	7.3	32	11.2
Tuberculosis	0	0	0	0	4	4.2	4	1.4

[a]Multiple responses

Prevalence of stomach ache or ulcer could be attributed to food scarcity among households and a common consequence of skipping meals. High occurrence of diarrhea (38.2%) also indicates improper hygiene and poor food handling practices in the area. Drinking rain water and water sourced out from deep wells and water pumps can contribute to the prevalence of the illness among the Badjaos.

It is interesting to note that these health concerns have become commonplace and normal in the study area. One KI casually narrated that members of her family usually suffer from stomach ache or ulcer, fever, diarrhea, headache, and skin diseases. She explained further:

> *"Every month, we always suffer from different kinds of sickness, especially stomach ache. Maybe because we do not eat regularly. But we are already used to this kind of situation. It is not only us; even my neighbors and almost all families in this area are suffering from the same problem."*

One KI described how his 7 year-old son met an accident a few days ago when he fell off the stilts directly into the water underneath their house along with heavy round timbers. The child was badly injured and could hardly move after the fall. At the same time, his daughter was afflicted with a skin disease which they are unfamiliar with. When asked if he had brought either of them to a doctor, health center, or hospital, he answered:

> *"No, ma'am, we do not have money. I just put some herbal leaves which I know can help relieve my children of the illness."*

Poverty Rating of Households

Respondents rate themselves as very poor. This perception is borne out of the realization that even some basic necessities are beyond their capability because they do not have a stable source of income. Table 6 shows the Badjaos' rating of household poverty and their reasons for their perceptions.

Psychological Outlook

Respondents were asked about their aspirations for themselves and their children. The discussion centered on their lifestyle, what

Table 6. Common illnesses in Badjao communities

RATING AND REASONS FOR RATING	NO. (n=95)	%
Household rating in terms of poverty		
Very poor	59	62.1
Poor	36	37.9
Reasons for personal rating[a]		
Inability to provide basic needs	75	42.7
Insufficient income	72	41.1
Lack of stable source of income	21	12.0
Cannot say	7	4.0

[a]Multiple responses

they want for themselves, and what they dream for their children. Ray (2002) speaks of aspiration failures among poor, older adults in highly stratified societies. Respondents characterized their lifestyle as unpredictable and unstable, especially in terms of income. However, when asked about their aspirations in life, a significant number (43.1%) expressed hopes of meeting basic needs such as being able to eat three times a day, being able to provide children's needs in school, or owning a simple house that will protect them from stormy weather (Table 2). One KI explained:

> *"I just want to be happy. I want to improve my families' life. I have been sacrificing for a long time but nothing good has happened yet."*

Results support the explanation of Ray (2002) that the poor do aspire for better conditions, but since the gap is too wide between the rich and the poor, the poor become frustrated and consider that all things are largely unreachable. This is a situation that illustrates a feeling of being trapped in a condition wherein the Badjaos feel that they could not change their current situations. Nevertheless, the Badjaos do aspire for a better future for their children. The aspirations, as shown in Table 7, are modest, as Badjaos seek to meet basic needs and find employment.

Table 7. The Badjaos' aspirations

ASPIRATIONS[a]	NO.	%
Aspirations for self		
Meet basic needs	41	43.1
Be employed	36	37.9
Acquire material possessions	25	26.3
Start a small business	4	4.2
Aspirations for children		
Finish formal education	35	24.5
Have white collar jobs	27	18.9
Meet basic needs	25	17.4
Have a better life	19	13.2
Own a pump boat for fishing	3	2.09

[a]Multiple responses

About one-fourth (24%) of the respondents wanted their children to finish formal education. They viewed education as a way to have a better life. Some of them wanted their children to have jobs such as becoming a teacher, police, or midwife. It could be noted that these are the types of profession they are most familiar with, as teachers teach their children, midwives help them give birth, and policemen are regularly seen in the market area.

Notably, a few (13%) wanted their children simply to have a better life but they could not specify further. They simply defined better life as "anything better than their current situation." One respondent explained that he wanted a pump boat simply because they did not have one when he was a child. Now that he is already a father, he still does not own a pump boat. This reflects an inter-generational sense of deprivation among community members.

