PROVINCIAL COMMODITY INVESTMENT PLAN

FOR

CASSAVA

2018 - 2020

Table of Contents

Page Number

ii. Table of Contents
iii. List of Abbreviations and Acronyms
v. List of Tables and Figures
vi. List of Maps

Introduction **1**

Chapter I: Development Background/ Context **2 – 25**
- **Geographic Profile**
  - Location
  - Topography and Slope
  - Existing Land Use and Vegetative Cover
  - Land Classification
  - Physical Resources
  - Natural Hazards
  - Infrastructure
- **Socio Economic and Demographic Profile**
  - Population
  - Poverty Situation
  - Employment
  - Economy and Priority Industries

Chapter II: Development Vision and Framework of the Province **26 – 31**
- Over-all Vision Statement and Development Goals
- Agriculture Sector Vision and Goals

Chapter III: Priority Commodity Chains Development **32 – 67**
- Commodity Profile
  - Product Description
    Nature and Structure of the Industry
  - Production Trends
  - Value Chain Mapping
  - Competitiveness Vision
- Investment Plan
  - Summary and Rank of Constraints
  - Expanded-Vulnerability and Suitability Assessment (E-VSA)
  - Investment Priorities
- PCIP Matrix for Cassava

Chapter IV. Institutional Arrangements **68 – 69**
- Implementation/ Supervision
- Organization and Management
- Monitoring and Evaluation
- Social and Environmental Safeguards

Chapter V. PDC Resolution Approving the PCIP **70 – 71**

Annexes **72 – 82**
- List of Farm-to-Market Roads for Bohol Cassava PCIP
- Directory of Cassava Industry Players, Bohol Province
- List of Provincial Core Planning Team
- Photo Documentation

List of Abbreviations & 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
ADP	Annual Development Plan
ARMM	Autonomous Region in Muslim Mindanao
BALA	Bohol Livestock Aide
BEMO	Bohol Environment Management Office
BFAR	Bureau of Fisheries and Aquatic Resources
BODACO	Bohol Dairy Cooperative
BODPA	Bohol Dairy Producers Association
BOI	Board of Investments
BONACGA	Bohol Native Chicken Growers Association
BPSFPC	Bohol Provincial Seaweed Farmers Producers Cooperative
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
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
NDA	National Dairy Agency
NGA	National Government Agency
NMIS	National Meat Inspection Service
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
RDS	Raw Dried Seaweed
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

List of Tables

Table No.	Title	Page No.
1	Slope Classification, Bohol	**5**
2	Existing Land Use Distribution, Bohol	**6**
3	Summary Matrix for Hazard Susceptibility, Bohol, 2014	**10**
4	Poverty Profile, Bohol	**17**
5	No. of Accommodation Facilities, Bohol, 2015	**23**
6	Priority Commodities, Bohol, 2015	**32**
7	Recommended Cassava Varieties	**35**
8	World Cassava Production, 2010-2014	**36**
9	World Cassava Area Harvested, 2010-2014	**38**
10	Top Ten Countries in Terms of Yield, 2010-2014	**38**
11	Volume of Cassava Production in the Philippines, 2011-2015	**40**
12	Production Trends in Central Visayas	**41**
13	Top Ten Producing Municipalities, Bohol Province	**42**
14	Summary and Rank Constraints of Cassava Value Chain	**47**
15	Summary of Opportunities	**48**
16	Ranking and Prioritization of Municipalities	**49**
17	Investment Plan Summary	**50**

List of Figures

Figure No.	Title	Page No.
1	Slope Classification in Bohol	**5**
2	Present Land Use and Vegetation Cover, Bohol	**6**
3	Type of Pavement, Bohol, 2015	**12**
4	Road Classification, Bohol, 2015	**12**
5	Bridge Classification, Bohol, 2015	**12**
6	Average Annual Growth Rate, Bohol, 1990-2015	**14**
7	Age-Sex Pyramid of Household Population, Bohol, 2010	**15**
8	Poverty Incidence Among Families, Bohol, 2000, 2006, 2009, 2012	**18**
9	Magnitude of Poor Families, Bohol, 2000, 2006, 2009, 2012	**18**
10	Employment Rate, Bohol, 2013-2015	**19**
11	Labor Force Participation Rate, Bohol, 2013-2015	**19**
12	Area Harvested to Major Crops, Bohol, 2015	**19**
13	Palay Production, Area Harvested, Yield Per Hectare, Bohol, 2015	**19**
14	Rice Sufficiency, Bohol, 2010-2015	**20**
15	Central Visayas Rice Production, 2015	**20**
16	Livestock Inventory, Bohol 2010-2015	**20**
17	Poultry Inventory, Bohol 2010-2015	**21**
18	Fisheries Volume of Production, Bohol, 2010-2015	**21**
19	Production and Consumption of Major Food Commodities, 2015	**22**

Figure No.	Title	Page No.
20	Visitor Arrivals, Bohol, 2011-2015	**22**
21	Top Ten Foreign Travelers, Bohol, 2014-2015	**23**
22	Business Name Registration, Bohol, 2010-2015	**24**
23	Number of Banks, Bohol, 2011-2015	**25**
24	Number of Accounts, Bohol, 2011-2015	**25**
25	Agriculture Goals and Strategies	**31**
26	Cassava Root Processing into Value-Added Products	**34**
27	Cassava Chips and Fresh Tubers	**35**
28	Cassava Global Production, 2014	**37**
29	Philippine Cassava Production, 2015	**41**
30	Geographical Flows of Products in the Study Areas	**43**
31	Cassava Value Chain Map in Central Visayas	**45**
32	Competitiveness Vision for Cassava in Central Visayas	**46**

List of Maps

Map No.	Title	Page No.
1	Bohol Location Map	**3**
2	Slope Map, Bohol	**4**
3	Soil Map, Bohol	**5**
4	Land Use and Vegetation Map, Bohol	**7**
5	Land Classification Map, Bohol	**8**
6	Protected Areas Map, Bohol	**9**
7	Tsunami Hazard Map, Bohol	**11**
8	Ground Shaking Hazard Map, Bohol	**11**
9	Active Faults Map, Bohol	**11**
10	Road Network Map, Bohol	**13**
11	Expanded-Vulnerability and Sustainability Assessment Analysis (E-VSA) Map	**49**
12	Commodity Map: Cassava Industry Players	**50**

INTRODUCTION

Bohol is one of the selected recipient provinces of the Philippine Rural Development Project (PRDP). PRDP 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 platform that aims to improve the incomes and food security of the rural poor. 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 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.

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 PCIP of Bohol is a 3-year strategic plan (2017-2019) that highlights the identified priority commodities of the province for an inclusive, value-chain based and climate smart agriculture that will contribute to the vision towards a strong and balanced agri-industrial province.

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]

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.

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 are: coconut, dairy, native chicken, swine, buffalo dairy, cassava, inland fishery, mariculture (seaweed), cacao and coffee. These identified commodities that are of great importance to the agricultural development of Bohol will undergo the value chain analysis. As soon as the value chain report will be approved it will start the preparation and integration of the commodity into the PCIP.

The PCIP will serve as a basis of all interventions relative to the commodities identified. Funding for I-BUILD and I-REAP sub-projects will be incorporated in the plan for the selection of eligible interventions. Infrastructure projects and commodity enterprises within this plan shall be the priority projects of the Provincial Government in agriculture, livestock and fisheries.

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

Chapter I: Development Background

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. 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 poor road networks that link farms to production support facilities and markets. Bohol's development challenges can be summarized as pertaining to underutilization of agricultural lands and small, limited landholdings with an average farm size of only 0.6 hectare; poor farm to market road system; and low production due to inefficient and insufficient modern farm or agricultural technologies.

The agricultural development of the province is a collaborative effort among stakeholders. The Philippine Rural Development Project (PRDP), thru the Department of Agriculture (DA) and funded by the World Bank is extending different projects with the objective of alleviating the poverty situation of the Boholano farmers. The Provincial Commodity Investment Plan (PCIP) is one of the requirements needed for project implementation. The PCIP is a strategic plan that substantiates the interventions within the various segments of the value chain of the commodity, which shall become the basis for PRDP's I-BUILD and I-REAP in selecting subprojects for funding.

The Bohol PCIP undertakes a series of consultation with various stakeholders. The issuance of No Objection Letter (NOL) by the National Project Coordination Office (NPCO) dated June 8, 2017 through Memo No. 801-2017 and the presentation of the VCA results to the Provincial Governor and the PCPT indicates the integration of the approved commodity to the PCIP. The buffalo dairy is the fourth priority commodity of the province that is with a PCIP, along with highland vegetables, native chicken and seaweeds.

The approved Buffalo dairy VCA with NOL was presented by RPCO to the Provincial Development Council last June 27, 2017. Being participatory, the planning process includes technical review and stakeholders' consultation with various actors along the chain from the input supplier, producer, processor and traders. The Buffalo dairy Stakeholders' Consultation was conducted last August 9, 2017 with strong participation by both private and public players in the industry. The PCIP was presented and approved by the Provincial Development Council last September 8, 2017. The PLGU may also use the PCIP to mobilize resources from other fund sources other than PRDP, such as other National Government Agencies (NGAs) and the private sector.

