Socio-Economic Profile of the Philippine National Aquasilviculture Program (PNAP) Beneficiaries in Jiabong, Samar, Philippines

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Abstract

A total of 37 beneficiaries under the Philippine National Aquasilviculture Program (PNAP) was interviewed using the structured survey questionnaire of Socioeconomic Monitoring Guidelines for Coastal Managers in Southeast Asia (SocMon SEA). Most of the members of the households are young and in-school. Household heads' primary occupation is fishing, a shift from mussel farming- the town's major industry in the past decades. Perceived threat by the beneficiaries is related to the environment specifically typhoon and the problems on waste disposal. It also identified law enforcement as weak leading to dwindling fish catch, mass mortality of mussel, red tide and other problems affecting their primary sources of income. However, they could not relate these phenomena to the most likely causes. The current occupation does not provide sufficient income for the family as they seek for alternative jobs. Garbage and poor implementation of laws are among the identified problems of the beneficiaries.

Keywords: socio-economics, aquasilviculture, mangroves, reforestation, ethno-survey

I. INTRODUCTION

In collaboration with the academe, concerned local government units (LGUs), and People's Organization (PO), DA-BFAR and CHED implemented the Philippine National Aquasilviculture Program (PNAP). The PNAP aims to ensure sustainability, to attain food security and to alleviate poverty (Medrano & Perez, 2011). There are four component of the PNAP namely: resource regeneration or mangrove reforestation; community-based hatchery (CBH); lying-in hatchery; and aquasilviculture. Aquasilviculture is an environment-friendly enhanced fisheries production in the wild that involves the growing of fish and other aquatic organisms within a mangrove area without cutting down a single tree. In this program, the mangroves as the "protector of shore-line" are protected not only for the present generation but also for the forthcoming generations. Specifically, mangroves are significant for the following reasons: (1) Buffer zone between land and sea; (2) Protect the land from erosion; (3) Play an invaluable role as nature's shield against cyclones, waves, tidal currents, typhoons, ecological disasters and as protector of shorelines, coastal areas and communities; (4) Breeding and nursery grounds for a variety of marine animals like fish, prawns and crabs, and supports

fisheries production in coastal waters; (5) Harbour a variety of life forms like invertebrates, fish, amphibians, reptiles, birds and even mammals like tigers; (6) Good source of timber, fuel and fodder; (7) Main source of income generation for shoreline communities like fisherfolk; (8) Save the marine diversity, which is fast diminishing; (9) Purify the water by absorbing impurities and harmful heavy metals and help us to breathe a clean air by absorbing pollutants in the air. Produce organic biomass (carbon) and reduce organic pollution in nearshore areas by trapping or absorption; (10) Potential source for recreation and tourism. It serves as recreational grounds for bird-watching and observation of other wildlife; and (11) Produce leaf litter and detrital matter, which are valuable sources of food for animals in estuaries and coastal waters. Mangrove reforestation is a part of the "National Greening Program" of DENR and other agencies; its purpose is to address carbon sequestration of the atmosphere as mitigation action to global warming (DENR, 2011). The one legal basis of this project was DENR Executive Order (E.O.) No. 263, series 1995 otherwise known as Community-Based Forest Management, also DENR E.O. 318 empowering the PO's to manage their resources.

The paper aimed to present benchmark information of the beneficiaries of the project before implementing the Aquasilviculture Program. The said information is necessary to determine the impact of the program implemented in the future.

II. MATERIALS AND METHODS

The study utilized the ethno-survey method to describe the socio-economic profile of the Philippine National Aquasilviculture Program (PNAP) beneficiaries in Jiabong, Samar. It utilized structured survey questionnaire of Socioe-conomic Monitoring Guidelines for Coastal Managers in Southeast Asia (SocMon SEA, 2003). The LGU, community organizer of BFAR, and SUC project coordinator pre-identified beneficiaries. Once beneficiaries were qualified and certified by the mayor of the LGU concerned, a memorandum of agreement (MOA) had been executed to implement the project. Each LGU was entitled to 40 fisherfolk duly registered from BFAR and certified by DSWD as indigent. A team of social science research was deployed in the area to collect data. Primary information was collated by a team of researchers thru one-on-one interview, and sometimes through focused group discussion (FGD) or group dynamics strategy.