What is perhaps more alarming than this sense of deprivation is the perception that it is a shared reality and is, therefore, almost natural. Referring to perennial health problems in the area, one key informant captures this outlook that poverty is almost normal:

> *"We are already used to this kind of situation (hunger). It is not only us, even my neighbors and almost all households in this area are suffering from the same problem."*

While Ray (2002) notes that frustrations can lead to protest, the Badjaos seemed resigned to their conditions with no hope for a better future within their lifetime.

Access to Services

Access to services was determined by investigating the organizations with projects in the study area and the number of respondents who were able to avail of the services of institutions who have projects in the area. To determine the institutions with projects, government offices were first visited. Other organizations mentioned by the government offices were also visited. All organizations were asked about their past and present projects in Bongao.

Table 8 shows the organizations with projects in the area, which directly or indirectly target the Badjao community. It can be gleaned that Badjaos have no easy access to services. The projects from the LGU appear far and between and only indirectly. The Office of Southern Cultural Communities (OSCC), on the other hand, does not have funding and operates only as coordinating body for various projects directed to cultural communities. The Department of Education and the Department of Social Welfare and Development (DSWD) have special projects on education that benefit cultural communities. While DSWD implements the cash transfer program for the poorest members of the society, no Badjao is part of the program. Directly benefitting the Badjao communities are those that are managed by foundations and religious organization that center on literacy and health, with one providing microfinance assistance.

Participation in Projects

The lack of access to services was worsened by feelings of being an outsider in the bigger community. As one KI explained:

> *"Once, there was a medical mission conducted in the town proper. We were not able to avail of the services because we were shy to mingle with other people. We did not know anybody whom we can approach."*

Table 8. Organizations with past and present projects in the area

INSTITUTIONS/ CLASSIFICATION/ ACTIVITIES	YEAR	TARGET BENEFICIARIES	BADJAO COMMUNITIES
Office of the Mayor (Local Government Unit)			
Coastal Environment Protection Program	2007	All constituents	Indirect beneficiaries
Repair of school building, day care centers	2007	All constituents	Indirect beneficiaries
Medical Mission in partnership with the Philippine Charity Sweepstakes	2007	Specific to Badjao communities	Direct beneficiaries
Citizen Education: Voting rights, where to vote	During election period	All constituents	Direct beneficiaries
Office of Southern Cultural Communities (Regional Office under the Autonomous Region in Muslim Mindanao)			
Currently has no funds for projects and works as coordinating body for projects directed to cultural communities			
Department of Education (National agency)			
Basic Education Assistance for Mindanao (BEAM) funded by Australian Aid	2012-2017	Indigenous peoples	Direct beneficiaries
Non-formal education, 10 hours per week	2002	Indigenous peoples	Direct beneficiaries
Department of Social Work and Development (National agency)			
Supplemental feeding at the day care centers	Occasional	All day care center children	Direct beneficiaries
Health literacy	Occasional	All communities	Indirect beneficiaries

Table 8. Organizations with past...(Continuation)

INSTITUTIONS/ CLASSIFICATION/ ACTIVITIES	YEAR	TARGET BENEFICIARIES	BADJAO COMMUNITIES
Magbasa Kita Foundation, Inc. (Foundation established by former Sen. Santanina Rasul)			
Literacy for Peace and Development (LIPAD) with three-month class sessions every Saturdays and Sundays for adult learners	Continuing	Illiterate adults	Direct beneficiaries
Health Promotions Education is a health literacy program	Continuing	Poor communities	Direct beneficiaries
Daughters of Charity of Saint Vincent de Paul (Religious organization)			
Badjao Village Learning Center which conducts pre-school education with feeding program and Alternative Learning System (ALS) for adults	Re-opened in 2011 and continuing	Poor communities	Direct beneficiaries
Vicariate Social Development Foundation (Religious organization)			
Micro-financing	Continuing	Poor communities	Direct beneficiaries

Another KI expounded:

> *"It is very rare that we get to be chosen as beneficiaries. Nobody among us was chosen to become part of the Conditional Cash Transfer. We are always not part of programs."*

For one, there is no clear count of the Badjao population as they are highly mobile. Secondly, because of their lack of entitlements and very low income, it is difficult for the Badjaos to comply with the requirements of the program such as opening a bank account. The requirements make it impossible for the Badjaos to avail of the programs of the government.

