PROVINCIAL COMMODITY INVESTMENT PLAN

2019 - 2021

FOR

VCO

Virgin Coconut Oil

Province of Bohol

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List of Abbreviations and Acronyms

A and D	Alienable and Disposable
ACFT	Annual per Capita Food Threshold
ACPT	Annual per Capita Poverty Threshold
AES	Agro-Edaphic Suitability
AIP	Annual Investment Plan
ARMM	Autonomous Region in Muslim Mindanao
BEMO	Bohol Environment Management Office
BFAR	Bureau of Fisheries and Aquatic Resources
BOI	Board of Investments
CCA	Climate Change Adaptation
CDA	Cooperative Development Authority
CLUP	Comprehensive Land Use Plan
CPT	Commodity Prioritization Tool
CSO	Civil Society Organization
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DRRM	Disaster Risk Reduction and Management
DTI	Department of Trade and Industry
ELA	Executive Legislative Agenda
EO	Executive Order
E-VSA	Expanded Vulnerability and Suitability Assessment
FA	Farmers' Association
FMR	Farm-to-Market Road
GAP	Good Agriculture Practices
GEF	Global Environmental Facility
I-BUILD	Intensified Building-Up of Infrastructure and Logistics for Development
IEC	Information Education Campaign
IP	Indigenous People
I-PLAN	Investment for AFMP Planning at the Local and National Levels
I-REAP	Investments for Rural Enterprises and Agricultural and Fisheries Productivity
KII	Key Informant Interview
LGU	Local Government Unit
M&E	Monitoring and Evaluation
MCPI	Marine Colloids for Pilipino Integrity
MLGU	Municipal Local Government Unit
MOA	Memorandum of Agreement
MPA	Marine Protected Area
NCIP	National Commission on Indigenous Peoples
NGA	National Government Agency
NOL	No Objection Letter
NPCO	National Project Coordination Office
NSCB	National Statistical Coordination Board
OPA	Office of Provincial Agriculturist
OPV	Office of Provincial Veterinarian

PCA	Philippine Coconut Authority
PCC	Philippine Carabao Center
PCIC	Philippine Crop Insurance Corporation
PCIP	Provincial Commodity Investment Plan
PCPT	Provincial Core Planning Team
PDC	Provincial Development Council
PDPFP	Provincial Development Physical Framework Plan
PGBh	Provincial Government of Bohol
PLGU	Provincial Local Government Unit
PMIU	Provincial Program Management and Implementing Unit
PO	People's Organization
PPDO	Provincial Planning and Development Office
PRDP	Philippine Rural Development Project
PSA	Philippine Statistics Authority
RBMES	Results-Based Monitoring and Evaluation System
RPC	Rice Processing Center
RPCO	Regional Project Coordination Office
RROW	Road Right-of-Way
SEAFDEC	South East Asian Fisheries Development Center
SES	Social Environmental Safeguard
SIAP	Seaweed Industry of the Philippines
SP	Sangguniang Panlalawigan
SRC	Semi Refined Carrageenan
SSS	Social Security System
SWCF	Soil and Water Conservation Foundation
TWG	Technical Working Group
VCA	Value Chain analysis
VCO	Virgin Coconut Oil

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Introduction and Rationale

Bohol is one of the selected recipient provinces of the Philippine Rural Development Project (PRDP). It is a six-year project (2013-2019) designed to establish an inclusive and market-oriented agri-fishery sector through strategic investments in priority commodity value chains. It is a poverty reduction program that aims to improve the incomes and food security of the rural poor. Externally, it will focus on expanding market access and improving competitiveness. Through a Memorandum of Agreement, the Department of Agriculture (DA) and the Province of Bohol have come into a joint partnership in implementing the PRDP. Both the DA and the Province will partner with Local Government Units (LGUs) and the private sector in providing key infrastructure, facilities, technology, and information that will raise incomes, productivity, and competitiveness in the countryside.

One of the requirements of PRDP is the formulation of the Provincial Commodity Investment Plan (PCIP). The PCIP is a 3-year rolling plan based on the value chain analyses of the commodities conducted with strong participation of the various stakeholders in the chain. Moreover, it is a strategic plan that rationalizes the interventions within the various segments of the value chain of commodities. These interventions are significant to the province and will contribute to the national goals of the agriculture and fishery sector. The PCIP be the basis for selecting eligible interventions and sub-projects for funding PRDP's I-BUILD and I-REAP project components. However, the CIP is not only focused on the investments of PRDP but also leveraging resources from other NGAs and the private sector.

Furthermore, the PCIP reflects agreements between DA-RFOs, PLGUs with strong participation of the various stakeholders and other government agencies in the context of convergence to leverage resources in helping develop the province's agri-fishery sector. It aims to maximize the synergy among various players of the value chain (industry players and the enablers), and the CIP represents an overarching platform in expanding opportunities in the value chains. The CIP not only rallies around the value chains that are being prioritized, but generates commitment to address the identified bottlenecks of the value chain based on the results of VC analysis.

The adopted planning approach for PCIP formulation is anchored on the use of the value chain approach (VCA) to objectively identify interventions to develop or enhance priority commodities. A value chain is defined as *the full range of activities that are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final customers, and final disposal after use.*[1]It involves an analysis of the vertical and horizontal process and players that add value to the product.

To enhance the value chain approach of planning, scientific tools are used, such as the Expanded Vulnerability and Suitability Assessment (E-VSA). It is a user-based online tool available at the PRDP website that uses the VSA result as a database and is collaborated with socio-economic parameters. A map will be generated as visual presentation of municipal ranking based on the parameters used per commodity.

[1]J. Hellin and M Meijer. *Guidelines for Value Chain Analysis*, (FAO) November 2006, p. 4.

Another important tool used to identify priority commodities is the Commodity Prioritization Tool (CPT). The major criteria for this tool are: suitability, market potential, impact on the poor, and the number of beneficiaries. The identified priority commodities of the province ranked as to the results of the CPT are the following: coconut, dairy, native chicken, high-value vegetables, cassava, inland fishery, mariculture (seaweed), swine, cacao and coffee. These identified commodities that are important to agricultural development will undergo the value chain analysis and will be integrated into the PCIP.

To ensure the successful implementation of the Project, the Governor issued Executive Order No. 05, Series of 2015, creating the Provincial Core Planning Team (PCPT) that is chaired by the Provincial Agriculturist. The PCPT is tasked as the principal mechanism through which the Provincial Commodity Investment Plan (PCIP) will be prepared. The enhanced PCIP of Bohol is a 3-year strategic plan (2019-2021) that rationalizes the interventions within the various segments of the value chain of identified significant priority commodities and will contribute towards the vision of a strong and balanced agri-industrial province.

The Bohol PCIP had undergone series of consultation with various stakeholders. After the National Project Coordination Office (NPCO) issued a No Objection Letter (NOL) for the Value Chain Analysis of the priority commodities, it was presented to the Provincial Governor, the Provincial Project Management Implementing Unit (PPMIU) and to the PCPT. The PCPT started the integration of the approved commodity to the PCIP after it was presented. The planning process being participatory includes technical reviews and stakeholders' consultation with various actors along the chain from the input supplier, producer, processor and traders. All six (6) priority commodities of the province had been subjected to a Stakeholders' Consultation. The final PCIP was presented to the Provincial Development Council for approval and endorsed to the Regional Project Coordination Office (RPCO) for inclusion to the Regional Development Investment Program (RDIP) for possible funding by other agencies. The approved PCIP served as the basis for identifying eligible I-REAP and I-BUILD sub-projects. Likewise, the PLGU also used the PCIP to mobilize resources from other sources such as other National Government Agencies (NGAs), NGOs and the private sector.

Chapter I. Development Background

Agriculture is one of the economic drivers of Bohol and is the main source of livelihood of majority of the Boholanos. It provides income and livelihood to farmers and fisherfolks and their dependents. Agriculture also enables traders, processors, retailers, and other groups to, directly or indirectly, make a living. Given these facts, it is only logical that the agriculture sector needs to be fully harnessed to enhance agricultural productivity and improve the incomes and welfare of farmers and fisherfolks.

Consistent with this drive and with consciousness that agriculture is one of the main economic drivers of Bohol, the Provincial Government has been steadfast in implementing agri-based support programs and projects to achieve food sufficiency and attain economic growth through agri-industrialization. The Province of Bohol is fortunate to be selected as a one of the sites of the Philippine Rural Development Project (PRDP) that aims to develop an inclusive, market-oriented, climate-resilient agri-fishery sector by strategically investing in priority value chains. Based on suitability, market potential, impact on the poor and number of growers/ producers, identified provincial priority commodities that go through prioritization are the following: coconut, dairy, native chicken, swine, high-value vegetables, cassava, inland fishery, mariculture, cacao and coffee.

The Provincial Government also desires to develop other commodities like banana, mango, balut and other economically beneficial crops like palm oil. Fishery development in the province is also being prioritized, considering that Bohol has rich marine resources. As to livestock and poultry development, the Provincial Government has been continually responsible in improving and safeguarding the said industries with the promotion of native chicken and the ongoing research on the development of a Boholano strain of native chicken.

Agricultural Production

Crops Production

Agricultural activities in Bohol are mainly involved in the cultivation of food crops such as palay, corn, coconut, fruits (mango, banana, watermelon, calamansi, papaya and pineapple), vegetables and rootcrops, raising of livestock and fisheries. Rice is the major staple food and is utilizing a significant area of the provincial agricultural land.

Rice. This staple food is mainly produced by small farmers, with a total of 72,589 hectares area planted. The irrigated and rainfed rice area is approximately 38,613 and 33,976 hectares, respectively. The total palay production in 2017 was about 238,728 metric tons, which translates to 3.29 metric tons average yield per hectare. Rice farming serves as the primary source of subsistence and income for about 57,778 farming households.

To enhance rice productivity, the Provincial Government of Bohol has continually worked for the production of hybrid rice and other high-yielding varieties. This helps maintain Bohol's reputation as the rice basket of the Central Visayas. Along this line is the development and expansion of national irrigation systems, as well as the communal irrigation systems, that will increase the productivity and utilization of land for rice production.

Vegetables.There are two types of vegetables grown in the province, the leafy and fruit vegetables. The leafy vegetables include pechay, kangkong and green onions while the fruit

vegetables are ampalaya, eggplant, okra, squash, string beans, tomato and ginger. Some lettuce, cabbage and chayote are commonly grown in the highland areas of Duero, Jagna, Sierra Bullones, Candijay and Guindulman. The other vegetables are grown in the different lowland areas with an approximate land area of 1,764 hectares. Eggplant has the most extensive area of 398 hectares and showed the highest volume of production of 1,863 metric tons in 2017.

Coconut. Coconut is a major commercial crop in Bohol in terms of agricultural land usage with an approximate area of 35,278 hectares. Total coconut palms are estimated at 4.68 million, of which about 87% are bearing, and 13% are non-bearing. The average planting density of coconut is 132 trees per hectare. About 96% or 1,067 barangays out of 1,109 barangays in the province are with coconut areas.

Coconut is predominantly grown in all parts of the province and serves as the main source of cash for farmers and landowners. Income from coconut production supported the basic needs of most farm families, but has been in the downtrend due to fluctuating price of copra and low productivity caused by the damage inflicted by strong typhoons in the past and the lack of improved varieties and production technologies. Virgin coco oil processing has been established as value-added technologies other than that of copra processing. Although, the province is also producing other commercial crops like coffee, cacao and oil palm, it is coconut that is widely and significantly produced. The crop is still among the top outgoing commodities in the province.

Coconut production is generally increasing with production in the province reaching 163,033.84 metric tons in 2017. At the regional scale, Bohol ranks first in coconut production, sharing 38% of total regional production as based on the 2017 PSA data. Negros Oriental comes second with 34%, while Cebu with 26% share and Siquijor accounted only 2% of the regional production.

Rootcrops. In 2017, Bohol's major rootcrops posted a production of 69,793 metric tons. This is lower by 23% from the 2016 production of 89,655 metric tons. Cassava remains to be the dominant crop with a total production of 39,715 metric tons. Camote and ubi produced 7,550 metric tons and 4,900 metric tons, respectively. Gabi, on the other hand, posted 3,546.04 metric tons.

A total of 6,825.11 hectares of land have been harvested with major rootcrops in year 2017. About 56% of these areas were harvested with cassava, camote 22%, with ubi 12%, and gabi showed 10% of the harvested land.

***Fruit Crops*.** There are six (6) major fruit crops planted in the province, namely: banana, mango, papaya, pineapple, watermelon and calamansi. As of 2017, the total area planted was 9,323.78 hectares with mango having the largest area covering 5,101 hectares, about 14,186 farmers are involved in mango planting which is dominated by backyard growers. Banana comes second with 3,966.78 hectares.

In 2017, PSA report shows an overall production of selected fruits in the province has increased with an output of 79,505.97 metric tons compared to the 2016 figure of 72,291.30 metric tons. Banana is the dominant fruit in the province in terms of production volume with a total production of 57,774.80 metric tons compared to the production of mango with a total of 19,039.59 metric tons.

Livestock and Poultry Production

The major livestock and poultry commodities raised in the province include cattle, carabao, goat, hog, chicken and duck. Being a good source of milk, meat and eggs, animal protein requirement of the Boholanos is sufficiently met by our local production. Livestock and poultry raising is a good source of income as it provides alternative livelihood and entrepreneurial opportunities at the household and community levels. Despite being a large contributor to greenhouse gases, livestock and poultry wastes are also good sources of organic fertilizer and renewable energy.

Generally, production is still backyard and livestock and poultry remain to be the most convenient immediate option in critical times like hospitalization and emergencies, educational needs and immediate source of cash. Initiatives have been developed to enhance production and health management yet, more has to be done on the aspects of waste management, the provision of support pre and post-harvest facilities to meet public safety standards and product development requirements. More so, there is a need to educate our local producers, traders, livestock handlers and program implementers on the importance of value chain and to recognize the necessary interventions needed for the total development of the industry to achieve production sufficiency and expand entrepreneurial opportunities.

The province's ruminant production is centered on cattle, carabao and goat which are predominantly on the backyard scale. Although government and private sector initiatives have been pushing to upgrade existing local breeds through artificial insemination and natural breeding, the ruminant population is dominantly of native breed.

Carabao. In 2017, carabao inventory reached to 70,057 heads, sharing about 31% of the total number of ruminants in Bohol. For a 5-year period (2013-2017), the carabao population had been generally increasing. However, the said increase is notably very low with only about 6%.

At the regional scene, based on the data from the PSA, Bohol consistently ranks number one in the inventory of carabaos for the past 5 years. In 2017, the province accounted 38% of the total 183,676 carabaos in region 7 followed by Negros Oriental (35%), Cebu (27%) and Siquijor which only shared 0.51%. With the dominant share of supply in the region, the province plays a vital role in providing good quality carabaos for breeding, draft and meat for its neighboring provinces. For the past 5 years, Bohol's main out-shipment points for carabaos are the provinces of Cebu and Leyte.

Being known as silent heaters, carabaos are difficult to breed. The strong upgrading program through artificial insemination being pushed by the Provincial Government through the Office of the Provincial Veterinarian with the support of the Philippine Carabao Center and the Department of Agriculture, has contributed to the genetic upgrading and productivity of the herd.

The infusion of carabaos through dispersal and livelihood programs funded by the Provincial Government of Bohol (PGBh) and other national agencies like Department of Agriculture (DA), Department of Social Welfare and Development (DSWD), the Department of Labor and Employment (DOLE) among others, and the successful implementation of the LETS HELP Bohol Program where original farmers are able to pass on caracalves to new farmers, also contributed to its population increment.

With the increasing carabao demand for dispersal, food and agriculture support, it is apparent that Bohol should build a reliable and sustainable carabao production stream. Among the priority aspects given attention are the following: i) productivity among carabaos through the conduct of heat synchronization and flushing in support to artificial insemination services, ii) provision of drugs and biologics to support animal health program, iii) enhancing the capabilities of AI technicians and the carabao raisers particularly in heat detection, and iv) the provision of incentives to AI Technicians for every calf dropped.

A small population of upgraded carabaos, mostly crosses of American and Bulgarian Murrah Buffaloes, are used as dairy animals. Dairy farmer cooperatives/associations are being organized in the municipalities of San Miguel, Ubay, Alicia, Carmen and Mabini. Locally produced milk in the province are processed at the Philippine Carabao Center (PCC) and milk-based products are being sold at the PCC, the Dairy Boxes in ICM, Tagbilaran City and Carmen, in some school outlets and some resorts in Panglao. In a span of time, value-adding and product development made fresh milk more popular with new product formats booming like milk bars of various flavors, milk-based bread and pastries, ice cream, cheese, yogurts and even milk soaps. The establishment and operation of the milk processing plants of the National Dairy Authority (NDA) side by side with PCC in Ubay, has promoted milk and created public awareness on its availability and affordability.

Cattle. The inventory of cattle in 2017 indicated 74,236 heads showing an irregular trend for the past years but increasing towards 2017. Based on the PSA data, Bohol ranks second to Cebu contributing 27% share in the regional inventory of 275,012 heads.
Cattle herd improvement in the province is done through infusion of superior breeds and artificial insemination. The NDA also started with 100 head multiplier dairy farm in 2010 with Holstein Friesian bloodline. These dairy herds can be found in barangay Calanggaman in Ubay.

Goat. Goat production in the province has generally shown a positive trend for the past 5 years. From 2013 to 2017, goat inventory increased by 11.6%, with a goat population of 82,907 heads as of 2017 (PSA). At the regional scene, the province only ranks third to Cebu and Negros Oriental contributing only 17% of the total inventory of 500,586 heads in Region 7.

Attempts have been made by private raisers to commercialize goat production in Bohol, yet it is generally backyard. Chevon provides a special yet an expensive menu. It is not commonly sold at the local markets and seldom in the groceries and meat shops. Local goat raisers claimed that there is easy market for goats but production still needs to be given attention. Live goats are not commonly found in livestock pooling areas and local markets and its availability commands a higher price. Among the factors affecting low supply is our farmers' knowledge on goat farming and the importance of forages and pasture development, which should be given consideration in the next 5 years.

Hog. Hog population of the province as of 2017 is recorded at 312,288 heads (PSA). Predominantly on backyard scale, hog production accounted for 84% of the total population, with only 16% representing the production in commercial farms. In region 7, Bohol ranks second to Cebu contributing 31% of the regional total population of 1,012,405 heads as of 2017.

Production of hogs has reached the level of commercialization with the private sector on the lead. In fact, there are a number of commercial farms, even breeder farms that are operating in different municipalities. This affected the value of hogs from small scale backyard raisers

resulting to a cheaper/lower buying price or difficulty in marketing for a live weight over 80 kilograms.

The operation of government-operated artificial breeding centers for swine in the municipalities and in some private farms and the mobile boar for hire services, has contributed to the upgrading of existing stocks. On the other hand, native pig production is becoming popular on a "back to basics" husbandry with starter breeders distributed through dispersal projects.

Chicken. The chicken population in the province include broiler, layer and native or improved. As of 2017, PSA data shows that the total provincial chicken inventory reached 3,494,575 heads. From this population, broiler represents 33%, layer is 9% while the native or improved chickens which comprise 57% of the total inventory is generally raised at the backyard level. In region 7, Bohol ranks second to Cebu in terms of total inventory followed by Negros Oriental then Siqujor. Likewise, for broiler, layer and native chickens.

Bohol has reached the level of commercializing chicken production more particularly in broiler and layer. In fact, private farms or contract growing is evident and progresses even without government intervention. Production of layers has been assumed by a commercial hatchery owned and managed by a private company.

The increasing awareness of the consuming public on the health properties of native chicken and its palatability slowly shifted the idea from a mere production for consumption to an enterprise endeavor. This has greatly affected the demand and supply of native chicken meat. However, this provided the province the opportunity for expanded enterprise and increased production. Henceforth, the province has considered native chicken as one of its commodity champions along side with dairy.

Strong support has been given by the Provincial Government in the implementation of a Native Chicken Development Program. The provincial institutional farm in Bilar and the municipal native chicken production centers are established and operating starting year 2015, with the intention of providing breeder stocks for massive production. Municipal native chicken growers' associations were also formed to speed up production and unify animal health services particularly vaccination. The organized federation of native chicken raisers named Bohol Association of Native Chicken Growers (BONACGA) is now leveling up its operation from a mere production for consumption into the higher segment in the value chain which is commercial venture such as processing and marketing.

Fish Production

Bohol has 30 coastal municipalities including the City of Tagbilaran, 365 coastal barangays with 73 islands and islets. Three (3) major fishing grounds surround the province, namely: Bohol Sea, Cebu Strait and Danajon Bank with a total area of 27,352.5 km^2 inside and outside Central Visayas. Bohol sea has 273.3 kilometers coastline, Cebu strait has 264.8 kilometers and Danajon Bank has 301.0 kilometers.

Municipal Fisheries. The municipal waters cover an area of 624,506 hectares, with a coastal population of 480,247. It is in these areas where most fisherfolks get their catch. There are 8,952 and 11,686 motorized and non-motorized fishing boats, respectively. There are 30 types of

fishing gears commonly used in the province[2]. Total municipal fish production in the province was 14,293.17 metric tons in 2017 from 13,466.91 metric tons in the previous year.

Commercial Fisheries. Commercial fishing in the province has been observed to have an irregular trend of fish catch for the past 5 years. Total commercial fish production in the province decreased from 1,871 metric tons in 2010 to 1,226 metric tons in 2014 and slightly increased to 1,510.04 metric tons in 2017.

Aquaculture. Aquaculture includes the production of commercial species like bangus, prawn, mudcrab, seaweeds, grouper and tilapia from brackish and freshwater fishponds. Total aquaculture production of Bohol for 2017 reached 57,617.35 metric tons.

Bohol has an area of approximately 18,115 hectares suitable for seaweeds farming. The average yield is 24 metric tons fresh seaweeds per hectare per year with an average of 3 croppings yearly[3]. Some 4,142 hectares are presently producing while 4,673 hectares are potential areas for expansion for shallow seaweed farming and another 9,300 hectares for deep sea seaweed farming. Among the coastal municipalities of Bohol, Bien-Unido is considered the top seaweed growing municipality in terms of existing and potential seaweed growing.

The province of Bohol is among the top producer of seaweeds, ranking number 4 in the whole Philippines. Palawan is the top producer followed by Tawi-tawi, Sulu and Bohol. However, as of 2017 total seaweed production of Bohol reached 53,875 metric tons, decreasing by 34% from the 2016 production of 81,310 metric tons. Bohol contributes about 84% to the total seaweed production in Region VII. Seaweeds are marketed raw in the local markets and in Cebu for food consumption. Dried seaweeds are marketed either in the local buying stations or direct to Cebu from the production areas through middlemen. Buyers of dried seaweeds in Cebu are either direct exporters or processors of carrageenan.

Development Challenges

There is an apparent necessity to address certain issues that have been hindering the full development of agricultural land in Bohol. Foremost, there are still large areas of idle lands in the province, unutilized or underutilized for agriculture. Only half of the total agricultural area of the province is planted to major crops. With this level of land utilization, there is still a substantial potential for the province to enhance its agricultural productivity and harness other crops suitable for its soil and weather conditions.

Technologies to maximize the upland areas have not yet been fully accepted and practiced by farmers. There is low level of adoption and application of location specific agri-aqua technologies. Many of the rural poor are landless, or have limited farm lands, which may not be appropriate to achieve viable financial returns. These farmers still remain engaged in subsistence farming. Insufficient farm equipment, support infrastructure and production and postharvest facilities also is a challenge in the sector that needs improvement of existing farm equipment and the provision of additional farm machineries and support facilities. Development of agricultural lands has also been impeded by lack of accessibility and limited road networks that link farms to production support facilities and markets.

[2]PDPFP:2010-2015
[3] Bohol Agriculture Master Plan: 2006-2026

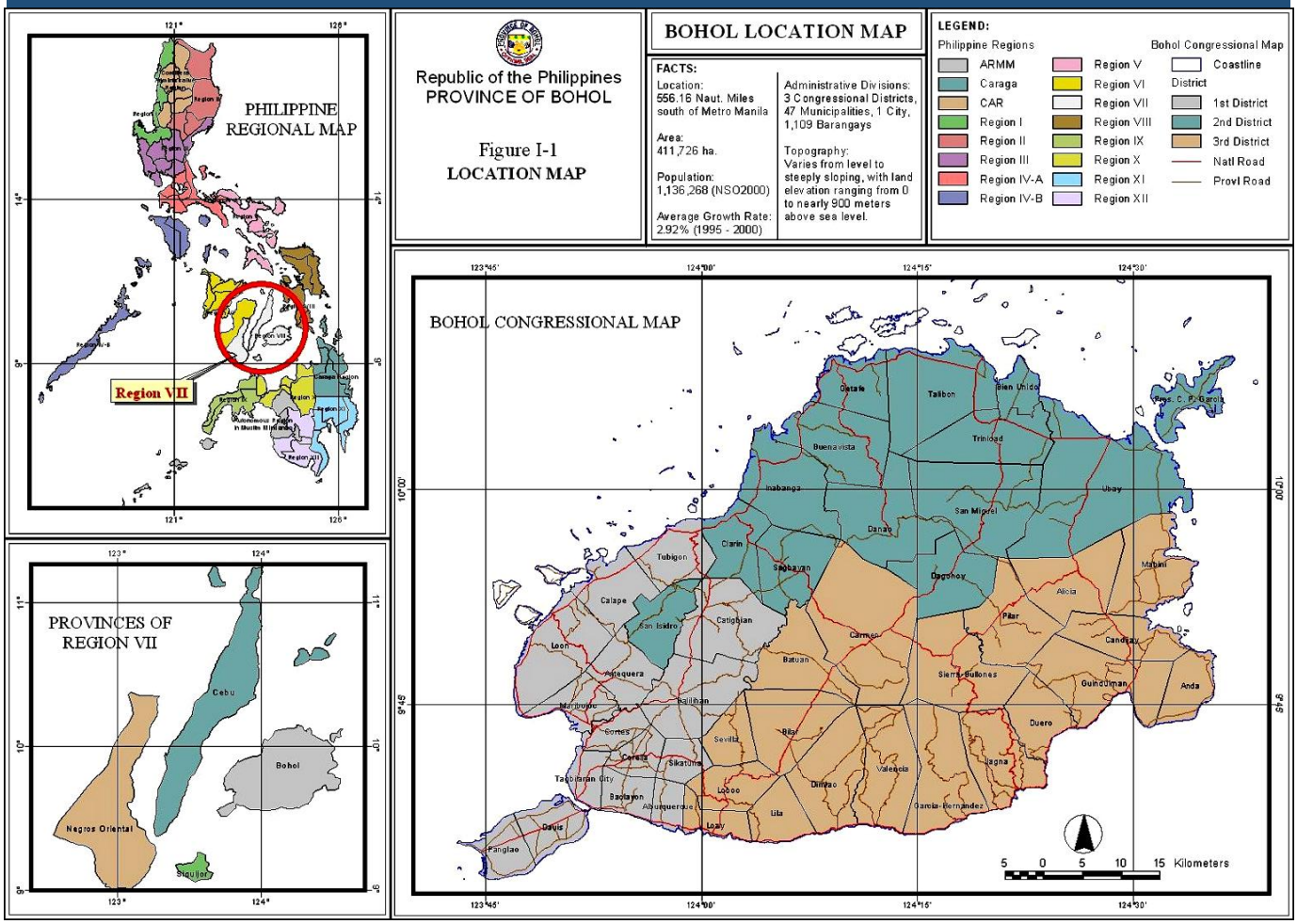
Geographic Profile

Location

Bohol is an island province of the Philippines located in the Central Visayas Region (Region 7) consisting of Bohol Mainland and 75 minor surrounding islands. It is one of four provinces in Region VII with 47 municipalities and one city, Tagbilaran City, serving as its capital. About 1,109 barangays comprise its administrative area of jurisdiction grouped into three congressional districts.

Bohol is the tenth largest island of the Philippines, with a land area of 4,117.26 square kilometers (1,589.68 sq. mi) and a coastline of about 261 kilometers (162 miles) long. To the west of Bohol is Cebu Province, to the northeast is the island province of Leyte and to the south, across the Bohol Sea is Mindanao.

Map 1. Bohol Location Map



Topography and Slope[4]

- **Topography Range**

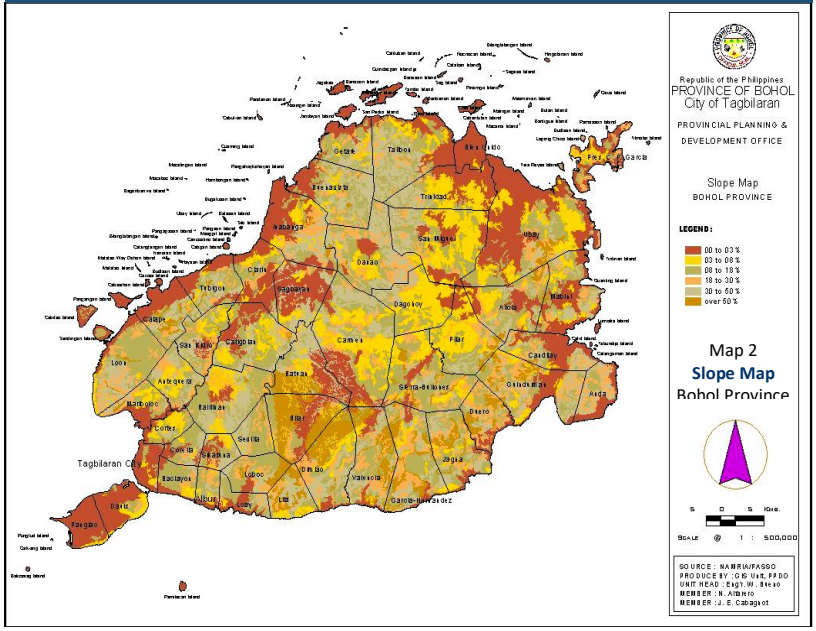
Bohol's terrain is variable from nearly flat at the plains to low rolling, moderate to very steep sloping with 5 to 50 meters high cliffs in the Sierra-Bullones limestone formation. The more rugged terrain is found in the southern part of the province although the Ubay volcanic rocks and Boctol serpentinite in the north and northeast are of moderate and rugged slopes in most of their outcrop areas. The central valley is almost rolling to moderately steep.

There are several mountain ranges found in Bohol. Two sets of them are found in the northeastern side of the mainland and located between the municipalities of Alicia and Ubay that generally trend to the north and south directions with a maximum elevation of about 404 meters above sea level. Farther east are two other mountain ranges, the Mt. Tanawan and Mt. Candungao with 460 meters and 500 meters elevation, respectively. Both are prominent landmarks rising as they do several meters above the surrounding landscape. From Mt. Tanawan going southwestward, it declines gradually in height until it finally joins southwestwardly the foothills of Calape. The main range of hills extending from Calape joins to the southwestwardly trending mountain range from the interior, runs south and out to Loon Peninsula terminating in Punta Cruz, Maribojoc. The Sierra Bullones Range follows roughly the trend of the south coast. The highest point of this range and in the entire province is Mt. Mayana in Jagna town with a height of 827 meters above sea level.

- **Slope Range**[5]

The province has six slope ranges from level to very steep. Level to nearly level sloping areas are mainly located along the coast and in the outer islands. The steep slopes are prevalent in the mountainous area, covered mainly by carbonate rocks (Wahig Limestone), volcanic extrusive and magmatic rocks (Ubay Volcanics and Jagna Andesite). *Map 2* and *Table 1* show the slope categories and the corresponding area covered in hectares.

Map 2. Slope Map, Bohol Province

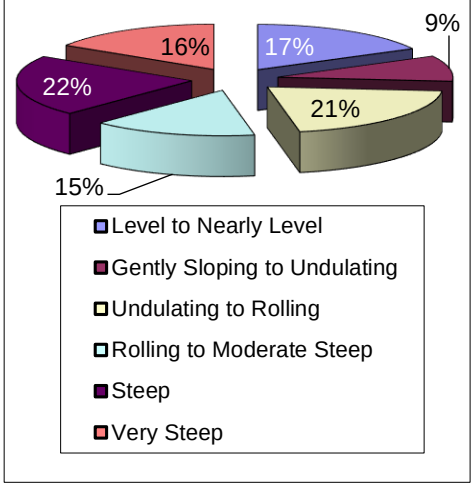


[4] Bureau of Soils and Water Management, DA, Region 7, Cebu City
[5] Philippine Land and Soil Management Atlas for Central Visayas

Table 1. Slope Classification, Bohol Province

Slope Category	Classification	Area Covered (has.)	% Distribution
0 - 3 %	Level to nearly level	71,289.00	17.31%
3 - 8 %	Gently sloping to undulating	37,519.00	9.11%
8 - 18 %	Undulating to rolling	84,902.00	20.63%
18 - 30 %	Rolling to moderately steep	62,473.00	15.17%
30 - 50 %	Steep hills& mountains	89,507.00	21.75%
50 % >	Very Steep hills	6,040.00	16.04%
Total		**411,726**	**100%**

Figure 1. Slope Classification in Bohol

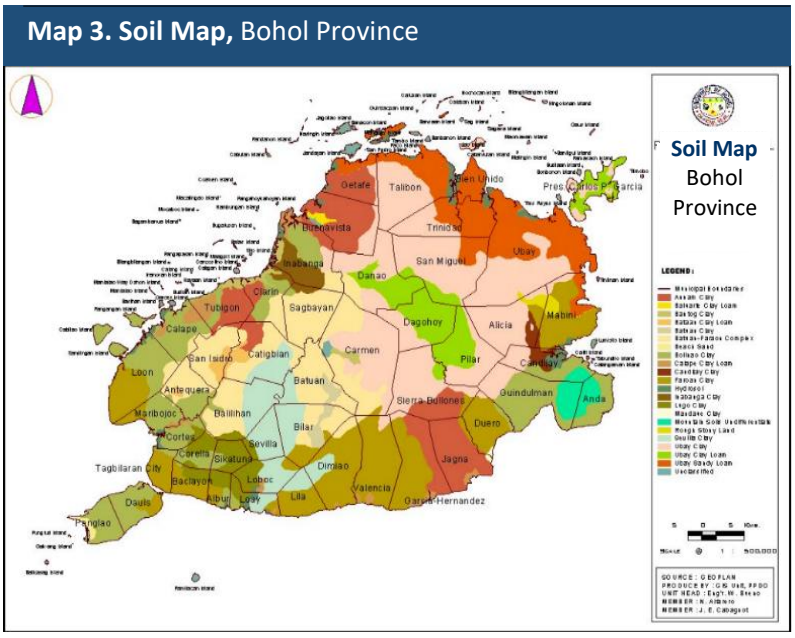


Source: ***BSWM, DA, Region7, 1992***

- **Soil Types**[6]

According to the Bureau of Soils and Water Management (BSWM Region 7, Cebu) there are 22 different types of soil that can be found in Bohol, which differ mainly in physical, chemical and morphological characteristics. The soil depth is relatively thin ranging from a minimum depth of 24 centimeters to a maximum of 30 centimeters. Most of the hills and ridges have meager to no soil cover due to fairly rapid surface drainage over most of the province's land. Clay soils with fine textures are predominant throughout the island province. The dominant soil type is Ubay Clay found in the northeastern part of Bohol constituting 19.34 percent or 79,644 hectares of the total land area of Bohol.

Map 3. Soil Map, Bohol Province



The soil derived from all rock types are generally clay and silty with sandy soil limited in some parts to the coastal area. Soils on steep to very steep side slopes (18-50%) are clay loam to clay. Gently sloping to undulating (3-8%) is clay while the narrow alluvial valleys are silty clay to clay. The soils in the province are predominantly brown having moderate to high inherent fertility *(Map 3)*.

[6] Bureau of Soils and Water Management, Department of Agriculture 1992, Region 7, Cebu City

Existing Land Use and Vegetative Cover[7]

The province of Bohol has five major land uses, i.e., agricultural land, grassland/shrubland, woodland, wetland and miscellaneous land that includes built-up areas, reservoirs and mine sites *(Map 4)*. Almost one-half of the province's total land area is covered by grassland/shrubland, while one-third of its total area is utilized for agricultural activities. About 67% of Bohol's land is used for agriculture while forestland occupies 25% of the province's total land area.

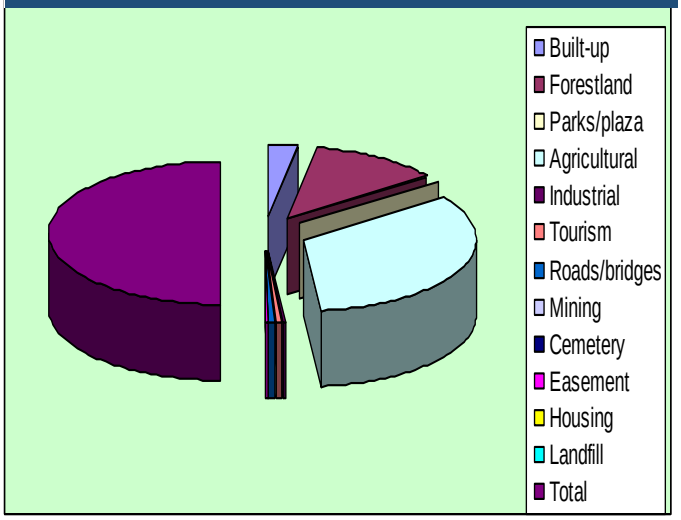
The province has a larger coverage of woodland (10.69%) compared to Cebu and some other provinces in the region. Wetland constitutes 4.92%, which includes mangrove, nipa, beach sands and fishponds while built-up areas comprise 10.22%.[8]

Table 2. Existing Land Use Distribution in Bohol

Land Use Category	Area	Percent
Built-up	21,882	5.32%
Forestland	101,271	24.61%
Parks/plaza	196	0.05%
Agricultural	273,950	66.56%
Industrial	2,672	0.65%
Tourism	3,663	0.89%
Roads/bridges	4,612	1.12%
Mining	1,138	0.28%
Cemetery	115	0.03%
Easement	1,916	0.47%
Housing	69	0.02%
Landfill	102	0.02%
Total	**411,586**	**100.00%**

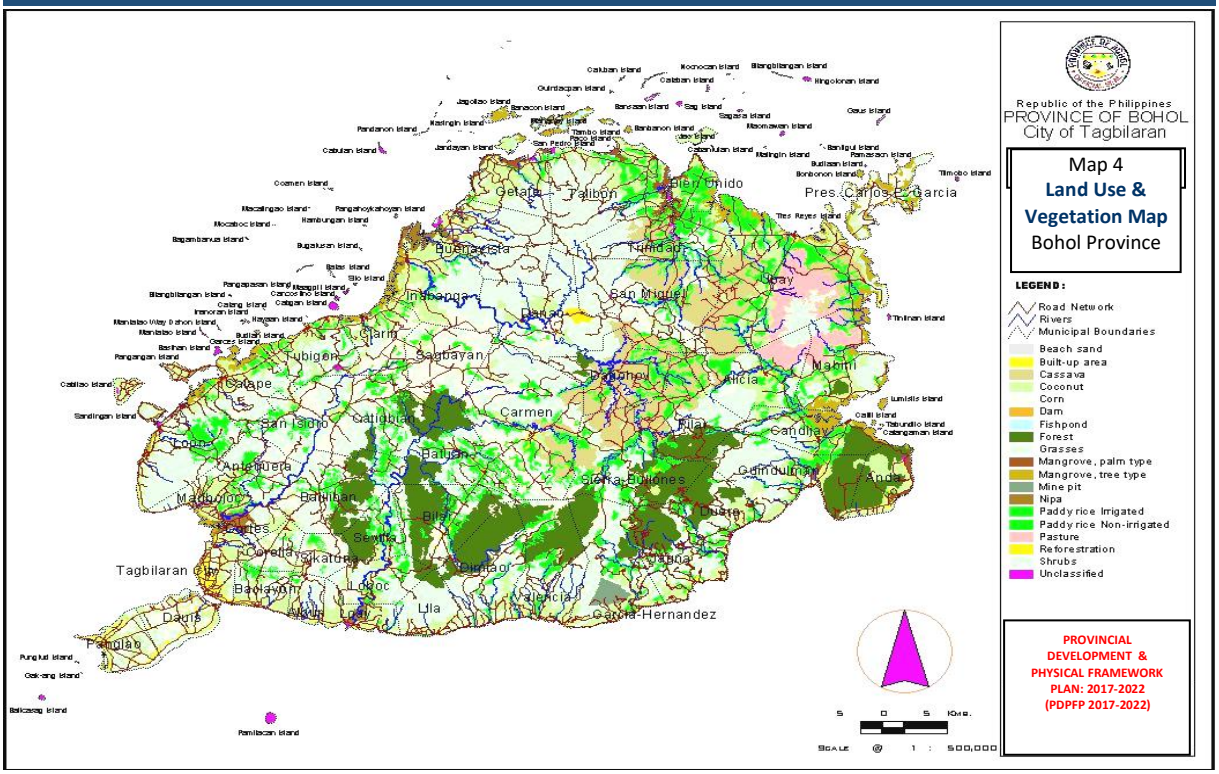
Source: ***Approved Municipal/ City Land Use Plan***

Figure 2. Present Land Use & Vegetation Cover, Bohol Province



[7] Bohol Ecological Profile of DENR, 1992
[8] Bohol Ecological Profile, DENR 1992

Map 4. Land Use and Vegetation Map, Bohol



Mangrove forests play a very vital role in shaping the ecology and economy of the Boholanos. Ecologically, mangroves are among the most productive coastal resources of Bohol as they serve not only as feeding, breeding and nursery grounds for many aquatic and terrestrial animals, but also as a protective structure against destructive waves and currents along the shoreline. Bohol has the biggest mangrove area in Central Visayas at 16,287.42 hectares. The biggest mangrove stands are located in Getafe, Talibon, Ubay, Pres. Garcia, Mabini and Candijay municipalities. The province also has the most diverse mangrove ecosystem in the Philippines with some 32 identified species. The largest and most diverse mangrove area is found in Cogtong Bay, which is bounded by Mabini and Candijay towns and covers an area of 2,200 hectares[9]. The most popular man-made mangrove forest in Bohol is around Banacon Island in Getafe town comprising an area of 1,750 hectares.

