

# Socioeconomic Conditions of Coastal Communities Along Albay Gulf, Bicol Region, Philippines

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## Abstract

The study sought to provide information on the socioeconomic condition of fishing households along Albay Gulf. There were 83 coastal barangays and 401 sample households covered in the seven selected municipalities of the Bicol Region, Eastern Philippines. Results revealed that fishing households in Albay Gulf are facing several challenges that push them to abject poverty. Lack of access to alternative livelihood was evidenced by a small percentage of households engaged in entrepreneurial activities (2%–9%) and a high percentage of fisheries dependence (94%). Community participation was also low in Coastal Resources Management (19%), as reflected by the few households that reported the existing people's organizations in their area. Under such conditions, it is imperative to find the balance between the welfare of the fishing households and sustainable use of coastal resources. Therefore, policy options should focus on addressing the livelihood issues of fishing communities that aim to reduce their vulnerability to income shocks and promote the sustainable use of natural resources. To do this, the paper recommends income diversification, livelihood opportunities, capability building, and comprehensive information, education, and communication (IEC) campaigns.

**Keywords:** *Albay Gulf, alternative livelihood, fishing households, poverty*

## Introduction

Socioeconomic information is critical for effective coastal management. By understanding the economic, social, cultural, and political characteristics and conditions of individuals, households, groups, organizations and communities, potential problems and opportunities for coastal resource management can be easily identified (Bunce *et al.*, 2003). Socioeconomic information, in particular, is especially useful in comparing current conditions with the baseline to identify the impacts of management decisions on the stakeholders. Similarly, socioeconomic drivers pose pressures on the environment when uses of coastal resources change as a result of changes in household demographic and economic characteristics. Thus, managing the fisheries sector becomes more demanding and challenging.

In 2018, the Philippine Statistics Authority (PSA) declared fisherfolks as among the three sectors identified with the highest poverty incidence (26%) (PSA, 2020), or the proportion of families or individuals with per capita income less than the per capita poverty threshold. Several

challenges served as barriers to poverty alleviation and empowerment of small-scale fishers—environmental challenges; governance, management, and conservation of fisheries and other natural resources; acquiring and improving fishing technologies and operations; handling, processing, and distribution of fishery and aquatic resources; marketing and utilizing fishery products; and the present socioeconomic status of fishers (FAO, 2016). In Asia, the central issue for coastal fisheries is the depleted state of resources. In Malaysia, the Philippines, and Thailand, the total biomass has declined to <10% of “baseline” estimates (Stobutzki *et al.*, 2006). In the Philippines, the total volume of fisheries production in 2020 recorded a negative growth of 0.3 percent (PSA, 2020). This results in Malthusian overfishing where small-scale fishers in developing countries engage in wholesale resource destruction in their effort to maintain their incomes (Pauly, 1993). As the resource declines, the income of fishers also declines. In response, they tend to fish harder with destructive gears, which in turn reduce the resources even further. As a consequence, poverty is likely to worsen when the resources are depleted and overfishing is prevalent.

Most early studies, as well as current work on socioeconomic condition of fishing households, focused on other coastal communities in the Philippines (Nieves *et al.*, 2009; Enate *et al.*, 2013; Mercado & Mercado, 2016). To date, there has been no previous baseline study focusing on the socioeconomic conditions of coastal communities along Albay Gulf, Eastern Philippines.

To fill this literature gap, alongside problems arising from resource management and socioeconomic issues faced by coastal communities, the Rapid Participatory Resource and Socioeconomic Assessment (RPRSA) was implemented to provide baseline data of households in the fishing sector in Albay Gulf. It sought to obtain data on the socioeconomic profile of families and other information that were related to their living conditions. Specifically, it intended to generate information on socioeconomic indicators in order to: 1. Determine the percent distribution of families in relation to socioeconomic indicators; 2. Assess the economic characteristics of households in Albay Gulf; and 3. Assess the participation of fishing households on coastal resource conservation and protection.

## Materials and Methods

This study employed quantitative descriptive research method to define the socioeconomic characteristics of fishing households along Albay Gulf. Details on household profile, housing characteristics, income, expenditure, and household participation in coastal resource conservation and protection were

collected using a survey questionnaire patterned after the Participatory Coastal Resource Assessment Training Guide developed by Deguit and colleagues (2004). Secondary data, on the other hand, were obtained from the Philippine Statistics Authority (PSA) and Bureau of Fisheries and Aquatic Resources (BFAR).

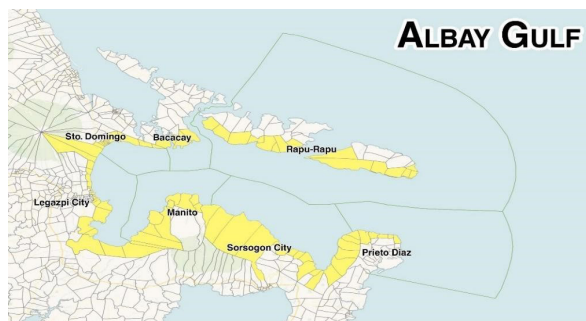
The statistical design employed a three-stage sampling. This is to create a more representative sample of the population compared to when a single sampling technique is employed. The first stage of the sampling was the selection of the Primary Sampling Unit (PSU) which consisted of all coastal barangays facing Albay Gulf. From these PSUs, the purok with the greatest number of fishers were identified. The third and final stage was the random selection of the households, which became the ultimate sampling unit. For each coastal barangay, there was a target of five households. The sample size was 401 households based on a 95% confidence level ( $Z=1.96$ ), with a margin of error of 0.004894 and a sample proportion of 0.5.

Overall, the 2019 Rapid Participatory Resource and Socioeconomic Assessment (RPRSA) covered 83 coastal barangays and 401 sample households in the seven municipalities of the Bicol Region facing Albay Gulf (Table 1). These LGUs were Legazpi City, Sto. Domingo, Bacacay, Manito, Bacon, Prieto Diaz, and Rapu-Rapu (Figure 1).

The data were mainly analyzed using descriptive statistics. Poverty statistics, on the other hand, was determined using the Head Count Ratio, which is the percentage of the households with per capita monthly income below the poverty threshold set by the PSA as of first semester of 2018.