Notably, only about one-third (38%) of the respondents were able to attend the projects offered by various institutions. Respondents explained that they were not able to do so because they were not around, did not have any idea about the activities, or were not invited. Among the key informants, one has never attended any educational program. He said he was not informed of an adult literacy program that was held every weekend at the day care center. He often wondered why a group of mothers met there regularly. He assumed that the activity was exclusively for women.

Table 9 presents the projects accessed by the respondents and the benefits they derived from participating in the projects. Not reflected here are the programs participated in by their children.

Participation in Community Activities

Almost all respondents attend wedding ceremonies or wakes in the community. They usually offer personal services like helping the host in cooking, serving visitors, and washing dishes. Whenever they have extra money or materials, they donate or share these to the hosts. The Badjaos believe that if you extend help to your neighbors, you are also likely to receive help when you need it.

While the sense of community among themselves is high, Badjaos, however, rarely attend official functions such as the Municipal or Provincial Day celebrations unless invited to participate in parades or games (*palaro*) (Table 10).

Results show that Badjaos have very few opportunities to participate in community activities other than in social activities in their own community or in religious occasions. When they participate, what they offer are their personal services which illustrates their sense of community. It also indicates lack of resources to share. Low participation could also be attributed to the fact that they are often preoccupied with making a living.

An overwhelming majority (88%) of the respondents participate in elections. This could be because many of them were fetched by supporters of various candidates. With regard to approaching local leaders during times of need, most (62.1%) of the respondents said that they have already experienced doing so, while about one-third (35%) of them have not yet tried. Of the 59 respondents who did,

Table 9. Kinds of educational opportunities participated in by respondents

PROGRAMS	INSTITU-TIONS INVOLVED	DAYS/ MONTHS	NUMBER OF PARTCIPANTS (n=95)		BENEFITS DERIVED
			No.	%	
Health and Nutrition					
Family Planning	RHU DSWD	1 day	4	4.2	Population consciousness Mother and child Healthcare
Feeding Programs	DSWD	1 day	8	8.4	Healthcare for the children and family Preparation for nutritional Food of the family
Medical-Dental Mission	LGU RHU	1 day	7	7.3	Free medical checkups, free dental, and free medicines
Non-formal Education					
Basic Literacy Education	MKFI	3 mos.	12	12.6	Reading, writing & numeracy
Voters' Education	LGU	1day	11	11.6	Proper filling up of ballots
VAWC Seminar	DSWD	1day	1	1.05	Rights awareness for women and children

Note: A few were able to attend to more than one intervention.
Legend:
DSWD - Department of Social Welfare and Development
LGU - Local Government Unit
MKFI - Magbasa Kita Foundation Inc.
RHU - Rural Health Unit

Table 10. Participation of the respondents in community activities

COMMUNITY ACTIVITIES	NO.	%
Wedding ceremonies	95	100.0
Funeral	95	100.0
Religious festivals	27	28.4
Municipal/Provincial Day celebration	19	20.0

Note: Multiple responses

Table 11. Political participation of the respondents

RESPONSE	NO.	%
Participation in choosing or electing our leaders		
Yes	84	88.4
No	8	8.4
No answer	3	3.1
Ways in going to the precinct		
Fetched by candidates' supporters from other municipalities	37	44.6
Went on our own	31	37.3
Fetched by candidates' supporters within municipalities	15	18.07
Kinds of assistance received		
Medical assistance	25	46.8
Basic goods	16	27.1
White cloth (for dead family member)	13	22.0
Financial assistance	11	18.6
Opinion/advice	8	13.6

majority (80%) of them were given the assistance they requested. The usual items given to them were white cloth (for members of the family who died), medicines, basic goods (sugar, coffee, and rice), money, and recommendation for medical checkups. They also received opinions or advice for their problems. When one KI's husband died several years ago, she approached their village leader for help. The village leader referred the problem to the municipal officials and the KI was given a white cloth to wrap her husband's body and a sack of rice.