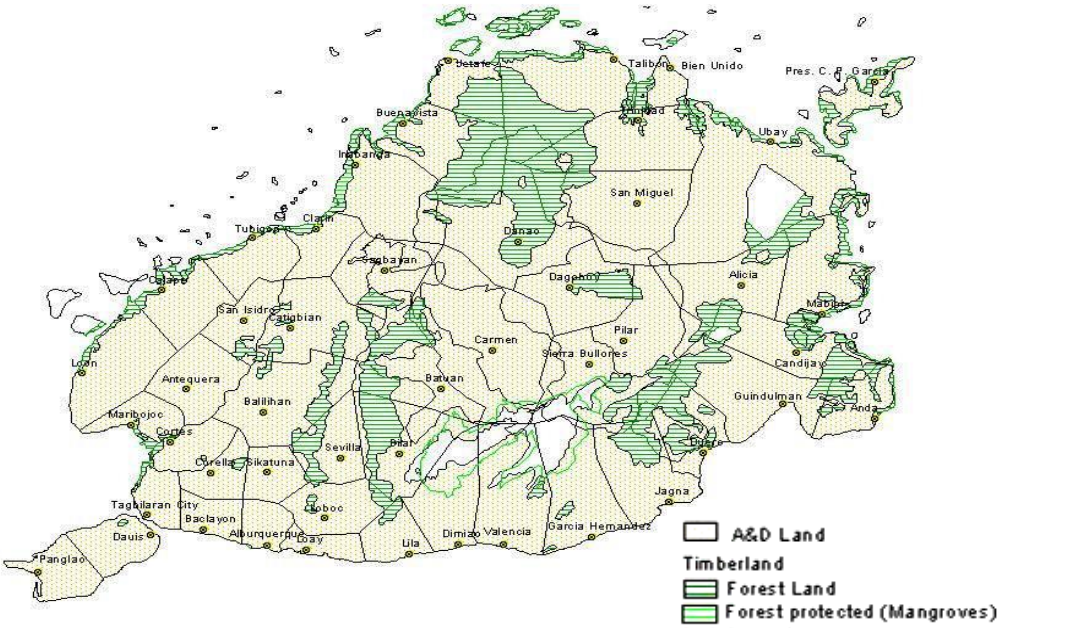
Land Classification[10]

The total land area of Bohol Province is approximately 411,726 hectares representing 43% of the region's land area and 1.4% of the total land area of the Philippines. About 75% are classified as alienable and disposable (A & D) land. The total area devoted to agricultural use is 273,950 hectares or 66 percent of the total land area of the province. Of the total agricultural area, 54 percent or 148,673 hectares is utilized for the planting of major crops such as rice, corn, coconut and rootcrops. The estimated land area as potential irrigable areas in the province is 40,800 hectares. The existing irrigable and non-irrigable rice lands are classified as priority focus for agricultural production.

[9] Bohol Coastal Environment Profile of 2002
[10] Department of Environment and Natural Resources (DENR), 2000

Bohol's public forestland or timberland occupies an area of about 101,271 hectares or roughly 25 % of its total land area. Almost 15% or 75,766 hectares of the province's land area is under protection through NIPAS System and are classified as environmentally constrained and critical areas.

Map 5. Land Classification Map, Bohol Province



Source: ***DENR Cebu 2000, digital files, layout*** *edited*

Physical Resources

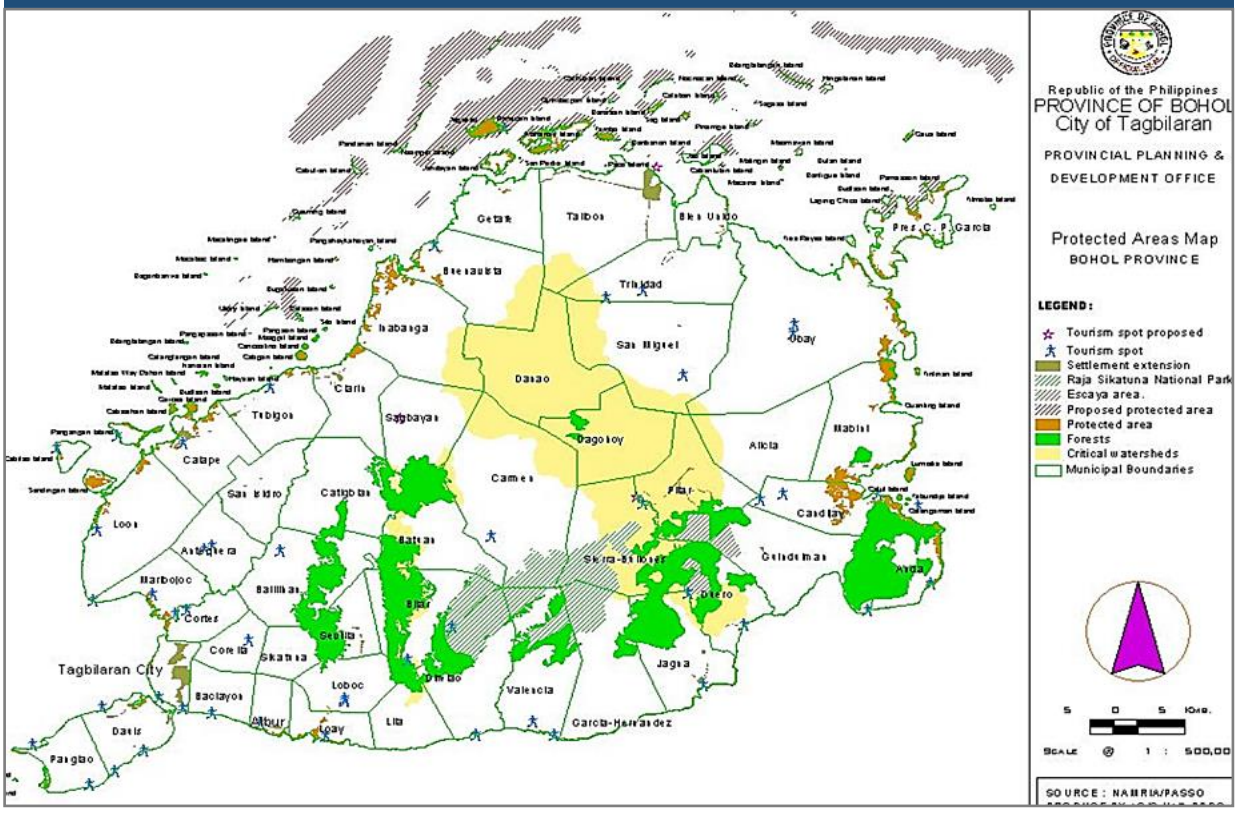
Bohol is endowed with a rich biodiversity and natural resources that play an essential role in guiding its future development for agriculture, industry, tourism, settlements, culture and infrastructure in both the medium and long-term time frame. It has a high diversity of flora and fauna found in the different ecosystems of the island such as its forests, reefs, farmlands, in zones along creeks and rivers, caves and marine areas. The quality of life in any given area is extremely dependent on the vibrant condition of these ecosystems and biological resources.

Bohol has a total land area of 411,726 hectares with 654 kilometers of coastline and 6,245 square kilometers of municipal waters covering its major islands and islets. The province is within four major resource boundaries, i.e., upland/forestry, lowland/agriculture, coastal/marine and water boundaries.

Bohol's water supply system for domestic, agricultural and industrial uses is mainly based on 2,224 springs, 59 rivers and 200 creeks. There are 22 rivers basins/watersheds that are valuable sources of water for drinking and irrigation. Surface water from rivers and streams in these basins are impounded and distributed for irrigation, electric generation, and industrial use as well as for domestic use.

Surface water in Bohol feeds its watersheds. There are 3 major watersheds in the province that have been declared as protected areas under the NIPAS. The largest reserve is the Wahig-Inabanga Watershed covering 16 municipalities with an aggregated area of 14,000 hectares. The second largest, and first to be proclaimed as a watershed forest reserve in Bohol, is the Loboc Watershed with an area of 10,450 hectares, part of which is inside the Rajah Sikatuna Protected Landscape. The third is the Duero Watershed (that covers an area of 3,620 hectares. The map below shows the location of these watersheds.

Map 6. Protected Areas Map, Bohol Province



Bohol's public forestland or timberland occupies an area of about 101,271 hectares or roughly 25 % of its total land area. Almost 15% or 75,766 hectares of the province's land area is under protection through NIPAS System and are classified as environmentally constrained and critical areas.

In terms of biodiversity assets, Bohol has a high biodiversity level of plant species categorized as: upland, mangrove, coastal areas, cave entrances, cultivated cropland and intensively used lands. Several plant species noted to be abundant before are already extinct, others are becoming rare.

The Province has the biggest mangrove forest in Southeast Asia which is located in Banacon, Getafe. There are about 1,200 species of crabs and shrimps with over 6,000 mollusks species found in 15,000 hectares of Baclayon, Dauis and Panglao (Bohol Marine Triangle). Bohol has one of the the six (6) world-renowned Double Barrier Reefs-the Danajon Double Barrier Reef, covering 13 municipalities. The province has a total of 1,920 hectares of coral reefs and its coastal ecosystem provides the major source of animal protein for the populace.

Infrastructure [11]

In 2018, Bohol's total road length is 6,146.42 kilometers. Of these roads, 12% is classified as national road and 14% provincial roads. The city road only accounts 1% while municipal road 5%. Barangay roads have the longest stretch, accounting 68% of road classification. In terms of type of pavement, most of the province's roads are still gravel, which may be attributed to local roads. Concrete roads account 28%, and continue to increase in length as both national and local governments sustain their projects for road concreting. Asphalt road, on the other hand, shared 3% of the total road length. Meanwhile, 19% of the province road remains to be earth roads, which are mostly classified as barangay roads.

As to bridges, there are 8,240.60 linear meters of bridges within the road network in the province, 61% of this total length is concrete. Steel bridge accounts 27% while bailey 8%. There are still timber bridges in the province, which shared a total length of 4%.

Majority of the bridges in the province are under the jurisdiction of the national government, which accounts to 58%. The Provincial Government is maintaining 1,565 linear meters, 19% of these bridges. The rest of the bridges are managed and maintained by the city/ municipal and barangay local governments.

Figure 3. Road Classification
Province of Bohol: CY 2018

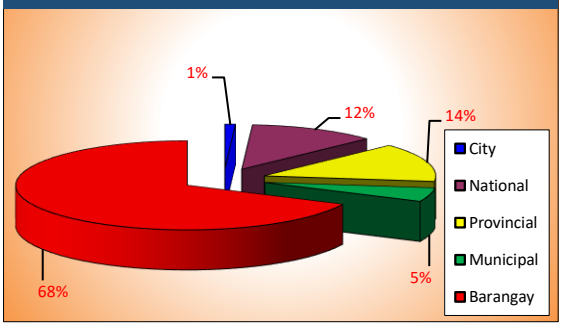


Figure 4. Type of Pavement
Province of Bohol: CY 2018

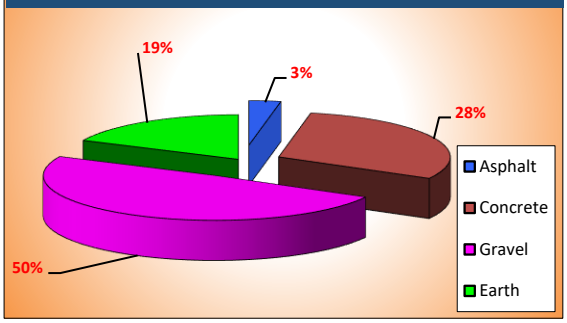
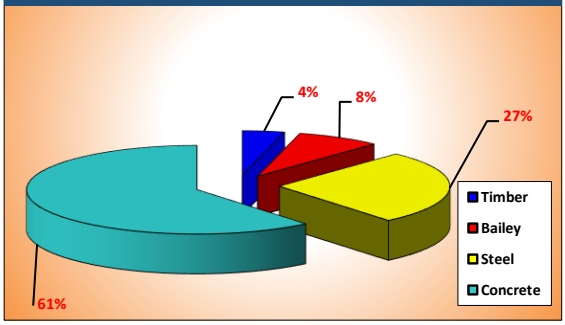


Figure 5. Bridge Classification
Province of Bohol: CY 2018



There are 16 **ports** in Bohol, serving as the gateways of people and goods. Of the 16 ports, there is only 1 baseport, located in Tagbilaran City. There are 4 terminal ports, 9 outports and 2 private ports located in several coastal municipalities. The Port of Tagbilaran is considered a major port of entry while the Port of Tubigon, the busiest among the terminal ports, offer more than ten daily round trips plying the Cebu-Bohol route. The Port of Jagna offers services that ply between Bohol

Figure 6. Shipcalls, 2013-2018
Province of Bohol

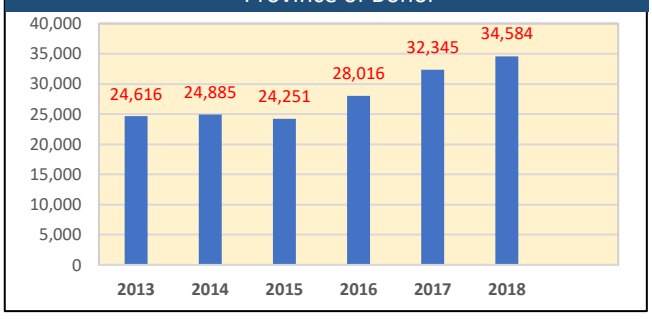
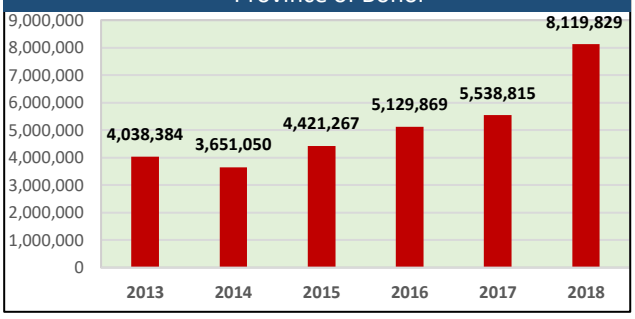


Figure 7. Passenger Traffic, 2013-2018
Province of Bohol

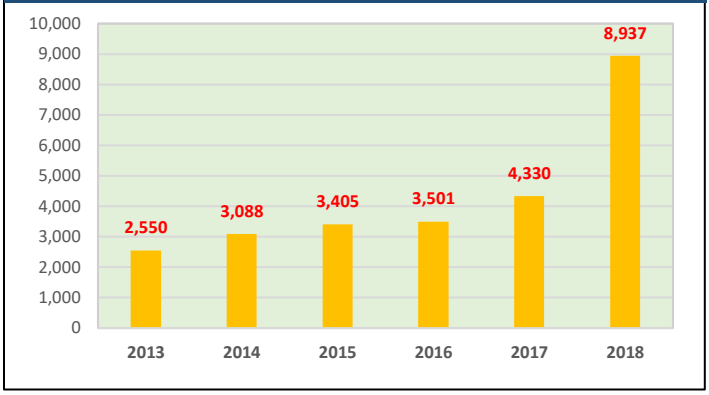


[11] Department of Public Works and Highways (DPWH)

to Cagayan, Nasipit and Camiguin with roll-on, roll-off route. Shipcalls in these ports have been erratic from 2013 to 2018, with highest recorded in 2018 with 34,584. Passenger traffic has improved in 2018 with a total of 8.11 million passengers recorded being served by the ports.

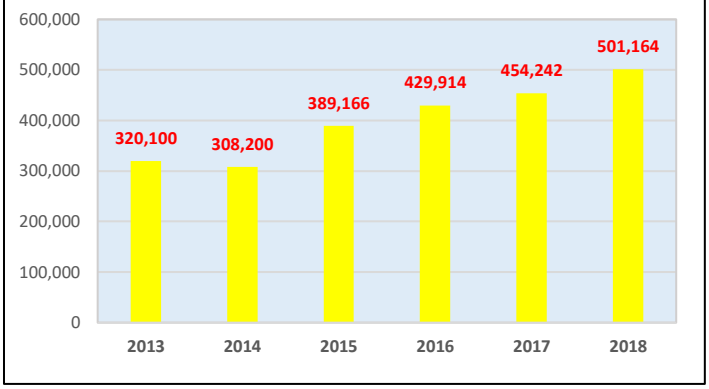
For **air travel**, the Province of Bohol is being served by only one international airport located in Panglao, Bohol. The number of flights in the province has increased from 2013 to 2018 brought about by airline competition, level of demand for air travel, changes in aviation regulations and the international flights. For the said period, the greatest number of incoming flights were recorded in 2018 with 8,937 flights due to operation of the New Bohol Panglao International Airport.

Figure 8. Incoming Flights, 2013-2018
Province of Bohol



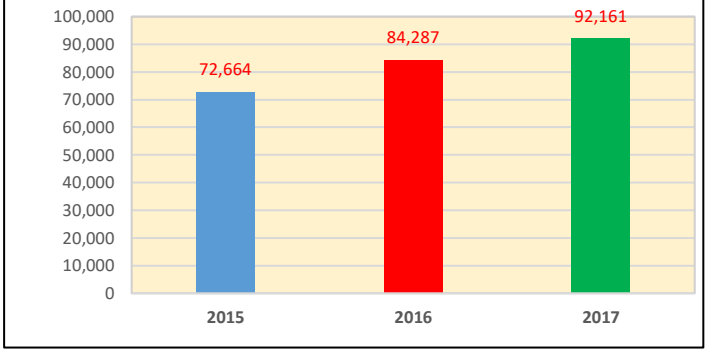
In terms of passenger traffic, the number of incoming passengers is increasing from 2015 to 2018. There was a downtrend recorded that started in 2013 up to 2014. While in 2018, the number of passengers coming in through Tagbilaran City Airport has improved, posting a total of 501,164 passengers.

Figure 9. Incoming Passengers, 2013-2018
Province of Bohol



For **land transportation**, there was an increasing number of registered vehicles in the province for the period 2015-2017. Such increase posted an average of 11.9% for the last 2 years. This is due to the improvement of payment capacities of Boholanos as well as affordable financing schemes offered by car dealerships and banks.

Figure 10. Number of Registered Vehicles, 2015-2017
Province of Bohol



In the area of **energy**, majority of the power source of Bohol is coming from the Leyte-Bohol Power Interconnection thru submarine cables with power sources from the Geothermal Plant of Leyte and other sources from Cebu province. Bohol has three (3) Hydropower plants with total capacity of only 3.9 MW. A diesel plant is located in Tagbilaran City with capacity of 16.2 MW.

In 2018, the Dependable Capability Profile for Bohol is 100.10 MW, forecasted demand of 70 MW and net reserve of 40.7 MW. All municipalities in the province are already provided with electricity and 100% of all barangays are also energized as covered by three (3) distribution utilities: Bohol Light Company Inc., Bohol Electric Cooperative I and the Bohol Electric Cooperative II.

The province's projected base demand in 2018 is estimated to reach 67 MW and this is expected to increase to 83 MW in 2024 and further to 132 MW in 2045.

Projected peak demand, on the other hand, is estimated to reach 82 MW in 2018. Anticipating the growth of local economy, demand is projected to reach 100MW in year 2024.

The government, with the participation of the private sector and key players in the industry is pushing for the development of new power sources in the province, most preferably thru renewable energy, as well as building facilities for a second transmission line linking Bohol and Cebu Province. These initiatives are being pursued to ensure the reliable, affordable and sufficient power supply to support the continuing socio-economic growth of the province.

Table 3. List of Power Plants, Bohol Province

BOHOL PLANTS	**INSTALLED CAPACITY** *(MW)*	**CAPABILITY** *(MW)*
SIPC *(Formerly BDPP)* *Dampas, Tagbilaran City*	**22.0**	**16.2**
Santa Clara Corporation *(Formerly LHEP)* *Tontonan, Loboc, Bohol*	**1.2**	**0.9**
BOHECO I-Sevilla Mini-Hydro Corp. *(BSMHC)* Ewon, Sevilla, Bohol	**2.5**	**1.2**
Janopol Hydroelectric Plant *(JHEP)* *Janopol, Balilihan, Bohol*	**5.0**	**1.8**
Sub-Total	**30.7**	**20.1**
Leyte-Bohol Interconnection (LBI)	**80**	**80**
TOTAL	**110.7**	**100.1**
Forecasted Demand	**70**	
Net Reserved	**40.70**	

Socio Economic and Demographic Profile

Population

Based on the latest 2015 Census on Population, Bohol's population reached 1.313 Million, showing a 0.87% average annual increase from the 2010 population count. Such annual growth rate is higher than the Central Visayas' growth rate of negative 2.25%. Bohol's population growth, however, is lower than that of the 1.70% national annual growth rate. With this growth, estimated population of the province in 2018 is pegged at 1.348 Million and will further increase to 1.432 Million in 2025.

Among the 48 localities, Tagbilaran City has the highest population with 105,051, followed by municipalities of Ubay, Talibon, Carmen, Tubigon, Inabanga, Dauis, Loon, Jagna, and Panglao. Sikatuna is the least populated municipality with only 6,726 population.

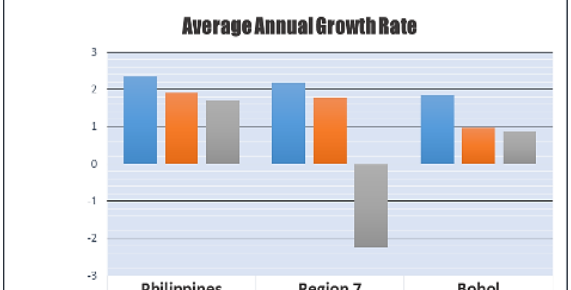
While population of Bohol has steadily increased, the pace of increase, however, slowed down from 1.85% average annual increase (1990-2000) to 0.97% (2000-2010) and further to 0.87% (2010-2015).

The municipality of Panglao has the highest growth rate in the Province (3.01%). Among the top 10 localities with high growth rates include Dauis, Jetafe, Sagbayan, Cortes, Trinidad, Baclayon, Corella, Talibon, and Tagbilaran City. The municipalities with negative growth rates include Dimiao, San Isidro, Mabini, Anda, Loboc, Valencia, Danao, and Catigbian.

BASIC FACTS OF BOHOL PROVINCE

Population : 1.255 Million (2010)
1.313 Million (2015)
1.324 Million (2016 Projection)
Income Class: 1st Class Province
Land Area : 411,726 hectares (411.726 Km2)
Pop. Growth Rate : 0.87% (2010-2015)
No. of Household : 261,408 (2010)
Average HH Size: 4.8 (2010)
Pop. Density : 322 persons/ Km2 (2016)
Administrative Units
: 1 City; 47 Municipalities
: 1,109 Barangays
: 3 Congressional Districts
Coastline: 654 kilometers of coastline
Municipal waters : 6,245 square kms
Coastal barangays = 304
No. of islets = 72 islets

Figure 11. Average Annual Growth Rate



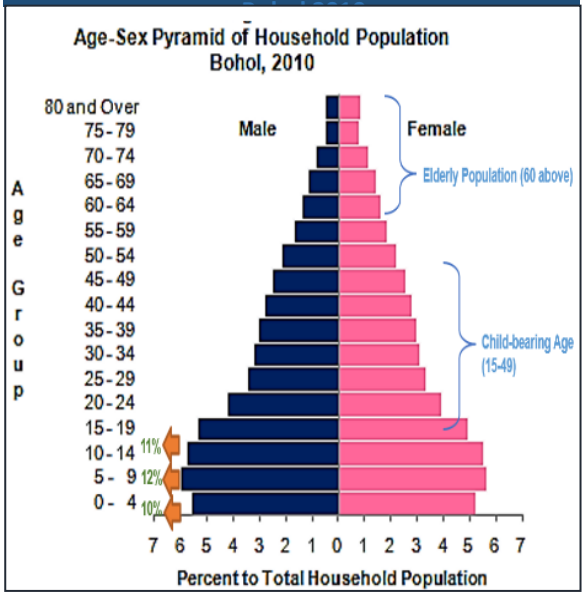
	Philippines	Region 7	Bohol
1990-2000	2.34	2.19	1.85
2000-2010	1.9	1.77	0.97
2010-2015	1.7	-2.25	0.87

Source: ***National Census and Statistics Office (NCSO)***

Based on the 2010 Census, the population structure of Bohol shows bigger group of younger people (with 34% belonging to age group under 15 years old). Female reproductive Age (Child-bearing age) comprised 23%. Males outnumbered females in the 0-54 years old. Females outlived the males in the older age groups. Those aging 60 and over comprised 10% of Bohol's Population. During such Census, it was established that the median age is 23.7 or 24 years (meaning half of the population was younger than 24 years). This is higher than the median age of 22 years in year 2000.

Bohol's population density is 315 persons per sq. km in 2015, which is higher compared to the 305 persons per sq. km in 2010. In 1990, the province's population density was only 230 persons per sq. km. Most of the densely populated areas in the province are found along the coast, concentrated along the north to northeastern part of Bohol. Among the top 10 most densely populated areas in the province include Tagbilaran City (3432/km2), Dauis (1065/km2), Tubigon, Panglao, Baclayon, Bien Unido, Loay, Pilar, Mabini and Calape. On the other hand, the least densely populated areas include Balilihan (119/km2), Bilar, Batuan, Sevilla, Antequera, Danao, Dimiao, Carmen, Loboc and Duero.

Figure 12. Age-Sex Pyramid of Household Population

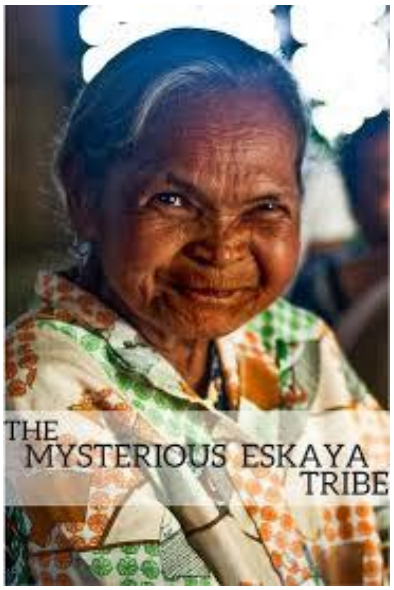


Source: ***National Census and Statistics Office (NCSO)***

Bohol's Indigenous Peoples (IP)

- **Eskaya Tribe**

The Eskaya is an indigenous tribe found in the hinterlands of the towns of Duero, Guindulman, Pilar and Sierra Bullones, in Bohol's southeast interior. They are a gentle community of about 4,000 people hardy peasants. Likewise known as the "Visayan-Eskaya", the community is only found in the island province of Bohol. They have a unique cultural heritage, use a distinct language and literature, and have traditional practices that dates way back to pre-Spanish times. The Eskaya people have their own language quite unlike the local Boholano or Cebu dialects, a system of writing, and an intrinsic written literature. While their whole week is devoted to tilling and communal forms, Sundays are set aside for Eskaya classes. Young and old alike learn the Eskaya ways in an attempt to relive and revive the almost forgotten Eskaya legacy.



The first settlement of this tribe is at Biabas, Guindulman, established in the early 20th century by one Mariano Datahan who died in 1949. A second settlement was established in Taytay, in the municipality of Duero in the year 1951 founded by Fabian Baja under Datahan's instructions. Eventually, the group spread to nearby Barangays of Canta-ub, Lundag, Tambongan, Cadapdapan and Abihilan.

The group was recognized and the community awarded a Certificate of Ancestral Domain Claim (CADC) in 1996 by President Fidel V. Ramos. CADC No. R7-CADC-14 was deemed as an ancestral domain consisting of 3,173 hectares of land in Taytay (Duero), Biabas (Guindulman), Lundag (Pilar), Canta-ub (Sierra-Bullones), and Cadapdapan (Candijay).

Legally, the Eskaya are now classified as an indigenous group under Republic Act No. 8371 entitled "The Indigenous People's Rights Act of 1997". No official census has yet been made of the group but a report in 1991 mentioned 130 Eskaya families living in Bohol.

- **Ati**

The Ati community in the Municipality of Loay, Bohol consists of about 200 people with an average family size of 5. Some of them settled along the shorelines of Loay, Bohol which is about 0.30 kilometers from the national highway. Their primary sources of income are fishing, hunting and selling herbal plants and medicines. Most head of families go fishing while mothers with their children sell herbal medicines.

The Atis are believed to have originally come from Panay Island. They are from the Negrito ethnic group in Panay, located in the Visayas Islands of Cebu, Bohol, Siquijor, Leyte, Samar, Masbate, Negros and Guimaras. They are genetically-related to other Negrito ethnic groups in the Philippines such as the Aeta of Luzon, the Batak of Palawan, and the Mamanwa of Mindanao.

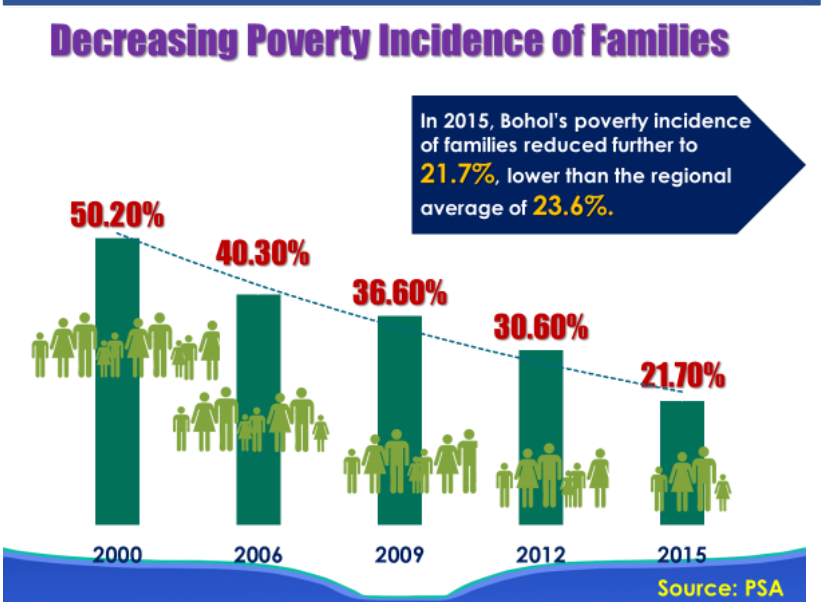
- **Badjao**

The Badjaos are an indigenous ethnic group of Malaysia and the southern Philippines. In Bohol, they are found largely in Brgy. Totolan, a coastal barangay at the northern part of Dauis, 1.5 kilometers away from the City. This cultural community migrated to this barangay during the tumultuous years in Mindanao in the 70's and have since then found a haven in the shorelines of said Municipality. Since then, this cultural group of Badjaos had established a community in said area.

The Badjaos are what are considered as sea gypsies. The Bajaos have been a nomadic, seafaring people, living off the sea by trading and subsistence fishing. They generally live in the sea using "bankas" as houses if not on stilt houses along the seashore. Their primary source of income is deep sea fishing. At present, there are 78 families in the community and a population of 545 people.

Poverty Situation

Figure 13. Poverty Incidence of Families, 2000-2015
Province of Bohol



The reduction, if not the elimination, of poverty continues to be a challenge in Bohol with a number of its families still considered as poor. However, Bohol's Poverty Incidence as well as its Subsistence Incidence[12] among families has been steadily decreasing since 2006. From 40.3 percent in 2006, poverty incidence among families lowered to 30.6 percent in 2012, then to 21.7 percent in 2015 or a decrease of about 20 percent over a period of nine years.[13] This translates to a total of 60,279 poor families in 2015 from 97,368 poor families in 2006. In the same period, the proportion of Boholanos in extreme poverty whose incomes are not sufficient to meet basic food needs registered at 7.2 percent numbering 20,135 Boholano families in extreme or subsistence poverty.

The Annual Per Capita Threshold, however, continued to increase with an Annual Per Capita Poverty Threshold (ACPT) rising from ₱14,098 in 2006 to ₱20,437 in 2015. The Annual Per Capita Food Threshold (ACFT) of ₱9,831 in 2006 to ₱14,249 in 2015, the lowest in Region 7 and the national figure. This means that a family of five in Bohol in 2015 will need around ₱4,088 monthly income to buy their minimum basic food needs; and around ₱7,852.92 monthly for their minimum basic food and non-food needs. Both ACPT and ACFT were higher in the urban areas of Bohol at ₱19,700 in 2012. Bohol improved 2 notches higher in its cluster standing of poorest provinces in 2015, from Cluster 1, the bottom or poorest cluster of provinces in 2006 to Cluster 2 in 2009 and 2012, then to Cluster 3 in 2015.

The income gap in 2015, which measures the amount of income required by the poor in order to get out of poverty, was estimated by PSA at 25.7 percent. This means that, on the average, a Boholano poor family of five members, needed an additional monthly income of about ₱5,252.00 to move out of poverty in 2015. Using this as a hypothetical benchmark to eradicate poverty in the province thru a mere cash transfer to all poor households to cross the poverty line in Bohol, government would need about ₱ 0.317 billion, at the minimum, to eradicate poverty in the province in 2015.

[12] Families with income below the food threshold; subsistence incidence is often referred to as the proportion of Boholanos in extreme or subsistence poverty

[13] 2015 official poverty statistics released by PSA at the sub-national level

Table 4. Poverty Profile, Bohol Province

Annual Per Capita Poverty & Food Thresholds, Poverty & Subsistence Incidence & Magnitude of Poor Families & Other Poverty Indicators in Region 7 & Bohol Province: 2006, 2009, 2012 & 2015

Region/ Province	Annual Per Capita Poverty Threshold (in Pesos)				Poverty Incidence among Families (%)				Magnitude of Poor Families			
					Estimates (%)				Estimate			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES	**13,357**	**16,871**	**18,935**	**21,753**	**21.0**	**20.5**	**19.7**	**16.5**	**3,809,283**	**4,036,915**	**4,214,921**	**3,746,513**
Region VII	**13,963**	**16,662**	**18,767**	**21,914**	**30.7**	**26.0**	**25.7**	**23.6**	**411,431**	**378,221**	**405,694**	**394,336**
Bohol	**14,098**	**16,633**	**18,847**	**20,437**	**40.3**	**36.6**	**30.6**	**21.7**	**97,368**	**93,942**	**83,455**	**60,279**
Cebu	15,064	17,770	18,855	21,740	25.6	22.3	18.9	17.9	209,301	200,481	185,603	179,162
Siquijor[b/,c/]	13,971	16,469	18,420	21,675	25.6	27.2	24.0	48.9	5,027	5,676	5,319	16,866

Region/ Province	Annual Per Capita Food Threshold (in Pesos)				Subsistence Incidence among Families (%)				Magnitude of Subsistence Poor Families			
					Estimates (%)				Estimate			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES	**9,308**	**11,780**	**13,232**	**15,189**	**8.8**	**7.9**	**7.5**	**5.7**	**1,596,850**	**1,553,082**	**1,610,865**	**1,303,549**
Region VII	**9,765**	**11,635**	**13,048**	**15,357**	**14.9**	**11.1**	**11.1**	**9.8**	**200,484**	**161,818**	**175,581**	**164,496**
Bohol[b/]	**9,831**	**11,596**	**13,155**	**14,249**	**21.9**	**16.6**	**12.2**	**7.2**	**52,901**	**42,619**	**33,288**	**20,135**
Cebu	10,519	12,360	13,049	15,139	11.6	9.7	7.0	6.8	95,289	86,825	68,383	68,345
Siquijor[c/]	9,756	11,500	12,863	15,136	18.7	5.9	8.7	18.8	3,672	1,236	1,916	6,495

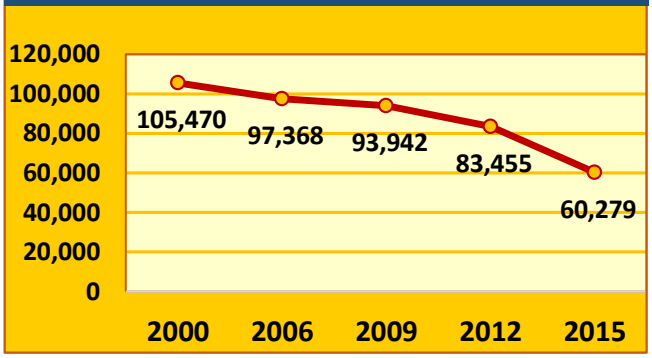
Region/Province	Income Gap				Poverty Gap				Severity of Poverty			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES												
Region VII	**30.8**	**27.7**	**28.1**	**27.9**	**9.4**	**7.2**	**7.2**	**6.6**	**4.0**	**2.8**	**2.9**	**2.6**
Bohol	**33.6**	**28.7**	**24.5**	**25.7**	**13.5**	**10.5**	**7.5**	**5.6**	**6.0**	**4.3**	**2.6**	**2.1**
Cebu	29.8	28.4	26.3	26.3	7.6	6.3	5.0	4.7	3.1	2.6	1.9	1.8
Siquijor[a/]	33.9	21.0	25.0	25.7	8.7	5.7	6.0	12.6	3.5	1.6	2.0	4.3

Note: ***a/ Caution in utilizing the estimate for these provinces due to its very small sample size.***
b/ Coefficient of variation of 2015 subsistence incidence among population is greater than 20%.
c/ Caution in utilizing the estimate for these provinces due to its very small sample size.