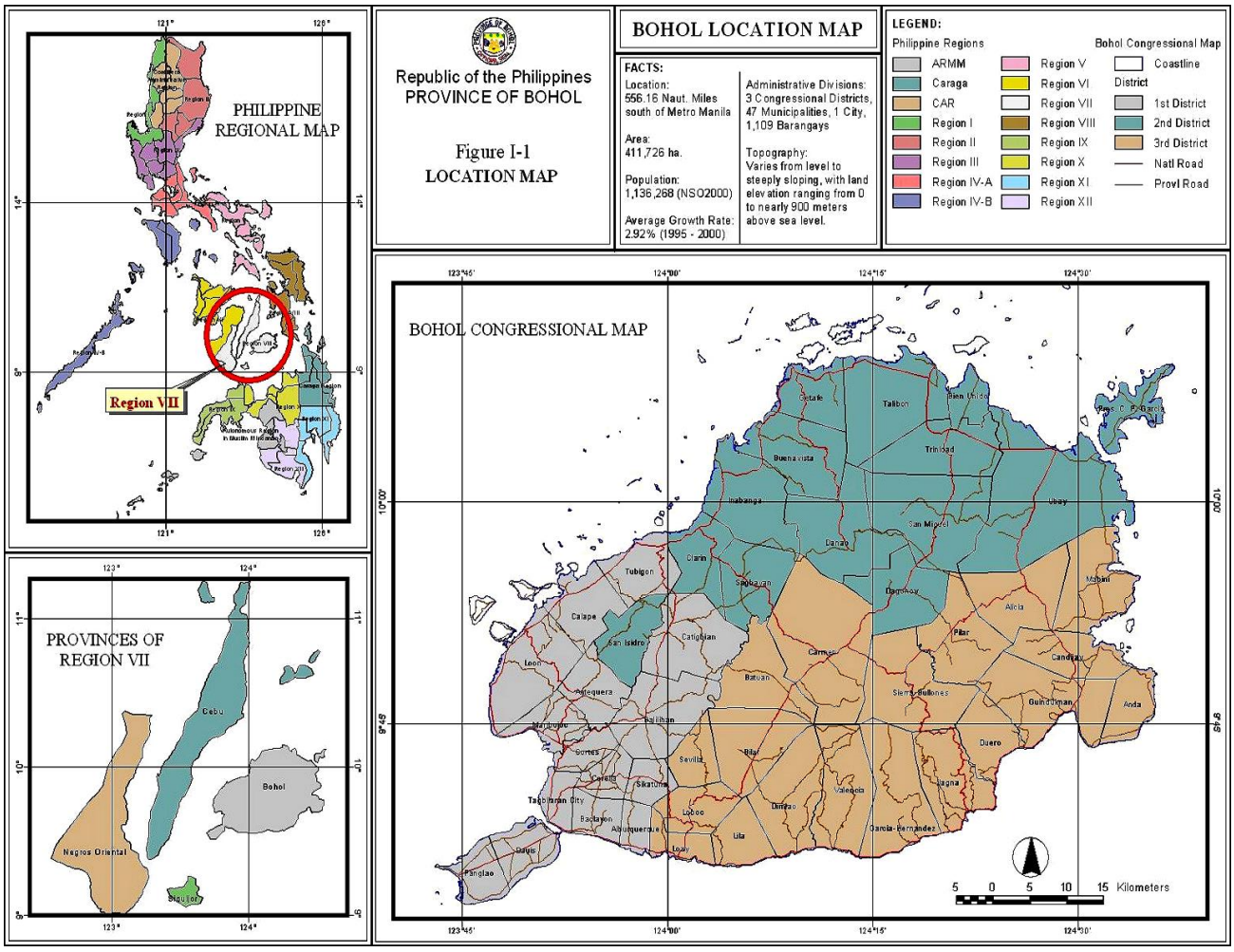
Geographic Profile

- **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**[2]

Topography Range

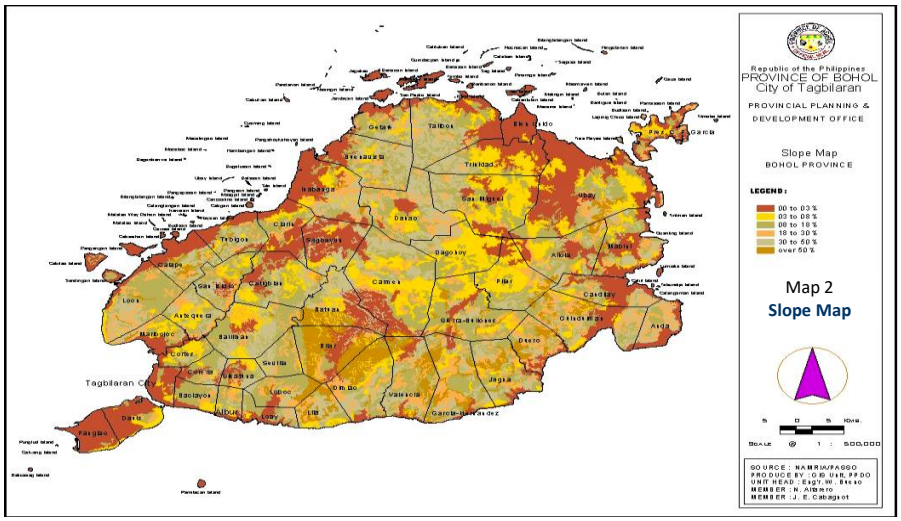
Bohol's terrain is variable from nearly flat at the plains to low rolling, moderate to very steep sloping with 5 to 50 meters high cliffs in the Sierra-Bullones limestone formation. The more rugged terrain is found in the southern part of the province although the Ubay volcanic rocks and Boctol serpentinite 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 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[3]

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



[2] Bureau of Soils and Water Management, DA, Region 7, Cebu City

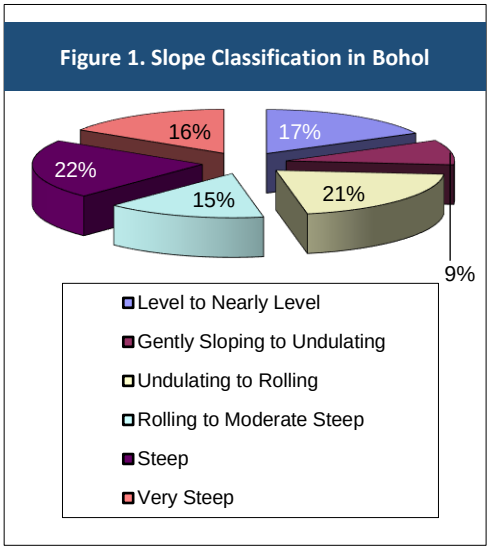
[3] Philippine Land and Soil Management Atlas for Central Visayas

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%**

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

Figure 1. Slope Classification in Bohol

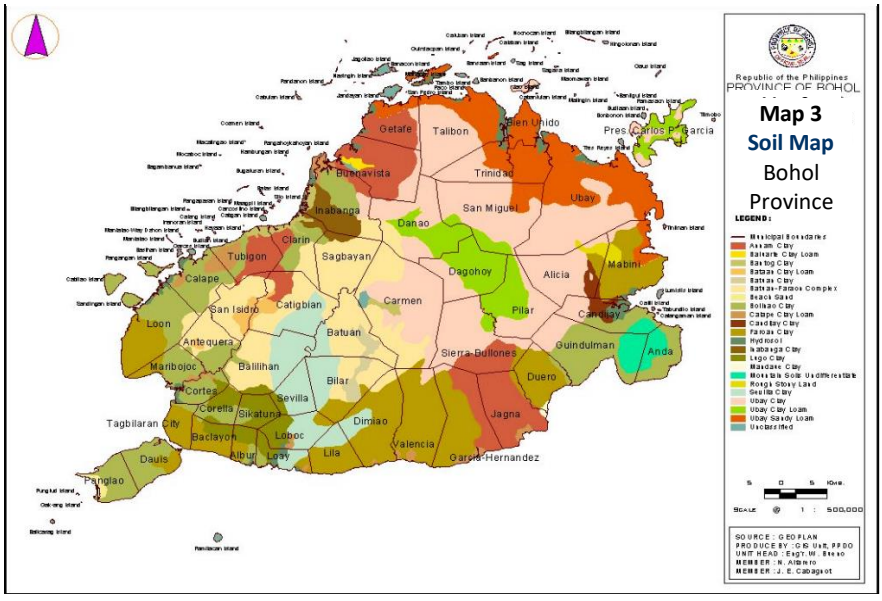


Soil Types[4]

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.

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)*.

Map 3. Soil Map, Bohol Province



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

- **Existing Land Use and Vegetative Cover**[5]

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.

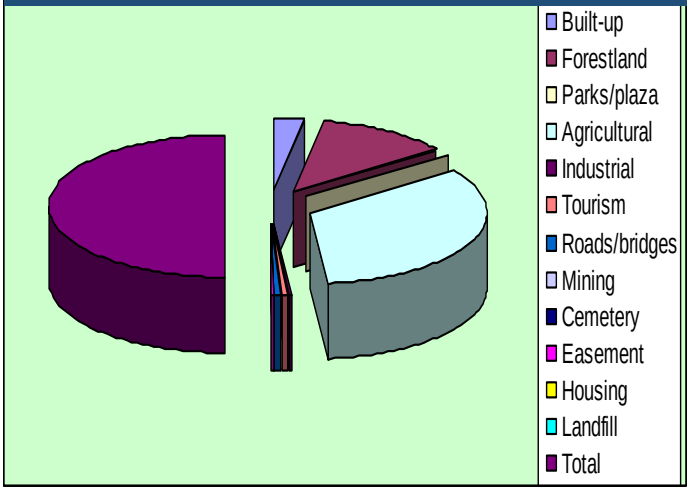
The province has a larger coverage of woodland (10.69%) compared to Cebu and some other provinces in the region. Wetland constitutes 4.92%, which includes mangrove, nipa, beach sands and fishponds while built-up areas comprise 10.22%.[6]

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***

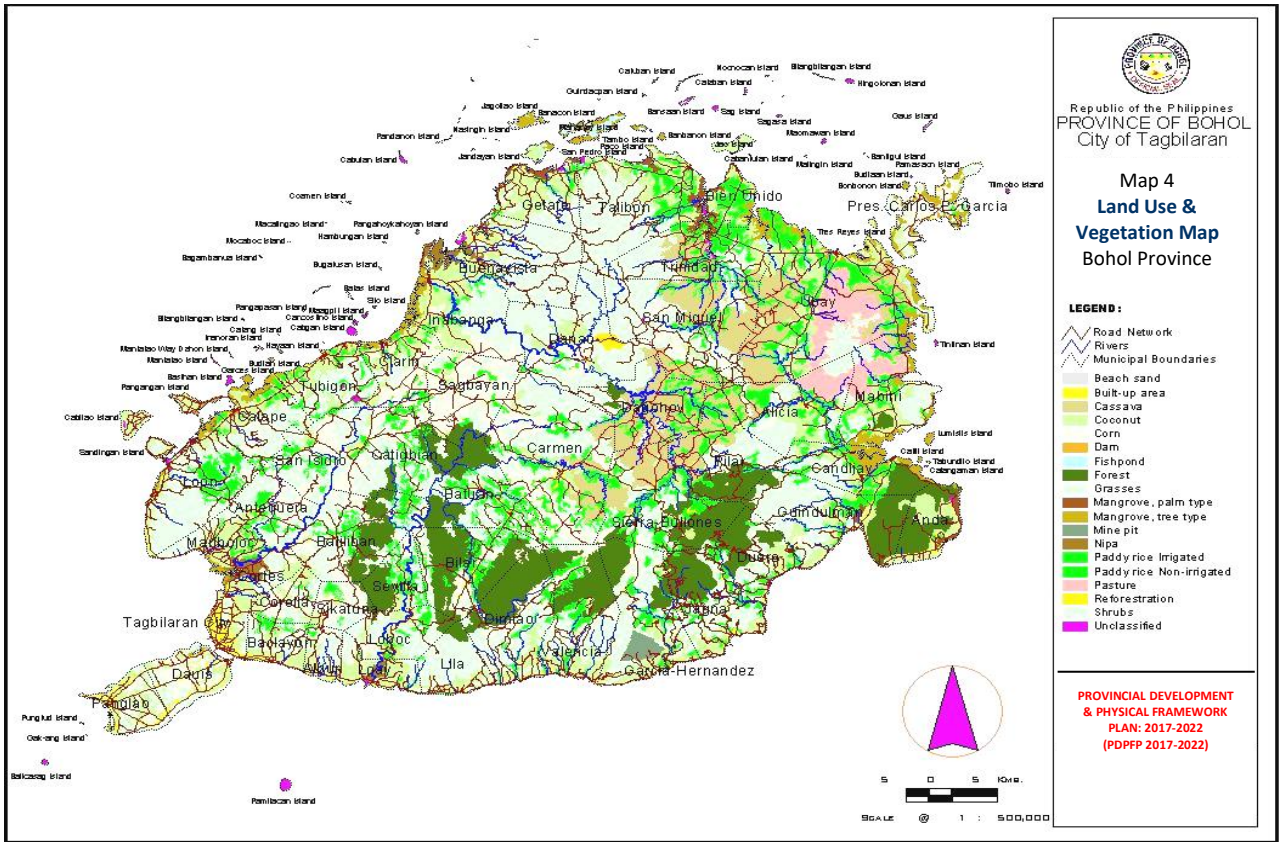
Figure 2. Present Land Use & Vegetation Cover, Bohol Province



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[7]. The most popular man-made mangrove forest in Bohol is around Banacon Island in Getafe town comprising an area of 1,750 hectares.