Badjaos generally ask for assistance from their leaders, and this is one reason they actively participate in elections. The KI explained:

> *"We are after a leader who can understand our situation and who is helpful and kind to us. In times of emergency, we can expect something from them. Like during the death of my husband, we were given rice and white cloth. And it was really a great help to us."*

CONCLUSIONS

The inter-related factors identified as considerable constraints in achieving development goals are highly interlinked. The conditions below, which formed the major themes resulting from the study, illustrate the conditions of deprivation that keep the Badjaos poor:

Low Educational Background, Lack of Skills, and Low Aspirations

Majority of the respondents were either illiterate or were unable to finish elementary. Therefore, they do not have the necessary knowledge and skills, and thus engage in low paying jobs. Their irregular and meager income prohibits their children's continued attendance in school, which compromises their hopes for better life.

Moreover, low educational status and limited access to capability-training seminars adversely affected productivity and livelihood opportunities. Since individuals with low educational background lack aptitude, competency, or skills necessary for regular-paying jobs, they have very limited opportunities to have regular income. Hence, they tend to have low aspirations in life.

Low Income and Lack of Assets

The Badjaos' household income could hardly sustain basic family needs including food. There are times when Badjaos skip meals or adults skip meals and let the children eat. These meals often consisted only of cassava and fish. Most respondents acknowledged that they could not even provide a safe shelter for their family.

Respondents shared the difficulty of having a stable source of income. The respondents' main occupation was fishing. Although they are good in fishing, income from fishing is uncertain because of a number of factors such as the weather (that is, if weather is good then fishers can get good catch), market price, and the quality of the catch (referring to kinds and size of fish caught). Furthermore, they have to pay for the use of pump boat that they do not own. Income from seaweeds vending, on the other hand, is highly erratic as it depends on what can be harvested along the shoreline. Meanwhile, mat weaving requires capital and raw materials, which are not readily accessible from their village.

The Badjaos also lack financial resources to spend for school expenses, to help neighbors in need, and to avail of medicine and health care services. This lack of financial resources intertwines with poor nutritional status and labor productivity that in turn affect prospects of better life. Even pursuing lucrative livelihood alternatives like mat weaving is problematic due to inaccessible raw materials and lack of capital for the venture.

This lack of income is actually brought about by a chain of related factors: the lack of knowledge and skills lead to difficulty in finding a decent-paying job, which consequently requires the respondents to engage in any kind of work for as long as they have money to earn however minimal. The kind of work they engage in is unstable and therefore income is uncertain.

The Badjaos do not own any piece of land and, thus, build their houses on stilts on the shore line or near coastal areas occupying government property. They use light materials for their houses. They own only basic kitchen utensils such as pots, plates, and kerosene or gas-operated lamps.

Poor Nutrition and Health Conditions

Habitual skipping of meals within the day may lead to poor household nutritional status and affect the health conditions of the households. This situation is an off-shoot of the inability to buy food. As a result, these two compounding issues negatively affect the attendance to school as households prioritize participating in activities that would bring in food.

Health condition of residents of the selected communities was generally poor. Prevalence of illnesses such as stomach ache and diarrhea could be results of poor hygiene and unsafe water supply. In addition, conditions of toilet and types of housing structures reflected an unsanitary environment. Taken together, these features are overwhelming factors that hinder human resource productivity and over-all progress in the community.

Poor Social and Political Capabilities

The members of the community have very little to offer, which is why they are unable to share information or share labor and materials. Because of this, they try to live harmoniously with one another and settle problems on their own. For them, it is important to settle problems as they cannot afford conflict within the community as this will disrupt their already difficult daily living. In the rare instances where there are services available to the community members such as medical missions which they know they need, they shy away as they feel that they are not part of these activities and that they will not be entertained.

Poor Access to Limited Services

General lack of access to basic utilities and public services in the community is seen as a barrier of progress in the area. Existing programs of DSWD on Conditional Cash Transfer and Comprehensive Livelihood Emergency Employment Program, which aim to help the poor family in their livelihood, do not benefit the Badjaos.

In terms of public utilities, availability of water for households had been a long-standing problem among the Badjaos. Thus, the more common source of water for drinking and other household needs such as for washing clothes are rainwater and deep well. However, collection of rainwater is also constrained by seasonality and lack of water tank or drums. Electricity is available in the area, but like water utilities, the main problem in access is due to the prohibitive cost of connections and monthly payments.

The general lack of social and political activity in the area is a major constraining factor toward an empowered community. The lack of organization exacerbates the problem of participation due to the lack of juridical body that could ventilate their concerns and represent them in socio-political fora. The Badjaos' limited involvement in social and political affairs of the community could have been mitigated by membership and participation in local organizations that could enhance their social interaction and collective decision-making skills.