**Table 1.** Household distribution by coastal barangays covered, Albay Gulf 2019

Province	City or Municipality	Coastal Barangays	Respondents
Sorsogon	Bacon	18	90
	Prieto Diaz	4	19
Albay	Bacacay	3	15
	Legazpi City	19	89
	Manito	12	60
	Rapu-Rapu	15	75
	Sto. Domingo	12	53
Total			401



**Figure 1.** Location map showing the coastal municipalities (in yellow) facing Albay Gulf in Albay and Sorsogon

## Results and Discussion

**Household Profile.** Establishing a household profile is vital in understanding the baseline conditions of the fishing households. Policymakers can refer to this initial set of information to assess how conditions have changed over time in the coastal communities under consideration.

### *Household Size*

The mean household size in Albay Gulf is six persons. This is relatively big compared to the 2015 national average of four household members (PSA, 2016). Of the 401 sample households, a majority (57%) had a household size between 6 to 10. In line with the findings of Etuk and colleagues (2015), increased poverty situation among households was associated with household size of five and above members. In the Philippines, fisherfolks registered the second-highest poverty incidence (26.2%) next to farmers (PSA, 2020). This means, fisherfolks belong to households with income below the official poverty thresholds. Thus, as the household size increases, the extent of poverty as well as their contribution to the whole group poverty also increases.

### *Age Structure of the Household Members*

In Albay Gulf, the households covered were composed mostly of members ages 20 and below (41%). A very young population indicates there will be more pressure on the resources in the coming years. On the other hand, receptivity to new ideas decreases as the age of the fisherfolk population increases (Muddassir *et al.*, 2019; Omobolanle, 2008). Young fishers are more likely to adopt advanced practices in fisheries compared to old fishers as the latter may not be as willing to adapt to change occupation as compared to the former who are willing to go through extensive training.

### *Composition of Household Members According to Sex*

The household surveyed were mostly composed of males (52%) compared to females (48%). This means that in the coastal communities covered, the sex ratio is close to being “balanced” and less “male-biased.” This result is closer to the national statistics on population by sex distribution. Based on the 2015 Census of Population and Housing, household population was composed of 50.6% males and 49.4% females (PSA, 2017).

### *Marital Status of Household Members*

A majority of the household members were single (57%). These were usually the members who were either too young to be part of the labor force or were still attending school. However, a significant percentage (39%) of households had married members but were still living with their parents. This means that the extended family is still common in fishing communities wherein aside from the mother, father, and their children, the spouses, as well as the sons and daughters of their children, are also living in the same household.

### *Educational Attainment of Household Members*

A significant portion of the members of the households surveyed had reached elementary level (21%) or high school level (21%). Those who graduated from elementary school comprised 18% of the total members recorded while those who graduated from high school composed 16%. It means that members of the fishing households are literate. Educated farmers are more likely to adopt the recommended fish production practices than those with less or no education (Muddassir *et al.*, 2019). In addition, those members who were able to reach at least college level (5%) or were able to graduate from college (6%) can find a more stable and higher paying job and contribute financially to their families.

### *Housing Characteristics*

Housing is important for many aspects of household well-being. The link between health and deficiencies in basic infrastructure, such as clean water and basic housing in particular, is well-established and long-standing (Howden-Chapman, 2004; Clair & Hughes, 2019). Further, as a structure and shelter, the literature review demonstrates that housing must be decent and safe (Goldstein *et al.*, 1990; Bratt, 2002).

### *Tenure Status of Housing Unit and Lot*

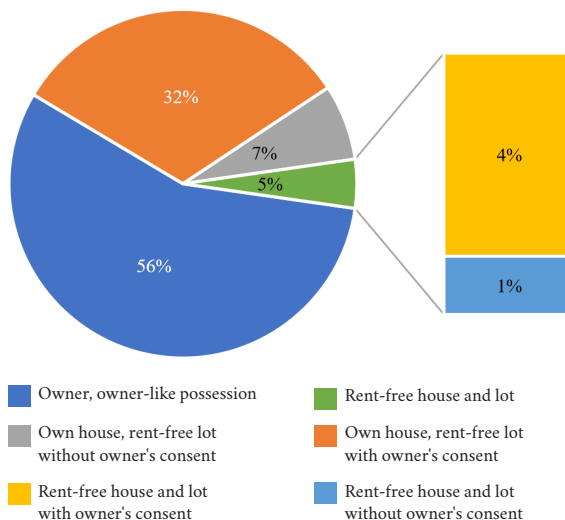
A majority of the households owned their house and lot (56%) (Figure 2). About 39% owned a house but did not own the lot. Of the 39%, about 32% did not pay rent but with owner’s consent and 7% did not pay the rent and without owner’s consent. About 5% lacked ownership of both their house and lot, but only 1% was reported without owner’s consent. This means, about 44% of the respondents had weak land tenure.

In the context of small-scale fisheries research, Fabinyi (2020) highlighted a range of challenges arising from weak land tenure, such as potential displacement

**Table 2.** Household Profile, Albay Gulf 2019

Household Characteristics	Frequency	Percentage
<b>Household Size</b>		
Number of Households	401	100
less than 5	154	38
6 to 10	229	57
10 and above	15	4
No response	3	1
Total Household Members	2067	100
<b>Age</b>		
Below 20	857	41
21-30	327	16
31-40	272	13
41-50	195	9
51-60	236	11
61 and above	124	6
No response	56	3
<b>Sex</b>		
Male	1068	52
Female	999	48
<b>Civil Status</b>		
Single	1168	57
Married	808	39
Widower	15	1
Separated	7	<1
No response	69	3
<b>Highest Educational Attainment</b>		
No formal schooling	14	1
Elementary Level	440	21
Elementary Graduate	371	18
Highschool Level	435	21
Highschool Graduate	339	16
College Level	109	5
College Graduate	114	6
Post-baccalaureate	5	<1
No response	240	12

Note: The total household members is 2067. Details may not add up to 100% due to rounding.



**Figure 2.** Tenure Status of the Housing Unit and Lot, Albay Gulf 2019

through pressure from tourism developers and limited opportunities to participate in tourism activities that use land. In Southeast Asia, foreigners and local elites reap the main benefits of tourism and beachfront property development. Fishing families and coastal communities become vulnerable to displacement (Knudsen, 2012).