Source: ***National Statistical Coordination Board (NSCB)***

Bohol's poverty incidence has consistently decreased from 2000 to 2015. From a high 50.2% in 2000, poverty incidence improved to 21.70% in 2015 which, for the time, is lower than the regional average of 23.6%. In terms of magnitude of poor families, a total of 60,279 families were considered poor in 2015. This figure is way below the poor families in year 2000 of 105,470.

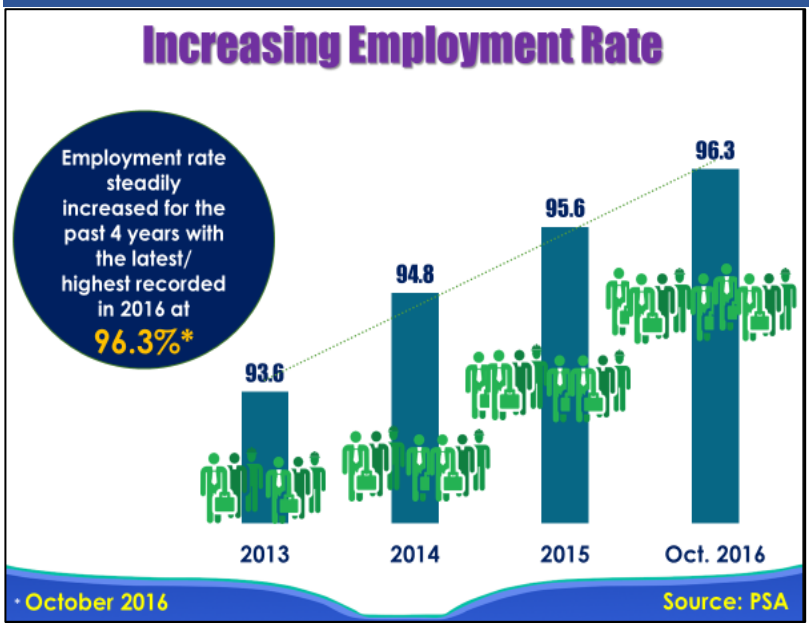
Figure 14. Magnitude of Poor Families
Province of Bohol



Employment

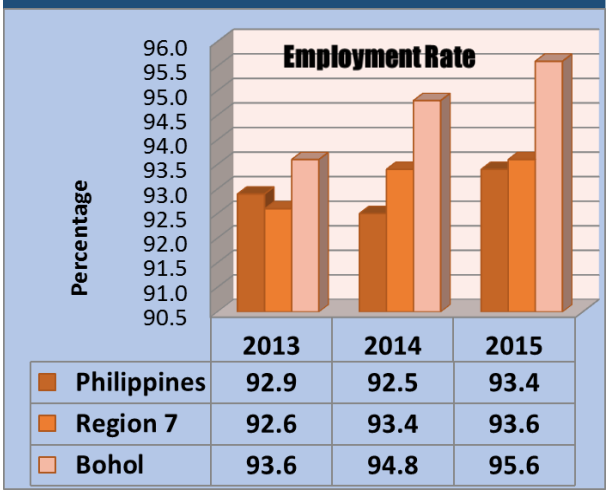
In terms of employment in the Province, employment rate has improved over the past three years. Based on the Labor Force Survey of the Philippine Statistics Authority (PSA), employment rate as of the latest PSA provincial data in the year 2016 is marked at 96.3%, an almost 1 point higher than the 2015 employment rate at 95.6% and higher compared to the 93.6% and 94.8% in the year 2013 and 2014, respectively. Figure 15 shows that Bohol's employment rate is much better than that of the national and regional percentages.

Figure 15. Employment Rate, Bohol, 2013-2016



It can also be noted that the employment rate of Bohol is consistently higher compared to the national and regional averages for the three-year period. Meanwhile, labor force participation rate of the Province has also increased during the same period, with 66.3% in 2015, higher than the 58.2% in 2013 and 60.2% in 2014.

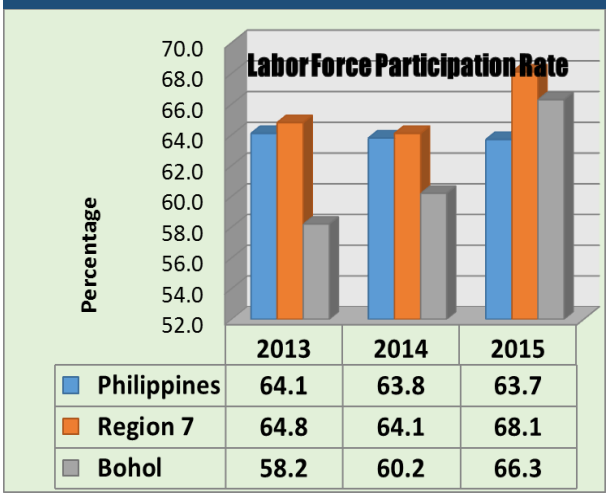
Figure 16. Employment Rate (Phil, Region 7, Bohol)



	2013	2014	2015
Philippines	92.9	92.5	93.4
Region 7	92.6	93.4	93.6
Bohol	93.6	94.8	95.6

Source: ***Philippine Statistics Authority (PSA)***

Figure 17. Labor Force Participation Rate



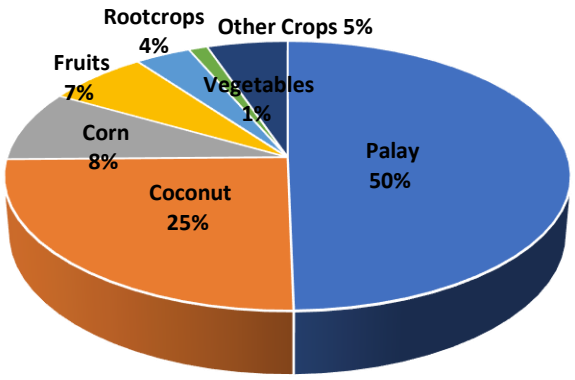
	2013	2014	2015
Philippines	64.1	63.8	63.7
Region 7	64.8	64.1	68.1
Bohol	58.2	60.2	66.3

Source: ***Philippine Statistics Authority (PSA)***

Economy and Priority Industries

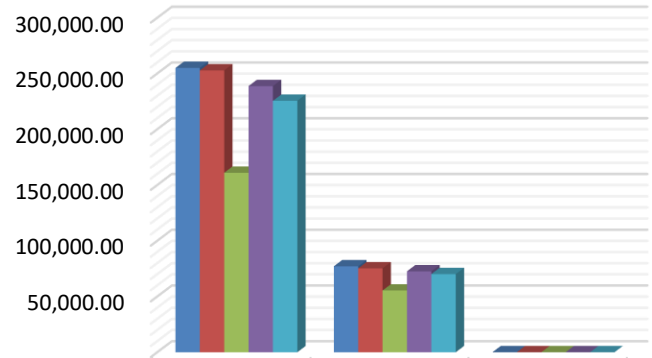
Agriculture is one of the economic drivers of Bohol, along with tourism. The province' economy is largely agri-based with agricultural activities focused on the cultivation of crops on its agricultural land, livestock and poultry production, and fisheries. Agriculture is the largest sector in terms of providing employment as well as in land use. Of the total land area of the province, which is 411,726 hectares, about 273,950 hectares[14] (66%) are available and used for agriculture. OpenStat, Philippine Statistics Authority (PSA) data shows that the area planted/ harvested to major crops is 141,067 hectares or 51% of the total agricultural area. Among the major crops planted in the area include palay (50%), coconut (25%), corn (8%), fruits (7%), rootcrops (4%), and vegetables (1%).

Figure 18. Area Harvested to Major Crops, Bohol Province, 2018



Source: OpenSTAT, PSA

Figure 19. Palay Production, Area Harvested and Average Yield, Bohol, 2014-2018



	Production (m.t.)	Area Harvested (has.)	Average Yield (mt/ha)
2014	255,053.00	77,130.00	3.31
2015	252,816.00	75,260.00	3.36
2016	161,003.00	55,406.00	2.91
2017	238,728.00	72,589.00	3.29
2018	225,548.00	70,117.00	3.22

Source: OpenSTAT, PSA

Rice is the major staple food in the province and is utilizing a significant area of its agricultural land. The rice production in the province has been fluctuating from 2014 to 2018.

In 2014, the average yield recorded was 3.3 metric tons, and this increased to 3.4 metric tons in 2015. However, by 2016 the average yield dwindled by 13% or 2.91 metric tons due to the occurrence of El Niño phenomenon. Nonetheless with continued government support to sustain the palay production, the average yield hiked to 3.2 metric tons by 2018.

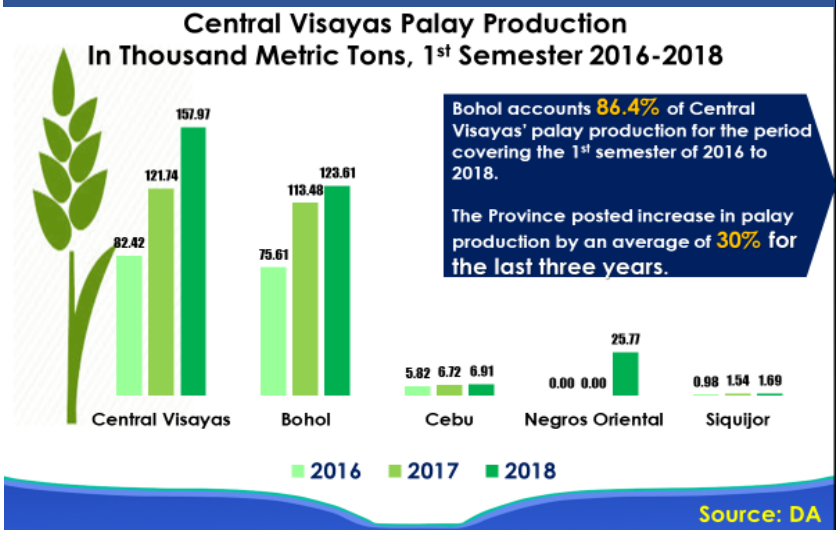
Bohol remains to be a rice self sufficient province with rice sufficiency levels sustained above 100% since 2012.

[14] Bohol Agriculture Master Plan (BAMP): 2006-2026

At the regional context, Bohol has provided a substantial share for palay production. The Central Visaya's food requirement for rice is largely dependent on Bohol. In 2016 until 2018, the province provided 86.4% of the region's production, which is significantly higher compared to the production share of the other provinces.

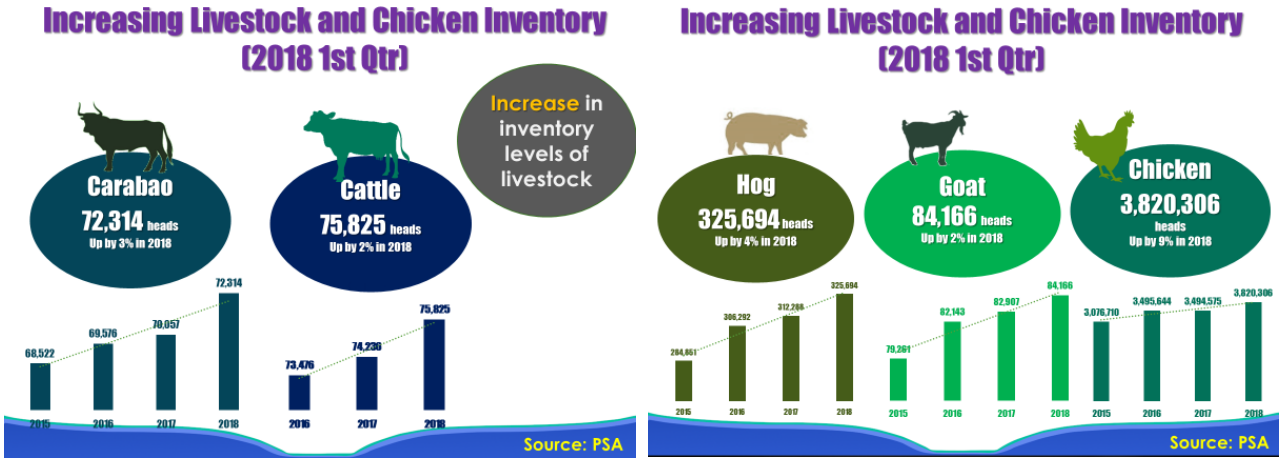
Additionally, the province registered growth in rice production by 30% for 2016 to 2018.

Figure 20. Stable Rice Production of Regional Significance



Livestock and poultry significantly contribute to the economy of the province and its people. Being a good source of milk, meat and eggs, animal protein requirement of the Boholanos is sufficiently met by our local livestock and poultry production. In terms of livestock production, there is a predominant increase in the inventory of carabaos, cattle and goat in the province. Among the livestock registered, hog stands as the largest in number with 325,694 in 2018 and this is followed by goat, cattle and carabao.

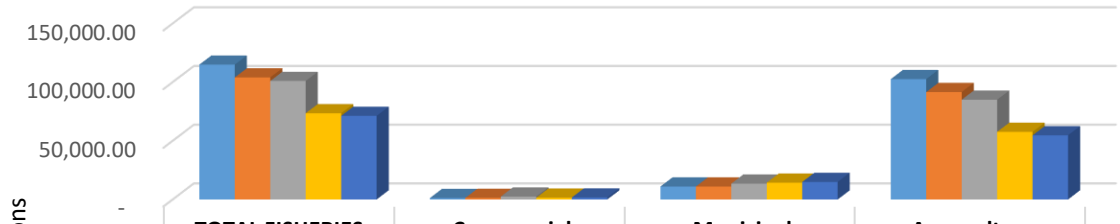
Figure 21. Livestock and Chicken Inventory, Bohol, 2015-2018



Poultry inventory in the province is likewise seen to be consistently increasing, from 3.076 million heads in 2015 to 3.820 million heads in 2018 resulting to a 9% increase by 2018. Of this number, 60% is attributed from native chicken production, which is about 2.268 million. The native chicken has increased its popularity among the health conscious and tourists, thus, demand likewise increases attributed also to its palatable taste. The Provincial Government of Bohol considers native chicken as a commodity champion along with dairy and has strongly supported the Native Chicken Development Program to further promote the commodity.

Although Bohol is rich in marine resources, but its fish production cannot meet the requirement of its population. For **fisheries**, the production has been downhill for the past five years. The production diminished by 38% from 114,863 metric tons in 2014 to 71,244 metric tons by 2018.

Figure 22. Fisheries Volume of Production, Bohol, 2014-2018



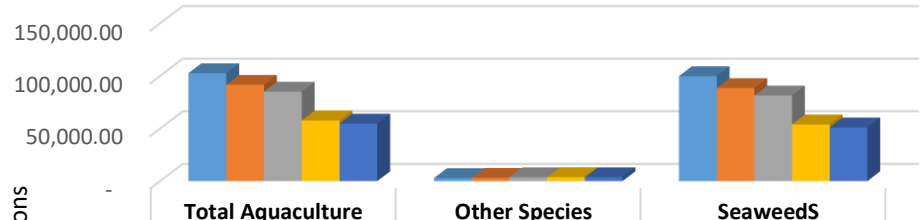
	TOTAL FISHERIES PRODUCTION	Commercial Fisheries	Municipal Fisheries	Aquaculture
2014	114,863.12	1,225.71	11,062.53	102,574.88
2015	103,957.20	1,381.30	11,052.97	91,522.93
2016	100,966.51	2,460.09	13,519.23	84,987.19
2017	73,471.43	1,510.04	14,344.04	57,617.35
2018	71,244.85	1,684.78	14,938.13	54,621.94

Source: OpenSTAT, PSA

In 2014, catch from aquaculture activities was the highest contributor to the volume of fishery production in the province. Aquaculture activities remained the top contributor to the fishery industry in 2018 and posted 77% of the total fisheries production or 54,622 metric tons, and of said volume 93% consisted of seaweeds. Municipal fishery and commercial fishery shared the remaining fishery activities.

The **aquaculture production** of the province is largely dominated by seaweeds production. Correspondingly, as aquaculture production diminished from 2014 to 2018, the same trend proved to be true for seaweeds production. In 2014, 99,752.95 metric tons of seaweeds were posted. The seaweeds production decreased by 49% in 2018 to 50,973.04 metric tons.

Figure 23. Aquaculture Production, Bohol, 2014-2018



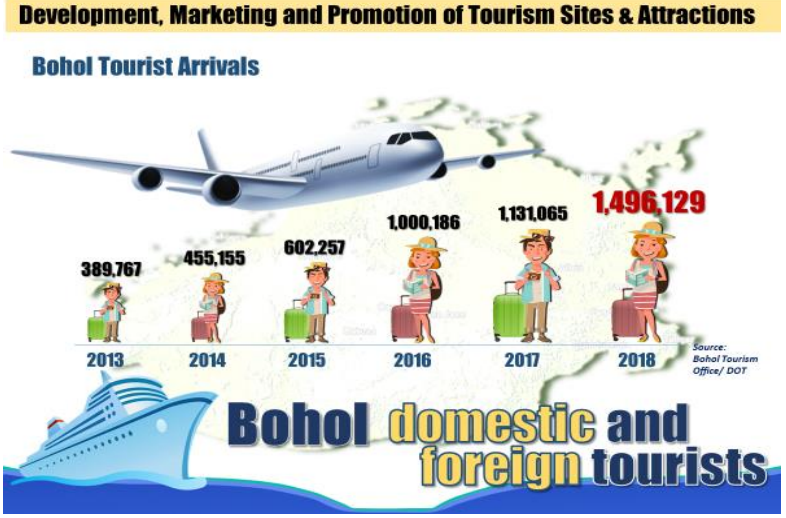
	Total Aquaculture Production	Other Species	SeaweedS
2014	102,574.88	2,821.92	99,752.95
2015	91,522.93	3,150.45	88,372.48
2016	84,987.19	3,676.84	81,310.37
2017	57,617.35	3,742.36	53,875.00
2018	54,621.94	3,648.90	50,973.04

Source: OpenSTAT, PSA

Tourism is another industry sustained by both the private sector and government. It has been noted that Bohol's visitor arrivals greatly increased throughout the years which substantially contributed to the economic growth of the province. Over the past 5 years, Bohol has intensified its progress as a prime eco-cultural tourist destination of the Philippines. Despite global economic challenges, the current flow of domestic and foreign tourists signifies stability and constant growth economically, as well as in the upcoming investments.

Based on tourism data, visitor arrivals increased by 283% from 2013 to 2018. In 2013, the visitor arrivals were recorded at 389,767. Post-earthquake, visitor arrivals steadily rose so that by 2015 there were 602,257 recorded arrivals. Such number was 54% more than the 2013 arrivals. Furthermore, by 2018 the visitor arrivals reached 1,496,129 which is nearly 50% higher than 2015.

Figure 24. Bohol Tourist Arrivals, 2013-2018



Among the foreign visitors in the province for 2018, Chinese tourists dominated the tourism scene, accounting 44%. It is followed by Koreans which consisted nearly 28% of the foreign tourist during the year. Other top foreign visitors include Taiwanese, Americans, French, Japanese, Germans, British, Australians and Canadians. It is relevant to highlight that the Taiwanese tourists recorded the highest increase in arrivals from 2016 to 2018, posting a 258% increase for the said period.

Local and foreign industry players continue to pour in investments in this sector considering the consistent and stable growth of the tourism industry in the province and bright outlook of the future. Improvement of infrastructure and support facilities in the province has also entice larger investments through the years.

Figure 25. Foreign Travelers in Bohol, 2016 - 2018

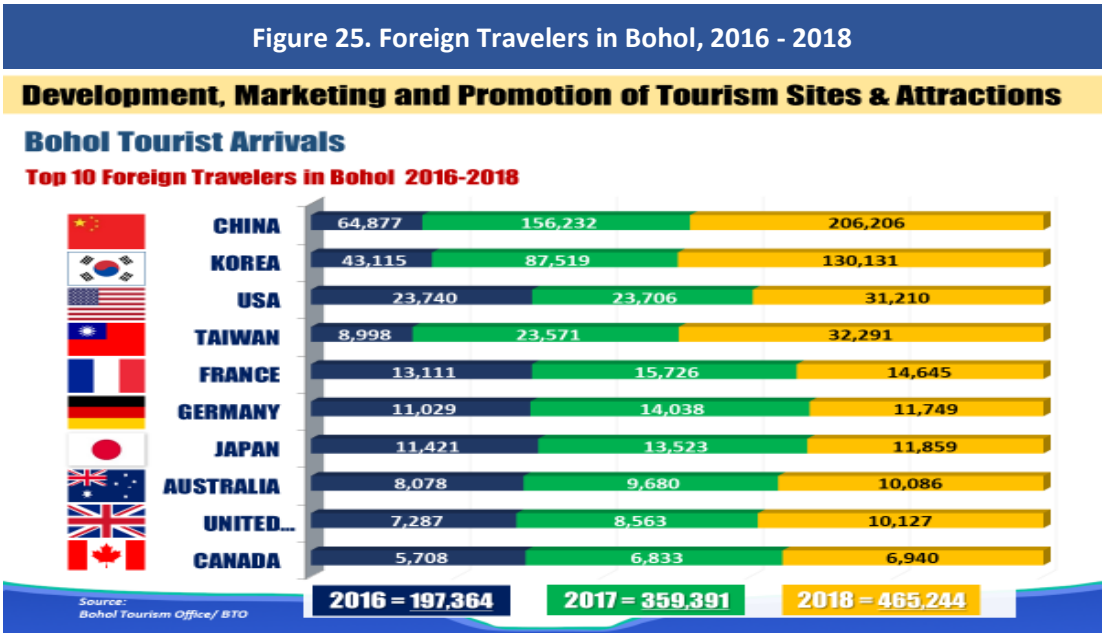
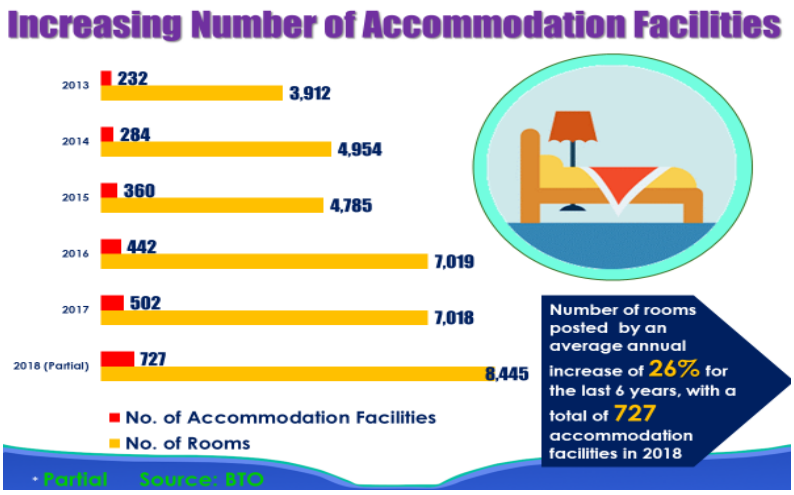


Figure 26. Number of Accommodation Facilities, Bohol, 2013-2018



In the case of accommodation services, the number of accommodation facilities has risen by more than a quarter for the last six years. Based on available tourism data, the number of accommodation facilities in 2018 is 727 which is 213% more than the number of facilities in 2013. Correspondingly, the number of rooms rose by 26% in average annually from 2016 to 2018. In the said period, there were 8,445 rooms as of 2018, which is significantly higher than that of 3,912 rooms in 2013.

In **terms of trade, investments and livelihood**, an estimated P21.27 Billion in significant capital was poured into the province by investors for 2014 to 2018. Of this invested amount, P7.08 Billion was attributed to the capitalization of small and medium enterprises. The accommodation industry investments also accounted for P5.62 Billion. Another P5.37 Billion was invested into the Agribusiness sector.

Figure 27. Investments Generated, Bohol, 2014-2018

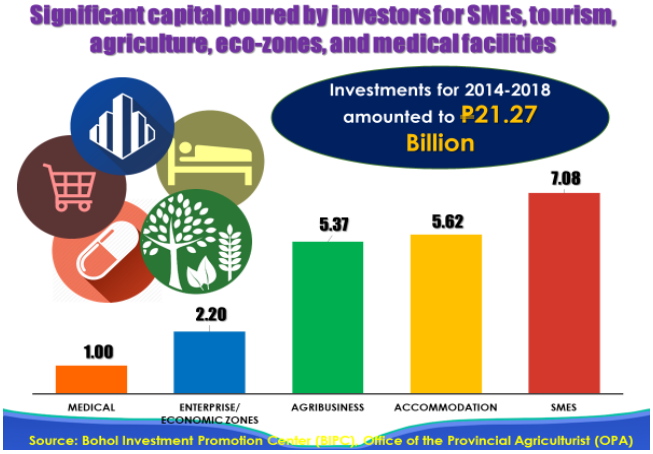
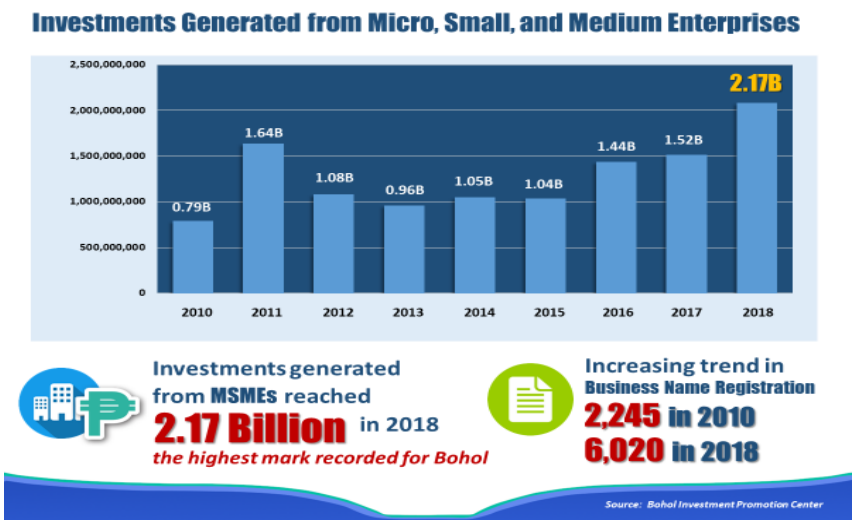
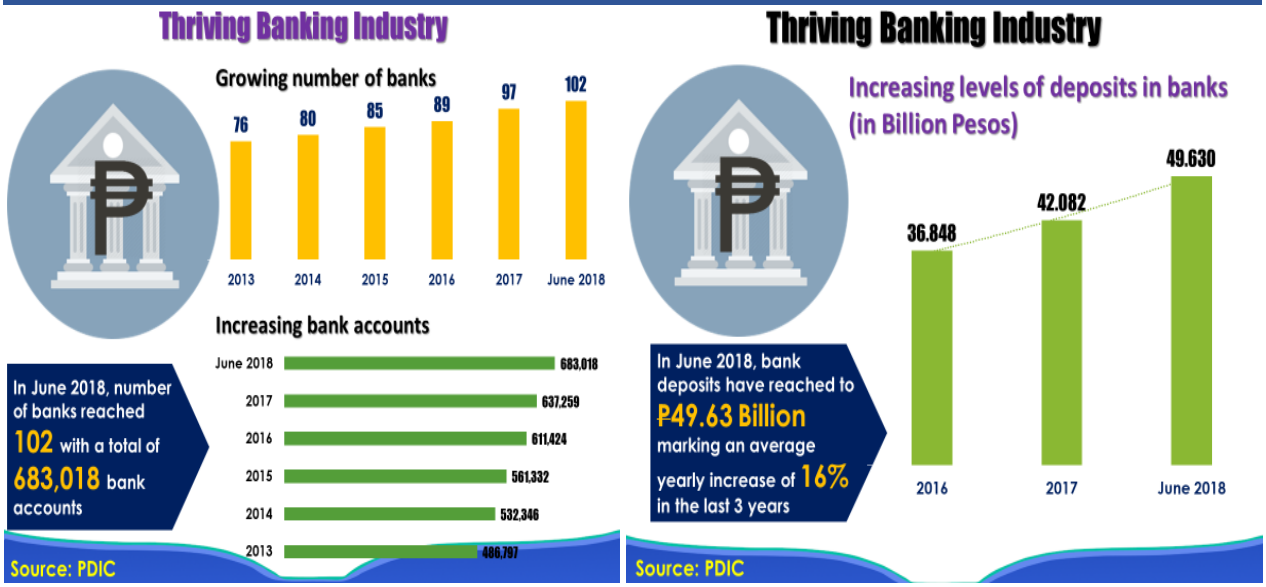


Figure 28. Investments from MSMEs



Additionally, micro, small, and medium enterprises (MSMs) in the province sustained its upward trend in 2010 to 2018. In 2018, there were 6,020 businesses registered. Such number is notably higher compared to the 2010 figure of only 2,245. The investments from these MSMEs reached P2.17 Billion in 2018 – the highest mark recorded in the province. Comparatively, the investments for this sector was P0.79 Billion in 2010.

Figure 29. Banking Industry in Bohol



The banking industry in the province has also shown a stable and growing economy with an increasing number of banks established in Bohol. In a span of 5 years, there were 26 new bank branches established in the province, so that by June 2018, there was a total of 102 bank branches. Accordingly, the number of bank accounts also rose from 486,797 in 2013 to 683,018 in 2018.

The Banking industry also reported higher levels of deposits in banks. As of June 2018, the amount deposited in banks have reached P49.630 Billion. This is much larger than the P36.848 Billion bank deposits in 2016. This means that there is a 16% average yearly increase in the preceding three years.

On the whole, the local economy of Bohol has been growing at an average rate of 9.1%. It is significantly higher as compared to the national average growth rate of 6.97% based on the data of Bangko Sentral ng Pilipinas.

Figure 30. Average Economic Rate, Bohol

Biodiversity

Bohol has a high biodiversity level of plant species categorized as: upland, mangrove, coastal areas, cave entrances, cultivated cropland and intensively used lands. Several plant species noted to be abundant before are already extinct, others are becoming rare. Data about Bohol's terrestrial and freshwater flora and fauna is scarce except for studies conducted in Rajah Sikatuna Protected Landscape (RSPL) conducted by Soil and Water Conservation Foundation, Inc. (SWCF) and University of Bohol Community Development Foundation, Inc. (UBCDFI).

The greater part of the tourism industry is based on Bohol's biodiversity. Unless we get very serious about conserving and protecting it, we will lose the tourism to other sites in the Philippines and other Southeast Asian Countries.

There is a diverse wildlife species in the province including: 33 mammals, 29 reptiles, 8 amphibians, several bat species, the Philippine tarsier and flying lemurs, 192 butterflies, 29 ants, 20 dragon flies, 116 birds species belonging to 28 families, 411 fish species and 60% of country's marine mammal species found in Pamilacan, Baclayon and almost 16% of deptirocarp species including the rarest in the country (30% of the total national deptirocarp) are found in Bohol (Source: SWCF Research Study & BMT 2006).

However, the biodiversity is under threat due to persistent and excessive utilization and sale of different species coupled with conversion of forests to agricultural and urban areas, monoculture farming with exotic species, farming on steep hillsides and mountains, coral reef destruction and over-fishing. In fact, several plant species noted to be abundant before are already extinct on the island while others are becoming rare and endangered.

- **Caves in Bohol**

  Caves, we are losing them to exploitation for tourism, guano collection, swift-nest collection, vandalism. Maybe one in ten caves could be used for tourism purposes but only after careful study as to how to use it. In the meantime, with present activities, the bats move out, swiftlet young are killed and surface areas deforested causing siltation in the caves.

- **Flora in Cultivated Croplands and Intensively Used Lands**

  Generally, the extremely diverse and dispersed vegetation in open fields could well evolve into forests without human intervention. However, most of these potential lands are within alienable and disposable areas and if these are within timberland areas, they are covered under the Integrated Social Forestry Program with a Certificate of Stewardship Contract (CSC). Constant cultivation and burning inhibit forest evolution and encourage the proliferation of grasses such as cogon (Imperata cylindrical) and other shrubs like kanding-kanding (Lantana

camara). To develop systems closer to natural forests, agroforestry shall be established in these areas.

Data about terrestrial fauna in Bohol are scarce. In the few studies conducted in Rajah Sikatuna Protected Landscape eight mammal species have been identified. These do not include the recent identification of 14 bat species (including one endangered species) inside the protected area. Forest regeneration by bats as keystone species for the reason that they are pollinators and seed dispersers of greater ecological value.

Most fauna classes such as reptiles, amphibians and insects have not been studied. Recent bird studies have positively identified 56 bird species with 18 more species still unidentified. Actually, recorded bird observations in Bohol, mainly near Bilar, go back to the mid-1800. However, there are now birds previously seen on the island that are not positively identified. This includes the Philippine Cockatoo last seen in RSPL in 1995. The most well-known animal in Bohol is the Philippine tarsier, one of the smallest primates in the world. Although not on international endangered lists, it is fast losing its habitat areas on the island. This is true of Bohol's flying lemurs, civet cats, wild pigs, grey squirrels and Philippine monkies.

Water Resources[15]

Bohol's water supply system for domestic, agricultural and industrial uses is mainly based on 2,224 springs, 59 rivers and 200 creeks. There are 22 rivers basins/watersheds that are valuable sources of water for drinking and irrigation. Surface water from rivers and streams in these basins are impounded and distributed for irrigation, electric generation, industrial use and potable water. The province has an average rainfall varying from 1,331 mm/yr along the coastal areas to 2,006 mm/yr in the mountainous part of the island that supplies the island.

At present, the quality of water in the province's catchments and streams is poor and will continue to deteriorate as human development activities increase. The water resources should be managed in order to meet the growing demand for domestic, agricultural, tourism, industrial, recreational and commercial uses. Proper management should prevent public health hazards associated with increasing incidence of water contamination and pollution from negligent human activities.

- **Surface Freshwater and Groundwater Resources**[16]

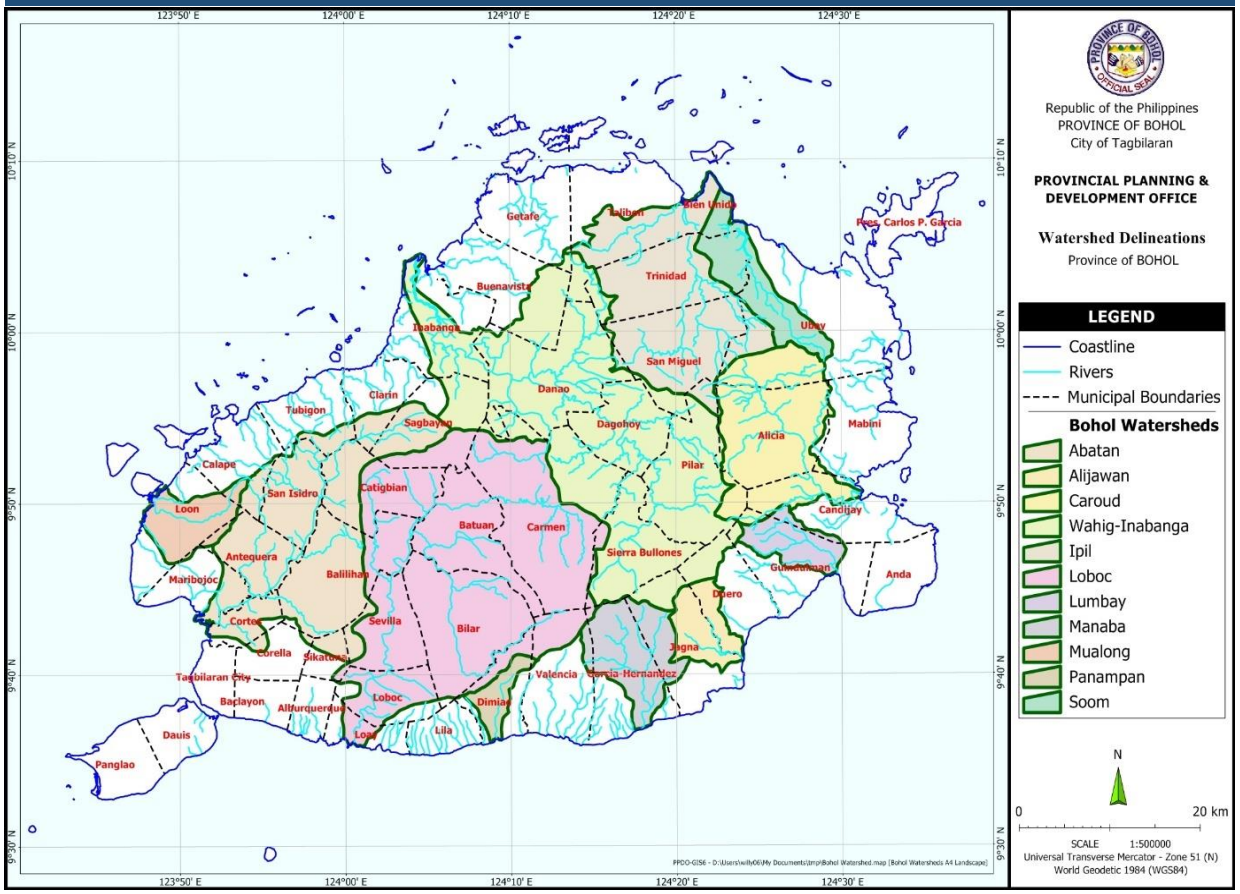
Bohol has eleven watersheds (see Table 8 Watershed Map). The biggest one is Inabanga Watershed followed by Loboc, Abatan, Ipil, Carood, Manaba, Soom, Mualong, Alijawan, Lumbay and Panampan watersheds. Three of the major watersheds are declared as protected areas under the NIPAS. The largest reserve is the Wahig-Inabanga Watershed (PP No 468, amended to PP No. 223), covering 17 municipalities with an aggregate area of 14,000 hectares. The second largest, and first to be proclaimed as a watershed forest reserve in Bohol, is the Loboc Watershed (PP No. 450) with an area of 10,450 hectares, part of which is inside the Rajah Sikatuna Protected Landscape (PP No. 127 as amended April 2000). The third is the Duero Watershed (PP No. 881) that covers an area of 3,620 hectares.