SOCIO-ECONOMIC INDICATORS

The socio-economic indicators were determined using the socio-economic monitoring (SocMon) guidelines for coastal managers: tools for understanding people and resources by Siar (2003). The questionnaire includes household demographics, coastal and marine activities, attitudes and perceptions and respondent's description of dwelling.

SocMon is a set of guidelines for establishing a socio-economic monitoring program at a coastal management site in Southeast Asia. Observations are qualitative descriptions of what the team member sees, and are obtained by attentively watching and recording the surroundings. For example, a team member may collect information related to respondent's dwelling in terms of the building materials used. Observation is a useful method because the team can learn first-hand information about complex activities, such as fishing patterns.

The raw data was processed into pooled data and inputted in MS Excel spreadsheet for data analysis and interpretation. Finally, data were graphed and tabulated

for layman's understanding.

Focus of the Study

The focus of the study was the coastal barangays of Jiabong, Samar, surrounded by Maqueda Bay, Samar. Fishing was the main livelihood of the people of the area located in central western part of Samar Islands. Pre-determined barangays that have profiles in the areas were the priority sites to fast track data collection. To gather information for the study, the researcher utilized the key informant technique by identifying and interviewing key informants. Among those interviewed were fishers, local government officials, members of the civic groups. The main research technique adopted was the participation observation, which was usually used by anthropologists. Its main strength is that it utilized and observed aspect in Filipino human relations. The kind of information gathered in the social research depends largely on the level of relationship forged between researcher and respondents (Sumagaysay, 2002).

III. RESULTS AND DISCUSSIONS

Results of the survey reveal that the demographic profile of PNAP beneficiaries in Jiabong, Samar belongs to the younger member of households. This is best shown in Table 1 in which populace was dominated by female, accounting 33.01%, versus male which was only 20.57% of the total 40 household population. Obviously half of the population (53.59%) was very young. This age bracket is the most productive age of the family since children were involved in fishing activities. While when they reach the next age bracket (19-30 years old), 17.22% moved to megacities. This age bracket was expected to have finished their secondary education. This is because of migration to bigger cities, seeking opportunities or looking for greener pasture. This can be explained by extreme poverty in the marginalized fisherfolk which recorded at 45.0 poverty incidence in 2009 for the Province of Samar (NSCB, Region VIII, 2009). At regional level, poverty incidence was 41.4% in 2009 still very far to attain the Millennium Development Goal (MDG) of 26.3% in 2013. On the other hand, middle ages constituted 22.97% which stayed in the barangays, and only 6.22% was the senior citizens. In terms of gender 55.02% was female, and 44.98% was male of the 209 household members. The average household member of the beneficiaries was six, and it ranged from one to nine; the provincial average household member was 5.1, slightly lower than Jiabong in 2010. Jiabong had a total 15,397 household population in 2010 (NSO, 2010) had 1.12 population growth rate.

Figure 1 below shows the educational qualifications of the beneficiaries. It can be gleaned that 31 out of 37 beneficiaries or 56.76% is high school graduates; 21.62% is elementary graduates; 10.81%

Table 1.
Age and Sex Profile of Household Members

Age	Sex				Total
	M	(%)	F	(%)	
0 – 18	43	20.57	69	33.01	53.59
19 – 30	20	9.57	16	7.66	17.22
31 – 50	23	11.00	25	11.96	22.97
51 - Above	8	3.83	5	2.39	6.22
Total	94	44.98	115	55.02	100.00

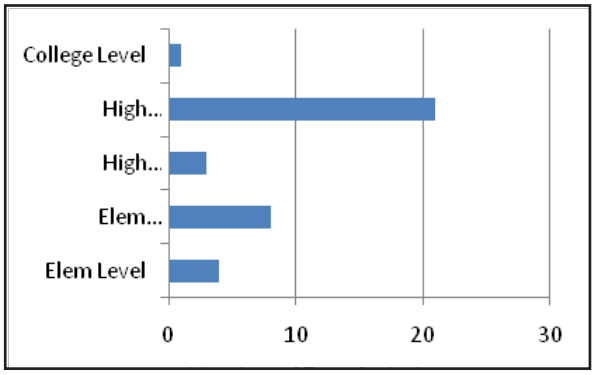

Figure 1. Educational attainment of the beneficiaries

is elementary undergraduates and 2.70% is college dropouts.