Socio-cultural discrimination is another constraining variable against. Many of the respondents admitted that they do not participate in many training programs or avail of public services because they are not prioritized or are discriminated.

Figure 3 shows the summary of the constraining factors, which contribute to the Badjaos' poverty conditions. The summary shows the poor conditions of the Badjaos as reflected in the major items investigated in the study. These emergent themes are results of interlocking causes, one of which is the general perception that these groups of people are nomadic in nature. This perception, however, has been detrimental in terms of provision of services. The respondents of this study, for example, are residents of the barangays where they live, yet there is an apparent lack of data regarding their identity. Hence, there are very few services directed to Badjaos. If there are, these services are limited. These deprivation conditions evidently trap the Badjaos in a state of poverty.

Accordingly, the Badjaos have a short developmental horizon. While they aspire for modest improvements in their children's lives, the pressing need for daily survival dictates their decisions. Thus, children skip school because of the need to help provide for their daily subsistence. Eventually, the next generation could end up with menial jobs because of problems related to illiteracy and lack of skills. Compounding this is the pervading belief that hunger and lack of entitlements is normal. This psychological belief system shrouds the deprivation that the Badjaos continually endure.

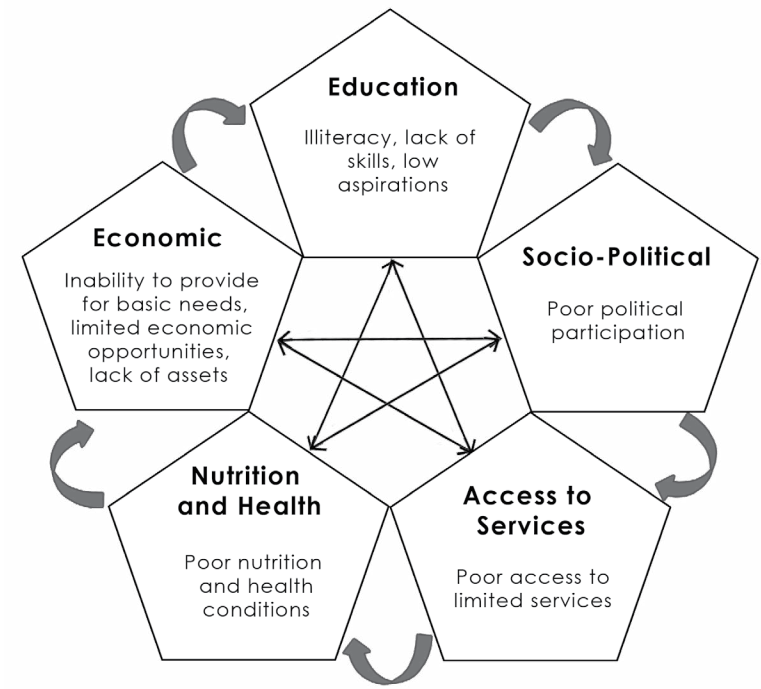

Figure 3. Deprivation trap of Badjaos

RECOMMENDATIONS

The Badjaos have suffered decades of social exclusion from mainstream society. The intertwining and reinforcing conditions that keep them poor and the lack of specific interventions to help them exacerbate the situation. The conditions that trap them in a cycle of deprivation include the lack of adaptive capacity (low educational background which leads to lack of skills and low aspirations) that leads to lack of access to capital (low income and limited economic opportunities), poor nutrition and health condition, and poor social and political capabilities reinforced by the lack of social capital.

The nature and descriptions of individual conditions under the conditions of deprivation discussed by Chambers (1983) are different from what the Badjaos suffer from. Previous researchers studying deprivation have not yet investigated the compounding effect of the psychological belief system of the Badjaos that deprivation is normal and should be endured.

The study thus provides a graphic picture of deprivation suffered by one of the poorest communities in the Philippines. While it has been acknowledged that the Badjaos belong to the poorest groups of society, there were very few studies that investigated their conditions. There is limited research regarding actual conditions of the Badjaos. The documentation of these conditions reveals the urgency to develop interventions that specifically cater to the needs of the Badjaos.