### Type of Dwelling Unit

Substandard housing is a major public health issue (Krieger & Higgins, 2002). Poor housing conditions affect health and may have long-term effects on incomes, employment, and public spending (Joseph Rowntree Foundation [JRF], 2015). The literature also cites the vulnerability of the poor to climate change and extreme weather conditions due to poor housing conditions (Tran *et al.*, 2012).

In Albay Gulf, most of the households surveyed had houses made of light materials (54%), such as nipa or cogon (32%) and wood or bamboo with galvanized iron roofing (22%) (Figure 3). Only 45% of the households visited had concrete dwelling units. This means, more than half of the households covered were exposed to climate hazards, such as typhoons, extreme heat and cold, and climate change.

### Electricity

Access to electricity is high among the households situated along Albay Gulf (94%) (Figure 4). Of which, 82% owned the connection while 12% shared it with other

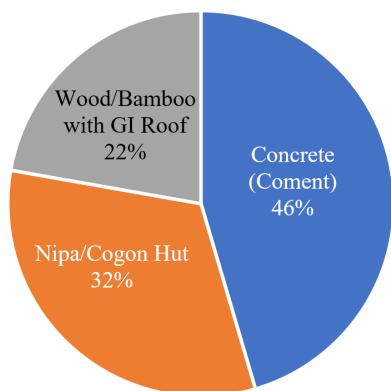


Figure 3. Type of Dwelling Unit, Albay Gulf 2019

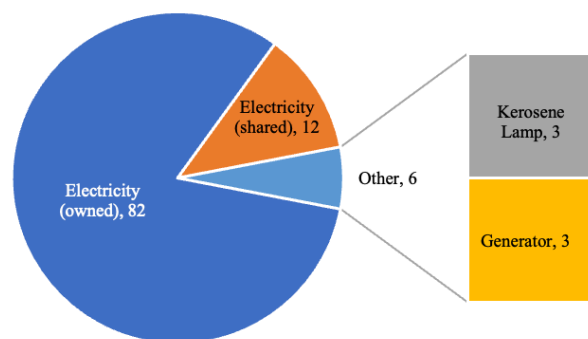


Figure 4. Lighting Facility and Source of Electricity

households. However, renewable energy sources are yet to be introduced. In the case of coastal communities, initiatives to implement solar-powered projects can help achieve energy security and improve the living conditions of fishing households arising from increased savings from fuel during night fishing and electricity costs from household consumption (Diemuodeke & Briggs, 2018; Manasseh *et al.*, 2017; Gill, 2005). Such results were achieved in Lagonoy Gulf (World Wide Fund for Nature Philippines, 2019) by installing a battery array and light-emitting diode (LED) technology and a solar charging station with handheld lamps. Improvements were recorded in terms of savings from fuel, public health, and safety.

### Water and Sanitation

A majority of the households got their drinking water from their own water faucets (38%) (Table 3). However, combining those households that had groundwater and surface water as their source of drinking water, close to half of the households surveyed

(43%) can be exposed to microorganisms causing illnesses (such as malaria, diarrhea, and worm infections) due to unsafe and untreated drinking water. The result suggests improvement of water sources by investing in piped household water connections, which is at the top of the drinking water ladder designed by the World Health Organization (WHO).

Data about the sanitation facility used by households provide indicators of health and sanitation status of families. One of its indicators is the proportion of families who used improved sanitation facilities. For this survey, improved sanitation facilities refer to water-sealed toilets and flush-type toilets.

Along Albay Gulf, a majority of the households (79%) had water-sealed toilets (Table 3). This means that proper hygiene is observed, and health risks related to waterborne diseases can be prevented. However, about 15% of the households still practiced poor sanitation in disposing human waste through overhang latrine (12%), open field (2%), and pit toilet (1%). Cases of which were

Table 3. Access to Drinking Water and Sanitation Facility, Albay Gulf 2019

Water and Sanitation	Frequency	Percentage
<b>Main Source of Drinking Water</b>		
Total	401	100
Own water faucet	151	38
Groundwater (Deep well/Artesian well)	120	30
Surface water (River, stream, lake, and other bodies of water)	51	13
Bottled water	32	8
Others	47	12
<b>Sanitation Facility</b>		
Water-sealed	315	79
Drop/overhang	50	12
Flush type	14	3
Open field	10	2
Pit toilet/ latrine	4	1
No response	8	2

Note: Details may not add up to 100% due to rounding.



reported highest in Bacon, Sorsogon (5%); Rapu-Rapu, Albay (4%); and Legazpi City (3%). With these types of toilet facilities, surface water like rivers, lakes, and the seas become polluted. This, in turn, contaminates the sources of drinking water of the community.

### Household Conveniences

Majority of the households owned a television set (80%), cellular phones (64%), and a radio set (55%) (Figure 5). This suggests that fisheries programs, laws and regulations pertaining to CRM, and disaster preparedness can be easily disseminated. On the other hand, only a few households owned productive durables, such as a refrigerator (5%), sewing machine (1%), and computer (1%). Not all households involved in the fisheries sector had their own boat for fishing (59%). The owner usually shoulders the maintenance cost of the boat. In terms of the fish catch, the fishers and boat owner adopt a 50-50

sharing scheme. This means, 50% of the fish catch should go to the owner while the remaining 50% will be divided among the fishers. This means, the more crew the fishing vessel has, the less bulky is the fisher's pocket. The net daily income was relatively bigger if the boat was owned by the fisherman and not rented. Thus, ownership of a fishing boat or vessel is more advantageous to fishers as compared to having none at all (Quiñones *et al.*, 2020).

**Economic Characteristics.** For the purpose of this study, economic characteristics included engagement in economic activities by sex, household expenditure, sources of income, household income, availment of loan, and poverty incidence of the households in Albay Gulf.

### Engagement in Economic Activities by Sex

There was a large gap in terms of specific tasks in fishing, farming, and other income-generating activities between men and women household members. Women of productive age hardly played any role in fisheries and farming activities (Figure 6). This is because mechanized and technical tasks are usually performed by male members. Activities where minimum physical activities are required are performed by female members because they are usually responsible for household tasks, which are considered as unpaid labor. This is consistent with the study of Mutia and colleagues (2020) which concluded that unequal division of reproductive roles and male-focused programs were among the major bottlenecks in women's contribution to fisheries.