The rivers and river estuaries are used in many ways. They commonly serve as harbors and navigation routes, areas for aquaculture development (Inabanga River), fishing and sand quarrying areas (Abatan River), and recreation and tourism (Cambuhat River in Buenavista and

[15] *BW4SMP Master Plan of Bohol 1999*
[16] *DENR Bohol and Region 7*

the Loboc River in Loboc and Loay, Bohol). They also provide water for irrigation (Malinao Dam on the Wahig River that feeds the Bohol Irrigation Project Stage I) as well as domestic and industrial uses such as power supply (Loboc River hydro-power plant and mini hydro-power plant in Balilihan).

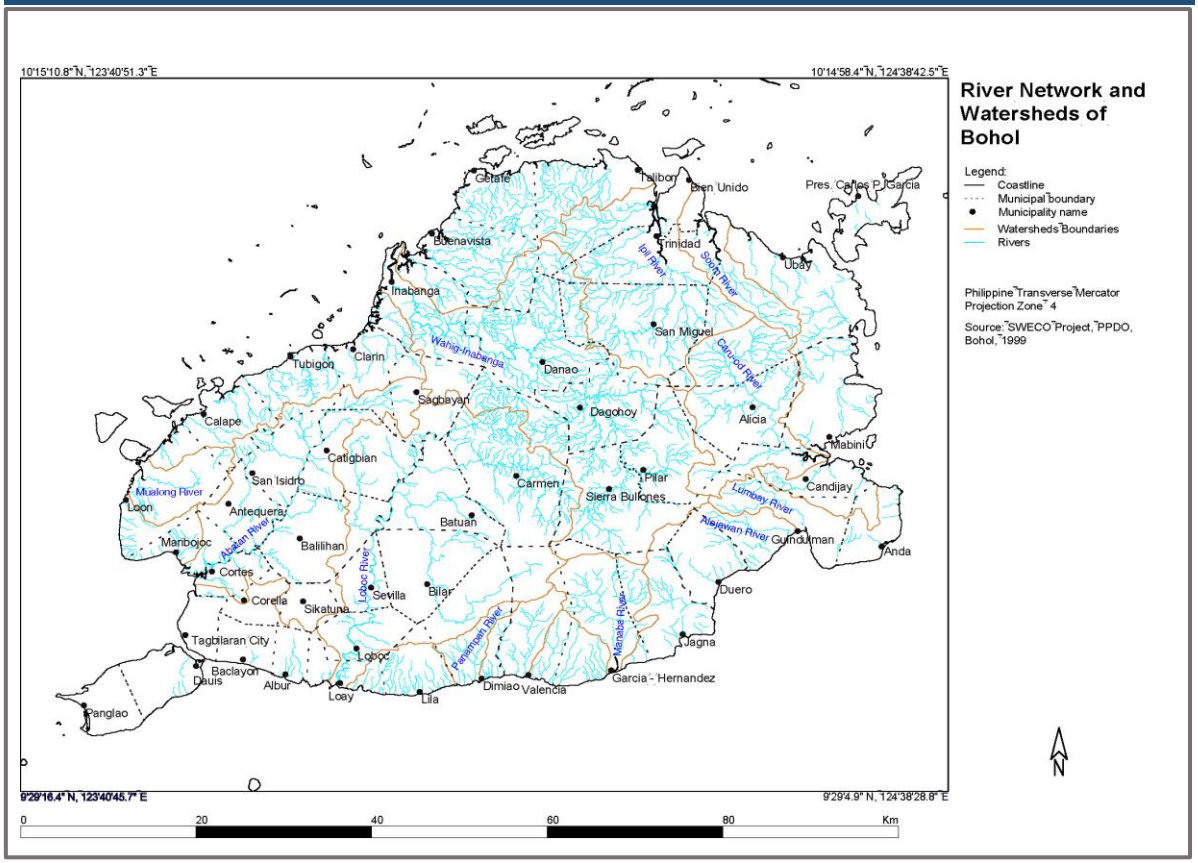
Map 7. Watershed Map, Bohol



- **Protection of Bodies of Water**

Water is a vital resource for Bohol's future prosperity. Its sustainability and management for economic, social and environmental gains underpin activities in government, industry, business and communities. The Bohol Environment Code contains a number of policies intended to preserve, protect and conserve the island province's water resources, including minimization of pollution in ground and surface waters. Data on surface and groundwater quality are scarce in the province. Based on the survey of wells conducted by SWECO revealed that the water for drinking do not satisfy the water quality standards for safe and potable. An estimated of 5000 wells have water quality problems caused by higher salinity content, excessive amounts of iron and manganese and bacteriological pollution *(see River Network Map below)*. Water for home consumption is often prone to contamination due to inadequate sanitation practices and characteristics in limestone inherent substrate (karst). It is important to designate strict water production areas for drinking water purposes and establish buffer zones to protect the same from activities that will harm them.

Map 8. River Network Map, Bohol

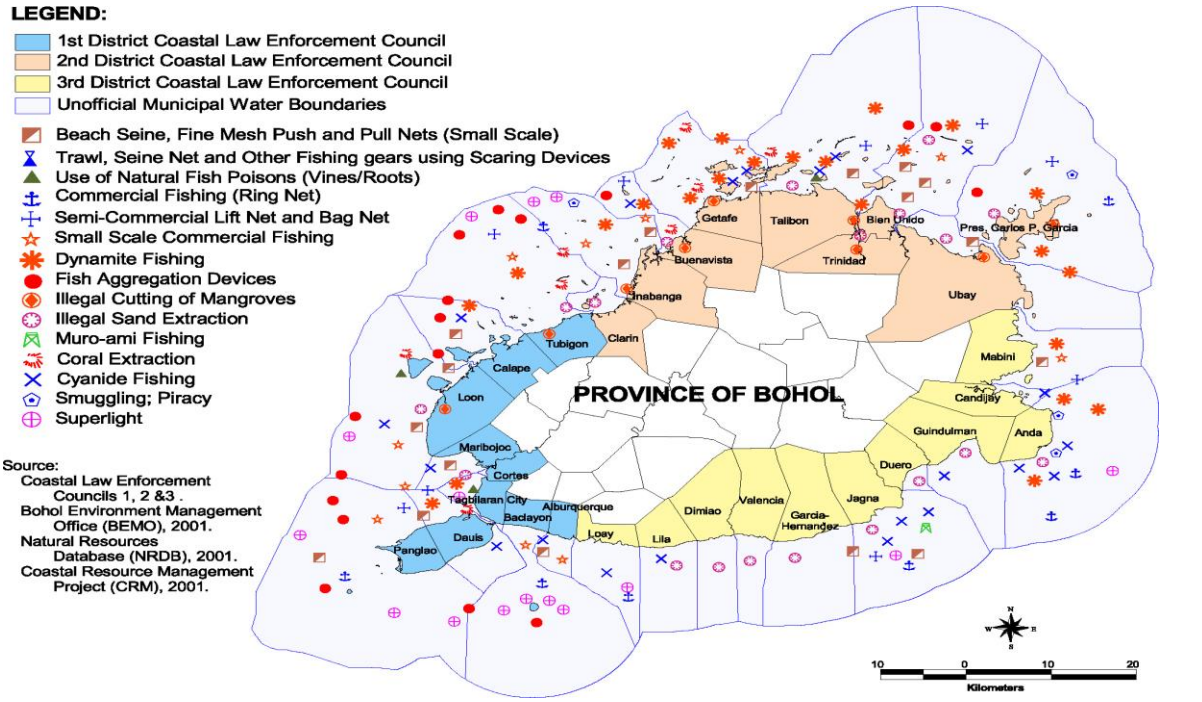


Coastal/ Marine Resource Management

Bohol has a total area of 624,506 hectares of municipal waters (6,245.06 square kilometers) and a total shoreline length excluding offshore islands of 654 kilometers.[17] It has 30 coastal municipalities with 304 coastal barangays and 72 islets. Approximately 33 percent of Bohol's population is directly dependent on fishing and fisheries-related activities as major sources of income (see Maps 9 and 10). Based on the records of the Regional Office of BFAR, the total area granted for fishpond development is 2,909.97 hectares. This data is, however, still subject for verification as BFAR is conducting an on-going inventory of fishpond areas in Bohol.

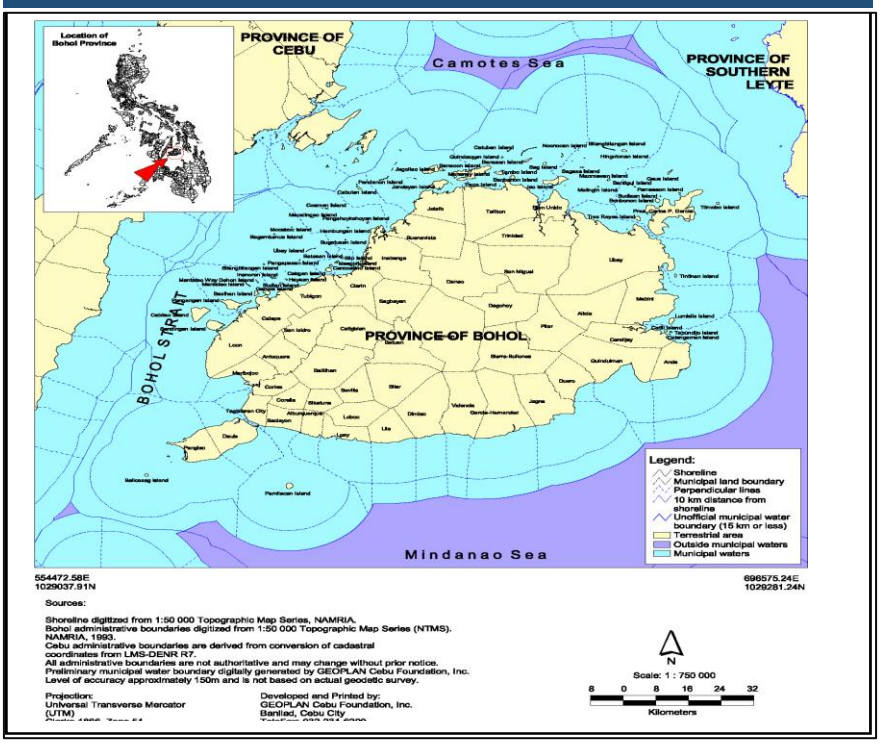
[17] *Bohol Coastal Environment Profile 2002*

Map 9. Coastal Resources Map of Bohol



The joint DA/BFAR and DENR General Memorandum Order No. 3, Series of 1991, tried to respond to the problem of idle, unproductive, abandoned and/or illegal fishpond areas by reverting them into their original classification of timberland. Fishpond areas with FLAs that are found to be violating this policy will be reverted to the administration of DENR. All applications within timberlands, which have not been released for fishpond development by DENR, shall automatically be returned without being acted upon. However, not even one idle unproductive, abandoned or illegal fishpond has been reverted to the category of timberland.

Map 10. Bohol Municipal Waters



- **Coastal Habitats**

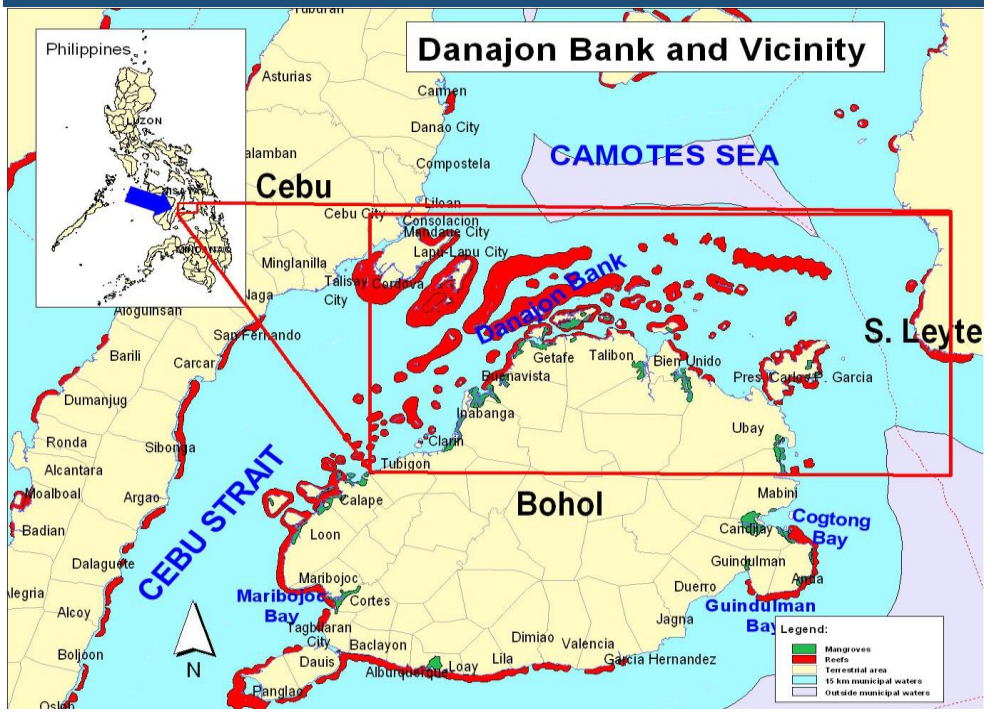
Bohol boasts of its white, sandy beaches that are commonly used as sites for tourism development (hotels, restaurants, beach resorts among others), fish and boat landings, and as a source of construction materials. These areas are evidence of healthy coral reef ecosystems. Many environmental issues focus on the beach ecosystem as it is prime land for commercial and household development due to its aesthetic value. It attracts the interest of many people to the shoreline, mangroves, coral reefs and fisheries that inhibit the near shore waters.

The area covering municipal waters is measured 15 kilometers seaward from the furthest inhabited shoreline to one kilometer inland if the shoreline contains estuaries, mangrove forests or marshlands.[18] This means the total municipal waters of the 29 towns and one city is two and one-half times larger that Bohol's land area. It also indicates that there is a remarkably huge area to consider in planning, yet only a few coastal LGUs have started to manage coastal areas. With the enactment of the Philippine Fisheries Code of 1998 and the Bohol Environment Code, the national government recognized that a paradigm shift is needed to adequately provide for the development, management and conservation of coastal resources.

- **Danajon Bank Double Barrier Reef**

The Danajon Bank is a double barrier reef that runs parallel to the northern coast of Bohol and is proposed as a designated provincial rehabilitation, conservation and protection area (see Danajon Map). The Danajon Double Barrier Reef is one of the six double barrier reefs in the world and the only one in the Philippines which could likely be nominated as national heritage site. Because of its unique coral reef ecology, Danajon Bank is a major breeding ground and habitat of many different species of fishes, marine mammals, mollusks, seagrasses and seabeds.

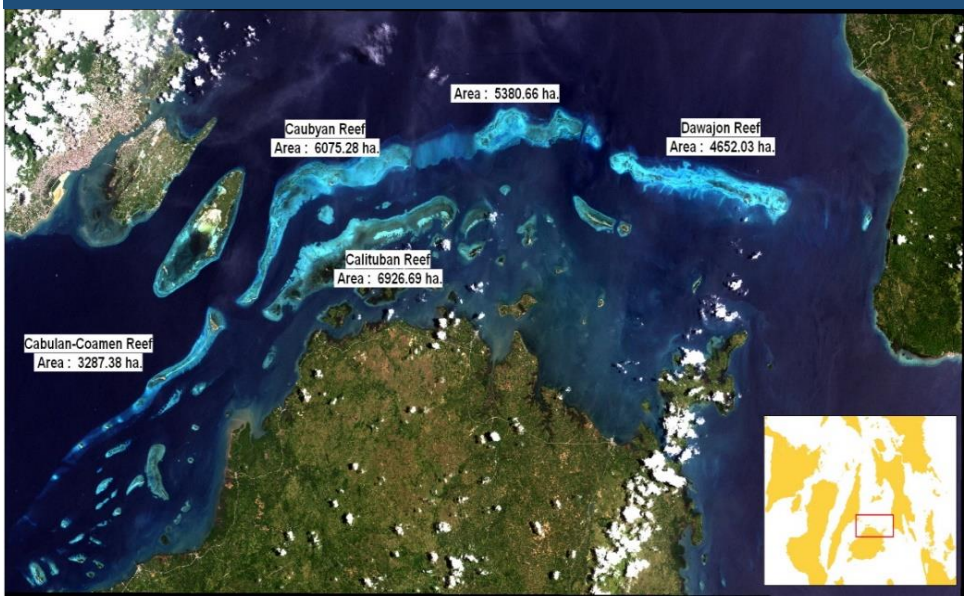
Map 11. Map of Danajon Bank Double Barrier Reef and its Vicinity



[18] *Republic Act 8550 (The Philippine Fisheries Code of 1998, Chapter 1, Section 4(58))*

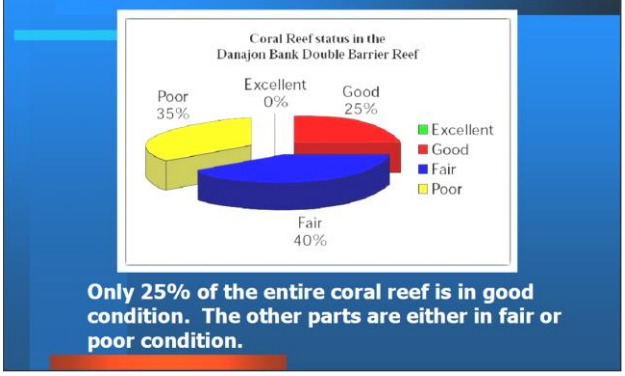
It is composed of the outer Caubyan and inner Calituban barrier reefs. It runs along the coastline of four municipalities, Getafe, Bien Unido, Talibon and Ubay in the south and into the Camotes Sea in the north. To the west it runs all the way to Cebu and to the east and northeast to Leyte and Southern Leyte. The establishment of the protected reef area should serve as an excellent example of how northern coastal towns of Bohol, from Tubigon to President C. Garcia can work together to implement an inter-provincial Coast Resource Management program to protect and preserve this unique treasure. However, marine resources like coral reef ecosystems, seagrass beds, mangrove forests, estuaries and inter-tidal seascapes are fragile and have limited potential if they are utilized improperly. Because these ecosystems are stressed by increasing population, environmentally-degrading consumption patterns, pollution wastes and human encroachment in coastal zones, there is an urgent need to protect and conserve the integrity of the ecosystems in order to continue to provide benefits to the present and future generations.

Map 12. Map of Danajon Bank Double Barrier Reef



- **Status of Coral Reefs and Sea Grass Beds**

Figure 31. Status of Danajon Double Barrier Reef



Coral reefs, commonly known as rainforest of the sea, while serving as a buffer against underwater current also constitute one of the provinces most productive and diverse ecosystems. They cover an estimated area of 1,920 hectares that include the Danajon Bank Reef in Inabanga, Buenavista, Getafe, Talibon, Trinidad, Bien Unido, Ubay, President Garcia and Mabini. However, the state of the province's reefs is classified as 35% poor condition, 40% fair condition, only 25% in good condition and o% excellent (BFAR, UP-MSI, CRMP and DENR surveys, FISH Project-USAID Survey 2005). This means that Bohol has already lost more than three quarters of its known corals. This has had a significant effect on the breeding grounds of many marine biodiversity. Significant human threats to coral reefs include collecting and exporting, blasting, use of cyanide, siltation, boat anchorage (especially diving boats), illegal fishing methods, storms, coral bleaching due to increase temperature, pier wharf and breakwater and other construction activities.

- **Initiatives to Danajon Bank under the Philippine Rural Development Project – Global Environmental Facility (GEF) (PRDP-GEF)**

Bohol is one of the six (6) pilot provines in the Philippines funded by the Global Environmental Facility (GEF). It is a 5-year World Bank grant package included under the Philippine Rural Development Project. The project aims to strengthen the conservation of the coastal and marine base in targeted program areas through biodiversity conservation and fisheries resources management. Among the pilot municipalities for the GEF sites are Ubay, Talibon Pres. Carlos P. Garcia, Bien Unido and Buenavista.

Disaster Risk Reduction Management (DRRM) and Climate Change Adaptation (CCA)

- **Climate Change Mitigation and Adaptation**

Climate change is one of the strongest development agenda of the 21st century; global scientific studies conducted by the Intergovernmental Panel on Climate Change (IPCC) have already confirmed that the change in global temperature is already unequivocal. In the Philippines, the manifestation of extreme weather events that resulted to losses in terms of livelihoods, infrastructure, and even lives, have become more frequent in recent years.

With the passage into law of Republic Act 9729 or the Climate Change Act of 2009, local government units (LGUs) were tasked to serve as frontline agencies in the formulation, planning and implementation of climate change action plans in their respective areas. Cognizant of the fact that climate change is a multi-sectoral concern, the involvement of all levels of government in the urban resilience planning process is crucial in order to attain higher probability of desired outcomes.

In **Section 14 of RA 9729** which is the ***Local Climate Change Action Plan,*** further states *that t*he Local Government Units (LGUs) shall be the frontline agencies in the formulation, planning and implementation of climate change action plans in their respective areas, consistent with the provisions of the Local Government Code, the DRM-CCA Framework, and the National Climate Change Action Plan. Barangays shall be directly involved with municipal and city governments in prioritizing climate change issues and in identifying and implementing best practices and other solutions. Municipal and city governments shall consider climate change adaptation as one of their regular functions. Provincial governments shall provide technical assistance, enforcement and information management in support of municipal and city climate change action plans. Inter-local government unit collaboration shall be maximized in the conduct of climate- related activities.

Resilience to extreme weather and climate change will greatly impact the communities as adaptation and mitigation measures provide opportunities for local governments to enhance the well-being of communities by lessening its impacts/vulnerability to them.

- **Climate and Hazard Profile**

The effects of climate change are now being felt in the Province of Bohol. The impact of this change has affected Bohol's forest, its biodiversity, water, agricultural, fishery resources and cultural assets with wide-range adverse impact on human health and loss of life. The ten (10) warmest years on record in the world all occurred in the years 1880 to 2000. Temperature changes are known to affect the transmission of infectious diseases like malaria, dengue and respiratory tract infections. Rising incidence of morbidity cases from these infectious diseases, particularly respiratory tract

infections has been recorded in Bohol with pneumonia as a leading cause of illness in the province affecting 10% of Bohol's population in 2008, mostly children.

Bohol is among the areas in the Philippines threatened by drastic effects of global warming. It is ranked 9th among top 20 provinces in the Philippines vulnerable to a one (1) meter sea level rise.[19] Its seascape, as an eco-tourism asset, is vulnerable to threats of global warming that may result in sea-level rise, causing loss of tourism and business investments. Cutting of trees in the upland communities is commonly practiced. There is degradation of marine environment due to pollution from industries, agriculture, including animal husbandry and settlements. Coastal erosion and sedimentation are not properly addressed and resulted to occurrence of sea level rise. Dumping and burning of solid wastes that include toxic materials and chemicals still pose a problem as well as the overflowing of sewers. There is an increase in frequency and intensity of the El Niño and La Niña phenomenon resulting to agricultural and ecological problems (e.g., disruption of wildlife) and damage to property.

Changes in rainfall patterns, typhoon frequency and the irregular period of occurrence, and sea level rise are now becoming noticeable. The connection between local environmental threats and climate change is an emerging concern among local government units. It is in the context that local government must play a major role in implementing measures on climate change mitigation and adaptation due to their authority to control the necessary changes.

Based on the distribution of rainfall during the year, Bohol's climate as classified by PAG-ASA belongs to Corona's 4th Type, characterized by rainfall more or less evenly distributed throughout the year. Intensification of the southwest monsoon usually occurs during the months of July to October. The rainfall varies from about 1,200 mm/yr around the coast to slightly more than 2,200 mm/yr in the mountainous areas in the province. Based on the climatogical records of Tagbilaran City weather station, the province has an annual average of 161 rainy days. Average rainfall and trend illustrated a declining trend of 250 mm over a period of 35 years or about 7mm a year, which is likely due to climatic change in the Southeast Asian Region. The coastal area of the province is warm in contrast with the interior part, which is colder especially during the night. Mean temperature is at 27.40 degrees centigrade. Prevailing wind direction is towards northeast with an average speed of 2 miles per record. Bohol is not included in the so-called typhoon belt of the country, as typhoons rarely pass in the province. Those passing below or above the island contribute to the greater volume of precipitation. The frequency of typhoon passage is 0-10% from the average of 20 typhoons passing over the Philippines per year.[20]

Based on the data on climate change scenario, the projected seasonal temperature increase, seasonal rainfall change and frequency of extreme events in 2020 and 2050 under the medium-range emission scenario in the provinces in Region 7 are presented in Table 5, Table 6 and Table 7, respectively.

[19] Source: Climate Hotspot, Climate Change Impacts in the Philippines conducted by Greenpeace Southeast Asia, Climate and Energy Campaign, 2007

[20] DENR-BSWM 1991 Preliminary Climatic Classification of 15 selected Provinces in the Philippines

- **Climate Projections in 2020 and 2050 of Bohol and other Provinces in Region 7**

  Bohol is facing the real impacts of climate change that are threatening its development prospects and exacerbates the vulnerability of its poor communities. With projected changes in precipitation, temperature, intensity of tropical cyclones and frequency of extreme weather events, considerable efforts would be required to prepare in dealings with the impacts of climate change on the different climate-sensitive sectors e.g. agriculture, forestry, biodiversity, water, coastal/marine resources and health. Adaptation will be an essential part in response to the threats of climate change.

  Scientific basis for adaptation and vulnerability assessment studies were already conducted by PAGASA which provides the opportunity to understand the future changes in climate and how these changes will affect the province in the future and what adaptation efforts will be done. Based on the data on climate change scenario, the projected seasonal temperature increase, seasonal rainfall change and frequency of extreme events in 2020 and 2050 under the medium-range emission scenario in the provinces in Region 7 are presented in Tables 5, 6 and 7, respectively. To use the tables and arrive at values of seasonal mean temperature and seasonal rainfall in 2020 and 2050 in any of the provinces, the projections are added to the observed values (presented in each of the tables). For Bohol province, the projected values are:

  - DJF mean temperature = (26.6 °C +0.9 °C) = 27.5 °C;
  - DJF rainfall = {376.1mm+376.1(9.8%) mm} = (376.1+36.9m) or 413mm;
  - Number of days with Tmax> 35 °C in Tagbilaran City during the 2006-2035 period (centered at 2020) = 1,710;
  - Number of dry days in Tagbilaran City during the 2006-2035 period (centered at 2020) = 6,836; and
  - Number of days with rainfall > 300mm in Tagbilaran City during the 2006-2035 period (centered at 2020) = 1.

Table 5: Seasonal temperature increases (in °C) in 2020 and 2050 under medium-range emission scenario in provinces in Region 7

Provinces	OBSERVED BASELINE (1971-2000)				CHANGE in 2020 (2006-2035)				CHANGE in 2050 (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	26.6	28.0	28.2	27.8	0.9	1.2	1.2	1.0	1.8	2.3	2.3	1.9
Cebu	26.8	28.4	28.2	27.9	0.9	1.2	1.1	1.0	1.9	2.4	2.1	1.9
Negros Oriental	27.0	28.4	28.0	27.8	0.9	1.2	1.0	1.0	1.9	2.3	2.0	1.9

Table 6: Seasonal rainfall change (in %) in 2020 & 2050 under medium-range emission scenario in Provinces in Region 7

Provinces	OBSERVED BASELINE (1971-2000)				CHANGE in 2020 (2006-2035)				CHANGE in 2050 (2036-2065)			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	376.1	209.6	412.9	514.5	9.8	-7.1	4.5	6.8	21.2	-11.9	18.9	22.6
Cebu	324.0	228.3	595.1	607.4	17.7	0.8	7.7	7.7	19.6	0.5	18.9	17.8
Negros Oriental	225.8	226.0	639.5	636.9	15.0	-4.9	9.3	4.7	17.4	-6.8	20.7	10.5

Table 7: Frequency of extreme events in 2020 & 2050 under medium-range emission scenario in Provinces in Region 7

Provinces	Stations	No. of Days w/ Tmax>35 °C			No. of Dry Days			No. of Days w/ Rainfall >100mm		
		OBS (1971-2000)	2020	2050	OBS	2020	2050	OBS	2020	2050
Bohol	Tagbilaran	260	1710	3413	8176	6836	6473	15	21	23
Cebu	Mactan	25	1488	2463	7112	5720	5693	12	4	17
Negros Oriental	Dumaguete	66	826	1499	8451	6032	5642	5	7	6

- **Climate Change Threats and Potential Impacts**

Table 8: Trends in Climate Change Impacts

Climate Change Impacts	Areas or location affected (Municipalities/Barangays)	Trend	Intensity	Frequency of Occurrence
Sea level rise	30 coastal towns including Tagbilaran City	same areas	every year	increasing every year
Prolonged drought	47 towns and 1-city	expanding to coastal areas	every year	every year
El Nino events	47 towns and 1-city	expanding to coastal areas	every year	every year
Floods	336 out of 1,109 brgys (47 towns and 1-city)	expanding to other areas	Increasing	Increasing every year (flash flooding, seasonal, river overflow, coastal flooding due to heavy rains, dam overflow
Storm surge	30 coastal towns and 1-city	same areas	Increasing	Increasing every year
Monsoon rains a) Southwest Monsoon or Habagat; b) Northeastern Monsoon/Amihan	47 towns and 1-city	expanding to interior part of the province	Increasing even dry season	Increasing every year

- **Disaster Risk Management Resiliency to Disasters and Climate Change**

Bohol, as an island province, is vulnerable to various hazards resulting from natural and man-made disasters such as flooding, rain-induced landslides, earthquake, storm surges, liquefaction, fire, air and water pollution and contaminated land. Inappropriate location and design of developments can aggravate exposure to and impact of hazards and climate change impacts like sea-level rise, storm surges, among others.

Vulnerability Assessment

- **Climate-related Hazards and Impacts**

Past Hazards and Climate Events. Phenomena such as increased precipitation, heat stress, floods and other extreme weather events, are referred to as climate exposures and are increasingly having an impact on infrastructure and systems within local governments. As part of developing the LCCAP, the local government of Bohol collected available local climate data including previous disasters and future climate projections. Using the data provided by the Office of the Civil Defense and PhiVolcs, a list of past hazards and climate-related disasters experienced in Bohol from 2004 to 2013 is consolidated in the Table below. The Office of Civil Defense reported a total of 78 disaster incidences during the period in the province with a total approximate damage cost of Php 7.949 Billion. The geologic and hydro-meteorological disasters that hit Bohol were flashfloods, landslide, and earthquake.

Table 9: List of Past Hazards and Climate-related Disasters Experienced in Bohol Province: CY 2004-2015

Date of Event	Type of Hazard	Frequency of Occurrence	Location	Impacts of the Event (Cost of Damage in million Pesos)
October 2004	Flashflood	1	Jagna	Php 0.100
January to Dec. 2005	Heavy rains, landslide, fire incidents, typhoon, earthquake	7	Jagna, Getafe, Calape, Tagbilaran City	15.048
January to Dec. 2006	Disease outbreak (diarrhea), lightning incidence, landslide, sea mishap, capsized vessel, tidal waves, land cracks, typhoons	18	Loon, Pilar, Tubigon, Ubay, Valencia, Loay, Panglao, Jagna, Candijay, Bien Unido, Getafe, Cortes, Alicia, Sierra Bullones, Batuan	16.450
January to Dec. 2007	Landslide, fire incidents, whirlwind (alimpus), lightning incidents, poisoning, drowning, earthquake, capsized motor bancas, typhoon	18	Tagbilaran City, Jagna, Pres. Garcia, Talibon, Getafe, Trinidad, Pilar, Tubigon, Valencia, Ubay, Loon, Loboc, Loay, Candijay	6.547
January to Dec. 2008	Flashflood, fire incident, landslide, typhoon, capsized vessel/fishing boat, airplane crash	28	Clarin, Tubigon, Tagbilaran City, Cortes, Buenavista, Panglao, Balilihan, Pilar, Talibon, Loon, Lila, Getafe, Dimiao, Loboc, Pres. CPG, Guindulman, Inabanga	30.828
March 2010-October 2013	Earthquake	6	17 hardest municipalities: North and south-western part of Bohol; Maribojoc, Loon, Tubigon, Calape, Clarin	7.8 Billion

			Inabanga, Buenavista, Danao, Sagbayan, Catigbian, San Isidro, Antequerra, Balilihan and Cortes; Southern municipalities of Loboc, Carmen, Lila, Guindulman, Duero, Jagna, G-Hernandez, Valencia, Loay Albuquerque, Baclayon and Tagbilaran City	
Total		**78**		**Php 7.949 Billion**

- **Hazard-Prone Areas in Bohol**

Minor and major fault lines are evident on the island as shown by terraced encarpments occurring in its southern and central parts. The terraced escarpments in the Ilihan Steep escarpments notably in Loon, Tagbilaran and in Anda Peninsula further prove vertical upliftment caused by tectonics. Earthquakes have been felt in Bohol but only an average of one perceptible shock is reported each year (refer to Map below).

The Provincial Development and Physical Framework Plan (PDPFP) must consider the flood-prone areas, given the numerous river systems in the province (see map below). A comprehensive Geo-hazard Assessment per municipality in Bohol was conducted by the Mines and Geo-Sciences Bureau of DENR Region 7 in September 2007 (see table below). Each barangay was rated with low, moderate or highly susceptible to landslide and/or flooding. There are other risks and potential disasters to be addressed: landslides, tsunamis, tropical cyclones, earthquake, among others**.** Majority of the coastal zones in Bohol is highly susceptible to liquefaction, storm surges and tsunami (refer to the maps on next succeeding pages). The Provincial Government of Bohol thru the Provincial Disaster Risk Management Council (PDRRMC), the newly installed Provincial Disaster Risk Reduction Management Office (PDRRMO) in collaboration with the PHIVOLCS-DOST, MGB and OCD, is continuously undertaking several initiatives to ensure its readiness to cope up with the challenging needs during natural and man-made disasters. The Multi-Geo-Hazard Maps of Bohol was developed thru the Hazard Mapping and Assessment for Effective Community-Based Disaster Risk Management -- the 1st component of the READY Project implemented in the province since February 2007.

Table 10 below shows the summary matrix for hazard susceptibility of the 47 municipalities and one city in the province of Bohol. All municipalities and Tagbilaran City are susceptible both to earthquake and earthquake-induced landslide (EIL). In summary, there are eight (8) municipalities (Cortes, Duero, Guindulman, Inabanga, Jagna, Loay, Maribojoc and Valencia) that are highly susceptible to all type of hazards; forty-seven (47) municipalities that are susceptible to three hazards, namely: earthquake, earthquake-induced landslide and rain-induced landslide. This is followed by liquefaction with 33 vulnerable municipalities. Next is the storm surge with 29 susceptible municipalities, followed closely by tsunami with 28 prone municipalities. The last but not the least is the flood with only 18 susceptible municipalities.