[5] Bohol Ecological Profile of DENR, 1992
[6] Bohol Ecological Profile, DENR 1992
[7] Bohol Coastal Environment Profile of 2002

Map 4. Land Use and Vegetation Map, Bohol Province



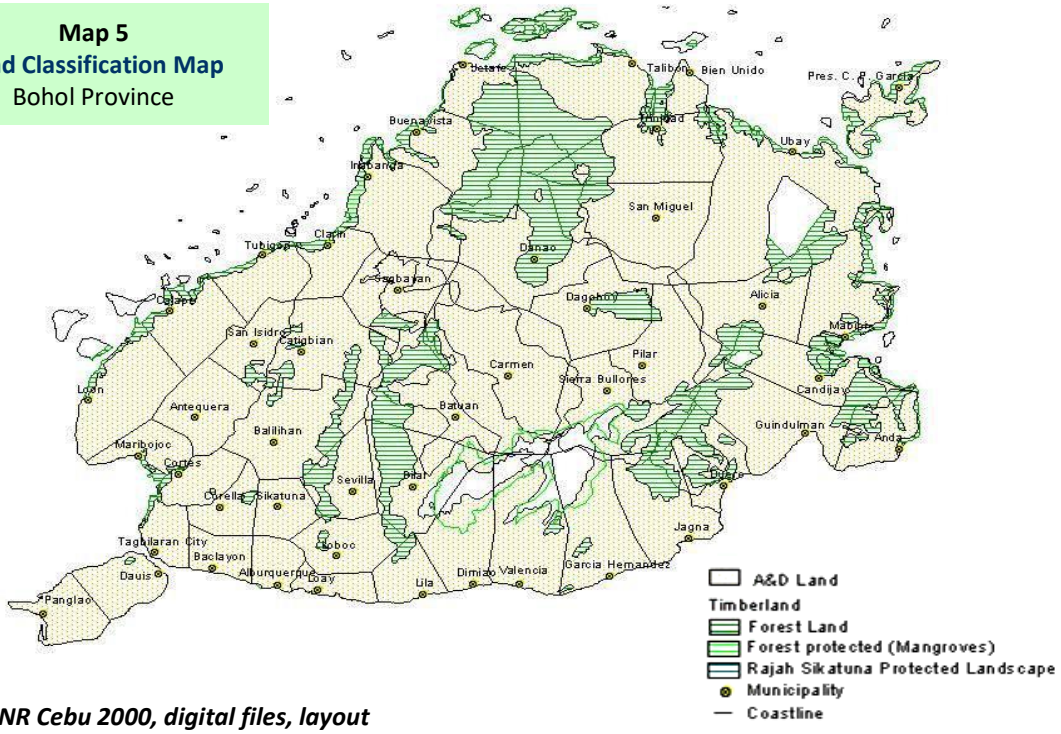
- **Land Classification**[8]

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.

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.

[8] Department of Environment and Natural Resources (DENR), 2000

Map 5. Land Classification Map, Bohol Province



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

- **Physical Resources**

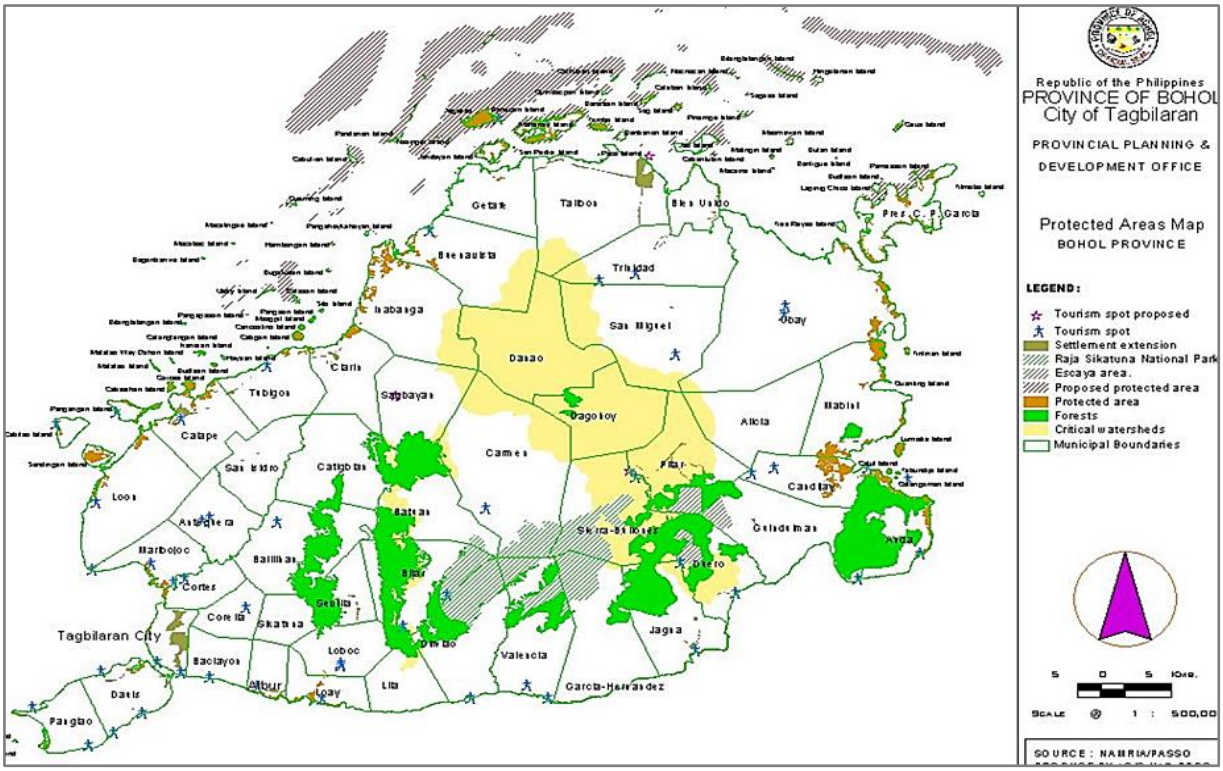
Bohol is endowed with a rich biodiversity and natural resources that play an essential role in guiding its future development for agriculture, industry, tourism, settlements, culture and infrastructure in both the medium and long-term time frame. It has a high diversity of flora and fauna found in the 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, 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, 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 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-renown 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.

- **Natural Hazards**

The Province of Bohol is prone to several hazards. Its inhabitants are vulnerable and at risks for natural calamities such as typhoons, earthquakes, flooding, tsunami, storm surges, wind wave, landslides, liquefaction and drought.

Based on the Hazard Susceptibility Study conducted in Bohol, eight (8) of the 48 towns/city are vulnerable to all types of hazards (Cortes, Duero, Guindulman, Inabanga, Jagna, Loay, Maribojoc, and Valencia) while the rest of the municipalities are prone to 3 to 7 hazards.

Table 3. Summary Matrix for Hazard Susceptibility, Bohol, 2014

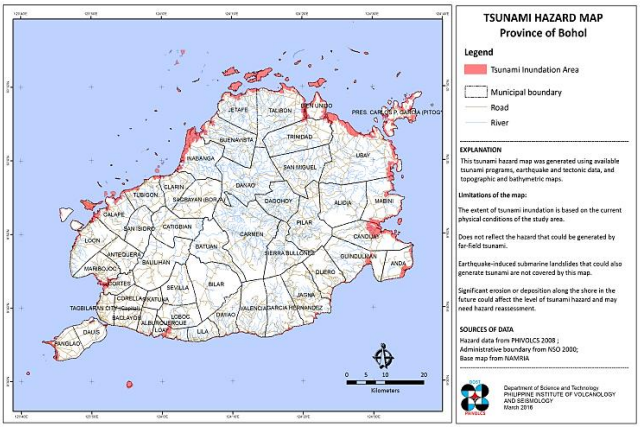
Municipality	Geologic Hazards				Hydro-Meteorologic Hazards			
	EQ	Liquefaction	EIL	Tsunami	Floods	RIL	SS	Others
Alburquerque								
Alicia								
Anda								
Antequera								
Baclayon								
Balilihan								
Batuan								
Bien Unido								
Bilar								
Buenavista								
Calape								
Candijay								
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								

Municipality	Geologic Hazards				Hydro-Meteorologic Hazards			
	EQ	Liquefaction	EIL	Tsunami	Floods	RIL	SS	Others
Sevilla	■		■			■		
Sierra Bullones	■		■		■	■		
Sikatuna	■		■			■		
Tagbilaran City	■	■	■	■		■	■	
Talibon	■	■	■	■		■	■	
Trinidad	■		■			■		
Tubigon	■	■	■	■		■	■	
Ubay	■	■	■	■		■	■	
Valencia	■	■	■	■	■	■	■	