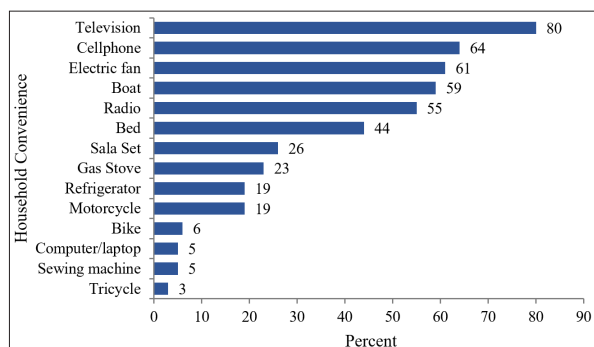


Figure 5. Type of Household Conveniences Owned, Albay Gulf 2019

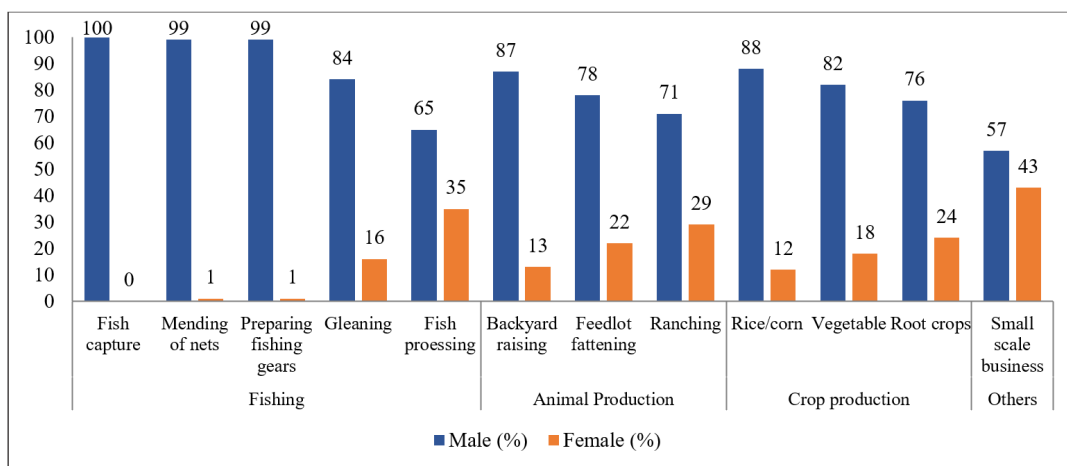


Figure 6. Families Engaged in Any Economic Activity by Sex, Albay Gulf 2019

### Household Expenditure

The average monthly expenditure of households in Albay Gulf amounted to P8,839 (Figure 7), lower than national and regional estimates of P19,916 and P16,083, respectively (PSA, 2018).

Food accounted for the highest proportion of expenditure with 42% of the total expenditure. A comparable study by Palanca-Tan (2020) in Laguna Lake recorded a similar result that food consumption (mainly rice) accounted for almost half of the fishing-dependent household's total expenditures.

With food as a top priority, households are left with a meager income to spend on other goods and services like clothing, durables, and recreation. Most households preferred to buy secondhand clothes, bags, and shoes at "ukay-ukay" where items are being sold at very cheap prices.

### Sources of Income

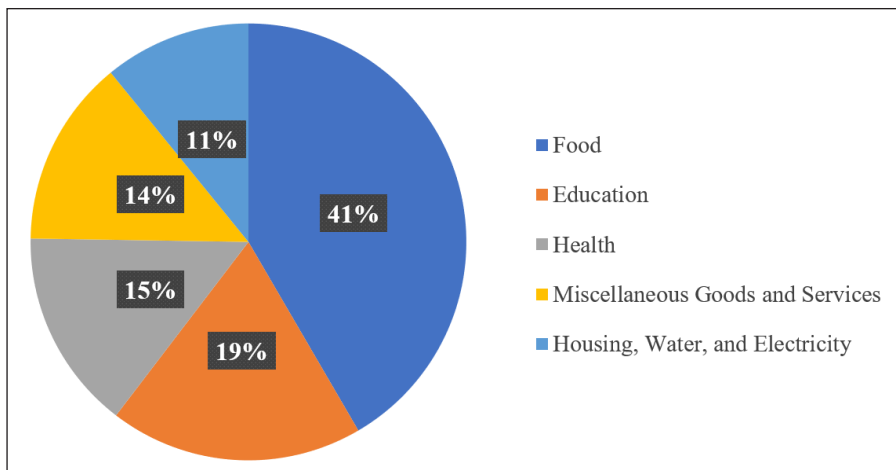
Information on sources of income is useful for determining the importance of the resources to the community. In the fishing communities, diversification in both fishery and farming strategies are paramount especially to larger households since it provides alternative sources of income and consumption of balanced protein and carbohydrate diet (Amevenku *et al.*, 2019). In Albay Gulf, it was evident that households consider fishing (94%) as a primary source of income (Table 4). In addition, households also received income in the form of wages or salaries and other sources of income not derived from work, such as 4Ps benefits (33%), remittances (4%),

pension (2%), and Unconditional Cash Transfer benefits (2%). There is, however, a small percentage of households engaged in entrepreneurial activities.

**Table 4.** Sources of Income of Households, Albay Gulf 2019

Sources of Income	Frequency	Percentage
<b>Income from fishing</b>		
Fishing	378	94
<b>Salaries and Wages</b>		
Regular employment	130	32
Laborer	53	13
<b>Entrepreneurial Activities</b>		
Animal Husbandry	35	9
Crop production	18	4
Preparation of gears	10	2
Business	22	5
Handicraft	9	2
<b>Other Sources of Income</b>		
4Ps Benefits	133	33
Remittances	15	4
Pension	8	2
UCT Benefits	7	2
Others	35	9

Note: Households may report more than one source of household income. Percentages do not add up to 100%.