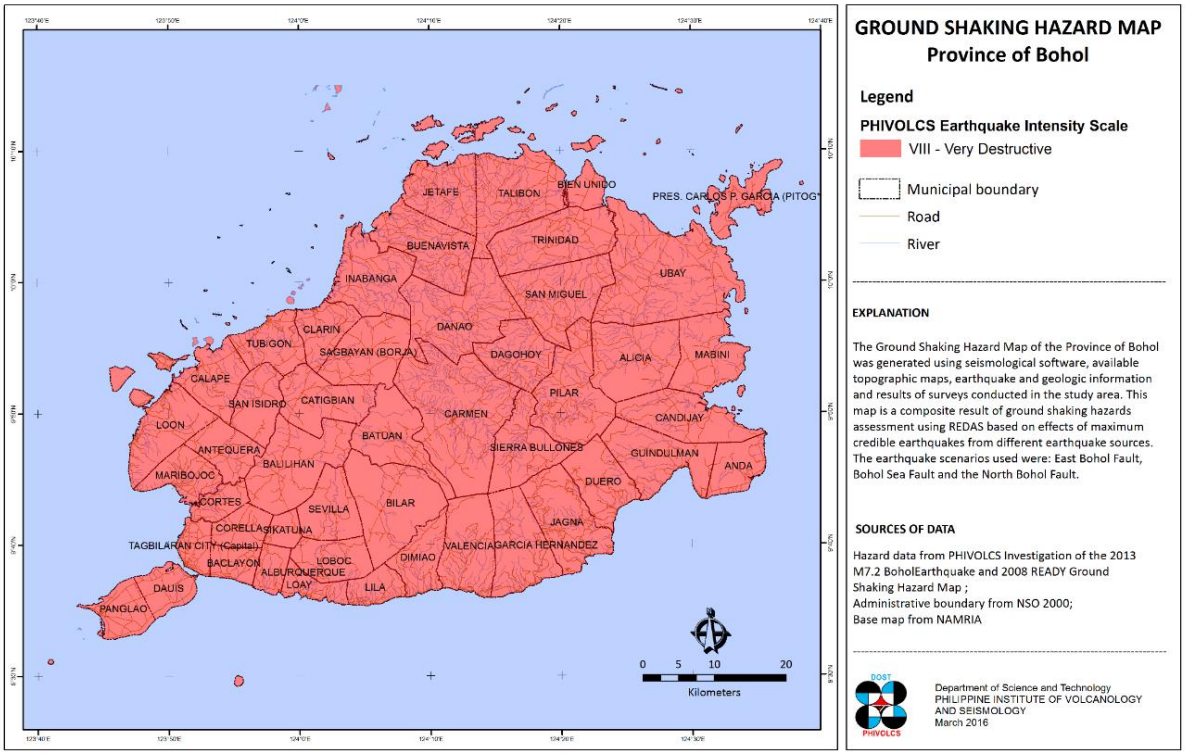
Table 10. Summary Matrix for Hazard Susceptibility, Province of Bohol

Municipality	Geologic Hazards				Hydro-meteorologic Hazards			
	EQ	Liquefaction	EIL	Tsunami	Floods	RIL	SS	Others
Alburquerque	■	■	■	■		■	■	
Alicia	■	■	■			■		
Anda	■	■	■	■		■	■	
Antequera	■		■		■	■		
Baclayon	■	■	■	■		■	■	
Balilihan	■		■		■	■		
Batuan	■	■	■			■		
Bien Unido	■	■	■	■		■	■	
Bilar	■	■	■			■		
Buenavista	■	■	■	■		■	■	
Calape	■	■	■	■		■	■	
Candijay	■		■		■	■	■	
Carmen	■		■		■	■		
Catigbian	■		■			■		
Clarin	■	■	■	■		■	■	
Corella	■		■			■		
Cortes	■	■	■	■	■	■	■	
Dagohoy	■	■	■		■	■		
Danao	■		■		■	■		
Dauis	■	■	■	■		■	■	
Dimiao	■	■	■	■		■	■	
Duero	■	■	■	■	■	■	■	
G-Hernandez	■	■	■	■		■	■	
Getafe	■	■	■	■		■	■	
Guindulman	■	■	■	■	■	■	■	
Inabanga	■	■	■	■	■	■	■	
Jagna	■	■	■	■	■	■	■	
Lila	■	■	■	■		■	■	
Loay	■	■	■	■	■	■	■	
Loboc	■		■		■	■		
Loon	■	■	■	■		■	■	
Mabini	■	■	■	■		■	■	
Maribojoc	■	■	■	■	■	■	■	
Panglao	■	■	■	■			■	
Pilar	■	■	■		■	■		
Pres. Garcia	■	■	■	■		■	■	
Sagbayan	■		■			■		
San Isidro	■		■		■	■		
San Miguel	■		■			■		
Sevilla	■		■			■		
Sierra Bullones	■		■		■	■		
Sikatuna	■		■			■		
Tagbilaran City	■	■	■	■		■	■	
Talibon	■	■	■	■		■	■	
Trinidad	■		■			■		
Tubigon	■	■	■	■		■	■	
Ubay	■	■	■	■		■	■	
Valencia	■	■	■	■	■	■	■	

Legend: EQ – Earthquake
EIL – Earthquake-Induced Landslide
RIL – Rainfall-Induced Landslide
SS – Storm Surge

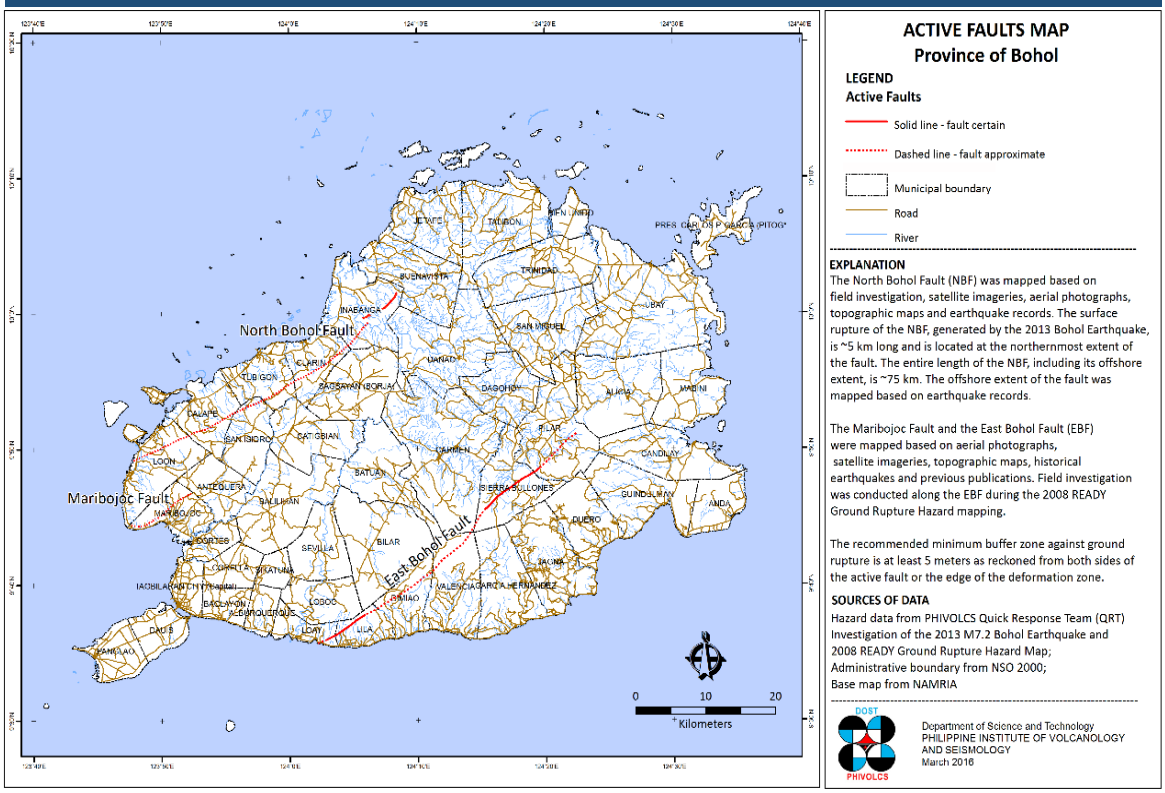
For floods, there are only 18 municipalities that are susceptible to this hydro-meteorological hazard, namely: Antequera, Balilihan, Candijay, Carmen, Cortes, Dagohoy, Danao, Duero, Guindulman,

Map 13. Ground Shaking Hazard Map, Bohol

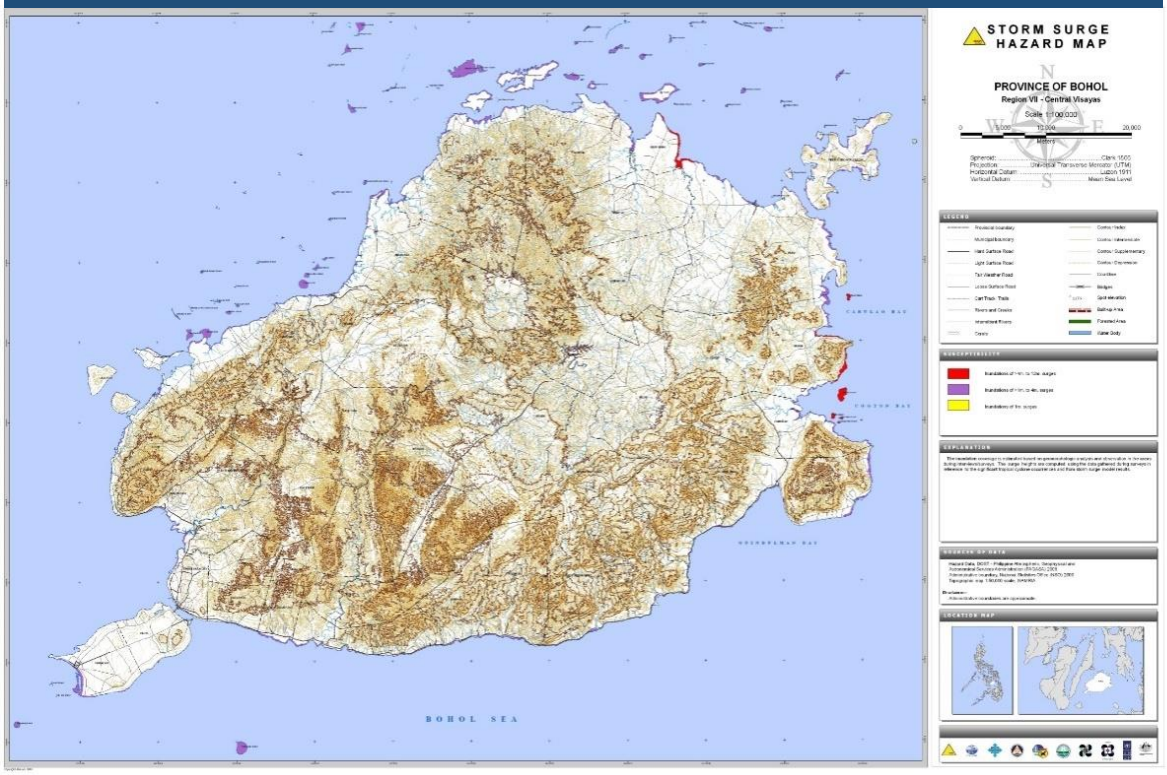


Inabanga, Jagna, Loay, Loboc, Maribojoc, Pilar, San Isidro, Sierra Bullones, and Valencia. Only the municipality of Panglao is not susceptible to rain-induced landslide (RIL) among the 47 towns and one city.

Map 14. Active Faults Map, Bohol

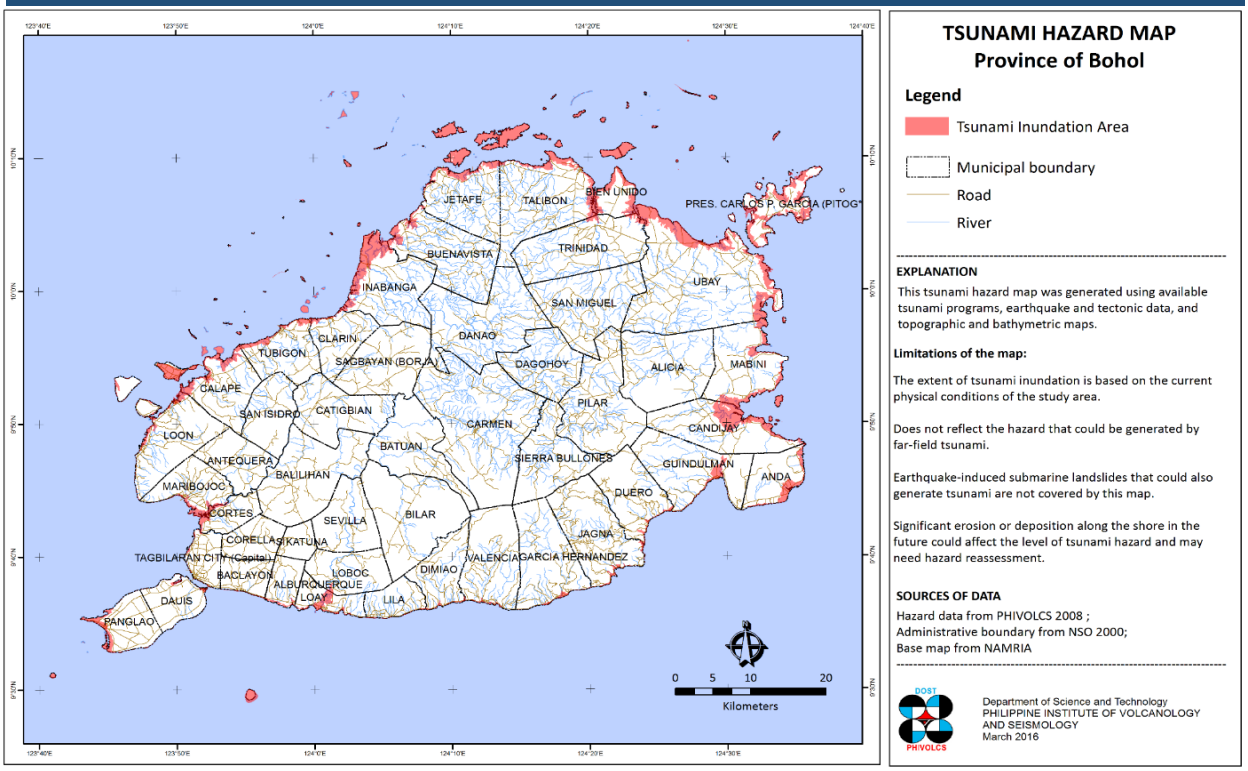


Map 15. Storm Surge Hazard Map, Bohol



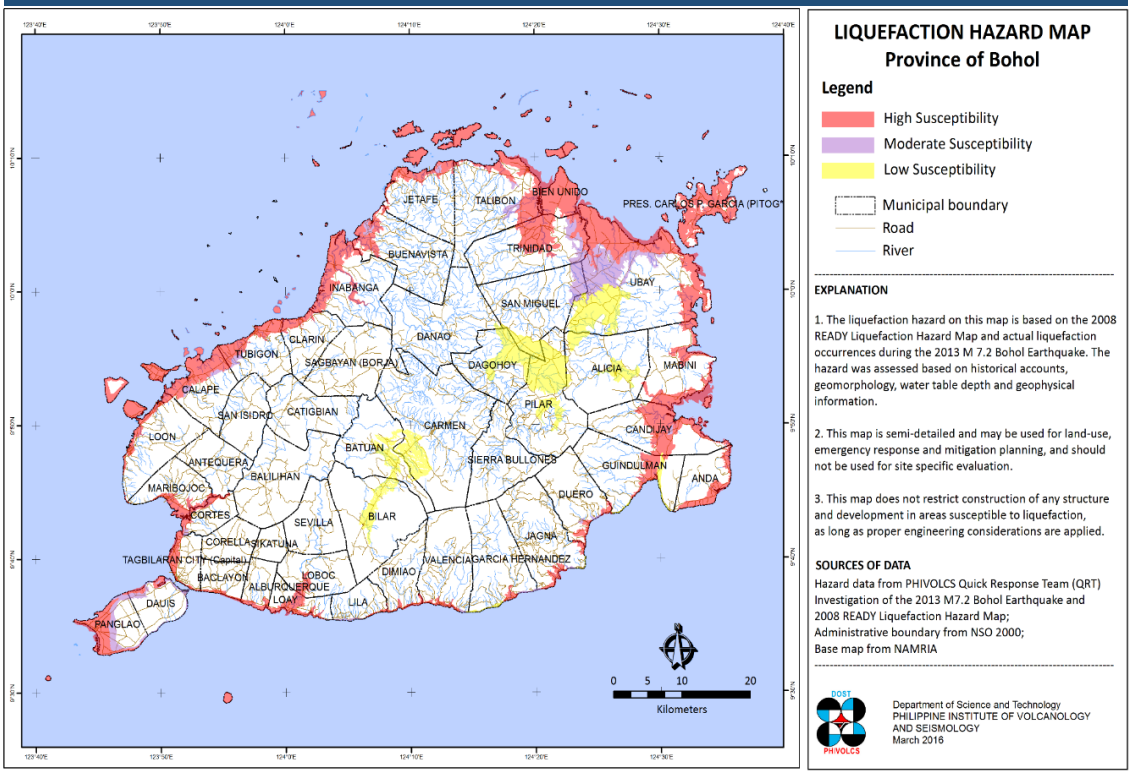
There are **29 municipalities** that are susceptible to storm surge, namely: Alburquerque, Anda, Baclayon, Bien Unido, Buenavista, Calape, Candijay, Clarin, Cortes, Dauis, Dimiao, Duero, Garcia Hernandez, Getafe, Guindulman, Inabanga, Jagna, Lila, Loay, Loon, Mabini, Maribojoc, Panglao, Pres. Garcia, Tagbilaran City, Talibon, Tubigon, Ubay, and Valencia.

Map 16. Tsunami Hazard Map, Bohol



For tsunami, there are **28 municipalities** that are susceptible while the rest of the 20 inland municipalities are not tsunami-prone, namely: Alicia, Antequera, Balilihan, Batuan, Bilar, Candijay, Carmen, Catigbian, Corella, Dagohoy, Danao, Loboc, Pilar, Sagbayan, San Isidro, San Miguel, Sevilla, Sierra Bullones, Sikatuna, and Trinidad. Most of the liquefaction-prone municipalities are the same municipalities that are also tsunami-prone.

Map 17. Liquefaction Hazard Map, Bohol



For liquefaction, only the following 15 municipalities are not susceptible to such hazard, namely: Antequera, Balilihan, Candijay, Carmen, Catigbian, Corella, Danao, Loboc, Sagbayan, San Isidro, San Miguel, Sevilla, Sierra Bullones, Sikatuna, and Trinidad. It could be concluded from this data that most inland municipalities are not prone to liquefaction and that all coastal municipalities are susceptible to this geologic hazard.

Chapter II. Development Vision and Framework of

Over-all Vision Statement and Development Goals

The Province of Bohol's development has been guided by its vision and mission statements. These statements, which have been crafted through consultative and participatory processes with practically all stakeholders and sectors represented, continue to serve as the overall guiding beacon of what Bohol wants to be, summarizing the aspiration of its people and the foundation of government's continued efforts of providing services, facilities and overall governance of the province.

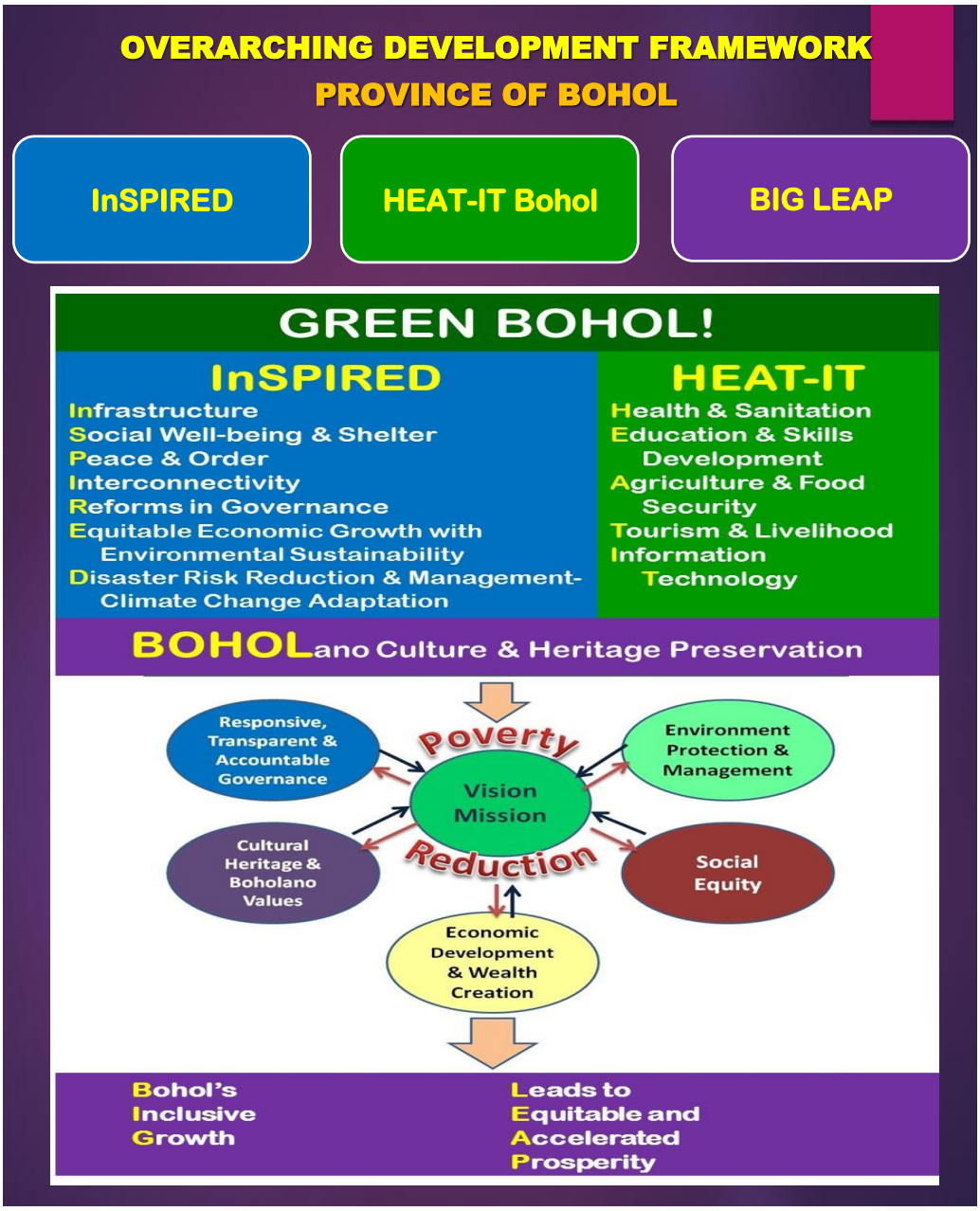
The vision and mission statements, for several provincial administrations, have been adopted and revalidated to ensure that the province's goals, strategies and programs are aligned with such long-term development state. Below are the vision and mission statements of the Province of Bohol.

Vision	**Bohol is a prime eco-cultural tourism destination and a strong, balanced agri-industrial province, with a well-educated, God-loving and law-abiding citizenry, proud of their cultural heritage, enjoying a state of well-being and committed to sound environmental management.**
Mission	**To enrich Bohol's social, economic, cultural, political and environmental resources through good governance and effective partnerships with stakeholders for increased global competitiveness.**

To effectively achieve this vision, the Provincial Government of Bohol (PGBh) has periodically updated its Development Framework, which basically covers the medium-term (term-based) development priorities for the next three years. Such priorities are attuned to current realities and situation, to make government-led interventions as pro-active as possible to address issues and concerns of all sectors.

For the year 2016-2019, an overarching development framework has been crafted with an updated set of strategies for each of the pillars of development. These pillars and strategies were identified through series of participatory workshops participated by Provincial Government Officials, heads of national government agencies, the local government units, civil society organizations and the private sector. This system of consultative activities was undertaken to ascertain the need and doability of the programs and projects identified as well as gain the commitment and support of all stakeholders through synergy, counterparting arrangements and complementation of initiatives.

The development framework of the PGBh can be summarized in the tagline **InSPIRED HEAT-IT Bohol** towards the **BIG LEAP**, as described in the following section.



The updated development framework supports the achievement of the development vision of the Province and gives more emphasis on the following:

- **Infrastructure Support**: On top of regular projects for roads and bridges, other infrastructure development interventions will be pursued for agriculture, social welfare service facilities, classrooms, hospitals and government buildings. Public-private partnerships will be strengthened to continue to implement programs for bulk water supply and power development. The strong partnership and collaboration with the national government agencies will be sustained for large infrastructure investments for airport, ports, and irrigation development.

- **Social Well-being and Shelter**: Development interventions and services for vulnerable groups, persons with disabilities including the conduct of mobile services. Collaboration with

various stakeholders for the relocation of vulnerable communities as well as the completion of the construction of core shelter for the earthquake victims in the province. Enhancement of disaster preparedness and response capabilities shall also be continued. Through fund-sourcing, shall establish rehabilitation service facility. Also, to continue to advocate for the prevention of illegal recruitment and human trafficking.

- **Peace and Order:** This is a continuing concern in the province, not just for anti-illegal drugs but for all forms of criminality including efforts to maintain internal security. Convergence for anti-criminality programs through the Provincial Peace and Order Council (PPOC) and Joint Task Force Dagon. Support shall be continued for the enhancement of capabilities of law enforcement agencies/ LGUs including the upgrading of facilities and equipment to fight and prevent crimes. Jail decongestion program and designation of additional anti-illegal drug court shall be supported in collaboration with appropriate national government agencies. A drug rehabilitation center will also be constructed.

- **Interconnectivity:** Sustaining partnerships and collaboration among LGUs, NGAs, CSOs, and the Private Sector in pursuing common development goals, through counterparting arrangements and sharing of technologies and skills. Strategic convergence with stakeholders for various socio-economic development initiative implementation in the province. Also, to improve physical interconnectivity through various infrastructure projects for information technology, power, water, communications, roads and bridges.

- **Reforms in Governance:** The PGBh shall continue to initiate reforms for more efficient, developmental, accountable and responsive governance. Strategies to achieve these include increase in local revenue generation, improvement of systems and processes and policy implementation especially for public financial management and human resource capacity development. The operation of local special bodies shall also be strengthened and local codes needed shall be enacted/ reviewed.

- **Equitable Economic Growth with Environmental Sustainability**: The PGBh shall continue to improve the performance of the province's economic drivers on agriculture, tourism, trade and investments and new industries for IT – based services in collaboration with stakeholders. The establishment of micro-small-medium enterprises shall be supported and the operation of the Negosyo Center and Business One Stop Shop shall be sustained. In doing this, the protection and preservation of the environment shall be underscored and benefits shall trickle down to the grassroot level.

- **Disaster Risk Reduction & Management/ Climate Change Adaptation:** Considering that the province is prone to multiple natural hazards, building capacities and awareness for disaster preparedness, mitigation, response shall be heightened. Among the strategies to be supported are: establishment of early warning system, awareness campaign at the community level, strengthening of local DRRM offices, upgrading of capabilities and facilities/ equipment, and mainstreaming of DRRM to local development plans.

The programs for Health, Education, Agriculture, Tourism, and Information Technology (HEAT-IT) shall also be continued:

- **Health and Sanitation:** Pursuing programs to improve hospital and sanitation services, hospital facilities and equipment upgrading, special universal Philhealth Program, medicine and medical supply management, specialization of hospital services, and sustaining effective health programs.

- **Education and Skills Development** – Improving school facilities, providing other avenues to develop the skills of labor force, which are responsive to the industries available in the province, implementation of the Dynamic Learning Program, establishment / operation of municipal libraries, CPG Scholarship Program, and strengthening partnerships with various national government agencies and stakeholders to pursue education and skills development.

- **Agriculture and Food Security:** Continue to implement and expand the services for agriculture, fisheries, livestock sectors thru the different programs of the provincial government, NGAs and other LGUs. Modernization of agri-livestock and fishery facilities, promotion of agri-business, strengthening agri-database, and capacity development for project implementers.

- **Tourism and Livelihood:** This shall include support to product development of new tourism sites and improvement of existing sites. Extensive promotion and marketing for Bohol's tourism industry, provision of infrastructure support to tourism, and creative tourism development.

- **Information Technology**: Though this is mainly driven by the private sector, the Province is working closely for the availability of needed resources (human resource and skills) and infrastructure support (reliable power, communication network) for the IT industry, as well as facilitating, with LGUs to provide an investment-friendly environment for IT. Also to be sustained are the implementation of the Bohol Information System Strategic Plan, and the development/ maintenance of processes and application software/ systems.

Another priority item added is **Boholano Culture and Heritage Preservation,** which covers the revitalization and promotion of our culture and the arts, creation of arts groups, capacity development support program for Boholano artists, and support for the creation of municipal culture office in LGUs. Furthermore, mainstreaming the Boholano culture and arts development across development sectors and planning shall be promoted.

On top of the Framework, the "**GREEN BOHOL**" banner in included to stress the province's priority to pursue sustainable development and the protection of the environment, supporting programs and projects that are climate change responsive, and the development/ utilization of renewable resources.

At the center of the Framework is the long-term vision-mission of Bohol, with still, **poverty reduction** as the main goal. While the province has been successful in reducing poverty incidence among its people, the latest survey shows that 24.7% of the families are still living in poverty. While this figure is way below the 50.2% poverty incidence in year 2000 wherein Bohol was among the 20 poorest provinces in the country, the government would still sustain its socio-economic programs to uplift the lives and welfare of Boholano constituents.

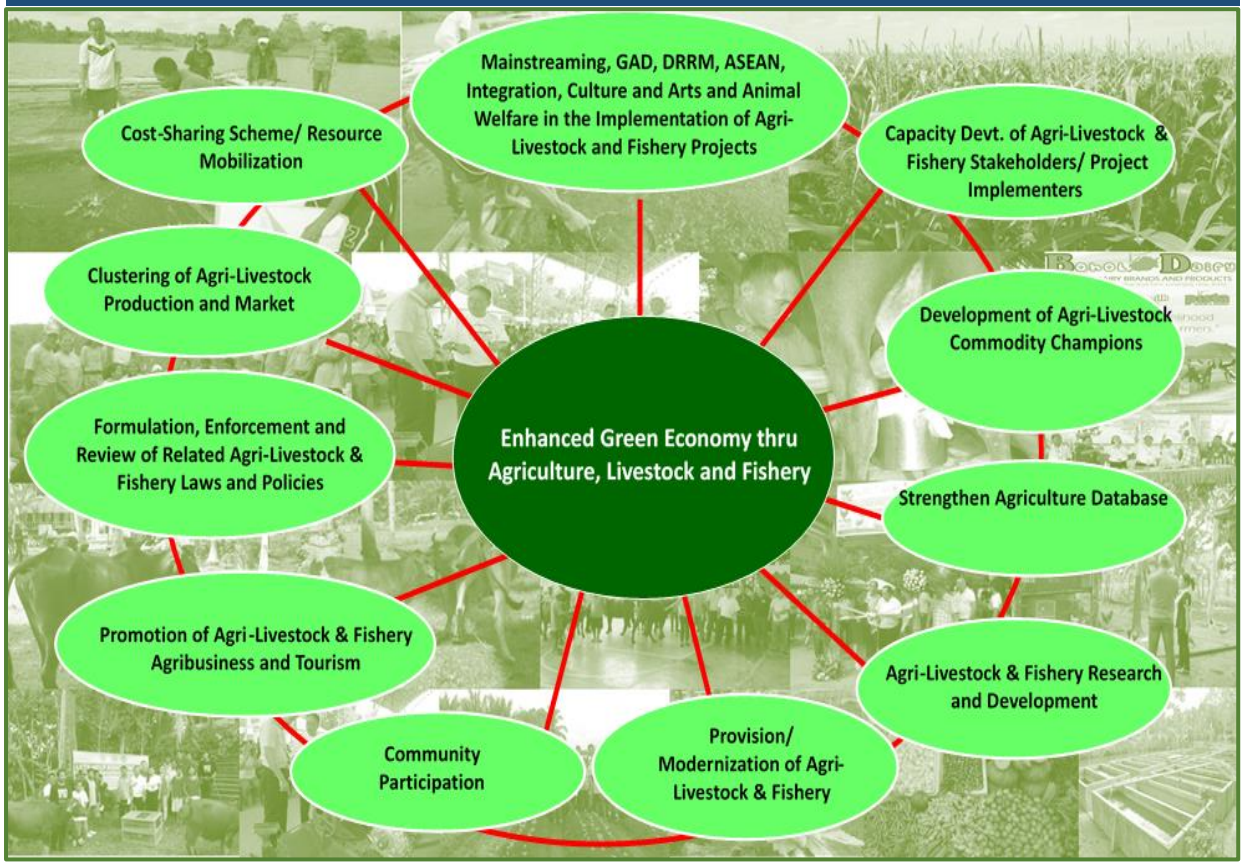
The PGBh will be pushing for the attainment of other goals set for **Environment Protection and Management, Social Equity, Economic Development and Wealth Creation, Cultural Heritage and Boholano Values, and responsive, Transparent and Accountable Governance**.

Looking into the different development pillars, the identified goals and strategies for the province of Bohol at the medium-term, and the eventual implementation of programs and projects, as embodied in the Provincial Development and Physical Framework Plan (PDPFP), Executive Legislative Agenda (ELA), Annual Investment Plan (AIP) and the Annual Appropriations of the PGBh, other LGUs, and various national government agencies, Bohol hopes to promote **inclusive growth** for all that will eventually **lead to equitable and accelerated prosperity.**

Agriculture Sector Vision and Goals

Much attention has been focused in the agriculture sector, Bohol being predominantly agricultural with more than half of its total land area devoted to agriculture. The development effort of the province is guided by its vision for a **Green Bohol, a Competitive and Sustainable Agro-industrial Province in the Visayas.** The figure below presents the mindmap of the agriculture sector with the overall goal for an Enhanced Green Economy through Agri-fishery and Livestock and its suggested strategies towards the attainment of the goal.

Figure 32. Agriculture Goals and Strategies



III. Priority Commodity Value Chain Development

The priority commodities identified in the province are: coconut, livestock-dairy, native chicken, vegetable, cassava, inland fishery, swine, mariculture (seaweeds), cacao and coffee. The identified commodities were ranked using the criteria as to suitability, market potential, impact on the poor and the number of growers or producers.

Commodity Prioritization Worksheet (CRITERIA)	Weight		Priority Commodities					
			COCONUT		LIVESTOCK-DAIRY		NATIVE CHICKEN	
			Raw Score	Weighted Score	0	Weighted Score	Raw Score	Weighted Score
I. Suitability	**20%**		-	**0.00**	0	**0.00**	0	**0.00**
II. Market Potential	**30%**			**2.70**		**2.70**		**2.34**
1. Market size		*20%*	9	1.80	9	1.80	9	1.80
3. Market growth potential		*20%*	9	1.80	9	1.80	9	1.80
4. Ease of entry		*20%*	9	1.80	9	1.80	6	1.80
5. Potential for value addition		*40%*	9	3.60	9	3.60	7	2.40
III. Impact on the Poor	**20%**			**1.80**		**1.80**		**1.80**
1. Number of Poor People Involved		*50%*	9	4.50	9	4.50	7	4.50
2. Potential to Raise/Create Income		*50%*	9	4.50	9	4.50	6	4.50
IV. Number of Growers/ Producers	**30%**		9	**2.70**	6	**1.80**	3	**1.80**
Total Weighted Score	**100%**			**7.20**		**6.30**		**5.94**
RANK				**1st**		**2nd**		**3rd**

Criteria	Weight		Priority Commodities					
			HI-HV VEGETABLE		CASSAVA		TILAPIA-HITO -IF	
			Raw Score	Weighted Score	Raw Score	Weighted Score	Raw Score	Weighted Score
I. Suitability	**20%**		0	**0.00**	0	**0.00**	0	**0.00**
II. Market Potential	**30%**			**1.98**		**2.34**		**1.62**
1. Market size		*20%*	9	1.80	9	1.80	6	1.20
3. Market growth potential		*20%*	9	1.80	9	1.80	6	1.20
4. Ease of entry		*20%*	9	1.80	9	1.80	9	1.80
5. Potential for value addition		*40%*	3	1.20	6	2.40	3	1.20
III. Impact on the Poor	**20%**			**0.90**		**1.80**		**0.60**
1. Number of Poor People Involved		*50%*	3	1.50	9	4.50	3	1.50
2. Potential to Raise/Create Income		*50%*	6	3.00	9	4.50	3	1.50
IV. Number of Growers/Producers	**30%**		6	**1.80**	6	**1.80**	3	**0.90**
Total Weighted Score	**100**			**4.68**		**5.94**		**3.12**
RANK				**4th**		**5th**		**6th**

Criteria	Weight		Priority Commodities							
			SWINE		MARICULTURE		CACAO		COFFEE	
			Raw Score	Weighted Score	Raw Score	Weighted Score	Raw Score	Weighted Score	Raw Score	Weighted Score
I. Suitability	**20%**		0	**0.00**		**0.00**		**0.00**		**0.00**
II. Market Potential	**30%**			**2.52**		**1.50**		**1.50**		**1.50**
1. Market size		*20%*	9	1.80	6	1.20	6	1.20	6	1.20
3. Market growth potential		*20%*	9	1.80	6	1.20	6	1.20	6	1.20
4. Ease of entry		*20%*	6	1.20	7	1.40	7	1.40	7	1.40
5. Potential for value addition		*40%*	9	3.60	3	1.20	3	1.20	3	1.20
III. Impact on the Poor	**20%**			**0.60**		**0.90**		**0.80**		**0.50**
1. Number of Poor People Involved		*50%*	3	1.50	3	1.50	2	1.00	2	1.00
2. Potential to Raise/Create Income		*50%*	3	1.50	6	3.00	6	3.00	3	1.50
IV. Number of Growers/Producers	**30%**		6	**1.80**	2	**0.60**	2	**0.60**	2	**0.60**
Total Weighted Score	**100%**			**4.92**		**3.00**		**2.90**		**2.60**
RANK				**7th**		**8th**		**9th**		**10th**

Commodity Value Chain 6: VIRGIN COCONUT OIL (VCO)

A) Commodity Profile[21]

- **Product Description**

The coconut tree is a plant that belongs to the family *Arecaceae* of the genus *Cocos* and species *Cocos nucifera*. The term "coconut" may refer to the whole tree, the seed or its fruit which is botanically called a drupe and not a nut. Coconuts have over 150 species all over the world and the tree grows in tropical and subtropical areas.

It is grown in different soil types – laterite, coastal sandy, alluvial, and reclaimed soils of marshy lowlands. It tolerates salinity and a wide range of pH (5.0-8.0). It also requires extensive exposure to sunlight and prefers an elevation not more than 600 meters above sea level.

Coconuts are classified into two types: tall and dwarf varieties. Tall varieties grow up to 30 meters, while dwarf varieties reach 15 meters. The tall type of coconut is a slow growing variety bearing less nuts. It starts bearing nuts 5-8 years after planting and will reach its maximum yield after 15-20 years. The tree has a strong stem, and has a lifespan between 80-100 years. They are normally cross-pollinating or heterozygous and are commonly found in Central Visayas.

Unlike the tall varieties, the dwarf varieties are fast growing and fruit at an early age. They flower 3 to 4 years after planting and reach maximum yield within 5 to 6 years from planting. Dwarf varieties have smaller nuts with variable colors of yellow, green, red and orange. They have a life span of up to 50 years and are self–pollinating or homozygous compared to the tall varieties. Hybrids are the inter-varietal crosses of two morphological forms of coconut. They show earliness in flowering and give increased yield, higher quantity and better quality of copra and oil when compared to the parents.

Based on the estimation of the Regional Office 7 of PCA, majority or about 85-90% of the coconut varieties in the region is of the tall variety. A little, about 5 to 10% is of hybrid variety and the remaining are dwarf varieties. The type of coconut varieties planted in the region is dependent on the type of seedlings available since coconut farmers do not usually spend money to buy seedlings to grow.

- **Coconut Suitability**

Coconut is one of the staple commodities in the region and being surrounded with bodies of water, Central Visayas gains natural salt fertilizer from the sea which is good for the growing of coconut trees.

[21] Value Chain Analysis Virgin Coconut Oil, Central Visayas, April 2018

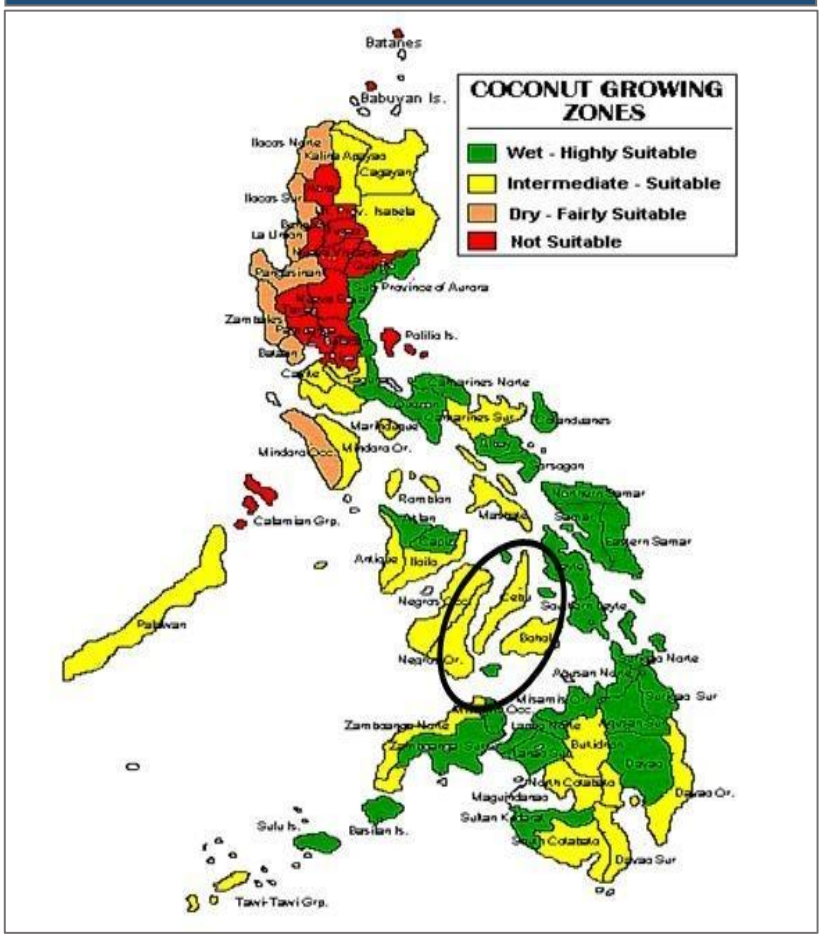
Table 12. Coconut Suitability of Central Visayas

Province	Estimated Area	Estimated Bearing Trees
Negros Or.	50,160	4,775,910
Cebu	42,290	4,094,330
Bohol	42,640	3,621,330
Siquijor	6,800	549,440

Source: PCA, (Magat)

The figure below shows the suitability of the region based on the rainfall distribution and growing altitude of the provinces. Central Visayas is classified under Suitability (Priority 2). These are areas in the Intermediate Growing Zone (IGZ), with adequate rainfall year-round and only 3 to 4.5 dry months. The average expected productivity of bearing trees annually is 1.5 to 2.5 tons copra/ha or 6,750 to 11,250 nuts/ha.