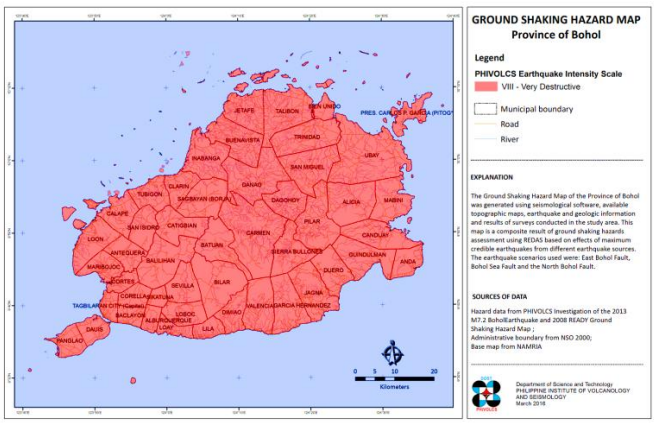
Source: ***Bohol VA Report 2014***

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

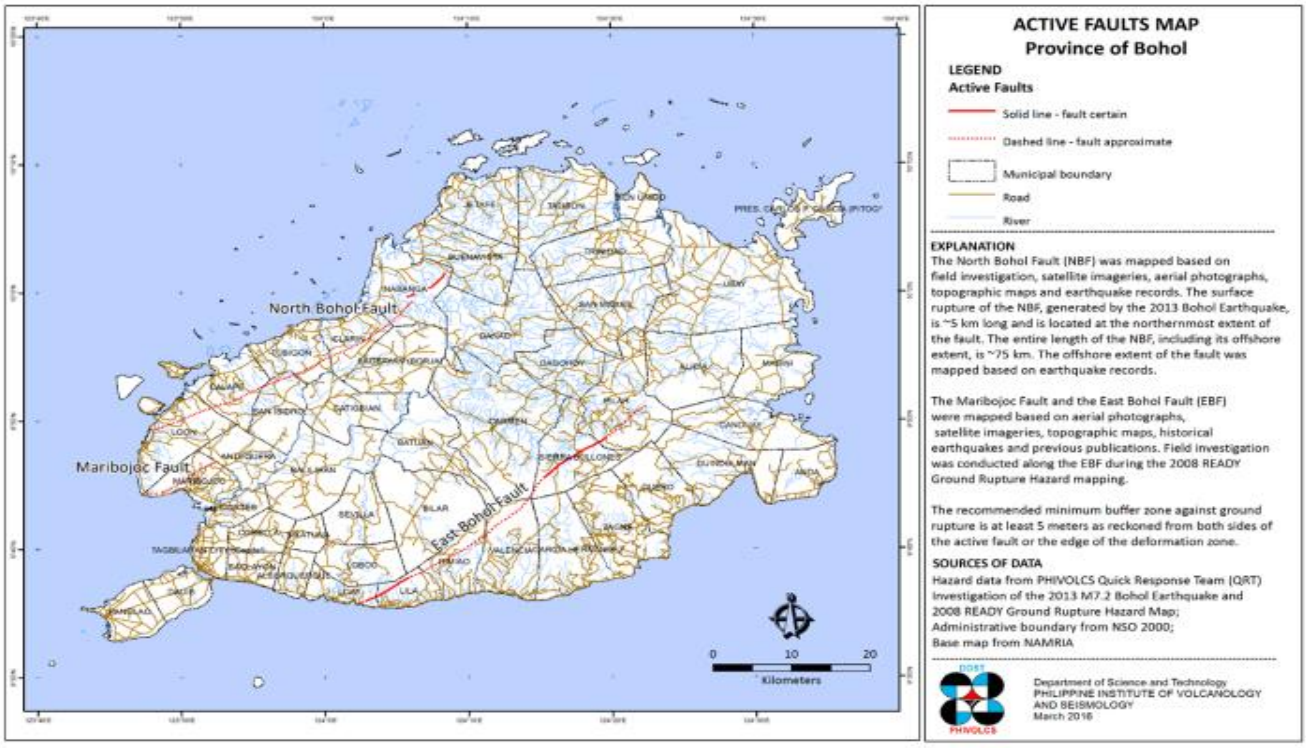
Map 7. Tsunami Hazard Map, Bohol Province



Map 8. Ground Shaking Hazard Map, Bohol Province



Map 9. Active Faults Map, Bohol Province



After the Great Bohol Earthquake and strong typhoons in in 2013, which caused the lives of Boholanos and destroyed Billions worth of properties, the public and government have strengthened their awareness and readiness for better disaster risk reduction management at the local level. Capacities are continually being improved not just for emergency responders and the government but also down to the household and purok level to ensure that the risk for people are reduced and/or prevented.

- **Infrastructure** [9]

In 2015, Bohol's **total road** length is 6,059.42 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 of roads, accounting 68%. 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 24%, 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, 14% of the province road remains to be earth roads, which are mostly classified as barangay roads.

As to bridges, there are 8,226.24 linear meters of bridges within the road network in the province. 64% of this total length is concrete. Steel bridge accounts 22% while bailey 8%. There are still timber bridges in the province, which shared a total length of 6%.

Majority of the bridges in the province are under the jurisdiction of the national government, which accounts 56%. The Provincial Government is maintaining 1,601 linear meters of 20% of these bridges. The rest of the bridges are managed and maintained by the city/ municipal and barangay local governments.

Figure 3. Type of Pavement
Province of Bohol: CY 2015

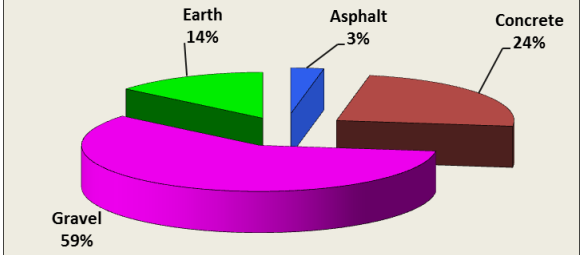


Figure 4. Road Classification
Province of Bohol: CY 2015

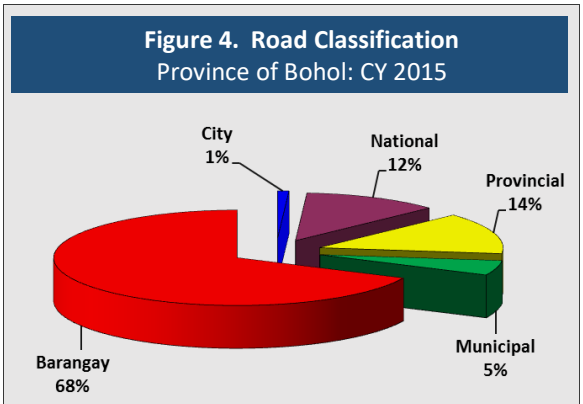
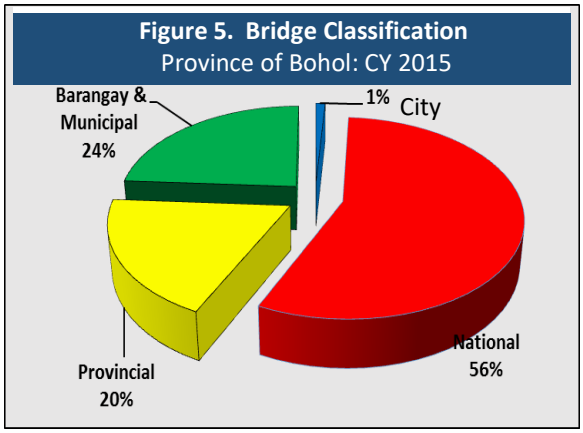


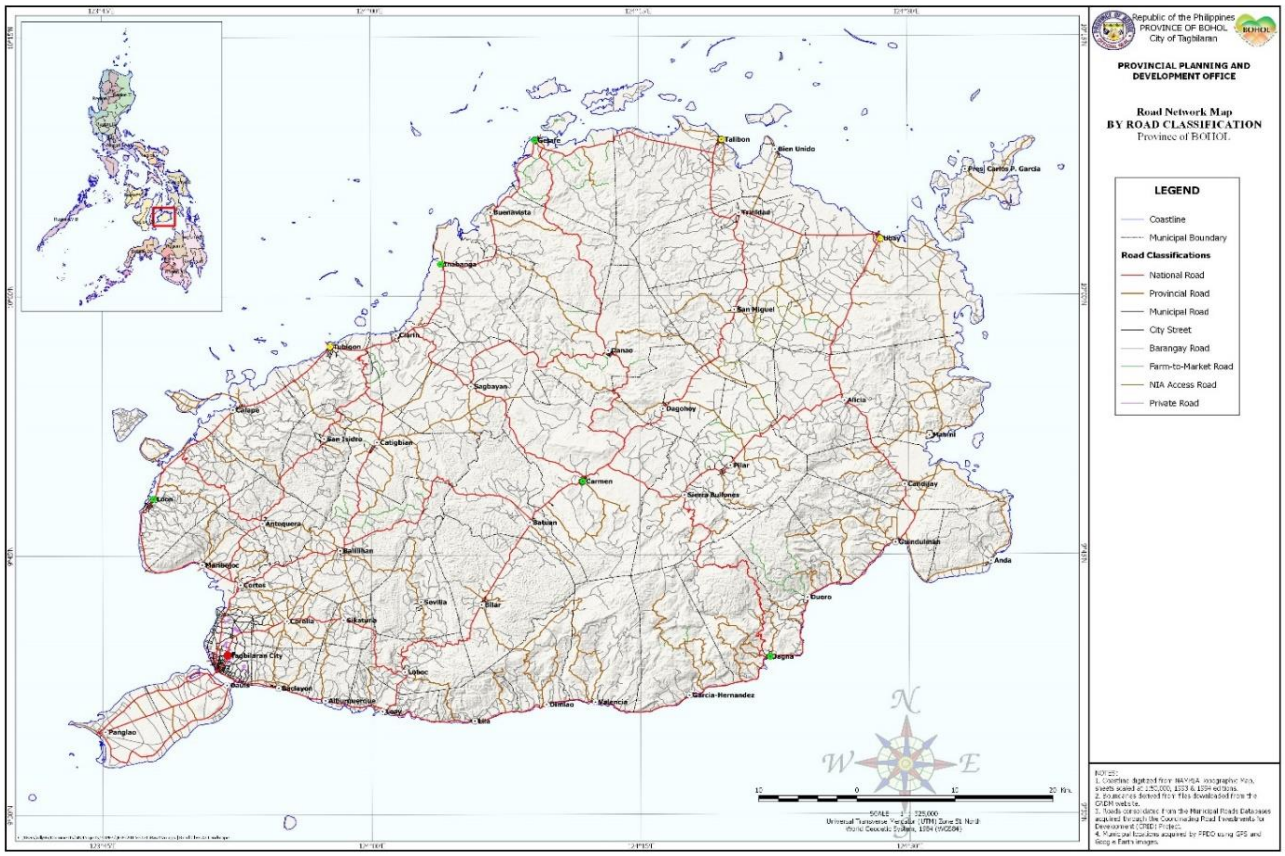
Figure 5. Bridge Classification
Province of Bohol: CY 2015



Source:
Department of Public Works & Highways (DPWH)

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

Map 10. Road Network Map, Bohol Province



There are 16 **ports** in Bohol, serving as the gateways of people and goods to and from the province. 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 to Cagayan, Nasipit and Camiguin with roll-on, roll-off route.

For **air travel**, the Province of Bohol is being served by only 1 domestic airport located in Tagbilaran City. Number of flights to the province has been irregular for the past 6 years brought about by airline competition, level of demand for air travel, and changes in aviation regulations.

For **land transportation**, an increasing number of registered cars, vans and trucks in the province for the period 2011-2014 is noted. Such increase posted a yerly average of 8.5%. This is due to the improvement of payment capacities of Boholanos as well as affordable financiang schemes offered by car dealerships and banks.

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.

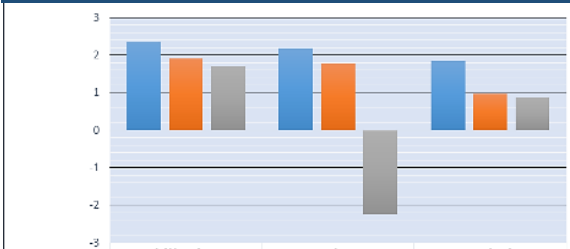
While population of Bohol has steadily increased, the pace of increase, however, slowed down from 1.85% average annual increase (1990-2000) to 0.97% (2000-2010) and further to 0.87% (2010-2015).