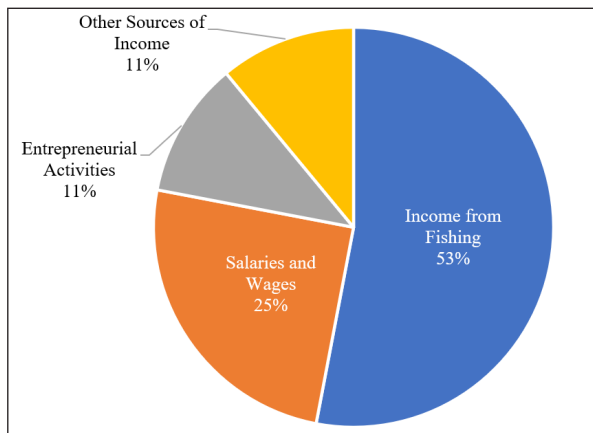


**Figure 7.** Average Household Expenditure by Major Expenditure Group, Albay Gulf 2019

### Household Income

For the purpose of this study, household income was classified into income from fishing, incomes derived from salaries and wages, income from entrepreneurial activities, and from other sources.

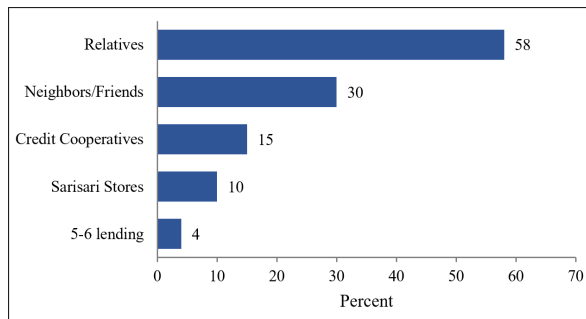
As of 2019, the survey showed that the average monthly income of households derived from fishing and other sources is P15,146 in Albay Gulf (Figure 8), lower compared to the national average of P26,083 and regional average of P19,583 (PSA, 2018). The largest percentage of the household income in Albay Gulf was derived from fishing (53%). Income from salaries and wages accounted for only 25%. More so, only a small percentage of the household income was derived from entrepreneurial activities (11%) and other sources (11%).



**Figure 8.** Average Household Income Derived by Source of Income, Albay Gulf 2019

### Availment of Loan

Investments in fishing equipment and facilities through strong credit support can lead to an increase in production and improvement in the socioeconomic condition of the fishing communities. However, only 15% had members who availed loans prior to the survey in credit cooperatives (Figure 9). The most common sources of loans were from relatives (58%) and neighbors/friends (30%). This is because formal credit providers, such as credit cooperatives, have lending procedures and requirements that usually ask borrowers' collateral. This dominance of the informal credit over the institutional credit sector was also revealed in the studies of Parappurathu and colleagues (2019) and Moahid and Maharjan (2020).



**Figure 9.** Availment of Loan by Sources, Albay Gulf 2019

### Poverty Statistics

Poverty situation in the fisherman community is well-documented in literature (Gai *et al.*, 2018; Sekarningrum & Yunita, 2019; Béné *et al.*, 2011; Rhoumah, 2016). Likewise, previous studies have emphasized on responding to coastal poverty through sustainable livelihood interventions (Chen *et al.*, 2020; Rukin *et al.*, 2018; Stacey *et al.*, 2019). In the Philippines, such coastal poverty is not new. In fact, the fisherfolk is one of the sectors with the highest recorded poverty incidence at 26% in 2018, 34% in 2015, 38% in 2012, 41% in 2009, and 41% in 2006 (PSA, 2017; PSA, 2020).

In Albay Gulf, based on the provincial poverty threshold, poverty incidence among households with incomes that are not sufficient to buy their minimum basic food and non-food needs was estimated at 42% (Table 5), higher than national estimate and regional estimate of 16% and 21%, respectively (PSA, 2019).

Based on the provincial food threshold, subsistence incidence among households with incomes that are not sufficient to buy their minimum basic food needs was estimated at 26% in Albay Gulf, higher than the national estimate of 6.2% and regional estimate of 7.2% (PSA, 2019).

### Household Awareness of CRM Regulations

In Albay Gulf, existing CRM regulations were assessed based on the perceived enforcement level of the said laws and ordinances (Table 6). Majority (60%) were aware of the regulations related to illegal use of destructive fishing practices. On the other hand, awareness of the laws and ordinances pertaining to proper waste disposal (47%); protection of rare, threatened, and endangered species (37%); illegal use of active fishing gear (31%); and closed fishing season in municipal waters (13%) were relatively lower.



**Table 5.** Household Poverty and Subsistence Incidence, Albay Gulf 2019

Income cluster <sup>a/</sup>	Food Threshold <sup>b/</sup>		Poverty Threshold <sup>c/</sup>	
	Frequency	Percentage	Frequency	Percentage
Poor	102	26	169	42
Low-income class (but not poor)	123	31	115	29
Lower middle-income	108	27	78	20
Middle middle-income	40	10	25	6
Upper middle-income	19	5	9	2
Upper-income class (but not rich)	4	1	1	0
Rich	2	1	1	0
No response	3		3	
Total	401	100	401	100

<sup>a/</sup>Author's calculations based on the provincial per capita poverty threshold for food and income poverty in 2018. <sup>a/</sup>Source: Albert, Santos, & Vizmanos (2018) b/P8, 476 for Albay and PP9, 167 for Sorsogon c/P12, 208 in Albay and P13, 114 in Sorsogon

**Table 6.** Household awareness on CRM regulations, Albay Gulf 2019

Laws/Ordinances	No. of aware	Percentage	Enforcement Level				
			Very strong	Strong	Good	Weak	None
Illegal use of destructive fishing practices	239	60%	60%	25%	9%	6%	0
Proper waste disposal	190	47%	57%	21%	12%	7%	2%
Protection of rare, threatened, and endangered species	147	37%	54%	26%	10%	8%	2%
Illegal use of active fishing gear	125	31%	47%	24%	14%	10%	5%
Closed season fishing in municipal waters	52	13%	48%	21%	19%	8%	4%

Of those who were aware, the majority believed that the enforcement level was “Very Strong” in the implementation of illegal use of destructive fishing practices (60%), proper waste disposal (57%), and protection of rare, threatened, and endangered species (54%).