Figure 33. Philippine Coconut-Growing Zone



Source: Philippine Coconut Authority

Virgin coconut oil is making waves in the export market. Philippine VCO products as Koko Oil from Leyte, Celebes Certified Organic Virgin Coconut Oil from Butuan City (with market outlets in Cebu City), Nutrizen Extra Virgin Coconut Oil, and Nutiva Organic VCO – are among the few samples showing the great potential in both domestic and export market.

In Region 7, the four provinces agreed to have coconut as one of its top priority commodities, with virgin coconut oil as one of the emerging and potential products. A number of VCO processors have already tapped both the domestic and export markets. The BHMC Bio Natural Products, Inc. for Bohol, the Southern Partners Fair Trade Center Inc. in Cebu, the BLISCOFA farmers association in Negros Oriental and the Smylen Dream VCO in Siquijor. They have farmer-members supplying matured nuts or whole nuts for their coconut oil supply.

Based on commodity selection criteria, the four (4) provinces in Central Visayas were able to prioritize coconut, as shown in the table.

Table 13. Commodity Prioritization for Coconut in Region 7

Criteria	Commodity Ranking: Coconut			
	Bohol	Negros Oriental	Cebu	Siquijor
Suitability	9	9	8	9
Market Potential	9	9	9	9
Impact on the Poor	9	8	8	9
No. of Growers/ Producers	9	6	9	9
Rank	**1**	**2**	**1**	**1**

Source: Commodity Prioritization Worksheet, PCIP
(Note: 10 = highest raw score)

Owing to the table above, there is a big potential of coconut-based products in both the domestic and international markets. Thus, the respective provinces of the region made coconut as the top priority commodity as this can compete in the market having suitability to the natural conditions of Central Visayas - particularly on rainfall patterns, soil quality and temperature levels distributed throughout the year. The commodity is readily available region-wide and is potential for value addition to other product formats, two of those are VCO and coco coir/geonets which involves local farmers and rural poor who are currently into the coconut industry.

In the region, this could be economically advantageous for farmers in Bohol, Negros Oriental, Cebu and Siquijor, who ventured into virgin coconut oil production - mostly on a smaller scale - but also to groups exporting VCO with good sales.

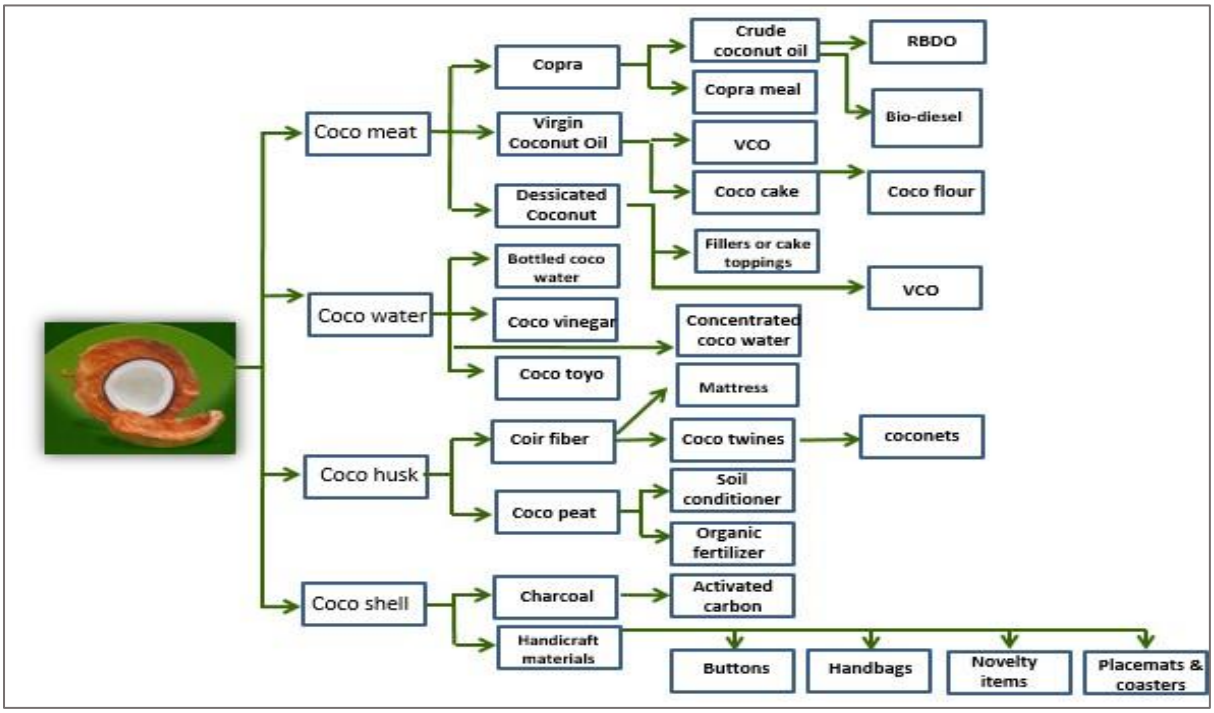
- **Product Formats**

With the use of machineries, equipment and technology, different products can be generated from a mature coconut such as oil, copra, fiber, coir dust, sap, coco water, charcoal and coco lumber. These primary products are then upgraded into high value coco-based products to be traded in the local and export markets.

Each part of the coconut tree can be converted into other products that can be useful to its users but more products are produced from the whole mature nut. A whole nut has four major parts which include the meat, husk, water and shell. Mature coconuts are harvested at around 9-12 months and produce more meat as compared with young coconuts, which

produce more water. The former's meat is thick, fibrous and full of flavor while the young coconut is gelatinous and not very flavorful. The different parts of the mature coconut can be processed into different products which include coconut oil, virgin coconut oil and coir, among others as shown in the Figure 34 below.

Figure 34. Whole Mature Nut Product Formats



Source: *PCA-Trade Information and Relations Division, National Office*

The coconut meat is the most important part of coconut because it is used to produce copra which is the number one coconut product of the Philippines. According to PCA, more or less 90% of the national coconut production is processed into copra. From copra, crude coconut oil is produced which can be further refined into cooking oil or used for bio-diesel.

Coconut oil is usually obtained from the copra or from kernel or meat of mature coconuts. It is slow to oxidize and is resistant to rancidification which can last up to six months at a temperature of 24˚C (75˚F) without getting spoiled. There are two broad categories for coconut oil: (1) those mass-produced at an industrial level which needs further refinement and (2) those which start from fresh coconut and have much less refining.

Another oil produced from the coconut meat is the virgin coconut oil which can be produced in households after undergoing several processes. Based on Philippine National Standard (PNS/BAFPS 22:2004/ ICS 67.2000.10), VCO is defined as:

1. Oil obtained from the fresh, mature kernel (*coconut meat*) of the coconut by mechanical or manual means, with or without the use of heat, without undergoing chemical refining, bleaching, or deodorizing, which does not lead to the alteration of the natural oil. Virgin coconut oil is suitable for human consumption without the need for furthering processing.

2. Virgin Coconut Oil (VCO) consists mainly of medium chain triglycerides, which are resistant to peroxidation. The saturated fatty acids in VCO are distinct from animal fats, the latter consisting mainly of long chain saturated fatty acids.

One by-product of producing VCO is the copra cake. Dessicated coconut is another product made from the coconut meat. This is used as fillers or toppings for desserts.
For the coconut water, this can simply be bottled or further processed into coco vinegar and coco toyo, among others. One of the fast-emerging products from coconut is coco coir which is produced from decorticating the coconut husks. The waste product from this processing is called coco peat which is often used as organic fertilizer. Coconut coir on the other hand is used to produce twines and geonets or being used as material for different fibrecrafts and horticulture products.

Coconut shells are converted into charcoal or used as raw material for producing different accessories, handicrafts such as handbags, placemats etc.

In Central Visayas, the products produced in the region includes VCO, Coir, Coconut based food products ("bucayo") and desiccated coconut, among others. Out of all these products, this VCA would focus on the Study of the Virgin Coconut Oil (VCO).

- **Uses**

VCO can be used as raw material for the manufacturing of laundry and bath soaps, shampoos, shower gels, and other cleaning ingredients. It is also used in the making of lotions, toiletries, massage oils and cosmetics. It is hypoallergenic, and is safe and gentle to the skin.

It is also considered as a nutraceutical because of its many health benefits. Studies conducted show the following benefits of VCO:

1. Possesses anti-inflammatory, anti-microbial and antioxidant properties which work together to protect arteries from atherosclerosis and the human heart from cardiovascular disease (Fife, 2004);
2. Boosts immune system of babies (medium chain C8 and C12) and adults (Kabara 2000);
3. Protects against heart diseases by increasing the high-density lipoprotein (HDL) that collects the excess or unused cholesterol in the body for excretion by the liver;
4. Provides protection from infectious diseases not easily cured by antibiotics;
5. Makes digestion easy without the need for bile and goes directly to the liver for conversion to energy (Dayrit, 2003);
6. Stimulates metabolism, boosts energy and prevents deposition of fats thereby preventing obesity (Dayrit, 2003);
7. Improves nutritional value of food by increasing absorption of vitamins, minerals and amino acids (Fife, 2004);
8. Provides natural, low-calorie fat (Fife, 2004); and
9. Inhibits the action of cancer forming substances (Clara Lim Syliangco, 1987).

Figure 35. VCO Products in Central Visayas

According to studies, VCO boosts the immune system, reduces heart disease because of its high contents of lauric acid, and stimulates metabolism. Aside from oral intake, VCO can also be applied topically to skin and hair. It is good for the skin to heal burns and rashes and for the hair to make it healthier.

Because of the health benefits of VCO, it is being used in a homeopathic clinic. VCO is also marketed as a food supplement and as pure oil. In some cases, VCOs are re-processed and made as base oils for aromatherapy, and massage oils used in massage salons and resorts. Herbal essences like eucalyptus, mint, and vanilla are mixed with the VCO to have achieve aromatic oils.

One potential VCO product from Bohol is the so-called "ozonated" virgin coconut oil, a product of BHMC Bio Natural, which is an effective treatment of bacterial infections, fungal infections, and viral infections with anti-protozoal and anti-parasitic properties. The product is also an effective adjunct treatment for the inflammation of the skin, such as dermatitis

- **Domestic Production**

Coconuts

The coconut industry is one of the most important industries in the Philippines due to its large contribution to the economy by comprising nearly half of the agriculture exports. There are also 68 out of 81 provinces in the country engaged in coconut production which are mostly in rural areas with smallholder farmers. Among the major crops, coconut lands have the largest potential for diversification and it still has huge, untapped resource pool for industry development.

Table 14. Philippine Coconut Production, 2011-2016 (in MT)

Regions	2012	2013	2014	2015	2016	Ave. Annual Growth Rate
PHILIPPINES	15,863,801	15,354,334	14,696,298	14,735,189	13,825,080	-3.35%
Davao Region	2,720,233	2,275,980	2,332,090	2,246,188	1,894,663	-8.30%
Northern Mindanao	1,816,501	1,816,578	1,838,405	1,851,702	1,802,403	-0.18%
Zamboanga Peninsula	1,730,428	1,743,792	1,659,014	1,682,121	1,529,763	-2.94%

Table 14. Philippine Coconut Production, 2011-2016 (in MT)

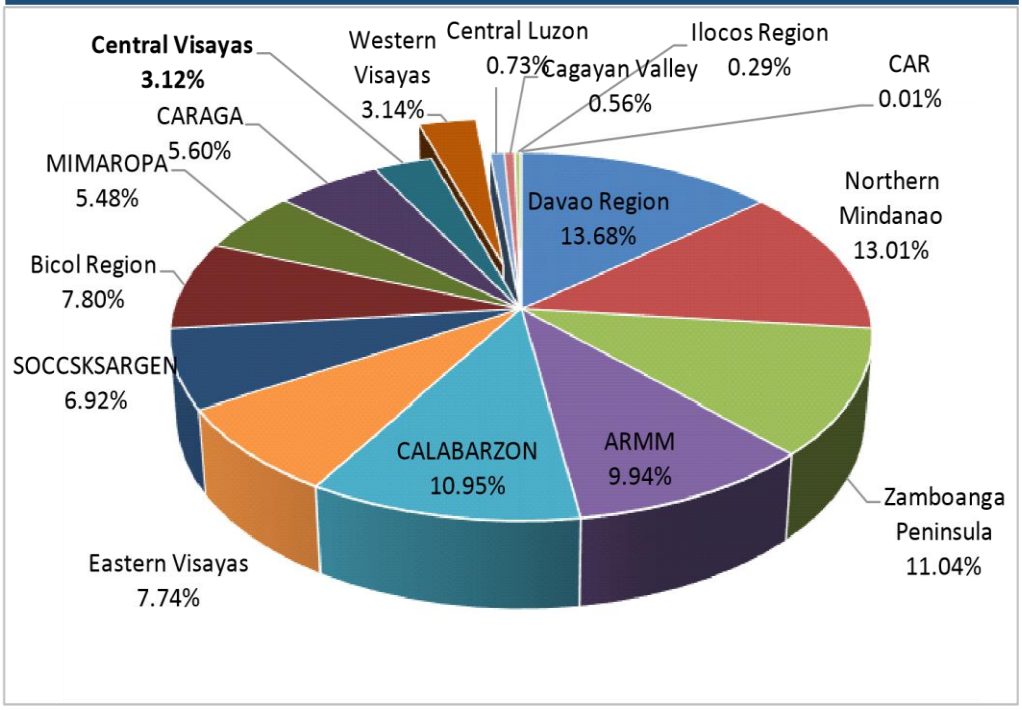
Regions	2012	2013	2014	2015	2016	Ave. Annual Growth Rate
ARMM	1,311,219	1,327,299	1,356,182	1,393,168	1,376,545	1.23%
CALABARZON	1,417,439	1,434,804	1,380,491	1,379,298	1,517,414	1.84%
Eastern Visayas	1,771,459	1,623,586	1,191,923	1,165,867	1,072,666	-11.28%
SOCCSKSARGEN	985,175	1,040,610	1,071,707	1,159,818	958,351	-0.13%
Bicol Region	1,240,459	1,255,507	1,124,412	1,105,743	1,081,112	-3.28%
MIMAROPA	745,489	779,135	806,929	818,146	758,748	0.55%
CARAGA	880,883	834,917	821,513	804,723	775,473	-3.13%
Central Visayas	**451,037**	**458,993**	**448,111**	**432,043**	**432,043**	**-2.68%**
Western Visayas	477,953	470,653	359,826	410,888	435,057	-1.25%
Central Luzon	209,025	179,360	189,174	167,738	100,755	-15.00%
Cagayan Valley	66,233	71,561	74,372	77,118	77,177	3.94%
Ilocos Region	39,316	40,482	40,978	39,464	40,158	0.56%
CAR	952	1,079	1,173	1,165	1,037	2.60%

Source: ***Philippine Statistics Authority, 2017***

It can be seen from the table that Philippine coconut production from 2012-2016 has been continuously decreasing at average growth rate of -3.35%. Davao Region, Eastern Visayas, and Central Luzon experienced the sharpest decreases at 8.30%, 11.28%, and 15% respectively. Despite the decrease in production of Davao Region, it still remains as the top-producing region in the country.

The figure below shows the percentage share of coconut production per region in in 2016.

Figure 36. Percentage Share of Coconut Production per Region, 2015



Of the 16 regions of the country, Davao region has the largest share of production with 13.70% share. This is followed by Northern Mindanao with 13.04% and Zamboanga Peninsula with 11.07%. The top three regions are located in Mindanao which has large plantations of coconut and religiously practices intercropping which produces higher yield.

Central Visayas is ranked 11th behind CARAGA with 2.92% share of total domestic coconut production. It is one of the least performing regions in the country, posting decreasing growth rate of 2.68% from 2011-2015. To be a top coconut producer, Central Visayas has to at least double its production, and be at par with CARAGA or MIMAROPA with around 5.5% share of total domestic production.

Central Visayas Coconut Production

The table below shows the coconut production of the region by province.

Table 15. Central Visayas Coconut Production per Province, 2011-2015 (in MT)

PROVINCE	2012	2013	2014	2015	2016	Ave. Annual Growth	% share 2016
CENTRAL VISAYAS	**451,036.96**	**458,992.52**	**448,110.88**	**432,042.79**	**403,757.73**	**-2.68%**	**100%**
Bohol	165,853.66	172,697.92	177,573.35	156,619.95	145,029.28	-3.06%	35.92%
Cebu	109,870.37	113,280.37	103,476.22	106,882.40	107,702.61	-0.37%	26.68%
Negros Oriental	164,212.80	162,757.31	156,684.34	157,974.17	142,178.44	-3.45%	35.21%
Siquijor	11,100.13	10,256.92	10,376.97	10,566.27	8,847.40	-5.22%	2.19%

Source: ***Philippine Statistics Authority, 2017***

From 2012 to 2016, coconut production in the region was characterized by an increasing trend in 2012-2013 before declining to its lowest in 2016. Average annual growth of the region posted -2.68%. Bohol has the highest production share for the past five years, despite the sharp decline in 2015 by 11.8%, which continued until 2016. Negros Oriental followed closely with production share of 35.21% in 2016, it's lowest through its erratic production.

One of the major factors affecting coconut production in the region is the occurrence of natural calamities. In 2015, El Nino affected coconut plantations in Bohol with land drought and very limited rainfall. In 2013, Typhoon Yolanda also hit the northern part of Cebu devastating coconut farms in the affected areas. Aside from that, there is also the issue on the pest infestation (brontispa or common leaf beetles and rhinoceros beetle) which has affected the coconut production.

PCA reported that from August 2007 to March 2011, the brontispa infestation already affected more than 3 million coconut trees nationwide. It also caused alarm as it infected 171,000 coconut trees in 25 provinces throughout the country, including Bohol. In Central Visayas, the Bohol had the highest affectation, while Negros Oriental, Cebu and Siquijor experienced minor or slight damages. This alarming situation prompted the PCA to spearhead the Brontispa Action Program to determine the extent of infestation and the level of damage in the country.

Apart from the Brontispa, the rhinoceros beetle (*oryctes rhinoceros*), locally known as "bakokang", also wreaked havoc in coconut trees. According to PCA Region 7, the pest infestation occurs year-round in all provinces. Its population is highest between June to September, with the onset of the monsoon that brings light damages to coconuts. This began in 2009 but the effect was only felt in 2011 to 2013, with Bohol as the province with most damage, followed by Cebu, Negros Oriental and Siquijor.

PCA implemented the Integrated Pest Management (IPM) to control or contain the damage to coconuts brought about by insect pests. Trunk injection, leaf pruning, and massive control of biocontrol agents are undertaken by PCA in affected regions. *Tetrastichus sp.* are wasps whose parasitic activity can regulate the population of B. Longgisima at a low level so that it could no longer cause significant damage to coconut palms.

Table below shows the coconut harvest areas in the region. Same as the global coconut area there is little to no significant change in the coconut planted areas in the region.

Table 16. Coconut Harvest Areas in Central Visayas, 2011-2015 (in Ha.)

	2012	2013	2014	2015	2016	Ave. Annual Growth Rate
CENTRAL VISAYAS	**128,660**	**128,666**	**126,347**	**124,950**	**124,940**	**-0.73%**
Bohol	35,293	35,293	35,293	35,258	35,278	-0.01%
Cebu	42,490	42,490	40,174	38,812	38,812	-2.21%
Negros Oriental	45,530	45,530	45,525	45,525	45,525	0.00%
Siquijor	5,347	5,353	5,355	5,355	5,325	-0.10%

Source: ***Philippine Statistics Authority, 2017***

Overall, the region posted an average growth rate of -0.73%. Cebu on the other hand, experienced a decline at 2.21%. The data implies that expansion of coconut planted areas is given little importance and are even decreasing, but at the same time conversion of these areas for other purposes is not apparent. Coconut areas are maintained in general, recognizing the coconut as a prime commodity in the region.

Table 17. Coconut Yield per Province, 2016

	Production (MT)	Planted Area (Ha.)	Yield (MT/Ha.)
CENTRAL VISAYAS	403,757.73	124,940	**3.23**
Bohol	145,029.28	35,278	4.11
Cebu	107,702.61	38,812	2.77
Negros Oriental	142,178.44	45,525	3.12
Siquijor	8,847.40	5,325	1.66

Source: ***Philippine Statistics Authority, 2017***

Table above shows the coconut yield per province in the region for 2016. Bohol had the highest yield at 4.11 mt/ha. Overall, Central Visayas posted a yield of 3.23 mt/ha., almost half

of the yield of Davao Region at 6.28 mt/ha., which is the top coconut-producing region in the country. Its coconut farms are characterized with vast plantations compared to the small landholdings of farmers in Central Visayas. This allows for concentrated and more systematic application of various practices that contribute to the high yields. This shows that Central Visayas has still a lot to improve in terms of productivity of its coconut areas.

Bohol has substantial number of small-holder farms with denser coconut cropage as farmers continue to rely on coconut as a staple crop than the rest of the provinces in the region. This is followed by Negros Oriental with coconut farms located in the uplands and vast sugar lands in the lowlands.

Table 18. Coconut Population in Central Visayas, 2013

Province	Bearing Trees	Non-Bearing Trees	Senile Trees	Nut Production
Bohol	4,680,669	344,065	421,260	168,504,084
Cebu	4,291,490	1,312,830	386,234	154,493,640
Negros Oriental	3,505,810	2,177,866	315,500	126,209,160
Siquijor	367,605	271,646	33,000	13,233,780
Total	**12,845,574**	**4,106,407**	**1,155,994**	**462,440,664**

Source: ***Philippine Statistics Authority, 2013***
(Note: Computation for Nut Production is Bearing Trees times 36 (Average nut per tree per year is 36 for Central Visayas)

In 2013, Central Visayas has 12.84M bearing trees, 3.79% of the population in the country. Bearing trees are mature coconut trees producing nuts, while non-bearing trees are coconut trees 3 years old and below that are yet to mature. Senile trees are 60 years old and above and have already reached or are beyond their productive years.

Bohol has the highest number of bearing trees followed by Cebu, Negros Oriental and Siquijor. Negros Oriental has the most non-bearing trees, implying that the province is more aggressive in the planting and re-planting of coconut trees. Senile trees on the other hand, are used for lumber and fuel.

Table 19. Average Nuts Harvested per Tree/ Harvest (kg), 2016

Province	Nut Production (kg)	Nuts Production/ Harvest (kg)	Bearing Trees	Nuts Harvested/ Tree/Harvest (kg)
Central Visayas	**403,757,730**	**100,939,433**	**12,845,574**	**7.86**
Bohol	145,029,280	36,257,320	4,680,669	7.75
Cebu	107,702,610	26,925,653	4,291,490	6.27
Negros Oriental	142,178,440	35,544,610	3,505,810	10.14
Siquijor	8,847,400	2,211,850	367,605	6.02

Eighty percent (80%) of the nuts harvested in the region are used for copra production. Only 0.63% are utilized for VCO production, while the rest are used for household consumption and fresh buko juice. The computation for the nut utilization for VCO production has the following assumptions:

a) 1 nut = 1 kg
b) VCO production is done quarterly as based on the KII, most processors process/ distribute VCO quarterly
c) 1 L of VCO uses 12-15 nuts or 13.5 nuts if averaged

Table 20. VCO Nut Utilization in Region 7, 2016

Province	Nut Production (kg)	VCO Production (L)	No. of nuts for VCO production	% nuts utilized for VCO Production
Central Visayas	**403,757,730**	**189,180**	**2,553,930**	**0.63%**
Bohol	145,029,280	16,740	225,990	0.16%
Cebu	107,702,610	103,800	1,401,300	1.30%
Negros Oriental	142,178,440	67,800	915,300	0.64%
Siquijor	8,847,400	840	11,340	0.13%

Source: ***Philippine Statistics Authority***

Copra remains the major industry of coconut, utilizing 80% of the nut produced in the region. VCO is still an emerging niche industry, utilizing only 0.63% of of nut production. The remaining 19.37% is is utilized for household consumption (gata) and fresh buko juice sold in public markets or retail stores, or in restaurants, resorts and other establishments.

The table below shows the top producing municipalities per province in Central Visayas and the top ten producing municipalities in the region as a whole.

Table 21. Top Coconut-producing Municipalities, Bohol, 2012

Province: Bohol	No. of Bearing Trees	Province: Cebu	No. of Bearing Trees
1. Carmen	718,479	1. Argao	422,033
2. Dimiao	565,887	2. Tuburan	358,235
3. Balilihan	533,861	3. Oslob	337,909
4. Ubay	531,167	4. Balamban	290,772
5. Inabanga	490,446	5. Barili	265,205
6. Batuan	393,161	6. Asturias	245,598
7. Candijay	387,258	7. Carmen	231,660
8. Antequera	383,728	8. Dalaguete	228,940
9. Anda	348,456	9. Dumanjug	227,152
10. Alicia	326,169	10. Catmon	222,650

Source: ***PCA 7, 2012 (Latest Update)***

Under the assumption that each bearing tree in the region produces an average of 36 nuts per year, Table 20 shows that majority of the top-producing municipalities in the Central Visayas are found in Negros Oriental and Bohol.

Carmen (Bohol) on the other hand, has 5,768 ha. It has high production due to its high number of bearing trees with an average yield of 35 nuts/tree/year. The average farm size is 0.50 ha/farmer with the highest number of coconut farmers in the region at 11,524. [22] According to PCA Bohol office, they do not have an updated data than that of 2011 figure since the Bureau of AgrIcultural Statistics (BAS) data is currently reconciling with that of the Philippine Statistics Authority (PSA) data. There is an on-going direct collection of data down to the barangay level by PCA region-wide, which is expected to be completed by the second semester of 2018.

- **Environment**

Environmental factor is being considered in the VCO processing. Coconut farmers and VCO processors adopt climate resiliency measures owing to the Yolanda experience in the Visayas. Most of these farmers adopted climate-smart activities such as intercropping in order to protect and sustain their livelihoods.

Aside from VCO, processors also produce coco coir or geonets to control the impact of coir dust and make it into fertilizer. This is practiced by Barangay Liptong Small Coconut Farmers Association (BLISCOFA) in Negros Oriental as they buy whole nuts and dehusk the nuts before VCO processing.

Common to all processors in the region, production wastes mainly come from the losses on the expeller and the grinder. All the other wastes are processed later. The wastes or contaminants from the expeller and the grinder are composed mainly of ground coconut meat which are utilized as animal feed or natural fertilizer. Waste from the settling tank and filter press are mainly coconut oil and some fibers from the coconut meat which can also be used as animal feed or fertilizer.

[22] Data available for Bohol in number of workers and coconut areas was dated 2011.

- **Value Chain Mapping**

Figure 37. Geographical Flow Map of VCO in Central Visayas

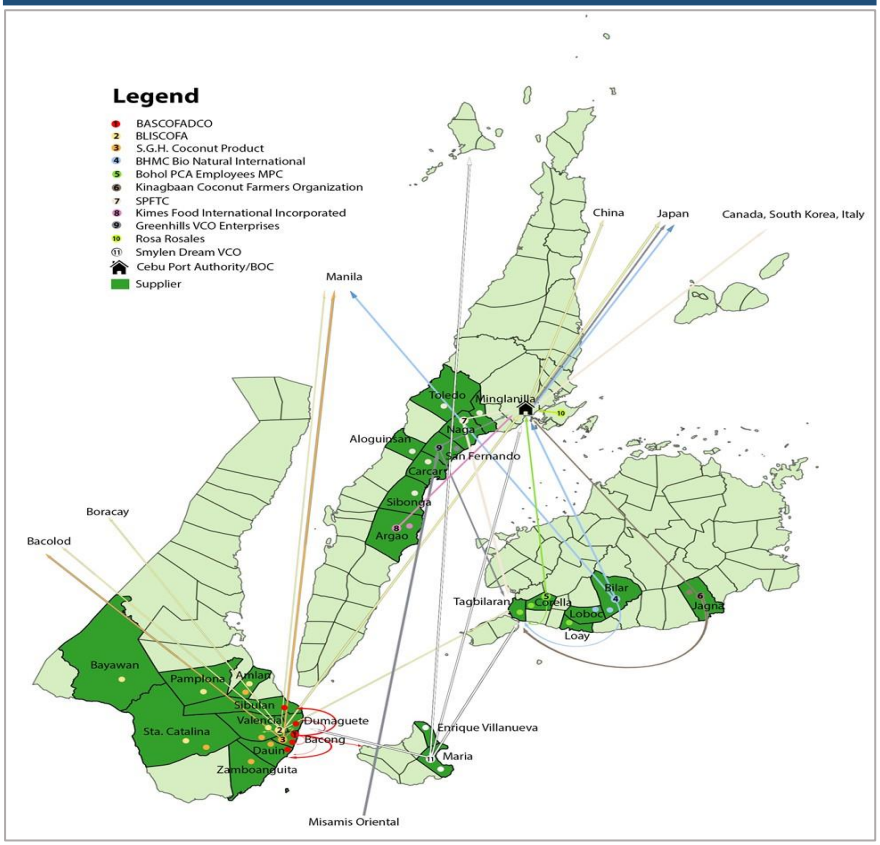


Figure 37 shows the flow of VCO in Central Visayas. The major domestic destinations of processed VCO are Manila, Boracay, Bacolod and Cebu. Some provincial processors export VCO to Japan, South Korea, Canada, Italy and China.

In the domestic market, the Biological Homeopathic Medical Corporation (BHMC) Bio-Natural Products Incorporated, a processor in Bohol, ships to BHMC – Cebu Office, their partner homeopathic medical clinic and the market-consolidating arm located in Cebu. The BHMC Cebu branch then ships these VCOs to the other clinics in Manila (BHMC Pasay and Alabang), and in Mindanao (BHMC Cagayan de Oro, Davao and Surigao), depending on the orders of said branches.

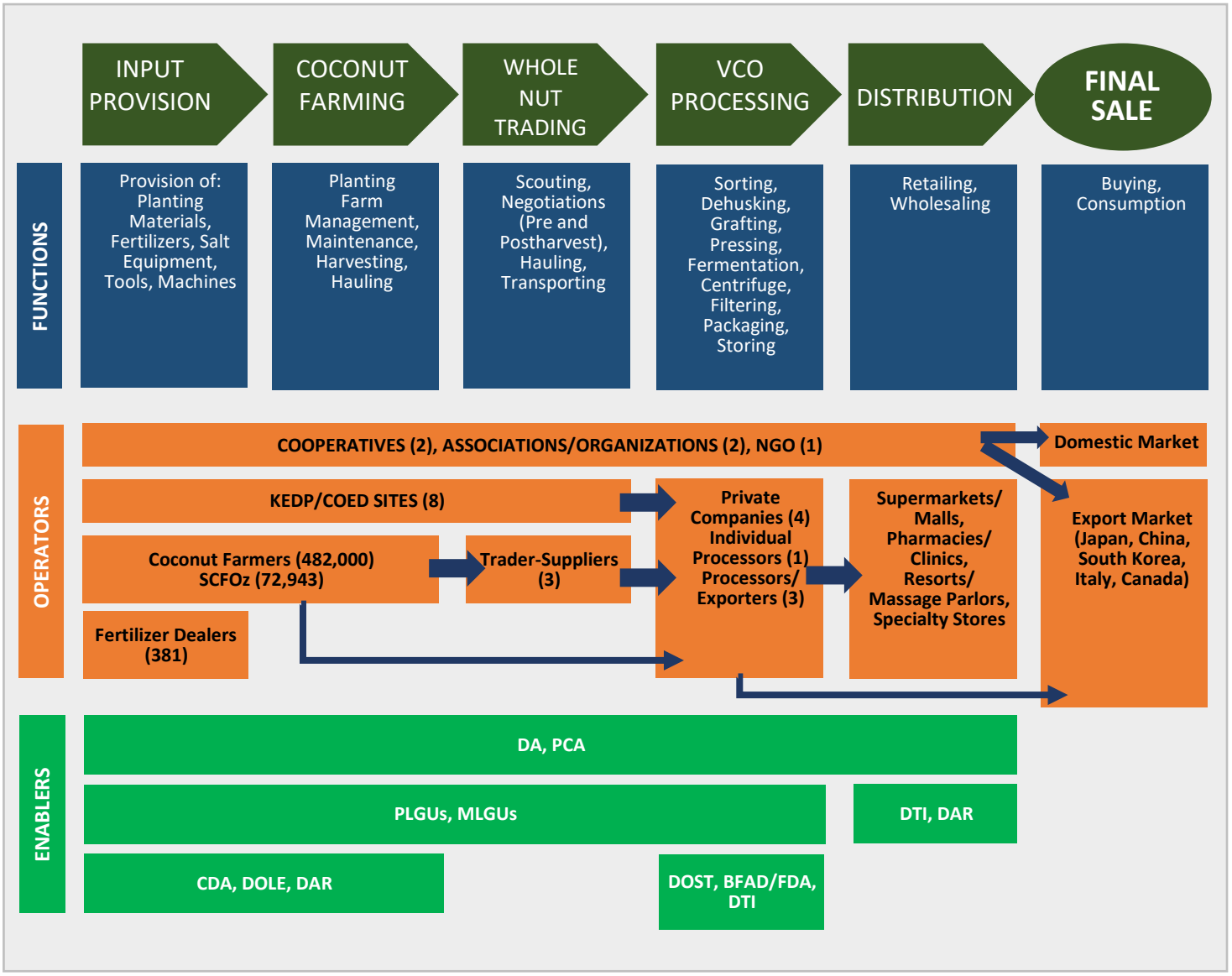
In Negros Oriental, VCO is shipped to the resorts and massage parlors in Boracay, Bacolod and Manila. There is really no permanent buyer in Manila and shipment is on a per order basis. Currently, Negros Oriental processors are more aggressive in their export marketing of VCO to Japan and China.

Smylen Dream VCO in Siquijor processor sells locally, with buyers from resorts Bantayan Island, Minglanilla, Cebu and Bohol. Buyers mix VCO with eucalyptus and local scents for massage oils. Southern Partners and Fair-Trade Center, Inc. has domestic markets in Cebu (Gaisano Country Mall) and Bohol (5 outlets of Alturas Group) and export market to South Korea and Canada. Two metric tons (2 MT) of VCO is supplied by Misamis Oriental to Southern Partners and Fair-Trade Center in Cebu for order shipments going to Canada. The company's

buyer from Canada requires that the coconuts used in the VCO production are Organic Certified. Since there is no organic certified coconut farm in Cebu, they order VCO from their partner organizations in Mindanao and package it in Cebu.

The other VCO processors in the region are only trading locally and have not yet made some breakthroughs in terms of capturing a larger market share.

Figure 38. Value Chain Map of VCO



The chain starts with input provision. Seedlings and fertilizers are provided through the programs of PCA to farmers. Coconuts are then grown until the fruits mature after 12 months for harvest. When the nuts are fully matured, the farmers who are directly involved in the production and the farm workers - harvest these nuts, and sell either to whole nut traders/buyers or directly to the processors. 1 liter of VCO needs an average of 12 to 15 fully matured coconuts, depending on the size.

Processed VCO are then distributed to retail outlets, pharmacies, clinics, supermarkets, malls and specialty stores. In the region, VCO is distributed both in the domestic and export

markets. End users are hotels, resorts, massage parlors, and households who use VCO for various purposes. VCO exported to Japan, South Korea, and Canada are further processed to food supplements and cosmetic products.

There are two classifications of VCO domestic markets. The first are individuals who use VCO for personal use. The other are establishments buying VCO and further re-process it into different VCO-based products. Most common are massage parlors and resorts that use VCO as the base oil and mix it with the massage oils, aromatherapy oils and local scents such as eucalyptus. Others also further processed into VCO soap.

The Department of Trade and Industry (DTI) also provides machines and equipment as a start-up for VCO processing through the provision of Shared Service Facility (SSF). Through this project, machines and equipment were provided to processors whose business got damaged by the 2013 earthquake in Bohol.

Small-scale processors in the region comprise of cooperatives or farmer associations, having a capacity of processing 100-200 nuts per day. Medium-scale processors are usually private businesses or farmer associations with a foreign investor, except for Southern Partners and Fair-Trade Center, Inc., which is a Non-Government Organization (NGO). Some processors also produce coco coir, coco geonet, coco vinegar, flour and other coconut products aside from VCO.

Shown in the table below are the suppliers of mature coconuts to some selected VCO processors. Most of these are farmer-associations whose members are coconut farm owners and laborers.

Table 22. Supplier of Coconuts of some VCO Processors

Province	VCO Processor	Supplier
Bohol	Kinagbaan Farmers' Organization	Farmer members
	BHMC Bio Natural Products Inc	Macaban Kakaw-Krayollo & LubiNetibo Agriculture Cooperative (MKLAC)
Cebu	Southern Partners Fair Trade Center	Mag-uumang Nagkahiusa sa Sam-ang ug Magdugo (MANAGSAMA) in Toledo City
		Kahugpungan sa mga Mag-uuma sa Aloguinsan (KMA)
		San Roque Farmers Organizaton (SRFA) in Aloguinsan
		Nagkahiusang Mag-uuma sa Lamacan Sibonga (NAMALASI)
		the Nagkahiusang Mag-uuma sa Cadulawan ug Vito-Camarin (NAMACAVIC) in Minglanilla
		Gabay sa Bag-ong Pag-asa sa Napo (GBP-Napo) in Napo, Carcar City

Source: ***KII***

Table 22 shows that Kinagbaan Farmers' Organization and BHMC Bio Natural Products Inc. in Bohol have arrangements with farm groups for their coconut supply. Southern Partners Fair

Trade Center in Cebu, through the six active partner-farmer-organizations are supplied with desiccated coconut which they process into VCO. The rest of the processors in the region have individual farmers as suppliers of whole nut.

SPFTC partnered with the Department of Trade and Industry (DTI) for the installment of Shared Service Facility (SSF) to its 10 partner farmer organizations supplying them desiccated coconut. Ten village facilities for desiccated coconut were provided by DTI with equipment worth P498, 000 for each farmer organization, which was later augmented with P2M in sum. However, only six village facilities are currently running, as some have problems regarding the damaged structure which housed the equipment and some also have problems on the installation of electricity connection. Each facility can process 48 kg of dessicated coconut everyday which are then picked up by SPFTC.

- **Waste Disposal**

According to processors, there are no wastes in VCO production. This is because all inputs that are used in the production can be re- used. The milked coconut meat or "sapal" are bought or given away and used as animal feeds. The husks can be further processed to coco coir and geonets. One processor in Bohol gave the husks to the neighboring houses as replacement for firewood since it is not allowed to gather firewood per forestry laws. Coconut shells are bought and sold to factories in Cebu.

In the natural fermentation method, when the milk has settled, it produces 3 layers. The first layer can be re-processed for cooking oil and the third layer can be made into vinegar. For those who do not further process the two layers, these are diluted with water first before disposing so as not to affect the environment.

For BFAD/FDA certified processors, they have their own septic tanks for the disposal of wastes, but other processors dilute their wastes with water. According to one processor, waste from VCO processing does not really have an adverse effect on the environment because the inputs used were all natural. They do not have any chemicals added to VCO. Feedback from their neighboring rice farmers about the VCO wastes is positive as the water and waste serve as fertilizer for the rice farms which resulted to higher rice yields.