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 6. Average Annual Growth Rate



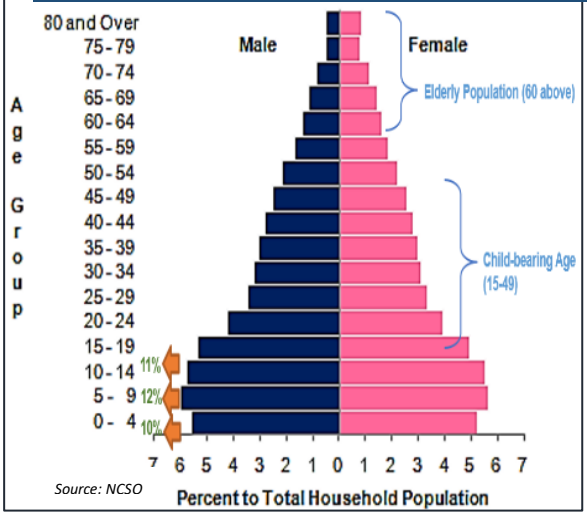
Source: NSO

	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

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.

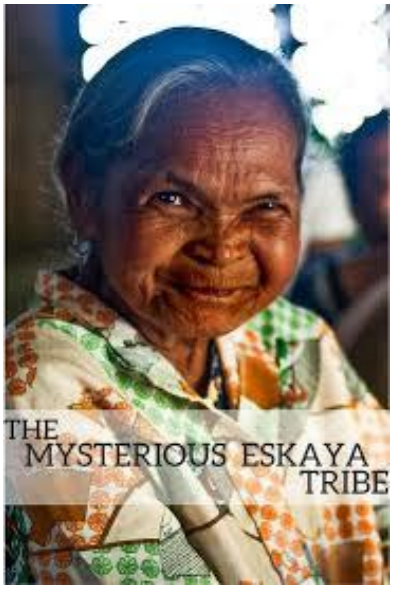
Figure 7. Age-Sex Pyramid of Household Population



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**

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[10] 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 (Table 5). [11] 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.

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, 1991, 2006, 2009, 2012 and 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

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

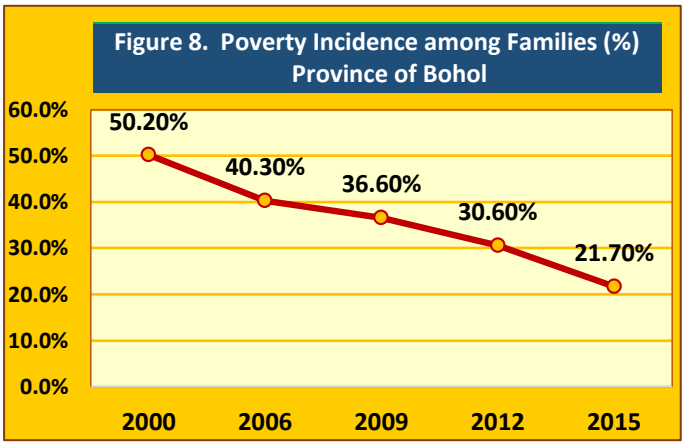
[11] 2015 official poverty statistics released by PSA at the sub-national level

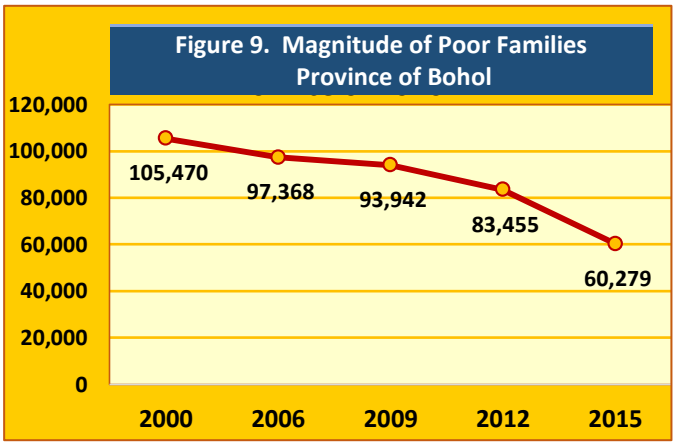
Region/ Province	Annual Per Capita Food Threshold (in Pesos)				Subsistence Incidence among Families (%)				Magnitude of Subsistence Poor Families			
					Estimates (%)				Estimate			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES	**9,308**	**11,780**	**13,232**	**15,189**	**8.8**	**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.

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.



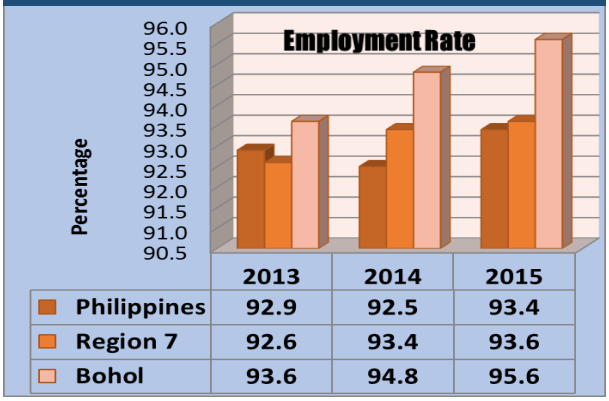


Source: ***National Statistical Coordination Board (NSCB)***

- **Employment**

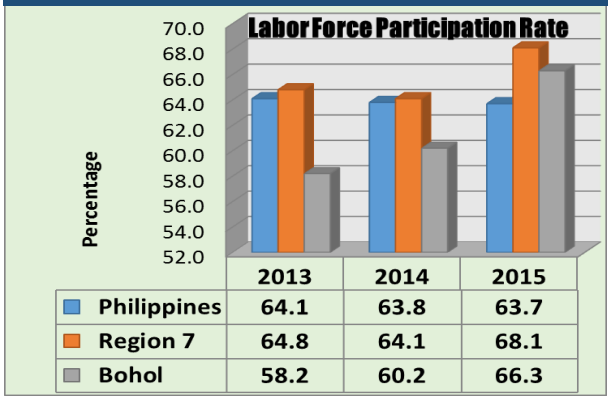
In terms of employment in the Province, employment rate has improved over the past three years. Based on the Labor Force Survey of the Philippine Statistics Authority (PSA), employment rate in the year 2015 is pegged at 95.6%, which is higher to the 93.6% and 94.8% in the year 2013 and 2014, respectively. 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 10. Employment Rate



	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

Figure 11. Labor Force Participation Rate



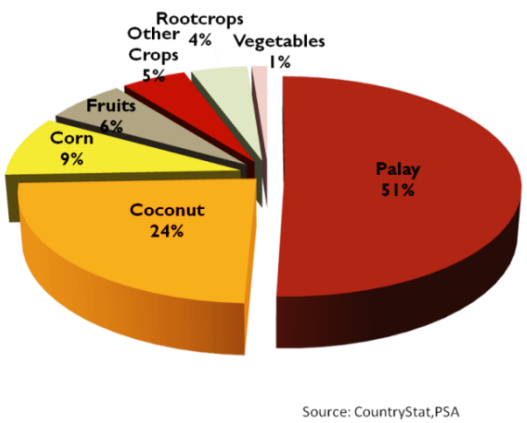
	2013	2014	2015
Philippines	64.1	63.8	63.7
Region 7	64.8	64.1	68.1
Bohol	58.2	60.2	66.3

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

- **Economy and Priority Industries**

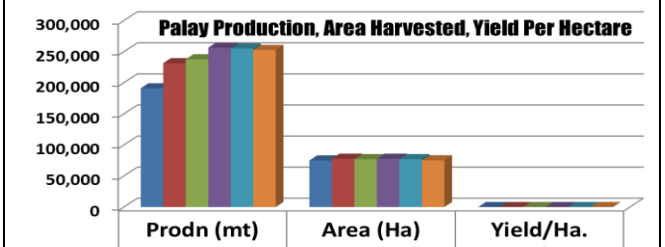
The economy of Bohol is largely agri-based with agricultural activities focused on the cultivation of crops on its vast agricultural land. With this, home-based industries, which are mostly of the micro and cottage types, play a vital role in the economy. The government continues to provide support to sustain the development and production of major crops such as palay, corn, high value commercial crops, and fisheries through upland and marine aquaculture, organic agriculture and livestock. The development of dairy products is also being pursued in collaboration with appropriate government agencies and livestock farmers' groups. Support for this program would allow further value-adding processing of cow and carabao's milk, which in turn, will provide higher income for farmers.

Figure 12. Area Harvested to Major Crops, Bohol: 2015



Agriculture is the largest sector in terms of providing employment as well as in land use. Of the total land area of the province, 273,950 hectares (66%) are available and use for agriculture. 148,673 hectares or 54% of this area is planted with and harvested of major crops. Among the major crops plated in the area include palay (51%), coconut (24%), corn (9%), fruits, root crops, and vegetables. The rice production in the province is generally on the uptrend for the last six years, with increasing yield per hectare despite the effects of El Niño. With the

Figure 13. Palay Production, Bohol: 2010-2015 (Area Harvested, Yield per Hectare)

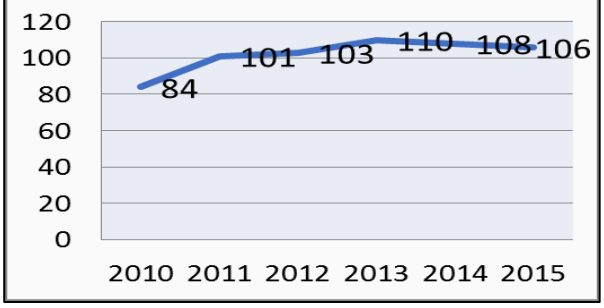


	Prodn (mt)	Area (Ha)	Yield/Ha. (mt/ha)
2010	191,174	74,958	2.55
2011	231,569	77,841	2.97
2012	237,836	77,226	3.08
2013	256,405	77,757	3.3
2014	255,053	77,130	3.31
2015	252,816	75,260	3.36

Source: ***CountryStat, Philippine Statistical Authority (PSA)***

introduction of right mix of technology, appropriate varieties of seeds, and continuing support to farmers, average yield per hectare has reached to 3.36 metric tons in 2015, which is way better to the 2.55 tons back in 2010. Irrigated lands provided the highest yield of 3.91 metric tons/hectare while rain fed rice land yielded an average of 2.82 metric tons/ hectare.