It should be noted that these figures were based on perceptions of the fishing households. The results were not based on the perspectives of technical people. Nonetheless, several studies that used household perceptions to assess CRM performance emphasized how CRM as perceived by fishermen households speak a lot about trends of natural resource condition, and use and the political acceptability of the approach in the coastal areas (Pomeroy *et al.*, 1997; Israel *et al.*, 2004; Mudge, 2018).

Law enforcement requires stronger community

participation in CRM programs (Warguez *et al.*, 2019). The higher the level of awareness and knowledge of resource management the more likely it is for the key stakeholders to actively participate in the resource management activities.

In the case of Albay Gulf, the awareness on laws and ordinances imply that more government efforts should be done on dissemination of information and regulations. Lack of knowledge thereof might result in issues, such as declining fisheries productivity due to overharvesting and loss of habitats, increasing environmental damage, low levels of awareness of the real causes of environmental problems, and widespread poverty in the coastal areas (Munoz, 1997). For the success of CRM policies and programs, visibility of authorities, stricter penalties for violators, seminars, and participation of nongovernment organizations and the academe need to be present (Warguez *et al.*, 2019).

### Household Community Participation in CRM

The lack of public awareness can be attributed to the inadequate involvement of the community in CRM. In Albay Gulf, about 82% of the respondents said that no people’s organization or fisherfolk organization has been established in their barangay (Table 7). Only 19% were able to identify an existing organization in their community. In terms of project implementation, most of the organizations (29%) focused on capacity-building activities, such as training and seminars on planting mangroves and corals, fish processing, and culturing. About 24% of the respondents lack awareness of the projects implemented by their respective organization. Further, of the 51 members of the organizations, more than half or 51% lacked awareness of the status of their projects.

With the above findings, the urgent need to further educate the people on coastal resources management is just timely to help them appreciate the importance of regulating fisheries. As the primary unit of governance of the country, any policy, project, program, and activity concerning the coastal environment should emanate at the barangay level through the efforts of sea guardians (*bantay dagat*), registered fisherfolks organization, and accredited people’s organizations (POs).

### Training Attended by Households in the Past Five Years

An initiative to provide adequate training to fisherfolk is inevitably an important step of the CRM process. For fishing households, coastal resources provide the most accessible form of tradable goods that can turn into cash. With their primary skill only in fishing, there can be low occupational mobility of the fisherfolk outside the fisheries sector. Addressing these livelihood issues would mean providing adequate training on the ancillary fisheries activities, such as planting of mangroves and corals, fish processing, seagrass and seaweed production, mud crab culturing, aquaculture, and other related activities.

The results of the survey showed that the majority (73%) of the households do not have any member who attended training for the past five years (Table 8). Only a few were able to participate in fisheries-related training for the past five years like planting of mangroves/corals (8%), fish processing (8%), and seagrass and seaweed production (6%). With a small percentage of households having access to the above training, diversification of income will just become more challenging for the

fisherfolks (Brugère *et al.*, 2008; Wekke & Cahaya, 2015; Andriesse, 2019; Campbell *et al.*, 2006).

**Table 7.** Household Community Participation in CRM, Albay Gulf 2019

Community Involvement	Frequency	Percentage
<b>Existing Organization</b>		
None	327	82
Fisherfolk organization	39	10
Other organizations	35	9
<b>Membership</b>		
Yes	51	69
No	23	31
<b>Projects Implemented</b>		
Capacity building	15	29
Fishing equipment and infrastructure	13	25
Not aware	12	24
Others	11	22
<b>Status</b>		
Not Aware	26	51
Ongoing	16	31
Completed	5	10
Pending/Discontinued	4	8

**Table 8.** Training attended by any household members for the past five years, Albay Gulf 2019

Training Attended	Frequency	Percentage
None	293	73
Planting of mangroves and corals	32	8
Fish Processing	32	8
Seagrass and Seaweed Production	25	6
Others (Culturing of freshwater species/mud crabs, Aqua silviculture, etc.)	19	5

*Note: Households may report more than one training attended by any household member. Percentages do not add up to 100%.*

## Conclusion and Recommendations

The socioeconomic information of households situated in coastal barangays along Albay Gulf is an important step to address the unsustainability issues of the fisheries sector. Generally, fisherfolk face several hardships given the limited opportunities for them in terms of capital ownership, access to social services, adequate training on ancillary fisheries activities, and alternative economic employment. All of these factors partly contribute to the abject poverty scenario in coastal communities.

Given the age structure of the respondents, older fisherfolk might not be willing to change occupations. However, increased access to adequate training on ancillary sectors of fisheries like aquaculture and fish processing can help address income shocks in times of fishing bans and calamities. This kind of livelihood option is also suitable for women. Vocational training can be given to young members of the fishing households. As future breadwinners, this will help them succeed in other ventures not related to fisheries. Government support like 4Ps can help but this is inadequate to get them out of poverty. Thus, it is more beneficial to focus on programs that will diversify the income of fishing households through non-fisheries livelihood interventions.

Community-based coastal resource management is also critical in promoting the sustainable use of coastal resources.

In raising public awareness and participation, innovative information, education, and communication (IEC) campaigns can be used as tools in increasing environmental literacy and promoting environmental advocacies. To further increase community participation, active involvement of people's organizations is important in mobilizing its fisherfolk members. The 4Ps beneficiaries can also be tapped in promoting CRM as part of their Family Development Session. Also, to ensure the sustainability of CRM initiatives, memoranda of agreement signed by LGUs, NGOs, and POs in support of CRM plans should be in place.

With the baseline data provided in the paper, policymakers can use the socioeconomic information to determine the impacts of future interventions. This can be applied to policies or a program that may affect occupational structure in the community and market value before and after a policy or program is implemented.