However, helping the Badjao community overcome poverty is a complex task. The Badjaos display wariness towards outsiders. They feel that they are excluded from interventions or would not be entertained. The Badjaos feel more at ease when they know somebody that they can relate with.

Based on the data gathered, the researchers developed a collaborative and culturally sensitive model of program intervention for the Badjaos (Figure 4). The components of the program are participative so as to make the Badjaos feel that the program is for them; informative to ensure wider participation; persuasive so the Badjaos feel that the program will directly benefit them; and formative to address individual and community needs. Results show that the Badjaos need many formative interventions at the personal level. At the same time, they need to be able to work as a community to articulate their needs and work for the improvement of their community.

Moreover, the program would be guided by collaboration and networking of various institutions as not one agency can provide all of the needs. For example, free tuition alone will not encourage the Badjaos to stay in schools as they have to look for income. Provision of short term medical missions will also not work as the people shy away from these activities. Cultural sensitiveness should be a key principle in any undertaking. Policies formulated should thus adhere to these principles. Hence, components of the program focus on participation, information giving, consensus building, capacity development, and organizational building.

Capability-building programs are considered crucial in moving marginal groups out of poverty (Farrington, Christoplos, Kidd, Beckman, & Cromwell, 2002) and help them escape abject social status (Bartholomew & Bourdon, 2002). Of immediate need would be livelihood activities related to fishing, fish processing, and mat weaving as well as literacy programs that could cater to more members of the

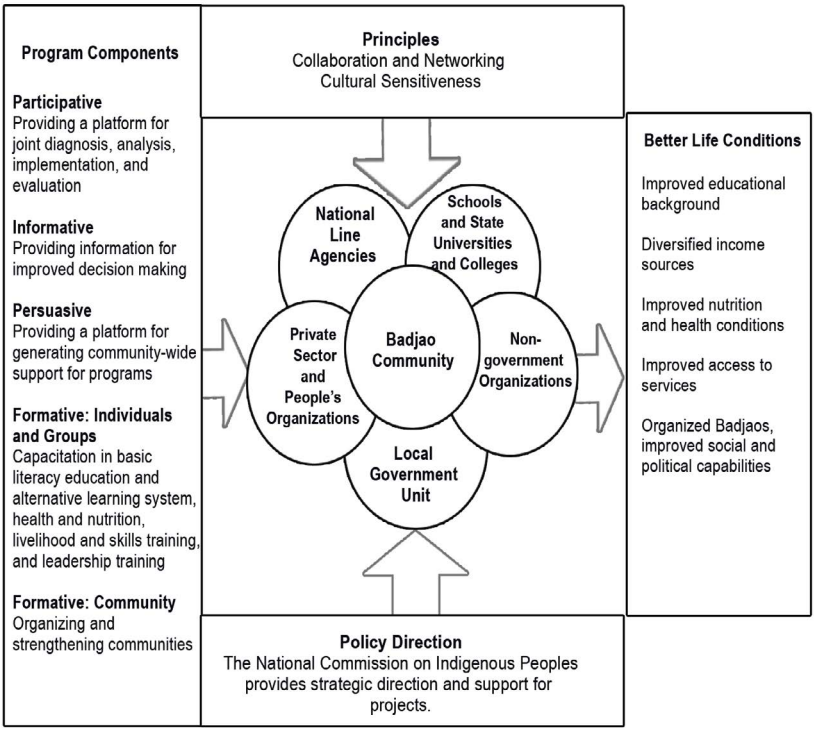

Figure 4. Model for program implementation for the Badjaos

community. Capacity building, for example, should not only focus on providing training but also on helping the Badjaos in the whole supply chain of their major enterprise – that of fishing and mat weaving. These people are skilled mat weavers but do not practice such skills because of problems related to capital, sourcing out of materials, and marketing.

The National Commission on Indigenous Peoples could be the active force in providing policy directions and coordinating with different agencies, specifically ARMM and OSCC. The lack of adaptive capacity and access to capital and services should be addressed through informative, formative, and persuasive interventions underlined by participatory approaches.

Accordingly, an integrated program directed to the Badjaos and participated in by different government agencies may ultimately improve the life conditions of the Badjaos. Through this integrated program, the Badjaos would be able to improve their educational attainment, diversify income sources, enhance nutrition and health conditions, and improve access to services, thereby resulting to an organized community.

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NOTES FOR CONTRIBUTORS

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