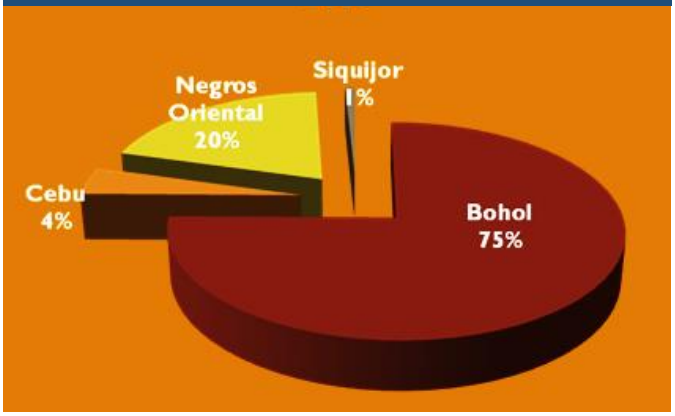
Figure 14. Rice Sufficiency, Bohol: 2010-2015



Bohol remains to be a rice sufficient province with rice sufficiency levels sustained above 100% since 2011. With estimated per capita consumption of 109.367 kilograms per year, the estimated demand for rice for 2015 is at 152,527 metric tons, which is within the rice supply of the province for that same year.

Considering the unfavorable weather conditions such as el niño and typhoons, rice sufficiency of the province remains high at 106% in 2015. Major rice producing municipalities of Bohol include Ubay, Trinidad, Carmen, Pilar, Dagohoy, Talibon, San Miguel, Alicia, Candijay, and Catigbian.

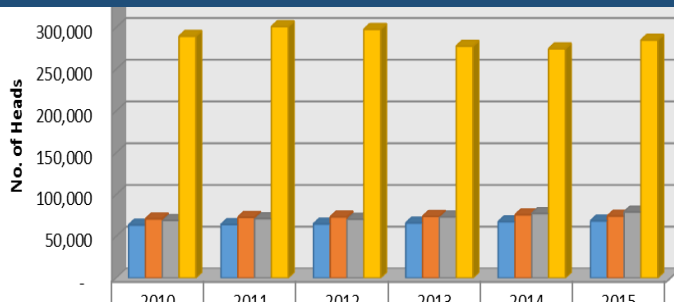
Figure 15. Central Visayas Rice Production, 2015



At the regional setting, the Central Visaya's food requirement for rice is largely dependent on Bohol. In 2015, the province provided 75% of the region's production, which is significantly higher compared to the production share of the other provinces.

In terms of **livestock production**, there is generally an increasing inventory of carabaos, cattle and goat in the province. Among the livestock inventory, hog remains to be the largest in number with 284,841 in 2015. This if followed by goat, cattle and carabao.

Figure 16. Livestock Inventory, Bohol: 2010-2015

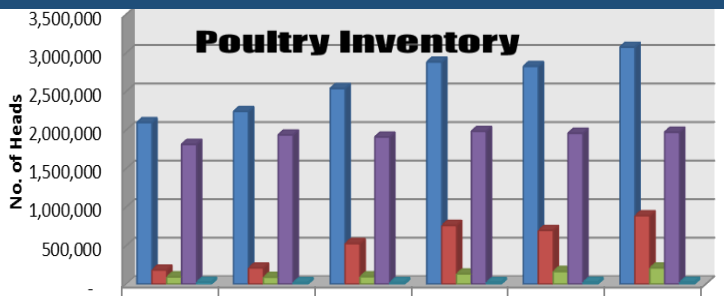


	2010	2011	2012	2013	2014	2015
Carabao	63,595	64,152	64,758	65,962	67,383	68,522
Cattle	70,896	72,785	73,214	73,846	75,693	74,249
Goat	69,091	71,245	70,454	73,230	77,328	79,261
Hog	289,424	301,016	297,718	277,651	274,543	284,851

Poultry production in the province, on the other hand, is seen to be consistently increasing from most of the poultry products.

Chicken remains to the major poultry commodity of Bohol with over 3 Million inventory in year 2015. Of this number, 64% is attributed from native chicken production. Broiler and layer inventory, though generally increasing for the past 6 years, still accounts the minority with 36%. Meanwhile, duck inventory is somehow irregular over the period, with yearly increases and decreases observed.

Figure 17. Poultry Inventory, Bohol: 2010-2015

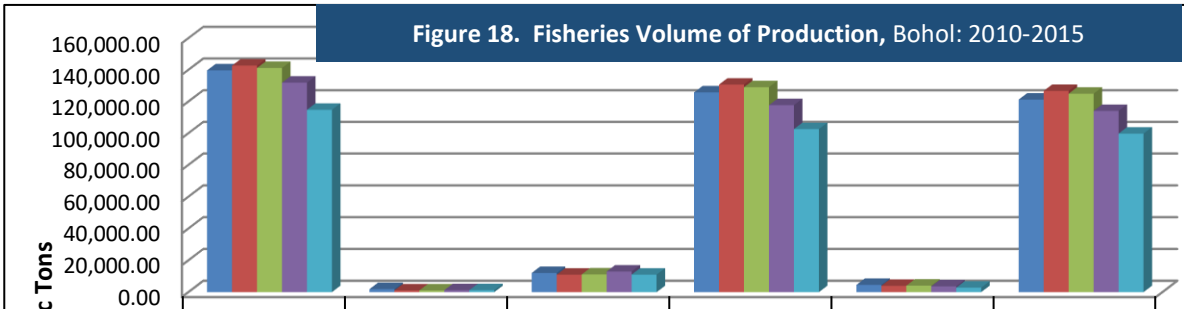


	2010	2011	2012	2013	2014	2015
Chicken	2,098,825	2,242,716	2,540,392	2,884,670	2,827,917	3,076,710
- Broiler	186,120	212,500	529,980	764,360	700,135	890,620
- Layer	97,105	92,079	99,480	135,836	168,120	212,556
- Native	1,815,600	1,938,137	1,910,932	1,984,474	1,959,662	1,973,534
Duck	29,146	23,281	23,671	25,425	26,607	26,199

Source: ***CountryStat, Philippine Statistical Authority (PSA)***

For **fisheries**, production from aquaculture remains to be highest contributor to the volume of fishery production in the province. In 2014, aquaculture posted 47% share in total production and closely followed by seaweeds accounting 46% share. Municipal fishery shared only 5% of the production, with commercial fishing and brackish water/ freshwater fishing both contributing only 1%.

Figure 18. Fisheries Volume of Production, Bohol: 2010-2015



	TOTAL	Commercial Fisheries	Municipal Fisheries	Aquaculture	- Brackishwater/ Freshwater	- Seaweed
2010	139,672.19	1,871.52	12,042.00	125,758.67	4,538.40	121,220.27
2011	142,699.40	1,070.65	10,949.00	130,679.75	3,963.87	126,715.88
2012	141,180.82	1,054.69	11,110.66	129,015.47	4,067.55	124,947.92
2013	131,926.86	1,256.54	12,958.84	117,711.48	3,664.83	114,046.65
2014	114,788.37	1,225.71	10,987.80	102,574.86	2,821.91	99,752.95

Source: ***CountryStat, Philippine Statistical Authority***

Comparing the production and consumption of major food commodities in the year 2015, the province of Bohol has surplus production for rice, corn, rootcrops, carabeef, beef, pork, chevon, and chicken. Food commodities where the province have recorded deficit in terms of production include vegetables, fruits, fish and marine products, and eggs.

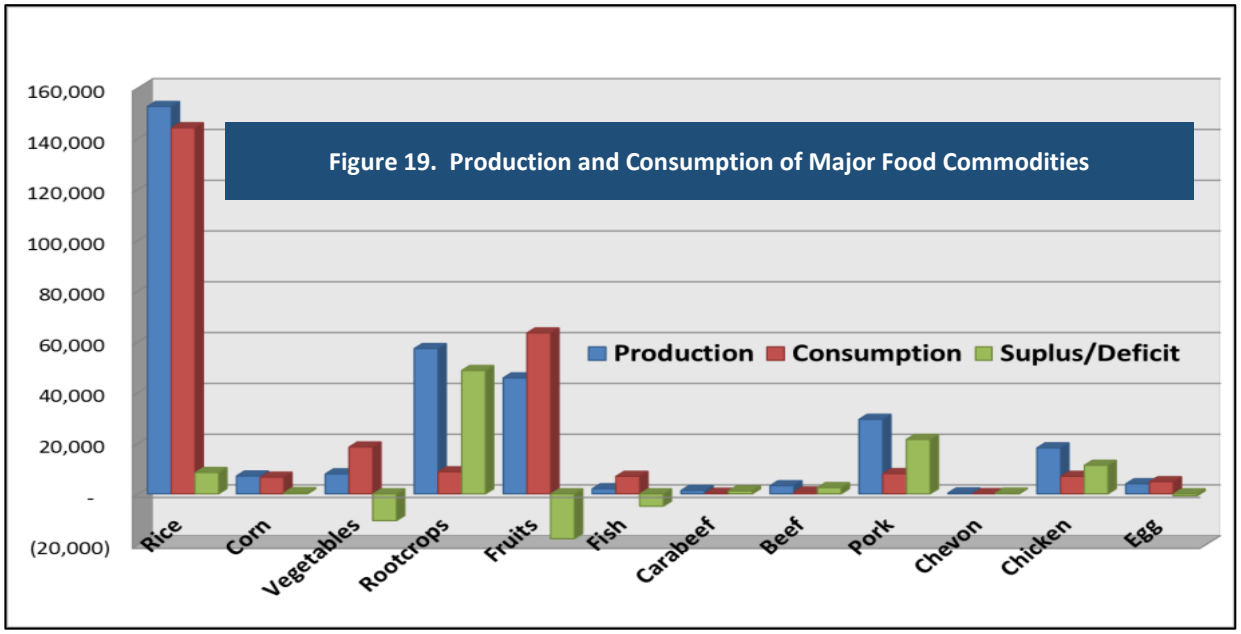
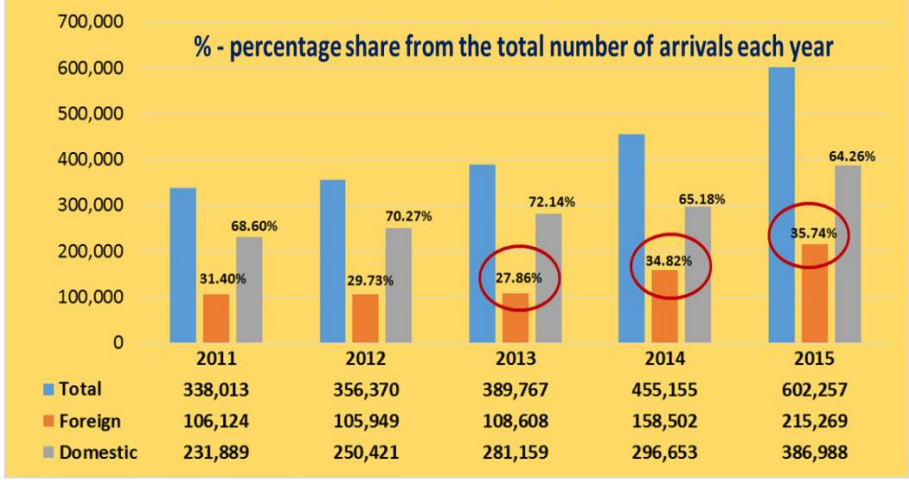


Figure 19. Production and Consumption of Major Food Commodities

Tourism is another industry, which is sustained by both the private sector and government. It has been noted that Bohol's visitor arrivals has increased throughout the years and such trend has significantly contributed to the province's economic growth.