Members of the households are of secondary level and below. The mother tongue is Waray-waray, and only one in every ten knows Tagalog with English as their secondary language. The average daily household income is between PhP 100 to PhP 200. While the average family income of beneficiaries is PhP 5,000.00, it is slightly lower than the threshold level of the poverty line of PhP 7,000.00.

Most of the respondents' primary occupation is fishing, and secondary occupation is farming. It can be gleaned in Table 2 that Jiabong in the last decades was a major producer of green mussel; in fact, it was considered as Samar's one-town-one-product. However, mussel industry was heavily affected due to mass mortality of green mussel. In 2008, the annual mussel and oyster production was 7,397.65 MT of 1000 hectares farm area (Diocton, et.al, 2009). This is why mussel farming is not anymore the primary source of income in the locality.

Table 2
Occupation of Beneficiaries

Occupation	F	%
Primary Occupation		
Crab Liftnet	1	3
Fishing	32	86
Mussel Farming	4	11
Total	**37**	**100**
Secondary Occupation		
Brgy. Captain	1	3
Brgy. Tanod	2	5
Carpentry	2	5
Coconut	1	3
Construction	1	3
Crab Liftnet	1	3
Farming	15	41
Fishing	2	5
Mussel Farming	6	16
None	6	16
Total	**37**	**100**

Declining catch was the main reason the fisherfolk migrated to Metro Manila since the capture fisheries did not suffice their basic needs of their family. For three decades or so, environmental degradation and illegal fishing caused the dwindling as shown in Figure 2. Catch will continue to diminish unless an action will be taken to avert the scenario. A coastal resource of Maqueda Bay is already on unsustainable level due to increasing population and bad governance issue. Many small-scale fishers in the country operated in the areas where the resources were heavily exploited (Jungeling, 1993). Its coastal barangays along Maqueda Bay, Samar abound with hard working women who with years struggling with the meager income of their husbands had learned to live with life's hardships. The present state of the resources is also attributed to open access and lack of an effective management system. These threatened the livelihood and coastal community sustainability (ASEAN\FAO\UNDP, 1988; Ben- Yami and Anderson, 1985).

The coastal and marine activities of the beneficiaries are shown in Table III. They considered fishing as their major activity in which the coastal and marine goods were fishes that can be caught using hook and line or gill net. It is followed with mussel farming in which mussels were the products of this endeavor. Mussels is a one-town-one-product (OTOP) of the Municipality of Jiabong, Samar. The local market of the household was oriented to local coastal and marine activities due to limited capability being an artisanal fisher. The products of the beneficiaries were used for their consumption and the rest were for sale.

The non-market and non-use values particularly on the attitudes toward the different statements about the coastal and marine resources in Jiabong, Samar

Table 3
Coastal and Marine Activities

Coastal and Marine Activities			Coastal and Marine Goods and Services	Types of Household Uses
Activities	F	%		
Crab Liftnet	1	3	Crab	Crab Liftnet
Fishing	19	51	Fish	Net, Hook
Mussel Faming	7	19	Mussel	Bamboo
Fishing & Crab Liftnet	2	5	Fish & Crab	Net, Hook, Crab Liftnet
Fishing & Mussel Farming	6	16	Fish & Mussel	Net, Hook, Bamboo
Fishing, Crab Liftnet Mussel Farming	2	5	Fish, Crab & Mussel	Net, Hook, Crab Liftnet, Mussel
Total	**37**	**100**		