- **Distributors**

In Central Visayas, the distribution of VCO is mostly done through retailing. VCO are packaged in different sizes like 220 ml, 250 ml, 330 ml, 450 ml, 500 ml and 1 liter. They are sold in retail in malls, supermarkets, pharmacies and specialty stores or health clinics. Processors also sell to walk-in buyers in their facilities. Unlike the more popular oils such as RBD coconut oil and palm oil which can be found in any supermarkets, sari-sari stores and convenience stores, VCO can only be found in select outlets.

Southern Partners Fair Trade Center has 7 channels, 5 outlets through the groceries of Alturas Group (Colonade, Island City Mall, Alturas Mall) with fixed orders, and 1 through the Gaisano Country Mall grocery which is through consignment. They also sell in the Fair-Trade Shop which is located in Cebu City. Alturas Group picks up the stocks every three months, around 2,000 500-mL-bottles distributed to their groceries. Their VCO costs P175.00 (330 mL) and P450.00 (500mL), which is slightly higher than other VCO brands in the local market.

According to them, this is one of the reasons why domestic sales are not high but they cannot lower the price as they are bound by fair trade principles to conduct business with farmers, workers, and distributors fairly.

According to the KII, they are selling more to the export market compared to the domestic market which is only distributed within the region. Last year, around 10,000 liters of VCO were exported to South Korea and Canada. The exported products are used as ingredients in cosmetics, skincare, and haircare. SPFTC sets the base price which is up for negotiation. Its affiliation with the World Fair Trade Organization provides it with tools for market access of its export destinations. Presently, SPFTC is applying for its certification for Japanese Agricultural Standards (JAS) and National Organic Program of the United States Department of Agriculture (USDA). This allows them market access of their products to Japan and USA.

BHMC Bio Naturals Inc. also has higher export than domestic sales of VCO. Domestically, distribution is through the local malls in Bohol (Island City Mall, Alturas, Plaza Marcela, Bohol Quality supermarket), pharmacies like the City Pharmacy and Jo's We Care Pharmacy, Bohol Bee Farm branches in Bohol and Cebu, market stalls in Robinson's Dumaguete City, Bohol PCA Employees Multipurpose Cooperative in Bohol and Cebu, and BHMC clinics in Cebu, Pasay, Alabang, Cagayan de Oro City, Davao, and Surigao City. Transit point of VCO from Bohol to its various clinics is Cebu. Around 2,200 liters of VCO are distributed domestically per yearl. Its export market is solely Japan, with around 3,800 liters sold yearly. According to the KII, compared to their production, there are less sales due to the premium price of their VCO attracting few consumers.

Table below shows some basic information of VCO processors in the Province of Bohol. There are eight identified processors in the province with six processors operating, they are in the municipalities of Bilar, Corella, Jagna, Loon and two in Carmen. There are two processors in Clarin and Trinidad which are not operational at the moment. Map 20 shows the location of VCO processors in Bohol and other industry players and facilities indicating the ports of entry and main roads in the province.

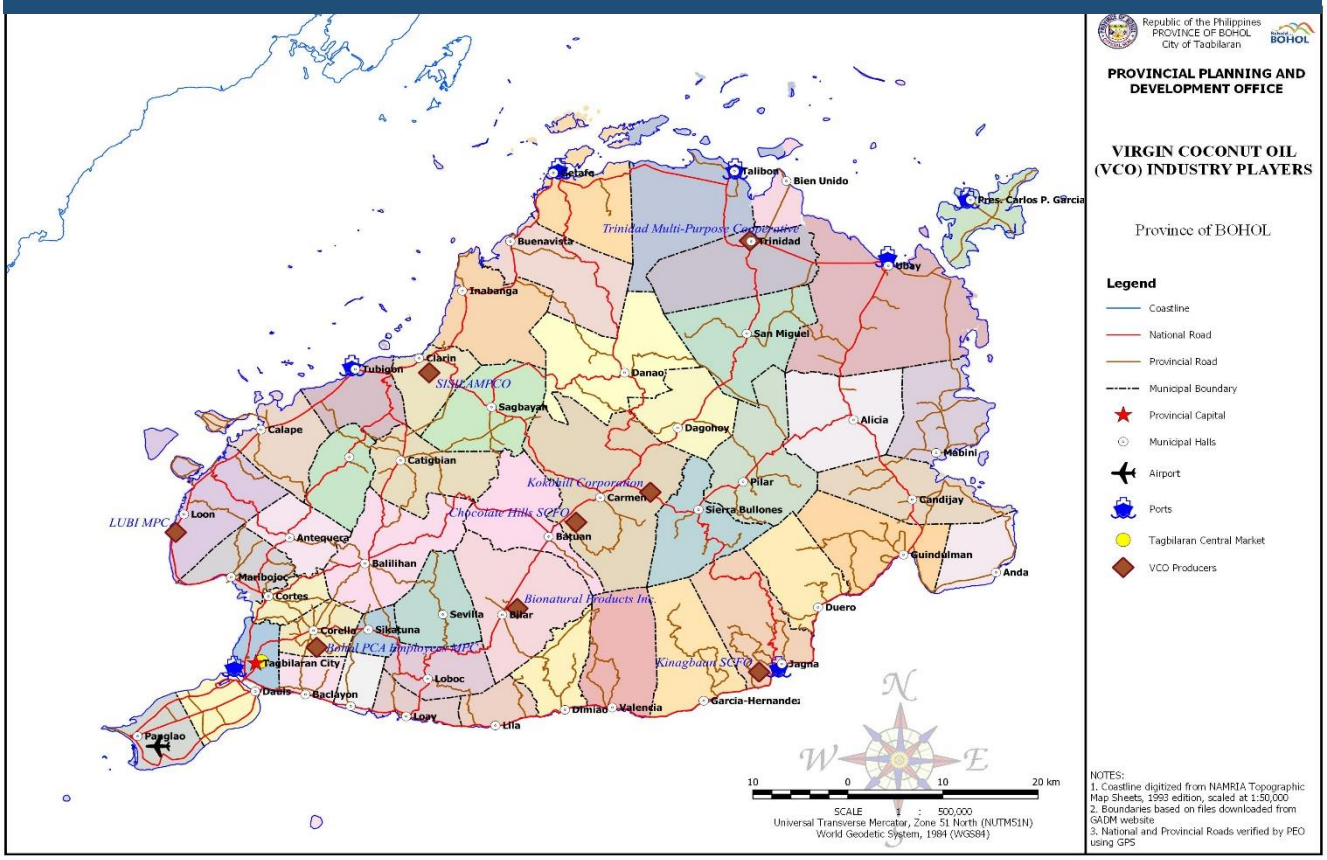
Table 23. VCO Processors in Bohol

	Name of Coop/ Organization	Address	Ave. Daily Processing (Nuts/Day)	Ave. Monthly Production (Liters)	Raw Materials Supplier	Market	Remarks
1	Bionatural Products Inc.	Riverside, Bilar	1,500	1,067	Bilar and adjacent towns including Inabanga	Local/ Homeopathic Clinics in major cities of the Philippines/ Japan	Wet Process/ Fully operational/ 20 + workers
2	Bohol PCA Employees MPC	Tanday, Corella	600	148	Corella & adjacent towns	Local/Tagbilaran City	Wet Process/ operational /3 workers
3	Kinagbaan SCFO	Kinagbaan, Jagna	400	Depends on order	Jagna	Local	Dry Process/ Intermitent operation/ 3 workers
4	LUBI MPC	Lintuan, Loon	200		Previously operated at 100-200 nuts daily capacity but stopped operation when their processing plant was badly damaged by the earthquake		

5	Chocolate Hills SCFO	Buenos Aires, Carmen	400	Not yet in commercial production	Newly installed processing plant with 200 nuts daily full production capacity funded by PCA under the KAANIB Program and targetted to be fully operational by next quarter of this year		
6	Kokohills Corporation	Bicao, Carmen		Not yet in commercial production	Newly installed processing plant with 200 nuts daily full production capacity owned by Manuel Decasa and targetted to be fully operational by next quarter of this year		
7	SISILAMPCO	Bugtongbod, Clarin	150				Non-operational
8	Trinidad Multi Purpose Cooperative	Poblacion, Trinidad	100				Non-operational
	TOTAL			**1,215**			

Source: ***Philippine Coconut Authority (PCA)***

Map 18. Commodity Map of VCO Industry Players



VCO is a slow-moving product because only a limited number of consumers are aware of its benefits. It has developed a niche market of health-conscious individuals, which is why it is exporting more than it is selling domestically. Japan, South Korea, Canada, and USA are among the countries which are shifting to organic and health products, which makes VCO appealing to them. Most of the VCOs displayed in the retail outlets are on consignment basis with orders made only when product inventory is low. Although VCO sits on the shelf longer than other products, there is a steady sale of VCO on a monthly basis amidst its limited supply. VCO also has longer shelf life, with the expiry date usually written in the container.

- **Domestic Market**

The domestic market for VCO in the region is not yet established. Only a small number of consumers and general public are aware of the benefits of virgin coconut oil. Even if VCO has been around for quite some time, the product has been promoted as a food supplement only recently.

Table 24. Volume of VCO Produced and Sold in the Market (in Liters)

Province	Volume Produced	Volume Sold in Domestic Market	Export Volume
Bohol	7,516	3,716	3,800
Cebu	17,864	4,864	13,000
Negros Oriental	25,110	11,110	14,000
Siquijor	840	840	0
Total	**51,330**	**20,530**	**30,800**

Source: ***KII***

Volume of VCO sold in the domestic market has 40% share of total VCO produced in Region 7, with export volume higher at 60%. This implies that there is higher demand for VCO of Region 7 from other countries than domestically, despite its low market share to total VCO exports of the Philippines. Domestic market of Region VCO is premature, with only a few consumers who belong to a niche market of health-conscious individuals. The figure below shows the distribution of VCO in the domestic market.

Figure 39. VCO Domestic Market Share

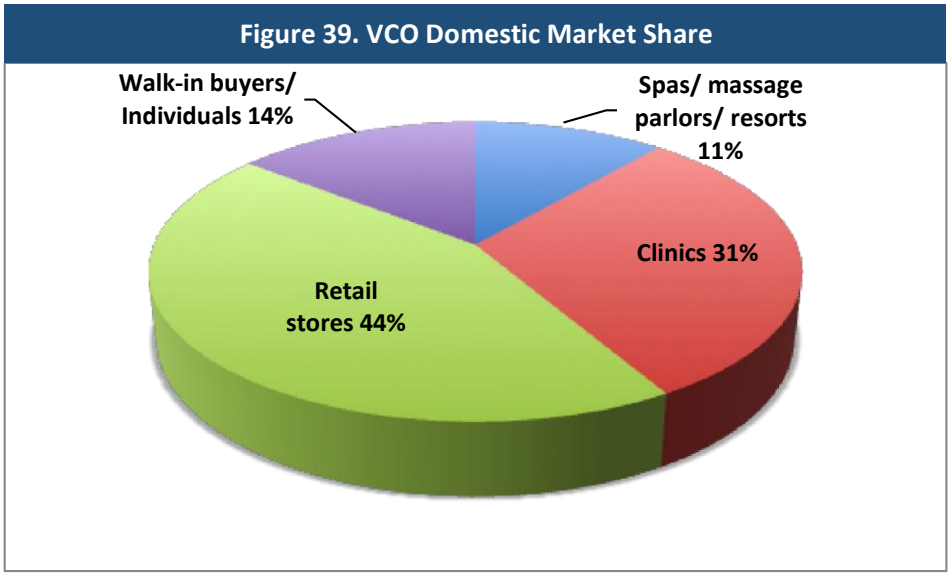


Figure 39 shows that retail stores capture the largest market share of VCO at 44%. Domestic sales of VCO in retail stores are also partly driven by foreign tourists as Region 7 is a tourist hub. As VCO caters mainly to a niche market of individuals who are conscious of healthy lifestyle, some retail stores order new stocks from processors every 3 months.

B) Investment Plan

The Provincial Government of Bohol recognizes the development of the virgin coco oil industry value chain as a strategy to help farmers not only raise their income but also their productivity and market competitiveness. The strategy would help reduce the incidence of poverty and maintain food security particularly in the rural areas, and sustain agricultural development of the province and country in general.

There is a growing interest of the provincial local government in strengthening the VCO industry since the province is among the top tourist destinations of the country and there is an increasing demand of VCO in massage parlors and spas that are frequented by tourists and health enthusiasts. VCO is a high value product with a niche market catering to the health-conscious individuals, massage parlors, wellness spas, health clinics, cosmetics/pharmaceutical industry, institutional buyers and tourists.

On the other hand, the way to increase production is to capacitate the farmers on new technology on nut production and provision of high-quality planting materials for a continuous supply of nuts for VCO processing.

VCO processing and marketing encounter problems because input supplies do not reach the upland barangays due to road inaccessibility and high transportation cost as a result of poor road condition. Farm-to-market road construction and rehabilitation are the best intervention for the foregoing predicaments. Provision of transport vehicles is the most welcome intervention next to farm-to-market roads.

Another priority intervention for the processing segment is the upgrading of existing VCO processing plants as well as its equipment using standard design compliant to FDA and HACCP processing standards. An Integrated Processing Center that is FDA compliant is also proposed for value adding of coco products as additional income for coco farmers who will engage in other product lines aside from VCO Class A and Class B, coconut oil, soaps, lotion and others.

The nuts suppliers and processors must be organized and registered so that group selling may be undertaken for a more stable supply of coconuts. There must be constant supply to sustain the demand from the buyers. Production of VCO will be enhanced with the increase in number of nuts to be processed and the improvement in the quality of finished product. Supply of nuts for the processing of virgin coconut oil will be sourced out from coconuts produced by its members. Marketing system must be also established. Producers must sell in group so that vehicle could be provided for product transportation. Another proposed intervention is the provision of technical assistance through trainings to improve the knowledge and skills of the farmers.

The project envisions to attract more processors and investors who will embark on VCO production in commercial scale. This will contribute to the generation of employment and livelihood opportunities in the agricultural sector, thus contributing to the overall economic growth of the province.

Plant facilities for VCO processing should be improved, and investment should be geared towards the acquisition of complete and up to date machines and equipment to increase

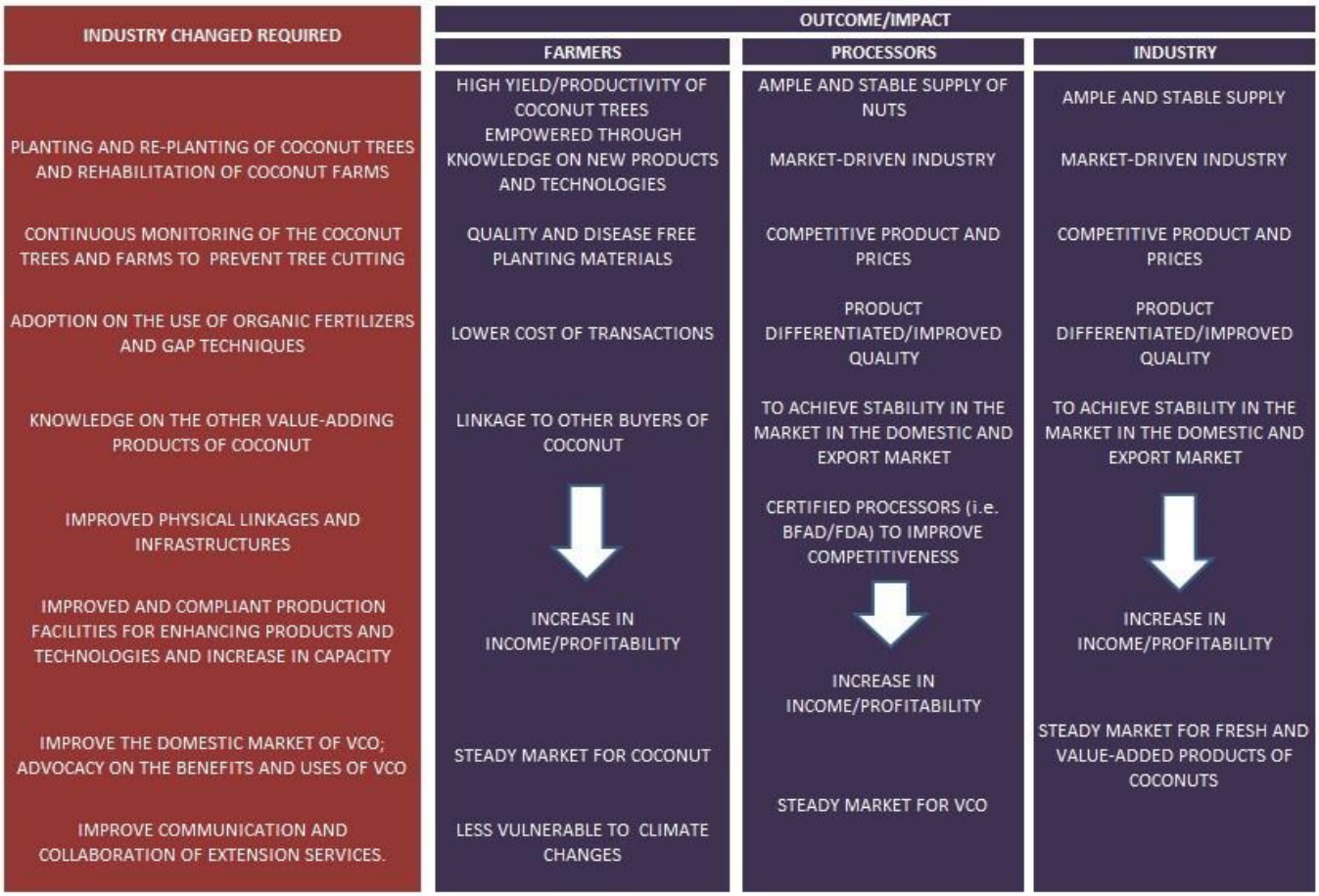
the capacity of processors, and meet the export standards which is the main goal of the industry. On the other hand, financial and technical trainings should also be conducted to achieve this. Training on downstream products of VCO could be another option to increase the income of processors and to obtain product differentiation. Furthermore, the local industry council can conduct forums and seminars to spread relevant information about VCO.

There should be an established relationship among the key players and the stakeholders, and an enabling environment to effect convergence and collaboration to ensure support to the development of the industry.

- **Competitiveness Vision**

Expressed by both VCO players and stakeholders during the joint stakeholder's consultation, a vision strategy was formulated for the development of the coconut industry.

"A sustainable industry in a conducive atmosphere for inclusive growth where stakeholders lead in undertaking market-driven, climate-resilient technologies and enterprises through coconut value-adding, adopting consolidated/integrated approaches in order to anchor the development in the community and strengthen peoples' participation in the dynamics of change."



- **Summary and Rank of Constraints and Opportunities**

Table below shows the constraints of the virgin coco oil value chain. The constraints are ranked according to their priorities in the value chain. Most of the constraints have similar ranking. This is because constraints can be addressed simultaneously and addressing the constraints may be performed not just by one value chain player. This also shows that proposed interventions are not "stand alone" as such will be simultaneously commenced with convergence of resources by a number of players in the value chain.

Table 25. Summary and Rank of Virgin Coconut Oil Value Chain Constraints

Constraints	Rank
Segment 1. Input Supply	**3**
• Input supplies do not reach the upland barangays due to road inaccessibility	
• Lack of financing for purchase of fertilizers which led to irregular application	
• Low volume of planting materials available due to pest infestation (brontispa, longissima) of coconut seedlings	
Segment 2. Coconut Production	**5**
• 6.38% of the coconut tree population in the region are senile trees which need replacements	
• Affectation of brontispa longissima during the dry season	
• Occurrence of natural calamities which led to the destruction of some coconut farms	
• Land/soil erosion resulted to soil degradation of coconut farms	
• Reduction of coconut areas due to conversion to residential and commercial lands, and other agricultural farms	
• Decreasing number of nut harvesters	
• Conversion of coconut farms to residential and commercial lands and other agricultural farms	
Segment 3. Whole Nut Trading	**1**
• High transportation costs due to poor road conditions in some areas	
• Difficulty in consolidating whole nuts due to fragmented coconut farmers with small landholdings and different harvesting days/schedules	
• Competition of nut supply between copra traders and buko/young nut traders	
Segment 4. VCO Processing	**2**
• Strict/stringent processing and manufacturing procedures	
• Capacity of machineries of the processors are not maximized due to limited volume of coconuts available for processing	
• Limited knowledge on the processing of other downstream products of VCO (i.e. soaps, lotions, shampoos, etc.)	
Segment 5. Distribution	**4**
• Low demand in local markets due to limited promotion and advocacy	
• Limited number of laboratory for VCO analysis for export	
Segment 6. Enabling Environment	**6**
• High cost and voluminous requirements needed for the application of BFAD/FDA certification	
• Reduction of coconut areas due to conversion to residential and commercial lands and other agricultural farms	
Segment 7. Inter-firm Relationships	**6**
• Only very few farmers are members of cooperatives and SCFOs	

Table 26. Summary of Opportunities

Opportunities
Segment 1. Input Supply • Agricultural grade salt fertilizers are provided for free to some coconut farmers • Coconut farms situated in coastal areas have natural fertilizers because of the salinity of coastal lands • Presence of nursery in Ubay, Bohol which is a good source of planting materials for dwarf and hybrid varieties **Segment 2. Coconut Production** • 70.9% of coconut trees in the region are bearing, with 22.7% non-bearing trees which could produce nuts once they mature • Climate in Central Visayas (immediate wet and dry season) is suitable for coconut farming • Replanting and rehabilitation programs of PCA focused on the replanting and rehabilitation of typhoon-damaged farms and senile trees • Practice of intercropping which maximizes the farm area and provides alternative income for farmers **Segment 4. VCO Processing** • VCO has longer shelf life compared with other oils • Presence of BFAD/FDA approved VCO processors in the region **Segment 5. Distribution** • Developing niche market in the health and wellness sector • Stable demand for VCO in the export market **Segment 7. Inter-firm Relationships** • Existing SCFOs which provide avenues for sharing of best practices and easier delivery of services

- **Expanded Vulnerability and Suitability Analysis (E-VSA)**

Only three parameters were used in the assessment and selection of priority sites using the EVSA as a tool, namely: poverty incidence, number of bearing trees and the VCO processing potential capacity. The data on number of bearing trees and VCO processing potential capacity in liters are sourced from the Philippine Coconut Authority (PCA) Tagbilaran City and from the VCO processors.

For poverty incidence, the weight of 0.001 was assigned based on the premise that virgin coco oil processing can be done in a municipality with large number of bearing trees may it be the poorest municipality or not. The number of bearing trees parameter was assigned a weight of 0.20, and the VCO processing potential capacity parameter in nuts per day was

assigned a weight of 0.25 based on the idea that if there are no VCO processors in the area the industry cannot thrive no matter the number of bearing trees present.

The system-generated results in Table 27 show the ranking of the 10 municipalities that are into Virgin Coconut Oil production and are potential for VCO production in the municipality, namely: Carmen, Bilar, Calape, Ubay, Inabanga, Balilihan, Antequera, Loon, Corella and Jagna. The table below shows the ranking and composite index of municipalities with competitive advantage in VCO production based on the parameters identified.

Table 27. EVSA Ranking of Municipalities

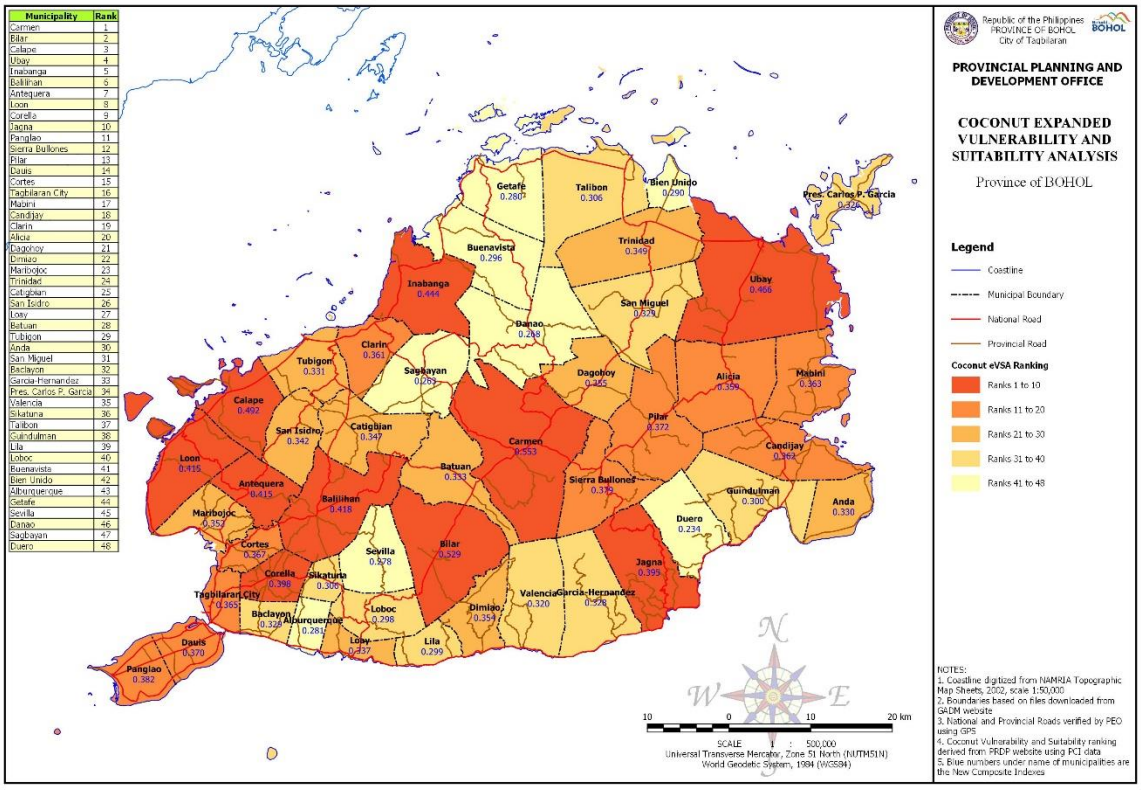
Municipality	Poverty Incidence	Bearing Trees (No.)	VCO Processing Capacity	New Composite Index	New Rank
CARMEN	38.4	653,368	400	0.55311	1
BILAR	22.6	84,592	1500	0.52889	2
CALAPE	25.4	303,455	800	0.4922	3
UBAY	39.6	531,167	0	0.46608	4
INABANGA	34.7	491,267	0	0.44403	5
BALILIHAN	31.3	532,356	0	0.41794	6
ANTEQUERA	18.5	385,904	200	0.41546	7
LOON	22	386,371	200	0.41538	8
CORELLA	17.9	87,407	600	0.39791	9
JAGNA	19.6	278,699	600	0.39536	10
PANGLAO	16.4	75,586	0	0.38202	11
SIERRA BULLONES	35.1	400,231	0	0.37865	12
PILAR	38.8	196,740	0	0.37174	13
DAUIS	17	37,877	0	0.37047	14
CORTES	15.9	92,592	0	0.3667	15
TAGBILARAN CITY	7.9	26,570	0	0.36514	16
MABINI	46.8	226,853	0	0.36287	17
CANDIJAY	34.5	305,057	0	0.36156	18
CLARIN	26.4	241,787	150	0.36054	19
ALICIA	33.9	257,668	0	0.35921	20
DAGOHOY	40.7	146,200	0	0.35506	21
DIMIAO	30.6	394,424	0	0.35372	22
MARIBOJOC	17.3	159,586	0	0.35223	23
TRINIDAD	39.7	159,811	100	0.34939	24
CATIGBIAN	37	170,044	0	0.34718	25
SAN ISIDRO	44.9	304,239	0	0.34234	26
LOAY	19.3	215,278	0	0.33749	27
BATUAN	32.3	79,302	0	0.33293	28
TUBIGON	26.7	208,681	0	0.3314	29
ANDA	30.9	348,456	0	0.32969	30
SAN MIGUEL	42.7	124,645	0	0.32921	31
BACLAYON	15.1	56,236	0	0.32862	32
GARCIA HERNANDEZ	28	373,894	0	0.32769	33
PRES. CARLOS P. GARCIA	51.8	107,130	0	0.3255	34

Table 27. EVSA Ranking of Municipalities

Municipality	Poverty Incidence	Bearing Trees (No.)	VCO Processing Capacity	New Composite Index	New Rank
VALENCIA	28.5	329,044	0	0.31962	35
SIKATUNA	29	88,820	0	0.30643	36
TALIBON	36.4	145,770	0	0.30631	37
GUINDULMAN	30.3	155,058	0	0.29953	38
LILA	19.6	219,230	0	0.29894	39
LOBOC	21.5	190,845	0	0.29773	40
BUENAVISTA	45.5	199,964	0	0.2959	41
BIEN UNIDO	48.8	27,762	0	0.28955	42
ALBURQUERQUE	15.9	83,858	0	0.28076	43
JETAFE	43.5	94,695	0	0.28045	44
SEVILLA	31.7	85,410	0	0.27793	45
DANAO	42.7	110,560	0	0.26798	46
SAGBAYAN	24	160,875	0	0.2627	47
DUERO	29.6	105,348	0	0.2335	48

The system-generated results show the ranking of the 47 municipalities including the City of Tagbilaran (Table 27). It can be noted that the top 5 areas are considered municipalities engaged in VCO processing activities.

Map 19. Expanded Vulnerability and Suitability Analysis (E-VSA) Map



- **Investment Priorities**

The over-all estimated investment cost for Virgin Coconut Oil (VCO) proposed interventions amounted to **P5.7 Billion** where the biggest bulk of the proposed PPAs is for the rehabilitation and upgrading of access roads of the priority municipalities amounting to P5.5 Billion. Farm-to-market road infrastructures play significant role in providing access and link from production sites to the market which will be funded way beyond the planning period by different fund sources. Selected road sections have been identified in Annex 1.

The proposed interventions identified in the 3-year Investment Plan are based on the gaps and constraints indicated by segments in the Value Chain Analysis conducted for the industry. The preparation of the PCIP has been subjected to series of consultations, arriving at a consensus on the prioritized interventions. Results from the EVSA ranking are used as reference in identifying locations of proposed projects.

Table 28. Investment Plan Summary for Virgin Coconut Oil (VCO), Province of Bohol

	Proposed Interventions	Estimated Cost (P000, 000, 000)			
		Year 1	Year 2	Year 3	Total
SEGMENT: INPUT SUPPLY					
1	Farm-to-Market Roads Rehabilitation/ Construction with climate-resilient specifications (274.84 kms)	2,832.99	1,571.10	1,117.60	**5,521.69**
2	Assist in access to financing institutions and credit providers with less interest and simplified requirements	0.05			**0.05**
3	Continuous education on pest management and control risk reduction and management	0.47			**0.47**
4	Strengthen the implementation of PCAs Coconut Seedling Dispersal Program (CSDP) and Participatory Coconut Planting Project (PCPP)	15.00	15.00	15.00	**45.00**
SEGMENT: COCONUT PRODUCTION					
5	Cut and replant senile coconut trees with climate change resilient varieties	0.15	0.15	0.15	**0.45**
6	Encourage farmers to adopt Good Agricultural Practices (GAP) in coconut farming to improve yield and productivity through trainings and demonstrations	0.36			**0.36**
7	Replication of parasitoid laboratory in each district	1.40	0.80	0.80	**3.00**
8	Provision of ready emergency funds for infestations	1.00	1.00	1.00	**3.00**
9	Establishment and dissemination of drought mitigating technologies to augment the low coconut production during long dry spells	0.36			**0.36**
10	Establishment of water supply system for fertigation	1.50			**1.50**
11	Adaption of climate change resilient coco varieties and planting methods	1.50	1.50	1.50	**4.50**
12	Introduction of intercropping and cover cropping	1.50			**1.50**
13	Increase production capacity of existing coconut farms	1.88	1.88	1.88	**5.64**
14	Promotion of contract harvesting (agsa)	0.06	0.06	0.06	**0.18**
15	Provision of accident insurance to harvesters	0.19	0.19	0.19	**0.56**
16	Introduce pole harvesting technique	0.06	0.06	0.06	**0.18**
17	Promotion and massive planting of high yielding dwarf coconuts	1.50	1.50	1.50	**4.50**
SEGMENT: WHOLE NUT TRADING					
18	Rehabilitation of climate resistant existing roads/ Construction of new roads				

Table 28. Investment Plan Summary for Virgin Coconut Oil (VCO), Province of Bohol

	Proposed Interventions	Estimated Cost (P000, 000, 000)			
		Year 1	Year 2	Year 3	Total
19	Provision of whole nut delivery vehicles	6.00			**6.00**
20	Developing POs/ SCFOs to act as consolidators	4.80			**4.80**
21	Scheduling of harvesting by area for easier consolidation	0.02	0.02	0.02	**0.06**
22	Forging of Marketing Agreements between VCO processors and consolidators/coops	0.02	0.02		**0.04**
SEGMENT: VCO PROCESSING					
23	Institutional upgrading through production expansion by improving farmers' production capacity	0.12			**0.12**
24	Upgrading of VCO processing plants and equipment using standard design compliant to FDA and HACCP	36.00			**36.00**
25	Integrated Processing Center, FDA Compliant (with Food Grade Equipments, and Hauling, Delivery Vehicles)	115.0			**115.0**
26	Establishment of common processing standards for VCO in the province	0.03			**0.03**
27	Link whole nut consolidators with VCO processors to supply raw materials	0.06			**0.06**
28	Conduct trainings on new technologies on downstream VCO products that could be developed	0.15	0.15	0.15	**0.45**
SEGMENT: DISTRIBUTION					
29	Conduct trade activities (investment forums, trade fairs, business-to-business meeting) to link buyers to VCO producers	0.30	0.30	0.30	**0.90**
30	Intensify advocacies to promote the uses and benefits of VCO to the domestic market	0.05	0.05	0.05	**0.15**
31	Provide assistance to processors in securing required certifications (GMP, HACCP, Fair trade)	0.06			**0.06**
32	Facilitate provision of assistance to VCO processors/ consolidators		0.05		**0.05**
SEGMENT: ENABLING ENVIRONMENT					
33	Provide assistance in the completion of requirements for product certification	0.03			**0.03**
34	Strict implementation and information campaign of government laws and regulations that will protect coconut farm areas and other major agricultural areas	0.03	0.03	0.03	**0.09**
35	Advocate for periodic policy reviews on CLUP versus Rural or Urban Development Plan	0.24	0.24	0.24	**0.72**
SEGMENT: INTER-FIRM RELATIONSHIP					
36	Formation of an industry council that will initiate the coordination among players in the industry		0.24		**0.24**
	GRAND TOTAL	**3,022.88**	**1,594.34**	**1,140.53**	**5,757.75**

C) PCIP Matrix for Virgin Coconut Oil (VCO)

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
SEGMENT: INPUT SUPPLY														
Poor Road Network	**Upgrading of climate resilient FMRs with positive impact on the value chain**	**274.84 kms** farm to market roads rehabilitated/ constructed with climate-resilient specifications					PRDP, DPWH, PCA, DA, LGU							**Boundary dispute (RROW)** - Negotiate with owners - Social Environment
	Carmen: • Guadalupe-Monte Video Road	• 5.77 kms		√	√	√		**15.40**	**62.50**	**62.50**	National Agencies/ PGBh			
	• Carmen-Vallehermoso Road	• 7.03 kms		√	√	√		**40.60**	**62.50**	**62.50**	-do-			
	• Buenos-Aires-Nueva Vida-Monte Hermoso Road	• 7.60 kms		√	√	√		**52**	**62.50**	**62.50**	-do-			
	Bilar: • Campagao-Cabacnitan FMR, Bilar, Bohol	• 10.96 kms		√				**219.20**	**0**	**0**	DA-PRDP/ PGBh			
	• Bilar-Sevilla Road	• 2.00 kms			√			**0**	**50**	**0.00**	NAs/ PGBh			
	• Bilar-Magsaysay Park Road	• 2.80 kms			√			**0**	**70**	**0.00**	NAs/ PGBh			
	• Jct. (Bilar-Dimiao)-Oac-Omjon Road	5.00 kms		√	√	√		**175**	**75**	**25**	CMGP/ DTI/ DPWH/ PGBh			
	Calape: • Calape-Cabayugan-Tabuan (Antequera) Road	• 12.68 kms		√	√	√		**500**	**1.0**	**1.0**	DA-PRDP/ PGBh			
	• Calape-Pangangan Road	• 15.60 kms		√	√	√		**5.0**	**1.0**	**1.0**	PGBh			
	• Jct. (Calape - Pangangan)-San Isidro-Tipkan Road	• 1.10 kms		√	√	√		**0.30**	**0.10**	**0.10**	PGBh			

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	Ubay:													
	• San Miguel-Bayongan-Bulilis-Mabuhay (Ubay) Road	• 17.40 kms		√	√	√		**36**	**150**	**150**	National Agencies/ PGBh			
	• Jct. (Soom)-Humay-Humay Road	• 3.31 kms		√	√	√		**6.20**	**37.50**	**37.50**	-do-			
	• Road to Ubay Jr. High School	• 0.40 kms		√				**8.0**	**0**	**0**	-do-			
	• Gabi Seed Farm, Ubay	• 1.01 kms		√				**25.25**	**0**	**0**	-do-			
	• Road to Ubay Stock Farm	• 1.60 kms			√			**0**	**40**	**0**	-do-			
	• Jct. (TER)-San Pascual (Ubay)-Mahayag (San Miguel) Road	• 2.47 kms		√				**49.40**	**0**	**0**	-do-			
	• Jct. (TER)-Ilihan-Cabulao Road	1.90 kms		√				**38**	**0**	**0**	-do-			
	Inabanga:													
	• Dagnawan-Dagohoy, Inabanga FMR	• 6.48 kms		√				**127**	**0**	**0**	DA-PRDP/ PGBh			
	• Pob. (Inabanga)-Lawis Road (Causeway Length)	• 6.248 kms		√	√	√		**31.20**	**75**	**75**	National Agencies/ PGBh			
	• One Way Traffic, Inabanga	• 0.335 kms		√				**8.38**	**0**	**0**	-do-			
	• Inabanga-Sagbayan via Lapacan-Magtangtang Road	• 9.340 kms		√	√	√		**20**	**125**	**77.50**	-do-			
	Balilihan:													
	• Corella-Balilihan Road	• 3.00 kms		√	√	√		**20**	**25**	**25**	NAs/ PGBh			
	• Sikatuna-Balilihan via Badiang Road	• 9.26 kms		√	√	√		**160**	**1.0**	**1.0**	DA-PRDP/ PGBh			
	• Baucan (Balilihan)-Cambague (Sevilla) Road	• 8.27 kms		√	√	√		**150**	**1.0**	**1.0**	DA-PRDP/ NAs/ PGBh			
	• Antequera-Balilihan via Dorol Road	• 12.28 kms						**0**	**0**	**0**	National Agencies/ PGBh			
	• Pob. (Catigbian)-Ambuan-Sagasa (Balilihan) Road	• 11.14 kms						**0**	**0**	**0**	-do-			