Domestic visitor still accounts the majority share of the total arrivals with an average of 67.6% for the period 2011-2015. Foreign visitors, while on average shared 32.4% for the period, has increased in number faster relative to domestic visitors, with growing share from 27.86% in 2013 to 35.74% in 2015.

Figure 20. Visitor Arrivals, Bohol: 2011-2015



SOURCE: Consolidated Data by the BTO and DOT 7

Among the foreign visitors in the province for 2015, Koreans dominated the tourism market, sharing 30%. It is followed by the Chinese accounting nearly a quarter of the foreign visitor during the year. Other top foreign visitors include Americans, French, Japanese, Germans, British, Australians, Russians, and Canadians. It is worthy to note that for the period 2014-2015, the French posted the highest increase in visitor arrivals with recorded 75.25%. Russians, on the opposite, recorded a decrease in visitor arrivals.

Figure 21. Top 10 Foreign Travelers, 2014-2015

COUNTRY	MARKET SHARE	2015	2014	GROWTH RATE (2014-2015)
KOREA	29.96%	51,592	32,334	59.56%
CHINA	24.61%	42,387	28,080	50.95%
USA	10.90%	18,765	13,472	39.29%
FRANCE	5.55%	9,553	5,451	75.25%
JAPAN	5.45%	9,385	8,090	16.01%
GERMANY	4.76%	8,204	6,514	25.94%
UNITED KINGDOM	4.16%	7,161	4,287	67.04%
AUSTRALIA	3.58%	6,165	5,262	17.16%
RUSSIA	2.69%	4,640	5,252	-11.65%
CANADA	2.64%	4,544	3,361	35.20%

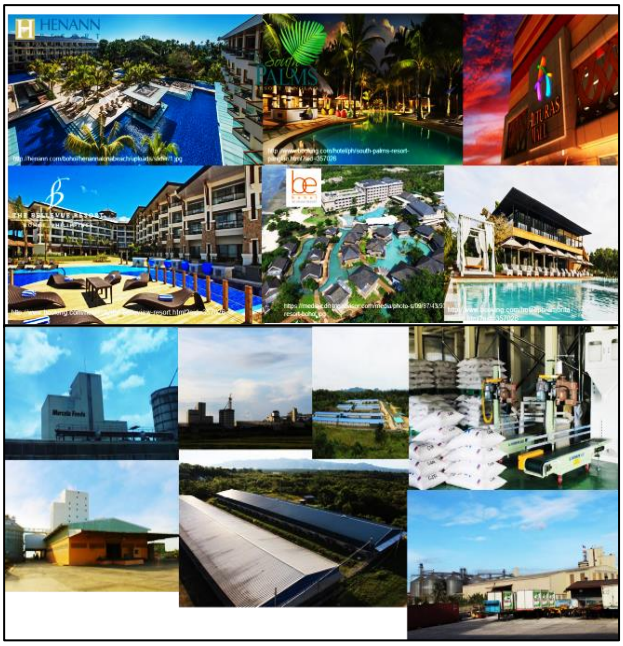
SOURCE: Consolidated Data by the BTO and DOT 7

As to the regional scene, Bohol accounts 13% of the total visitor arrivals of Central Visayas. Cebu, the major gateway and hub in the region, still accounts the significant share of 72%. For regional domestic visitors, Bohol shared 15% while accounting only 11% in foreign visitors. It is expected tourist arrivals will improve and increase once the New Bohol Airport in Panglao Island will start its operation in 2018.

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. For accommodation services, for example, the number of accommodation facilities has doubled for the period of six years. Based on the data available, number of accommodation facilities in year 2015 has reached to 360, which is twice the number of facilities in 2009. Correspondingly, the number of rooms has more than doubled in the period, with total rooms of 6,370 in 2015, which is significantly higher than that of 2,982 in 2009.

Table 5. No. of Accommodation Facilities

Year	No. of Accommodation Facilities	No. of Rooms
2009	180	2,982
2012	232	3,375
2015	360	6,370

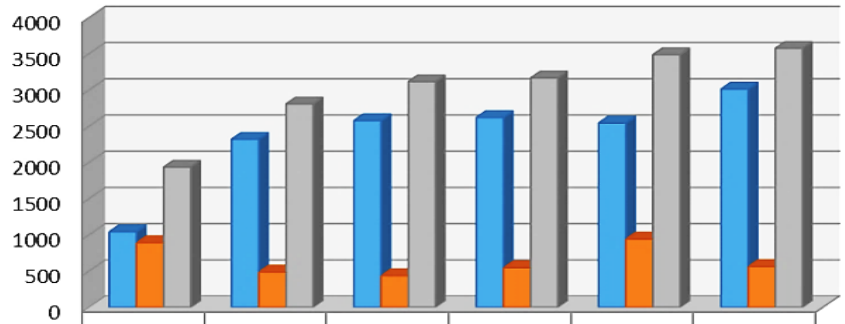


In **terms of trade, investments and livelihood**, an estimate of over P6 Billion from large investments are poured in the province for new hotels, resorts and malls (for the period 2013-2015). Another P8 Billion investments were capitalized for agri-business from private sector sources.

Also, micro, small, and medium enterprises (MSMs) in the province sustained its increasing trend over the last 6 years (2010-2015) with a total of 3,577 businesses registered in 2015. Such number is notably higher compared to the 2010 figure of only 1,043. These MSMEs provided significant number of jobs from 4,605 in 2010 to 8,740 in 2015. Investments from MSMEs reached to P6.561 Billion in 6 years.

Furthermore, the operation of cooperatives in the province is also thriving to provide socio-economic benefits to its members. In 2015, there were already 565 cooperatives in Bohol (with 299 CDA-compliant cooperatives), operating with P2.54 Billion total assets and with a total membership reaching to 113,348.

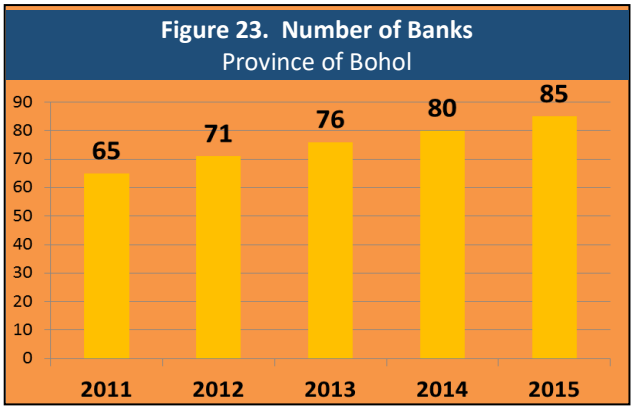
Figure 22. Business Name Registration

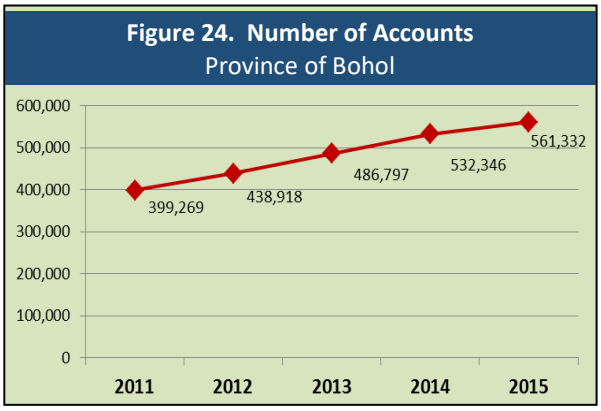


	2010	2011	2012	2013	2014	2015
BN New	1043	2321	2578	2621	2545	3013
BN Renewal	893	488	438	547	944	564
Total	1936	2809	3116	3168	3489	3577

Source: ***Department of Trade and Industry (DTI)***

The banking sector in the province has also shown a stable and growing economy with an increasing number of banks established in Bohol. For a span of 5 years, a total of 20 new bank branches were established in the province, making the total number of banks to 85 in the year 2015. Total number of accounts also rose from 399,269 in 2011 to 561,332 in 2015. Total bank deposits grew to P32.87Billion in 2015 from just P19.26 Billion in 2011.





Source: ***Philippine Deposit Insurance Corporation (PDIC)***

Another new but promising industry in Bohol is the sector on Information Technology, particularly for business process and knowledge process outsourcing. With the improvement of information technology highway, following the installation of fiber optic technology in Bohol by private telecommunication firms, the province may soon provide significant employment opportunities for its capable workforce for such related services.

Chapter II: Development Vision and Framework of the Province

- **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.

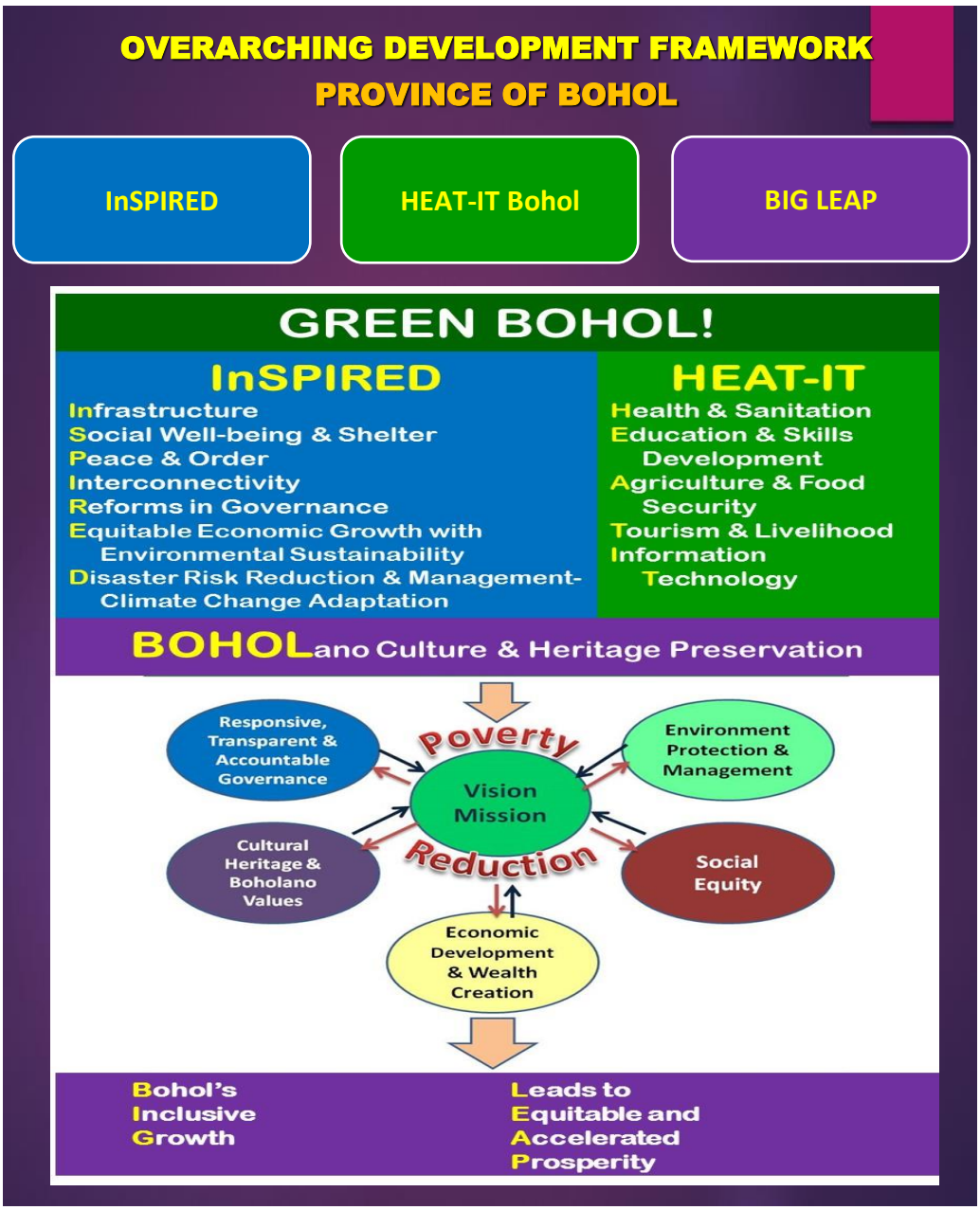
The vision and mission statements, for several provincial administrations, have been adopted and revalidated to ensure that the province's goals, strategies and programs are aligned with such long-term development state. Below are the vision and mission statement of the Province of Bohol.