## References

- Andriesse, E. (2019). Local differentiation in diversification challenges in eleven coastal villages in Iloilo Province, Philippines. *The European Journal of Development Research*. doi:10.1057/s41287-019-00233-3
- Albert, J.R., Santos, A. G., & Vizmanos, J.F. (2018). Defining and profiling the middle class. *Philippine Institute for Development Studies. Policy Notes No. 2018-18*.
- Amevenku, F., Asravor, R. & Kuwornu, J. (2019). Determinants of livelihood strategies of fishing households in the Volta Basin, Ghana. *Cogent Economics & Finance*, 7(1), 1-15. <https://doi.org/10.1080/23322039.2019>.
- Béné, C., & Friend, R. M. (2011). Poverty in small-scale fisheries. *Progress in Development Studies*, 11(2), 119–144. <https://doi.org/10.1177/146499341001100203>
- Bratt, R. (2002). Housing and family well-being. *Housing Studies*, 17(1), 13-26. <https://doi.org/10.1080/02673030120105857>
- Brugère, C., Holvoet, K., & Allison, E. (2008). Livelihood diversification in coastal and inland fishing communities: Misconceptions, evidence and implications for fisheries management. Working paper, Sustainable Fisheries Livelihoods Programme (SFLP).
- Bunce, L. & Pomeroy B. (2003). Socioeconomic monitoring guidelines for coastal managers in Southeast Asia: SocMonSEA. World Commission on Protected Areas and Australian Institute of Marine Science.
- Campbell, J., Whittingham, E., & Townsley, P. (2006). Responding to coastal poverty: Should we be doing things differently or doing different things? In C.T. Huong, T.P. Tuong, J.W. Gowing & B. Hardy (Eds) *Environment and Livelihoods in Coastal Tropical Zones: Managing Agriculture – Fishery – Aquaculture conflicts*. CGIAR Comprehensive Assessment
- Chen, S., De Bruyne, C., & Bollempalli, M. (2020). Blue economy: Community case studies addressing the poverty–environment nexus in ocean and coastal management. *Sustainability*, 12(11). <https://doi.org/10.3390/su12114654>
- Clair A & Hughes A.J. (2019). Housing and health: New evidence using biomarker data. *Epidemiol Community Health*, 73, 256–262. <https://doi.org/10.1136/jech-2018-211431>
- Deguit, E., Smith, R., Jatulan, W., & White, A. (2004). Participatory coastal resource assessment training guide.
- Diemuodeke, E. O. & Briggs, T. A. (2018). Policy pathways for renewable and sustainable energy utilisation in rural coastline communities in the Niger Delta zone of Nigeria. *Energy Reports*, 4, 638–644. <https://doi.org/10.1016/j.egyr.2018.10.004>

- Eenate, R.T., Diocton, R. C., & Macopia, J. L. (2013). Socioeconomic profile of the Philippine National Aquasilviculture Program (PNAP) beneficiaries in Jiabong, Samar, Philippines. *The Countryside Development Research Journal*, 1(1), 75-83.
- Etuk, E., Angba, C., & Angba, A. (2015). Determinants of poverty status of fish vendor households in lower cross river basin, Nigeria. *Journal of Economics and Sustainable Development*, 6(14).
- Fabinyi, M. (2020). The role of land tenure in livelihood transitions from fishing to tourism. *Maritime Studies*, 19, 29-39. <https://doi.org/10.1007/s40152-019-00145-2>
- FAO. (2016). Technical and socioeconomic characteristics of small-scale coastal fishing communities, and opportunities for poverty alleviation and empowerment. FAO Fisheries and Aquaculture Circular No.1111.
- Gai, A. M., Soewarni, I., & Sir, M. M. (2018). The concept of community poverty reduction in coastal area of Surabaya based on sustainable livelihood approach. *IOP Conference Series: Earth and Environmental Science*, 137, 012099. <https://doi.org/10.1088/1755-1315/137/1/012099>
- Gill, A.B. (2005). Offshore renewable energy: Ecological implications of generating electricity in the coastal zone. *Journal of Applied Ecology*, 42(4), 605-615. <https://doi.org/10.1111/j.1365-2664.2005.01060.x>
- Goldstein, G., Robert, N., & Schaefer, M. (1990). Housing, health and well-being: An international perspective. *The Journal of Sociology & Social Welfare*, 17(1).
- Howden-Chapman, P. (2004). Housing standards: A glossary of housing and health. *Epidemiol Community Health*, 58, 162-168. <https://doi.org/10.1136/jech.2003.011569>
- Israel, D. C., Adan, E. Y., Lopez, N. F., & De Castro, J. C. (2004). Household perceptions of the long-term impact of coastal resources management in Panguil Bay. PIDS Discussion Paper Series, No. 2004-02, Philippine Institute for Development Studies (PIDS).
- Joseph Rowntree Foundation [JRF]. (2015). Housing and poverty. Retrieved from <https://www.jrf.org.uk/sites/default/files/jrf/migrated/files/housing-poverty-roundup-full.pdf>
- Knudsen, M. (2012). Fishing families and cosmopolitans in conflict over land on a Philippine island. *Journal of Southeast Asian Studies*, 43, 478-499. <https://doi.org/10.1017/S0022463412000355>
- Krieger, J. & Higgins, D. L. (2002). Housing and health: Time again for public health action. *American Journal of Public Health*, 92(5), 758-768. <https://doi.org/10.2105/ajph.92.5.758>
- Manasseh, R., Sannasiraj, S., McInnes, K. L., Sundar, V., & Jalihal, P. (2017). Integration of wave energy and other marine renewable energy sources with the needs of coastal societies. *The International Journal of Ocean and Climate Systems*, 8(1), 19-36. <https://doi.org/10.1177/1759313116683962>
- Mercado, J. & Mercado, R. (2016). Analysis of socioeconomic profile of rural fishers in northern part of Surigao del Sur, Philippines. *World Journal of Fish and Marine Sciences*, 8(1), 64-67. <https://doi.org/10.5829/idosi.wjfm.2016.8.1.102169>
- Moahid, M. & Maharjan K. (2020). Factors affecting farmers' access to formal and informal credit: Evidence from rural afghanistan. *Sustainability*, 1-16. <https://doi.org/10.3390/su12031268>
- Muddassir M., Ali Noor, M., Ahmed, A., Aldosari, F., Waqas, M., Abubakar Zia, M., Mubushar, M., Zuhaibe, A., & Jalip, M. (2019). Awareness and adoption level of fish farmers regarding recommended fish farming practices in Hafizabad, Pakistan. *Journal of the Saudi Society of Agricultural Sciences*, 18, 41-48. <https://doi.org/10.1016/j.jssas.2016.12.004>
- Mudge, L. (2018). Use of community perceptions to evaluate and adapt coastal resource management practices in the Philippines. *Ocean & Coastal Management*, 163, 304-322. doi:10.1016/j.ocecoaman.2018.07.008
- Munoz, J. C. (1997) Coastal resource management in the Philippines. In: *Proceedings of the Regional Workshop on Coastal Fisheries Management Based on Southeast Asian Experiences*, Chiang Mai, Thailand, 19-22 November 1996. Samut Prakan, Thailand, Training Department, Southeast Asian Fisheries Development Center, pp. 80-85.
- Mutia, M. T., Magistrado, M., Fermaran, M. J., & Muyot, M. (2020). Gender participation in the fisheries sector of Lake Taal, Philippines. *The Philippine Journal of Fisheries*, 27(2), 157-182. <https://doi.org/10.31398/tjpf/27.2.2018A0001>
- Nieves, P., Pelea, N., Bradecina, R., Pereyra, M., Morooka, Y., Shinbo, T., & Rivero, M. C. (2009). Socioeconomic Conditions, the Status of Fisheries and Agriculture and the Adaptive Capacities of Households and Communities in San Miguel Island, Albay, Philippines in the Kuroshio Sphere of Influence. *Kuroshio Science*, 3-1, 23-32.
- Omobolanle, O.L. (2008). Analysis of extension activities on fish farmers' productivity in Southwest, Nigeria. *African Journal of Agricultural Research*, 3(6), 469-476.
- Palanca-Tan, R. (2020). Economic vulnerabilities of fishing-dependent households around Laguna Lake, Philippines. *Philippine Journal of Science*, 149 (3-a), 815-831.
- Parappurathu, S., Ramachandran, C., Baiju, K., & Xavier, A. K. (2019). Formal versus informal: Insights into the credit transactions of small-scale fishers along the south west