Table 4
Non-Market and Non-Use Values

Attitudes	Total	Average	Interpretation
The mangroves are important for protecting land from storm waves.	183	4.95	Strongly Agree
In the long-run fishing would be better if we cleared the mangroves.	53	1.43	Disagree
Unless mangroves are protected, we will not have any fish to catch.	161	4.35	Strongly Agree
Mangroves are only important if you fish or dive.	184	4.97	Strongly Agree
I want future generations to enjoy the mangroves and coral reefs.	181	4.89	Strongly Agree
Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow.	177	4.78	Strongly Agree
We should restrict development in some coastal areas so that future generations will be able to have natural environments.	146	3.95	Agree
Seagrass beds have no value to people.	72	1.95	Disagree

is shown in Table 4. The beneficiaries strongly agreed on the five statements such as: (1) The mangroves are important for protecting land from storm waves; (2) Unless mangroves are protected, we will not have any fish to catch; (3) Mangroves are only important if you fish or dive; (4) I want future generations to enjoy the mangroves and coral reefs; and (5) Fishing should be restricted in certain areas even if no one ever fishes in those areas just to allow the fish and coral to grow. They agreed on the statements: We should restrict development in some coastal areas so that future generations will be able to have natural environments. They disagreed on the statements: (1) In the long-run fishing would be better if we cleared the mangroves; and (2) Seagrass beds have no value to people.

The respondents perceived that the coastal resources such as mangroves, coral reefs and fresh water were in good condition while the upland forests were not. This is so because the ecosystem can provide more goods directly or indirectly. The least appreciated ecosystem was upland because most of the respondents were part-time farmers especially on root

crops.

Typhoon and illegal forms of fishing ranked the highest among the listed threats. The declining mangrove forest was considered lower risk for the respondents.

More than half of the respondents were aware of the rules and regulations relating to fisheries including management of coastal resources. Data reveals that almost all of the respondents were aware of the rules and regulations about the activities related to fishing, mangrove use and aquaculture. However, conversion of mangroves and other coastal zones receive lower rating. Close to half of the respondents were not aware of rules and regulation regarding residential development while almost all of them were unaware about hotel development.

For the extent do people comply with coastal management rules and regulations, the average mean (4) of their response was 32% that means complied. To the extent are the rules and regulations enforced, the average mean score was four (32%) which is interpreted as enforced. The participation of people in coastal management decision-making had an average mean score was 5 or (36%) which means fully active participation (Figure 2). The beneficiaries had their organization duly registered by the LGU and DOLE namely: Jia-an Producer Association (9 members); Brgy. Alejandrea Small-Scale Fisherfolk Association (15 members); Macabetas Small-Scale Fisherfolk Association (13 members).

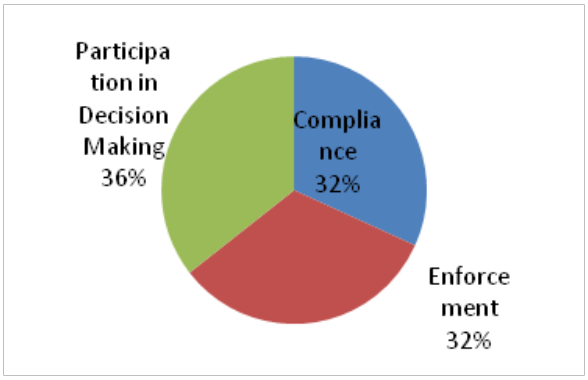

Figure 2. Compliance, enforcement and participation in decision making

Like many coastal communities, garbage disposal is one of the major concerns. In the study of Orale (2009 and 2011), improper waste disposal from the towns ended up in the sea. The study showed that coastal communities especially island villages threw most of their waste into the sea. Illegal fishing in the Maqueda Bay is rampant, however, beneficiaries ranked it last as a perceived coastal problem.

Respondents were one in saying that there is an immediate need to clean up the coast. Laws especially related to environment and fisheries need to be implemented. In the study (Orale 2009 & 2011), people did so because the local government failed to collect the wastes from the communities. Further, they were not afraid of being penalized even if they violated ordinances related to waste disposal.