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				Y1	Y2	Y3		Y1	Y2	Y3				
	• Sikatuna-Balilihan via Can-agong Road	• 3.65 kms						0	0	0	-do-			
	• Balilihan-Cabad Road	• 1.57 kms						0	0	0	-do-			
	Antequera:													
	• Calape-Cabayugan-Tabuan (Antequera) Road	• 12.68 kms		√	√	√		500	1.0	1.0	DA-PRDP/ PGBh			
	• Antequera-Balilihan via Dorol Road	• 12.28 kms		√	√	√		30	50	50	National Agencies/ PGBh			
	Loon:													
	• Pondol-Candaigan, Loon FMR	• 4.74 kms			√			0	118.50	0	DA-PRDP/ PGBh			
	• Tajang-Sandingan Road	• 2.50 kms		√				50	0	0	NAs/ PGBh			
	• Catagbacan-Lawis Road	• 1.33 kms		√				26.56	0	0	-do-			
	• Pondol-Pananquilon-Cantam-is Road	• 4.15 kms		√				83	0	0	-do-			
	• Maribojoc-Pagnitoan Candavid-Tabuan Basak Road	• 7.00 kms		√	√			100	40	0	CMGP/ DTI/ PGBh			
	Corella:													
	• Corella-Balilihan Road	• 3.00 kms		√	√	√		20	25	25	NAs/ PGBh			
	• Baclayon-Corella Road	• 0.50 kms		√				10	0	0	-do-			
	• Baclayon-Corella via Tunga Road	• 4.00 kms		√	√	√		20	50	50	-do-			
	• Sambog-Caumbang-Tanday Road	• 2.30 kms		√	√	√		6.0	25	25	-do-			
	• Pob. (Corella)-Cancatac-Abucay (Sikatuna) Road	• 4.50 kms		√	√	√		20	62.50	25	-do-			
	• Tanday-Guinoan-Cancatac-Corella Road	• 7.09 kms		√	√	√		18	87.50	87.50	-do-			
	• Canapnapan-Canangcaan-Canhumang-it Road	• 7.90 kms		√	√	√		58	62.50	62.50	-do-			

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	Pob. (Corella) Pandol-Anislag-Monserrat (Cortes) Road	• 4.88 kms		√	√	√		**17.60**	**50**	**50**	National Agencies/ PGBh			
	Jagna: • Can-uba-Faraon-Laka Road • Road Around Jagna Market • Road Infront Central School, Jagna • Road to Jagna Wharf • Severo Salas Street • Achacoso Street • Abrea Street • Road to Central School, Jagna • Road Around Ilihan Hill • Jct. (Jagna-Sierra Bullones) Lonoy Road • Jct. (Jagna-Sierra Bullones) Can-ipol-Odiong Road • Jagna-Cabungaan-Lonoy Road • Jct. (TER)-Bunga Mar-Kinagbaan-Balili Road • Jct. (Jagna-Sierra Bullones) Malbog-Calabacita Road	• 1.50 kms • 1.00 kms • 1.90 kms • 1.445 kms • 10.50 kms • 9.00 kms		√ √ √ √ √ √	 √ √	 √ √		**30** **0** **0** **0** **0** **0** **0** **0** **0** **20** **38** **28.90** **10** **60**	**0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **100** **60**	**0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **0** **100** **60**	National Agencies/ PGBh -do- -do- -do- -do- -do- -do- -do- -do- -do- -do- -do- -do- National Agencies/ PGBh			
Lack of financing for purchase of organic fertilizers which led to irregular or non-application of fertilizers	• **Assist in access to financing institutions and credit providers with less interest and simplified requirements** - ***Creation of a "soft loan portfolio" to cater to the coconut farmers***	• MOA signed with government banks and cooperatives concerning provision of soft loans to coconut farmers		1. Corella and surrounding mun. 2. Bilar and surrounding mun. 3. Jagna & surrounding mun.			LBP, PCA, DA, Farmers Coops, Coco farmers	**0.05**			LBP, PCA,DA, Farmers Coops, Coco farmers	10 T per meeting/ session	**5**	• **Refusal of financing institutions to the proposal** - Seek assistance with PLGU and concerned national agencies to

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
				4. Loon & surrounding mun. 5. Carmen & surrounding mun.										lobby for the proposal • **Availability of CCBOF** - PCA to identify and develop Coconut Farmers Organizations/ Coops to produce CCBOF • **Adaption of mulching technology** - Farm visits/ Lakbay Aral to farms implementing the technology
	• **Intensify the promotion and utilization of coconut coir-based organic fertilizer** • **Promotion for the utilization of coconut debris for mulching**	• XXX farmers using Coconut Coir-Based Organic Fertilizer • Mulching technology practiced by farmers												
Low volume of planting materials available due to pest infestation (brontispa, longissima) of coconut seedlings	**Continuous education on pest management and control risk reduction and management**	47 Trainings conducted on Coconut Pest Management and Control		47 mun.			ATI, PCA, DA	**0.47**			ATI, PCA, DA	P10,000 per training	**19**	**Insufficient funds for the trainings/** Scout for funds from other sources
	Strengthen the implementation of PCAs Coconut Seedling Dispersal Program (CSDP) and Participatory Coconut Planting Project (PCPP)	450,000 coco seedlings planted under the CSDP & PCPP programs • Accreditation of three PO nurseries • Three hauling vehicle for coco seedlings		• 47 mun. • Balilihan, Ubay, Carmen	47 mun.	47 mun.	• PCA • PRDP, PCA, PLGU, LGU	**15.00**	**15.00** **3.00**	**15.00**	PCA PRDP, PCA, PLGU, LGU	P100 per seedling 1M / Truck	**17**	**Natural calamities Adoption of new planting patterns Pest infestations and disease infections** - Prohibition of entry of coconut products and byproducts from infested & infected areas

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
SEGMENT: COCONUT PRODUCTION														
6.38% of the coconut tree population in the region are senile trees which need replacements	**Cut and replant senile coconut trees with climate change resilient varieties**	Senile trees cut and replanted with climate change resilient varieties		Province wide	Province wide	Province wide	PCA	**0.15**	**0.15**	**0.15**	PCA	P100/ seedling	**18**	**Unavailability of planting materials** - PCA to mass produce climate change resilient planting materials
Affectation of bronstispa longissima during the dry season	**Encourage farmers to adopt Good Agricultural Practices (GAP) in coconut farming to improve yield and productivity through trainings & demonstrations**	• 47 GAP Trainings on Coconut conducted		47 mun.			PCA, ATI, LGU, PLGU	**0.36**			PCA, ATI, LGU, PLGU	P7,500 per training	**20**	**Non-adaption of some farmers to GAP technologies** - Benchmarking on successful GAP certified coconut farms
	Replication of parasitoid laboratory in each district	• 1 existing parasitiod laboratory maintained • 3 parasitiod laboratories established & operational		Tagbilaran Balilihan, Ubay, Carmen	Tagbilaran	Tagbilaran		**0.80** **0.60**	**0.80**	**0.80**		800T/ laboratory site 200T/lab site		**Non-cooperation of farm owners & stakeholders during prevention & control operations** - Benchmarking or farm visits to successfully treated farms
	Provision of ready emergency funds for infestations	• Funds provided & guidelines established		Tagbilaran				**1.00**	**1.00**	**1.00**		1 Million/ year		- Provision of alternative income generating activities to affected farmers
Occurrence of natural calamities which led to the destruction of some coconut farms	**Establishment and dissemination of drought mitigating technologies to augment the low coconut production during long dry spells**	• 47 Trainings conducted		47 mun.			ATI, DA, PCA	**0.36**			ATI, DA, PCA	7,500 per training	**21**	**Establishment & adaption of a holistic drought mitigating technology** - Review and consolidation of all mitigating techniques from different
	Establishment of water supply system for						NIA, DOST, PCA, LGU	**1.50**			NIA, DOST, PCA, LGU	0.5M/ demo site		

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	fertigation **Adaption of climate change resilient coco varieties & planting methods** - *Planting of coco varieties using climate change resilient planting system methods*	• 3 demo areas for fertigation (1 per District) • 450T climate change resilient coco trees		Balilihan, Ubay, Carmen 47 mun.	47 mun.	47 mun.	PCA, LGU	**1.50**	**1.50**	**1.50**	PCA, LGU, PLGU	P100/ seedling		concerned agencies
Land/ soil erosion which resulted to soil degradation of coconut farms	**Introduction of intercropping & covercropping**	Erosion-prone areas intercropped/ covercropped		Province wide			PCA, LGU	**1.50**			PCA, LGU	P30/ planting material	**22**	**Inadequate knowledge on intercropping** - PCA, LGU to conduct training
Conversion of coconut farms to residential & commercial lands & other agricultural farms	**Increase production capacity of existing coconut farms:** - *Organic fertilization* - *Adaption of GAP for coconut*	20% increase in production		47 mun.	47 mun.	47 mun.		**1.88**	**1.88**	**1.88**	PCA, LGU	P400 per bag	**23**	**Insufficient supply of organic fertilizer** - Development of POs to produce coconut coir based organic fertilizer as an enterprise
Decreasing number of nut harvesters	**Promotion of contract harvesting (agsa)**	• Increased adaption of contract harvesting (agsa)		Province wide	Province wide	Province wide	PCA, LGU	**0.06**	**0.06**	**0.06**	PCA, LGU	5 T/ month mobility fund	**24**	**Hesitant to adapt contract harvesting** - Field visits
	Provision of accident insurance to harvesters	• Inventory of nut harvesters established • Insurance provided to nut harvesters		Province wide	Province wide	Province wide	PCIC, PLGU, PCA	**0.188**	**0.188**	**0.188**	PCIC, PLGU, PCA	P400/ harvester/ year		**Provision of sources of funds for insurance** - Apply for group insurance
	Introduce pole harvesting technique	• Increased adaption of pole		Province wide	Province wide	Province wide	PCA, LGU, PLGU	**0.06**	**0.06**	**0.06**	PCA, LGU, PLGU	5 T/ month mobility fund		**Hesitant to adapt pole harvesting technique**

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
		harvesting technique												- Field visits
	Promotion and massive planting of high yielding dwarf coconuts	• Increased area planted to high yielding dwarf coconuts		Province wide	Province wide	Province wide	PCA, LGU, PLGU	**1.50**	**1.50**	**1.50**	PCA, LGU, PLGU	P100/ seedling		**Provision of high yielding dwarf coconut seedlings**
SEGMENT: <u>WHOLE NUT SUPPLIERS</u>														
High transportation cost due to the poor road conditions in some areas	**Rehabilitation of climate resistant existing roads/ Construction of new roads**	**<u>185.03 kms</u>** farm to market roads rehabilitated/ constructed		Corella Loon Inabanga	Jagna Bilar Panglao	Carmen Ubay Trinidad					PRDP, DPWH, PCA, DA	20 M per kilometer	**1**	**Possible intervention as to identification of project area** - Setting up of clear selection guidelines and criteria based on E-VSA
	Provision of whole nut delivery vehicles	6 delivery vehicles provided to consolidators		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			Whole nut consolidators, PRDP	**6.00**			PRDP	1.0 M per vehicle	**8**	**Maintenance capabilities of consolidators** - Require consolidators to undergo proper briefing/ seminar on proper maintenance activities
Difficulty in consolidating whole nuts due to fragmented coconut farmers with small landholdings and different harvesting days/ schedules	**Developing POs/ SCFOs to act as consolidators**	1 PO per municipality acting as consolidator		Province wide	Province wide	Province wide	Whole nut consolidators, MFIs	**4.80**			Whole nut consolidators, MFIs	P100,000/ consolidator start-up capital	**6**	**Start-up capital** - Assist POs in formulation of business plan and fund sourcing (investors' forum)

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	Scheduling of harvesting by area for easier consolidation	Schedule of harvest per municipality programmed for easy consolidation		Province wide	Province wide	Province wide	PCA, LGU	**0.024**	**0.024**	**0.024**	PCA, LGU	P2,000/ month mobility fund for M&E		**Difficulty of some farmers to adhere to proposed harvesting schedule** - Continuous education on proper coconut harvesting technology
Competition on nut supply with copra traders and buko/ young nut traders	**Forging of Marketing Agreements between VCO processors and consolidators/coops**	At least six (6) Marketing Agreeements formulated		1. Corella 2. Bilar 3. Jagna	1. Loon 2. Buenos Aires, Carmen 3. Bicao Carmen		PCA, DTI, LGU	**0.0225**	**0.0225**		PCA, DTI, LGU	P7,500 per session	**7**	**Disagreement as to the price of nuts** - PCA to mediate and propose for an appropriate price beneficial to both parties
SEGMENT: VCO PROCESSING														
Strict/stringent processing and manufacturing procedures	**Institutional upgrading through production expansion by improving farmers' production capacity**	At least six (6) VCO Processing Enhancement Trainings conducted		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			ATI, DOST, PCA, DTI	**0.12**			ATI, DOST, PCA, DTI	20 T/ per training	**10**	**Refusal of some processors to participate** - Motivate processors to produce more to earn more
	Upgrading of VCO processing plants and equipment using standard design compliant to FDA & HACCP Processing	6 VCO processing plants and equipment upgraded		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			PRDP, PCA, DOST	**36.00**			PRDP, PCA, DOST	6,000,000 per plant	**2**	**Local availability of upgraded equipments** - Request assistance from PCA and DOST and other manufacturing institutions
	Integrated Processing Center, FDA Compliant (with Food Grade Equipments, and	1 Integrated Coco Processing Center		Balilihan			PCA LGU	**115.0**			PCA, PRDP		**2**	

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	Hauling, Delivery Vehicles)													
	Establishment of common processing standards for VCO in the province	One common processing standard for VCO		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			VCO producers, PCA, DOST, DTI, PLGU	**0.03**				5 T/ session	**11**	**Non-compliance of some processors** - Constant monitoring
Capacity of machineries not maximized due to limited volume of coconuts available for processing	**Link whole nut consolidators with VCO processors to supply raw materials**	At least 18 consolidators linked to VCO processors		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			PCA, LGU, DTI, DA,	**0.06**			PCA, LGU, DTI, DA,	5 T / per linkaging session	**9**	**Not continuous operation of some VCO processors** - Encourage processors to engage in coconut meat-based multi-product processing
Limited knowledge on the processing o other downstream products of VCO (i.e. soap, lotion shampoo, Etc.)	**Conduct trainings on new technologies on downstream VCO products that could be developed**	**18 Trainings Cum Production on VCO downstream products:** - Products development - Packaging & labeling		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen	1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen	1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen	**DOST, ATI, PCA, DTI**	**0.15**	**0.15**	**0.15**	DOST, ATI, PCA, DTI	25 T / per training	**3**	**Availability of ingredients for trainings, packaging materials & equipments** - Request trainors/ DOST/ DTI to provide access to sources of ingredients
SEGMENT: DISTRIBUTION														
Low demand in local markets due to limited promotion and advocacy	**Conduct trade activities (investment forums, trade fairs, business-to-business meeting) to link buyers to VCO producers**	At least 2 trade forums for VCO conducted per year		1. Tagbilaran City 2. Ubay	1. Tagbilaran City 2. Ubay	1. Tagbilaran City Ubay	DTI, PCA, PLGU	**0.30**	**0.30**	**0.30**	DTI, PCA, PLGU	P15,000 per Trade Forum	**4**	**Financing for the Trade Forums** - Coordination of all governement agencies having related thrusts
	Intensify advocacies to promote the uses and	Radio programs or plug-ins on		1. Tagbilaran City	1. Tagbilaran City	1. Tagbilaran City	VCO producers, PCA, PLGU	**0.048**	**0.048**	**0.048**	VCO producers, PCA, PLGU	4 T / per month	**13**	**Funds to sustain the program**

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	benefits of VCO to the domestic market	testimonies for the healing wonders of VCO		2. Ubay 3. Jagna	2. Ubay 3. Jagna	2. Ubay 3. Jagna								- Encourage VCO processors to pool their resources for the purpose
	Provide assistance to processors in securing required certifications (GMP, HACCP, Fair trade)	At least 6 VCO processors assisted		1. Corella 2. Bilar 3. Jagna 4. Loon 5. Buenos Aires, Carmen 6. Bicao, Carmen			PCA, DOST, DTI	**0.06**			PCA, DOST, DTI	P10,000 per extension of assistance	**12**	**VCO processors have limited technical expertise to do the job** Request assistance from DOST/ PCA and other allied agencies
Limited number of laboratory for VCO analysis for export	**Facilitate provision of assistance to VCO processors/ consolidators**	**At least 1 VCO consolidator assisted**		Tagbilaran City			DOST, PCA		**0.05**		DOST, PCA	5T allowance for mobilization	**14**	**Uniformity of quality of VCO** - Set clear and strict processing standards among VCO producers
SEGMENT: ENABLING ENVIRONMENT														
High cost and voluminous requirements needed for the application of BFAD/ FDA certification	**Provide assistance in the completion of requirements for product certification**	At least 3 VCO processors assisted in the application for FDA certification		1. Jagna 2. Buenos Aires, Carmen 3. Bicao, Carmen			VCO processors, DOST, PCA	**0.03**			VCO processors, DOST, PCA	10 T / processing site allowance for mobilization	**15**	**Access to FDA acrredited laboratories** - Request assistance from PCA Central Office
Reduction of coconut areas due to conversion to residential & commercial lands and other agricultural farms	**Strict implementation and information campaign of government laws and regulations that will protect coconut farm areas and other major agricultural areas such as the following:** • Comprehensive Land Use Plan (CLUP)	At least 3 violators prosecuted or penalized per district per year		47 mun. & 1 City	47 mun. & 1 City	47 mun. & 1 City	PCA	**0.027**	**0.027**	**0.027**	PCA	3 T / per apprehension for mobilization	**16**	**Limited number and voluminous workloads of PCA personnel**

Key Gap/ Constraints	Brief Description of Potential Intervention	Target Result/ Outcome	MFO/ Sub-MFO	Target Areas to be covered			Proposed Lead & Other Players for Subproject Implementation	Estimated Project (Php '000 in M)			Proposed Sources of Funds	Remarks	Ranking	Risk & Risk Management
				Y1	Y2	Y3		Y1	Y2	Y3				
	• RA 8048 (Coconut Preservation Act) as amended by RA 10593													
	Advocate for periodic policy reviews on CLUP versus Rural or Urban Development Plan	Regular review of policies conducted by LGUs		47 mun. & 1 City	47 mun. & 1 City	47 mun. & 1 City	LGU's	**0.24**	**0.24**	**0.24**	LGUs	P5,000 per review session	**26**	**Policy review not prioritized in some LGU's** - Monitoring of LGUs on policy review
SEGMENT: INTER-FIRM RELATIONSHIP														
Only few farmers are members of cooperatives and SCFOs	**Formation of an industry council that will initiate the coordination among players in the industry**	One Provincial Local Coconut Industry Development Council organized			47 mun. & 1 City		PCA, LGU		**0.24**		PCA, LGU	5 T / per organizational meeting	**25**	**Manipulation of local executives on the council** - Formulate policies and operations manual

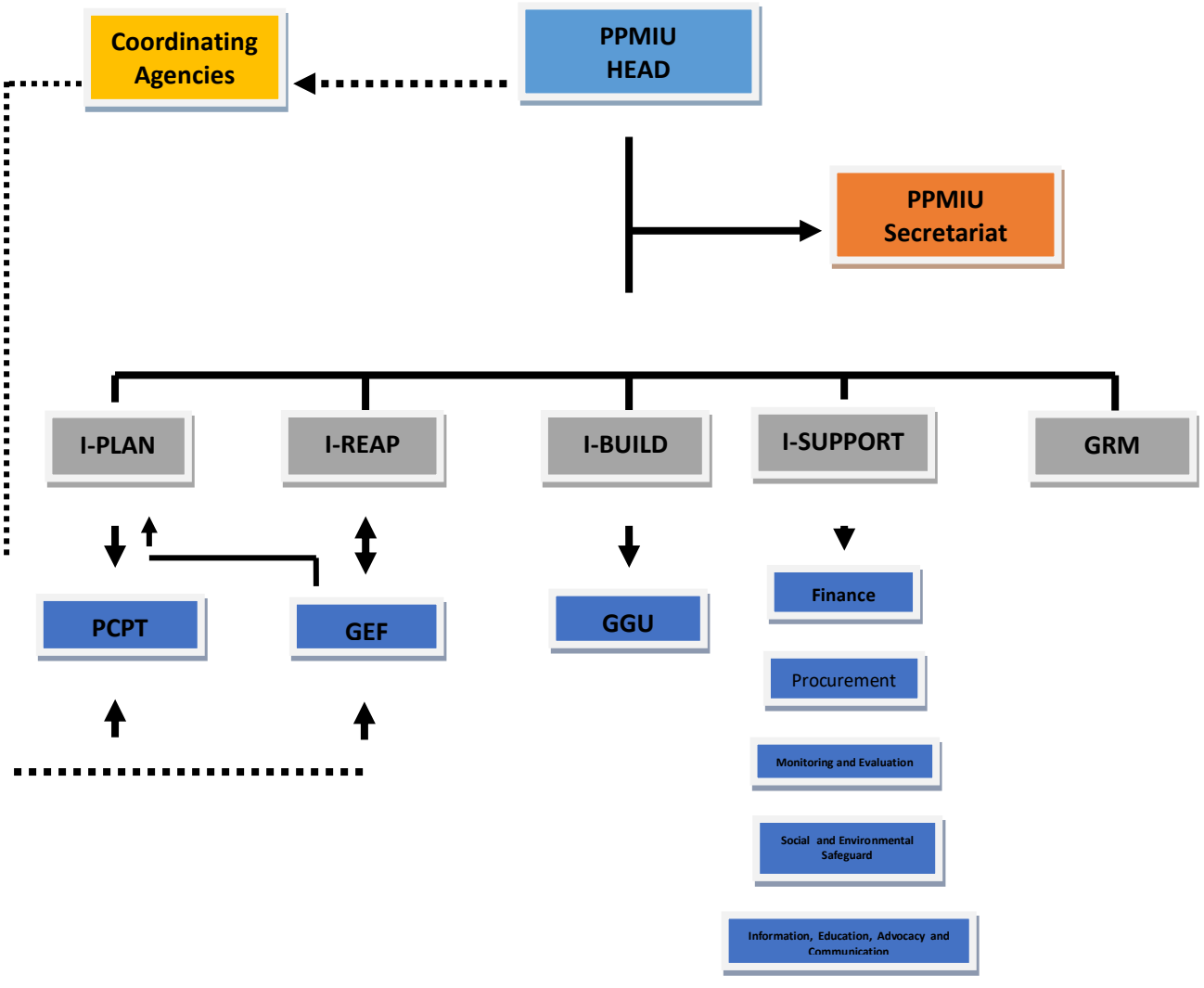
Chapter IV. Institutional Arrangements

- **Implementation/ Supervision**

The implementation and supervision of the Philippine Rural Development Program (PRDP) will be under the Provincial Governor thru the Provincial Program Management and Implementing Unit (PPMIU) created thru EO. No. 05 Series of 2014, with the Provincial Planning and Development Coordinator as the overall head. The PPMIU will be responsible for implementing all sub-projects, including but not limited to the preparation of pertinent documents as required by the program. The Regional Program Coordinating Office (RPCO) headed by the Regional Executive Director of the Department of Agriculture (DA) shall provide technical assistance in implementing the various projects.

- **Organization and Management**

The organization and management of the program will be handled by the province through its PPMIU, composing of its unit components (I-PLAN Unit, I- REAP Unit, I-BUILD Unit, I-SUPPORT and GRM Unit) and sub-unit components (Finance Sub-Unit, Procurement Sub-Unit, Monitoring and Evaluation Sub-Unit, Social and Environmental Safeguard Sub-Unit, and Information, Education, Advocacy and Communication Sub-Unit, Provincial Core Planning Team, Global Environment, and Geotagging and Governance Unit). The Bohol PRDP- PPMIU organizational structure is shown below.



- **Monitoring and Evaluation**

A monitoring and evaluation system for the I-PLAN will be installed using the PRDP Results-Based Monitoring and Evaluation System (RBMES), to track the implementation of projects indicated in the plan as well as projects being implemented and completed. Based on the PRDP Results-Based Monitoring, the indicators, means of verification of results and means of data collection are to be adopted. The use of geo-tagging tool/system is to be used in the pre-implementation, implementation and post- implementation of the projects funded under the PRDP. The PPMIU M&E Sub-Unit shall have the following functions:

1) Oversee monitoring and evaluation of the I-REAP and I-BUILD components in the province;
2) Coordinate all M&E activities of the participating LGUs;
3) Implement and Maintain Program Monitoring Information System ensuring that system's problems are immediately attended to or reported to RPCO thru the PRMIU;
4) Identify problems and issues which impeded program implementation for remedial actions by the PPMIU;
5) Generate and submit the prescribed provincial reports based on the LGU's reports to PPMIU for submission to RPCO;
6) Ensure that all completed data capture forms and file copies of the provincial consolidation reports are properly kept for ready reference;
7) Validate submitted reports by participating LGUs;
8) Provide technical assistance to participating LGUs pertaining to M&E system;
9) Prepare and submit reports to the RPCO.

- **Social and Environmental Safeguards**

The province will observe safeguard policies set by the World Bank and the Philippine Government as described in the Social and Environmental Safeguards (SES) Framework of the PRDP.

Social safeguards will be governed by the Indigenous People Development Framework, Land/ Right of Way (ROW) Acquisition and Resettlement Policy Framework. Environmental Safeguards will be governed by the Philippine Environment Impact Statement System and will adopt the Environmental Framework and Guidelines set for by the program.

The SES Sub-Unit of the PPMIU shall carry out environmental guidelines, prepare and implement environmental management plan, resettlement action plan and indigenous people development framework in a manner and substance satisfactory to the World Bank.

Chapter V. PDC Resolution Approving the PCIP

- **PDC Full Council Res. No. 04-2018 Approving the PCIP for Virgin Coconut Oil (VCO)**

Republic of the Philippines
PROVINCE OF BOHOL
City of Tagbilaran

PROVINCIAL DEVELOPMENT COUNCIL

EXCERPT FROM THE MINUTES OF THE FULL COUNCIL MEETING OF THE PROVINCIAL DEVELOPMENT COUNCIL HELD ON OCTOBER 24, 2018 AT THE MAGNOLIA PAVILION, REYNA'S HAVEN AND GARDENS, TAGBILARAN CITY, BOHOL, PHILIPPINES

In Attendance:

Gov. Edgar M. Chatto.....Chairman, Presiding Officer
and
Majority of the Members of the PDC Full Council

PDC FULL COUNCIL RESOLUTION NO. 04-2018

A RESOLUTION APPROVING THE ENHANCED BOHOL PROVINCIAL COMMODITY INVESTMENT PLAN (PCIP) WITH THE UPDATED VERSION FOR THE SEAWEEDS PCIP AND THE NEW VIRGIN COCONUT OIL PCIP AND FAVORABLY ENDORSING THE SAME TO THE CENTRAL VISAYAS REGIONAL DEVELOPMENT COUNCIL (RDC-VII) FOR INCLUSION IN THE REGIONAL DEVELOPMENT AND INVESTMENT PROGRAM (RDIP) AND THE DEPARTMENT OF AGRICULTURE (DA) AND OTHER RELEVANT AGENCIES FOR SUPPORT AND FUNDING ASSISTANCE

WHEREAS, the Enhanced Bohol PCIP is an integration of the six (6) approved priority commodities of the province, namely: seaweeds, native chicken, highland vegetables, buffalo dairy, cassava and virgin coconut oil (VCO) through mainstreaming biodiversity conservation, climate change resiliency and natural resource management;

WHEREAS, the Seaweeds PCIP is an updated version with the previous plan already due for updating and the addition of the Virgin Coconut Oil (VCO) PCIP, another priority commodity of the province, with a newly approved Value Chain Analysis (VCA) undertaken and prepared as part of the necessary requisites to ensure effective interventions with the new PCIP enhanced through integration of environmental protection and conservation measures;

WHEREAS, the PRDP Project Support Office – Visayas Cluster issued a Memorandum dated February 21, 2017 requiring all PCIPs for endorsement to the Regional Development Council (RDC) for inclusion of the PCIP to the Regional Development Plan and in the Regional Development

Investment Program (RDIP) for funding support, thus ensure that other NGAs will be aware and cognizant in their role as important source of funds for sub-projects and interventions indicated in the PCIP that are in line with the agency's programs;

WHEREAS, the matrix of interventions in the PCIP significantly consider potential fund sources to facilitate integration of CIPs in the planning and budgeting processes of the DA and LGUs, specifically for identified interventions relevant to the development of the priority commodity but do not qualify to funding support from PRDP, thus the PLGU may use the PCIP to mobilize resources from other sources or utilize other financing scheme;

WHEREAS, the Bohol PCIP was presented to this Body, giving emphasis on biodiversity conservation measures, climate change resiliency and natural resource management, relevant information, gaps and constraints, and needed interventions, which has been identified through a technical review and a stakeholders' consultation involving suppliers, growers, processors, traders, municipal agriculturists, provincial and regional commodity coordinators, and other key players in the industry;

WHEREAS, the Bohol PCIP, after review and deliberation, has been found by this Body to be relevant, well-grounded, responsive, and aligned with the provincial goals and priorities, as well as contribute to the regional and national agriculture goals and for these reasons, worthy of its approval and endorsement to the Regional Development Council, Department of Agriculture and other relevant agencies for support;

WHEREFORE, upon proper motion duly seconded, be it resolved by this Body in a meeting duly convened –

To approve the enhanced Bohol Provincial Commodity Investment Plan (PCIP) with the updated version for the Seaweeds PCIP and the new Virgin Coconut Oil PCIP and favorably endorsing the same to the Central Visayas Regional Development Council (RDC-VII) for inclusion in the Regional Development and Investment Program (RDIP) and to the Department of Agriculture (DA) and other relevant agencies for support and funding assistance

UNANIMOUSLY ADOPTED.

-0-

I hereby certify to the correctness of the foregoing Resolution.

RONILITA M. BUNADO
OIC, PPDO-Bohol
Head, PDC Secretariat

APPROVED:

EDGARDO M. CHATTO
Governor
Chairman, PDC-Bohol

C-KGS - 2018-2018

ANNEXES

Annex 1. Farm-to-Market Roads (FMR) for Virgin Coconut Oil PCIP

Province of Bohol

	Project Name	Road Length (km.)	Estimated Project Cost (Php '000 in M)		
			Y1	Y2	Y3
1	**Carmen**				
	Guadalupe-Monte Video Road	5.77	15.40	62.50	62.50
	Carmen-Vallehermoso Road	7.03	40.60	62.50	62.50
	Buenos-Aires-Nueva Vida-Monte Hermoso Road	7.60	52.00	62.50	62.50
2	**Bilar**				
	Campagao-Cabacnitan FMR, Bilar, Bohol	10.96	219.20		
	Bilar-Sevilla Road	2.00		50.00	
	Bilar-Magsaysay Park Road	2.80		70.00	
	Jct. (Bilar-Dimiao)-Oac-Omjon Road	5.00	175.00	75.00	25.00
3	**Calape**				
	Calape-Cabayugan-Tabuan (Antequera) Road	12.68	500.00	1.00	1.00
	Calape-Pangangan Road	15.60	5.00	1.00	1.00
	Jct. (Calape-Pangangan)-San Isidro-Tipkan Road	1.10	0.30	0.10	0.10
4	**Ubay**				
	San Miguel-Bayongan-Bulilis-Mabuhay (Ubay) Road	17.40	36.00	150.00	150.00
	Jct. (Soom)-Humay-Humay Road	3.31	6.20	37.50	37.50
	Road to Ubay Jr. High School	0.40	8.00		
	Gabi Seed Farm, Ubay	1.010	25.25		
	Road to Ubay Stock Farm	1.600		40.00	
	Jct. (TER)-San Pascual (Ubay)-Mahayag (San Miguel) Road	2.47	49.40		
	Jct. (TER)-Ilihan-Cabulao Road	1.90	38.00		
5	**Inabanga**				
	Dagnawan-Dagohoy, Inabanga, FMR	6.48	127.00		
	Pob. (Inabanga)-Lawis Road, Causeway Length	6.248	31.20	75.00	75.00
	One Way Traffic, Inabanga	0.335	8.38		
	Inabanga-Sagbayan via Lapacan-Magtangtang Road	9.340	20.00	125.00	77.50
6	**Balilihan**				
	Corella-Balilihan Road	3.00	20.00	25.00	25.00
	Sikatuna-Balilihan via Badiang Road	9.26	160.00	1.00	1.00
	Baucan (Balilihan)-Cambague (Sevilla) Road	8.73	150.00	1.00	1.00
	Antequera-Balilihan via Dorol Road	12.28			
	Pob. (Catigbian)-Ambuan-Sagasa (Balilihan) Road	11.14			
	Sikatuna-Balilihan via Can-agong Road	3.65			
	Balilihan-Cabad Road	1.57			
7	**Antequera**				
	Calape-Cabayugan-Tabuan (Antequera) Road	12.68	500.00	1.00	1.00
	Antequera-Balilihan via Dorol Road	12.28	30.00	50.00	50.00

	Project Name	Road Length (km.)	Estimated Project Cost (Php '000 in M)		
			Y1	Y2	Y3
8	**Loon**				
	Pondol-Candaigan, Loon, FMR	4.74		118.50	
	Tajang-Sandingan Road	2.50	50.00		
	Catagbacan-Lawis Road	1.33	26.56		
	Pondol-Pananquilon-Cantam-is Road	4.15	83.00		
	Maribojoc-Pagnitoan Candavid-Tabuan Basak Road	7.00	100.00	40.00	
9	**Corella**				
	Corella-Balilihan Road	3.00	20.00	25.00	25.00
	Baclayon-Corella Road	0.50	10.00		
	Baclayon-Corella via Tunga Road	4.00	20.00	50.00	50.00
	Sambog-Caumbang-Tanday Road	2.30	6.00	25.00	25.00
	Pob. (Corella)-Cancatac-Abucay (Sikatuna) Road	4.50	20.00	62.50	25.00
	Tanday-Guinoan-Cancatac-Corella Road	7.09	18.00	87.50	87.50
	Canapnapan-Canangcaan-Canhumang-it Road	7.90	58.00	62.50	62.50
	Pob. (Corella) Pandol-Anislag-Monserrat (Cortes) Rd	4.88	17.60	50.00	50.00
10	**Jagna**				
	Can-uba-Faraon-Laka Road	1.5	30.00		
	Road Around Jagna Market				
	Road Infront Central School, Jagna				
	Road to Jagna Wharf				
	Severo Salas Street				
	Achacoso Street				
	Abrea Street				
	Road to Central School, Jagna				
	Road Around Ilihan Hill				
	Jct. (Jagna-Sierra Bullones) Lonoy Road	1	20.00		
	Jct. (Jagna-Sierra Bullones) Can-ipol-Odiong Road	1.9	38.00		
	Jagna-Cabungaan-Lonoy Road	1.445	28.90		
	Jct. (TER)-Bunga Mar-Kinagbaan-Balili Road	10.5	10.00	100.00	100.00
	Jct. (Jagna-Sierra Bullones) Malbog-Calabacita Road	9	60.00	60.00	60.00
	TOTAL	**274.84**	**2,832.99**	**1,571.10**	**1,117.60**

Annex 2. Industry Players Directory

Name of Association/ Cooperative / Individual	Business Address/ Contact Number	Contact Person	Main Business
Association/ Cooperative			
BHMC Bio Natural International	Riverside, Bilar, Bohol 09285017573	Pastor Ibarra	VCO Processor
Bohol PCA Employees MPC	Tanday, Corella, Bohol 09197561235	Vicky Lago	VCO Processor
Loon Untied Business Inc. (LUBI) MPC	Cogon Sur, Loon, Bohol 09225379897	Alexander Luzon	VCO Processor,
East Ulbujan Virgin Coconut Oil Producer	East Ulbujan, GarciaHernandez 09108877877	Procopio Peligrino	Vinegar VCO Processor
Kinagbaan Coconut Farmer and Processors Organization	Kinagbaan, Jagna, Bohol (038) 238-2855; 531-8144;	Rose Olaer/ Julia Cuartero	VCO Processor
Adlawan Small Coconut Farmers MPC	Adlawan, Valencia, Bohol 09183332047	Antonio Sumaylo/ Grace Cellan	VCO Processor, copra
Dimiao Coconut Processing MPC	Poblacion Dimiao, Bohol	Coop BOD	VCO Processor
Andang CBO	Clarin, Bohol 09209175711	Andang CBO Officer	Whole nut trader
Sensen Coconut Farmers Consumers Coop	Cambacay, Batuan, Bohol 09296466459	Norma P. Legaspi	VCO processor, consumers coop
SESILAMCO	Pob Clarin, Bohol 09363190149	Leonida P. Japay	VCO processor
Buenavista Farmers Multipurpose Coop	Buenavista, Carmen, Bohol 09212650771	Alma Garcia	Copra trading
Sagbayan Coconut Farmers MPC	Poblacion, Sagbayan, Bohol 09108491631	Dante Lozano	VCO processor, copra trading
Jagna Small Coconut Farmers MPC	Poblacion, Jagna, Bohol	Primitivo Gozales, Jr.	"Calamay" production, copra
Individual Player			
Delfin R. Lago	Tanday, Corella, Bohol 09161741593	Delfin R. Lago	Whole nut supplier
Timoteo R. Lago	Tanday, Corella, Bohol 09198905309	Timoteo R. Lago	Whole nut supplier
Eduard Mainit	Tanday, Corella, Bohol	Eduardo Mainit	Whole nut supplier
Epifanio Ribay	Tanday, Corella, Bohol 09103347119	Epifania Ribay	Whole nut supplier
Outlet			
Bohol Quality Store	Tagbilaran City 09176263321	Vincent Decasa	VCO buyer/dealer
Botica Ng Bayan	Tagbilaran City 09198905309	Restituta Lago	VCO buyer/dealer
City Pharmacy	Tagbilaran City (038) 411-2430	Mrs. Yap	VCO buyer/dealer
Shop Me	Tawala, Panglao Bohol 09173085187	Leuca Trotin	VCO buyer/dealer
Biological Homeophatic Medical	Riverside, Bilar Bohol 09228139711	Hermogenes Decasa	VCO processor
Biological Homeophatic Medical Clinic – (Inter-regional branches)	Manila, Davao, Cebu, Cagayan de Oro, Surigao - 09228198241	Jay Jumamoy Bernaldez	VCO outlets/trading
Export Market - Japan	Tokyo, Japan 09228198241	Jay Jumamoy Bernaldez	Importer/exporter

Provincial Core Planning Team

1. **DR. LARRY PAMUGAS** – OIC, Office of the Provincial Agriculturist (Subproject Component Head)
2. **MS. MA. IMELDA BORROMEO** – Provincial Planning & Development Office (PPDO)
3. **ENGR. EVELYN MALIGSA** – Office of the Provincial Agriculturist (OPA)
4. **MS. REMEDIOS REGACHO** – Office of the Provincial Agriculturist (OPA)
5. **MS. DAISY BASCO** – Office of the Provincial Veterinarian (OPV)
6. **ENGR. EVELYN AYUBAN** – Office of the Provincial Engineer (PEO)
7. **MS. AURELIN EUGENIA MAYOL** – Bureau of Fisheries & Aquatic Resources (BFAR)
8. **MR. JOSE ALLAN CAJILOG** – Philippine Coconut Authority (PCA)

PHOTO DOCUMENTATION

1) Bohol PCIP Enhancement Writeshop

8-9 August 2018

2) Enhanced PCIP Writeshop

17-18 September 2018

3) Stakeholders Consultation

22 October 2018

4) Enhanced Seaweeds and VCO PCIP Presentation to the Provincial Development Council (PDC)

24 October 2018