- coast of India. *Marine Policy*, 103, 101–112. <https://doi.org/10.1016/j.marpol.2019.02.032>
- Pauly, D. (1993). From growth to Malthusian overfishing: Stages of fisheries resources misuse. *South Pacific Commission. Traditional Marine Resource Management and Knowledge Information Bulletin*, 3: 7–14.
- Philippine Statistics Authority [PSA]. (2016). 2015 Census of Population. Retrieved from <https://psa.gov.ph/content/highlights-household-population-number-households-and-average-household-size-philippines>
- PSA. (2017). Philippine Population Surpassed the 100 Million Mark (Results from the 2015 Census of Population).
- PSA. (2017). Farmers, Fishermen and Children consistently posted the highest poverty incidence among basic sectors – PSA.
- PSA. (2018). Family Income and Expenditure Survey. Volume 1 ISHB Series No. 182.
- PSA. (2019). First Semester 2018 Official Poverty Statistics of the Philippines.
- PSA. (2020). Farmers, Fisherfolks, Individuals Residing in Rural Areas and Children Posted the Highest Poverty Incidences Among the Basic Sectors in 2018.
- PSA. (2020). Fisheries Situation Report, January to December 2020.
- Pomeroy, R.S., Pollnac, R.B., Katon, B.M. & Predo, C.D. (1997). Evaluating factors contributing to the success of community-based coastal resource management: The Central Visayas Regional Project-1, Philippines. *Ocean & Coastal Management [Ocean Coast. Manage.]*, 36(1-3), 97-120.
- Quiñones, M., Jimenez, C., Dela Rosa, H. K., Paghasian, M., Samson, J., Molina, D., & Garcia, J. (2020). Socioeconomic condition among the fisherfolks in Iligan Bay, Northern Mindanao, Philippines. *Journal of Environment and Aquatic Resources*. 5, 43-60.
- Rhoumah, A. M. O. (2016). Determinants of factors that affect poverty among coastal fishermen community in Malaysia. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 7(3), 9-12. <https://doi.org/10.9790/5933-0703020912>
- Rukin, Rahman, B., Toha, A., & Gianawati, N. D. (2018). Coastal rural community economic development as a poverty reduction efforts. *The International Journal of Social Sciences and Humanities Invention*, 5(4), 4627–4633. <https://doi.org/10.18535/ijsshi/v5i4.12>
- Sekarningrum, B. & Yunita, D. (2019). Socioeconomic conditions of coastal communities and its implications to health behaviors. *Review of Integrative Business and Economics Research*, 8(1), 195-201.
- Stacey, N., Gibson, E., Loneragan, N.R. Warren, C., Wiryawan, B., Adhuri, D., & Fitriana, R. (2019). Enhancing coastal livelihoods in Indonesia: An evaluation of recent initiatives on gender, women and sustainable livelihoods in small-scale fisheries. *Maritime Studies*, 18, 359–371. <https://doi.org/10.1007/s40152-019-00142-5>
- Stobutzki, I., Silvestre, G., & Garces, L. (2006). Key issues in coastal fisheries in South and Southeast Asia, outcomes of a regional initiative. *Fisheries Research*. 78, 109–118. <https://doi:10.1016/j.fishres.2006.02.002>
- Tran, T. A., Tran, P., & Tuan, T. H. (2012). Review of housing vulnerability: Implications for climate resilient houses. Institute for Social and Environmental Transition-International.
- Warguez, K., Luzviminda, A., Montiflor, M., & Aguinaldo, R. (2019). Willingness to Participate in Coastal Resource Management: The Case of Coastal Communities in the Municipality of Lupon, Davao Oriental, Philippines.
- Wekkea, I. & Cahayab, A. (2015). Fishermen poverty and survival strategy: Research on poor households in Bone Indonesia. *Procedia Economics and Finance*, 26, 7 – 11. [https://doi.org/10.1016/S2212-5671\(15\)00962-4](https://doi.org/10.1016/S2212-5671(15)00962-4)
- World Health Organization. The drinking water ladder. [https://www.who.int/water\\_sanitation\\_health/monitoring/water.pdf](https://www.who.int/water_sanitation_health/monitoring/water.pdf)
- World Wide Fund for Nature (WWF) Philippines. (2019). Positive Effects Felt with the Introduction of Solar Power to Fishing Communities in Lagonoy Gulf.