The respondents also perceived the lack of source of livelihood as a community problem. This only meant that the current form of occupation, fishing was not sufficient for the family's consumption. Despite the apparent significant reduction of mussel production and low fish catch, people didn't see it as a major community problem.

Table 5 shows the things that worked well for the coastal management in the community. The main problem identified was shown on Tables 6 and 7. It was related to waste disposal and enforcement of laws while mangrove related problems were considered lest. On the other hand, Table 9 shows that mangrove reforestation is the most successful way of coastal management while waste disposal and enforcement of laws are the least successful management initiatives.

Table 5
Successes in Coastal Management

Successes	F	%
Mangrove Reforestation	11	34.38
Cooperation in Protecting the Coastal Areas	4	12.50
Establishment of Manhole or Garbage Can	2	6.25
Proper Disposal of Garbage	2	6.25
Strict Enforcement of Laws	2	6.25

Table 6
Challenges in Coastal Management

Challenges	F	%
Lack of Cooperation in Coastal Management	12	28.57
None / No Answer	12	28.57
Neglect of Coastal Resources	3	7.14
No Proper Garbage Disposal	3	7.14
Mangrove Reforestation	2	4.76
No Strict Implementation of Laws	2	4.76

Table 7
Respondents Dwelling Profile

Materials	Type of Roof		Type of Outside Structural Walls		Windows		Floors	
	F	%	F	%	F	%	F	%
Nipa	17.5	47.30	5	13.51	0	0.00	0	0.00
Tin/GI	18.5	50.00	0	0.00	0	0.00	0	0.00
Wood	0	0.00	16.5	44.59	22.5	60.81	19.5	52.70
Tatch/Bamboo	1	2.70	6	16.22	0	0.00	7	18.92
Brick/ Concrete	0	0.00	9.5	25.68	0	0.00	9	24.32
Glass	0	0.00	0	0.00	8.5	22.97	0	0.00
Open	0	0.00	0	0.00	4	10.81	0	0.00
Dirt	0	0.00	0	0.00	0	0.00	1.5	4.05
None	0	0.00	0	0.00	2	5.41	0	0.00
Total	**37**	**100.00**	**37**	**100.00**	**37**	**100.00**	**37**	**100.00**

Table 6 shows the challenges in coastal management. The two major challenges were: (1) lack of cooperation in coastal management (28.57%) and (2) neglect of coastal resources (7.14%) and improper garbage disposal (7.14%). The other challenges were: mangrove reforestation (5.5); absence of strict implementation of laws (4.76); illegal fishing, lack of concern for the poor individuals, mark of pathway, negligence of coastal management, negligence of planted mangroves, no concern for fellow men, insufficient association in coastal management (10.5), and, one lane road (2.38).

Table 7 shows the material style of life. The majority type of roof was tin and followed by nipa. For the type of outside structural walls, wood ranked first followed on brick

or concrete. For the windows, wood ranked first and glass ranked second. For the floors, wood ranked number one and cement ranked number two. The type of roof and materials indicate the social status of the beneficiaries; the use of tins may be a little advanced compared to nipa shingles used as roofing.

IV. CONCLUSION AND RECOMMENDATIONS

Most of the members of the households are young and in-school. Household heads primary occupation is fishing, a shift from mussel farming, which was the towns major industry in the past decades.

Perceived threat by the beneficiaries was related to the environment specifically typhoon and the problems on waste disposal. It also identified law enforcement as weak leading to dwindling fish catch, mass mortality of mussel, red tide and other problems affecting their primary sources of income.

Beneficiaries of the program say they need alternative sources of income as their current occupation could hardly meet household expenses.

Though the beneficiaries felt the problems such as low fish-catch and mass mortality of mussel, they seemingly could not relate it to coastal activities and issues like decline of mangroves and illegal fishing.

Philippines and the local government units have laws and ordinances to manage and to protect coastal zones and the seas but has failed immensely in enforcing such laws.

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