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. These system of consultative activities were 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**

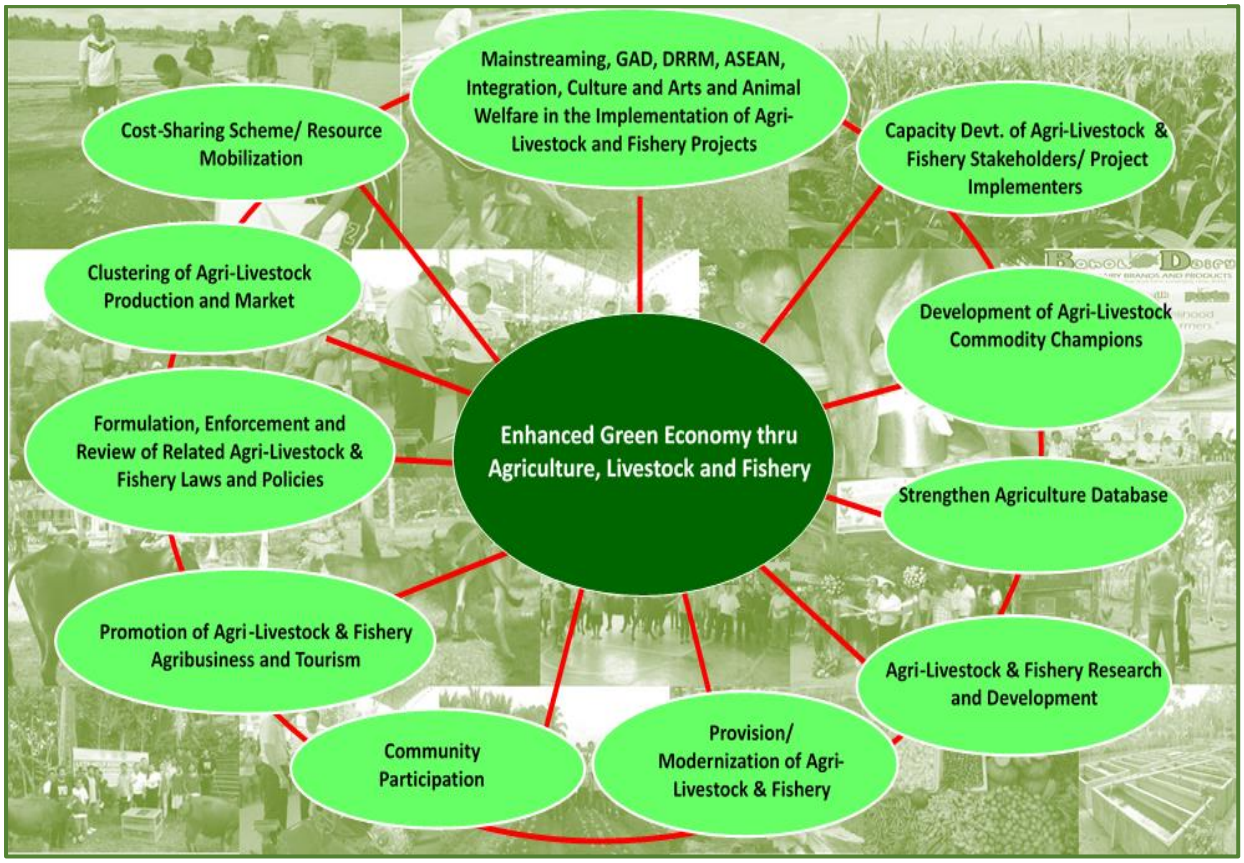
Agriculture is one of the economic drivers of Bohol and is the main source of livelihood of majority of the Boholanos. It provides income and livelihood to farmers and fisher folks and their dependents. Agriculture also enables traders, processors, retailers, and other groups to, directly or indirectly, make a living. Given these facts, it is only logical that the agriculture sector need 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 an economic driver 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 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 its high-value crops, vegetables, banana, mango, coconut and other economically beneficial crops like palm oil and cassava. Fishery development in the province is also being prioritized, considering that Bohol is a major source of fishery products in Region VII. 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.

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 efforts 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 25. Agriculture Goals and Strategies



Chapter III: Priority Commodity Chains 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 as to the number of growers or producers.

Table 6. Priority Commodities, Bohol, 2015

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 3: CASSAVA[12]

A) Commodity Profile

1. Product Description

Cassava *(Manihot esculenta Crantz syn. M. utilissima Pohl.)* belongs to the family Euphorbiaceae. It is considered one of the major food crops of most Filipino farmers as well in other tropical and subtropical regions of the world. A billion people, more or less, in 105 countries worldwide depend on cassava as their major food staple.

Locally known as kamoteng kahoy or balanghoy, it is a perennial, woody shrub that grows, on the average, between one to four meters in height and its roots can grow up to 15 centimeters in diameter and reach 120 centimeter in length to weigh between one and eight kilograms. The starch content of its roots is normally between 20% to 30% which is considered higher by comparison to other starchy food crops.

Cassava has a strong economic relationship with resource-constrained farmers situated in forest margins and marginal lands. The crop can be grown under marginal conditions where few other crops could survive. It is relatively tolerant of poor soil and seasonal drought and has an unrivalled ability to recover from damage by pests and diseases. The crop offers the convenient flexibility that it can be harvested when the farmers need it. It can be left in the ground for 7 months to 2 years after planting and then harvested as needed. These characteristics make this crop a fundamental food and income security in marginal agricultural lands.

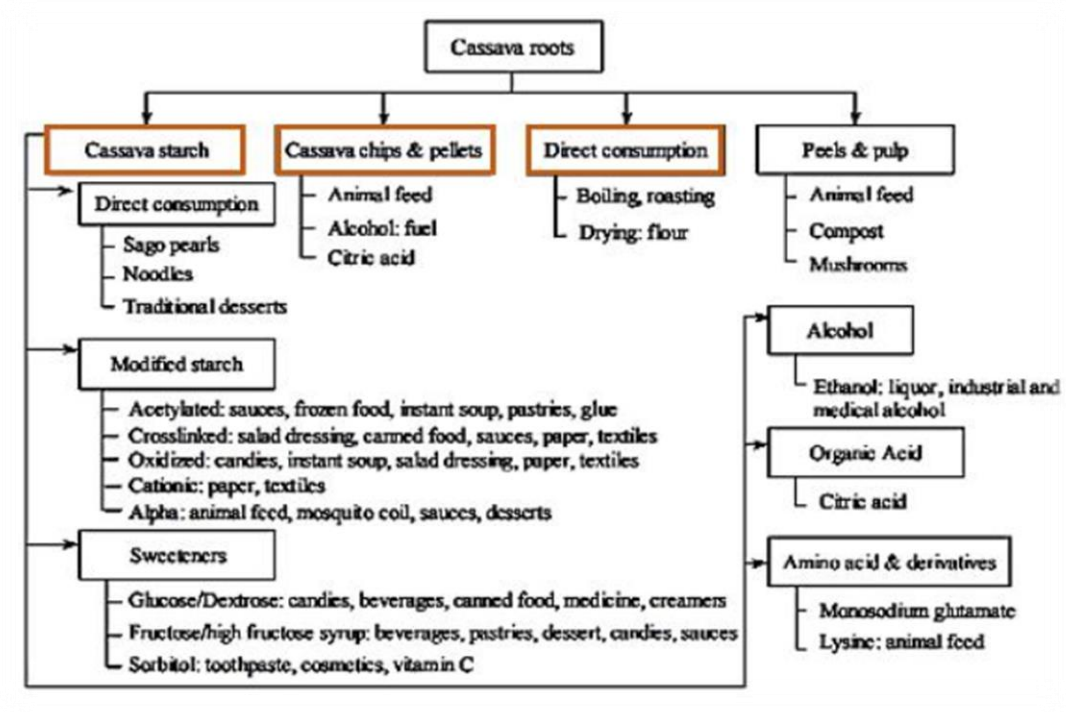
Varieties of cassava are often categorized as either sweet or bitter, signifying the absence or presence of toxic levels of cyanogenic glucosides. The so-called sweet cultivars can produce as little as 20 milligrams of cyanide (CN) per kilogram of fresh roots, whereas bitter ones may produce more than 50 times as much (1 g/kg). Hence, cassava must be properly prepared before consumption since improper preparation of cassava can leave enough residual cyanide to cause acute cyanide intoxication and goiters.

The root is long and tapered, with a firm, homogeneous flesh encased in a detachable rind. The flesh can be chalk-white or yellowish. Cassava roots are very rich in starch and contain significant amounts of calcium, phosphorus and vitamin C. However, they are poor in protein and other nutrients. In contrast, cassava leaves are a good source of protein (rich in lysine).

Cassava is used as a base for a multitude of products, including food, flour, animal feed, alcohol, starches for sizing paper and textiles, sweeteners, prepared foods and bio-degradable products. The products are derived from a number of forms of cassava, ranging from fresh leaves and roots to modified cassava starch (Figure 1). The degree of processing and the 10 technical requirements tend to increase from the fresh form to the modified starch form. More products however are derived from cassava's roots. Products from it also have greater value as these require more complex value added activities.

[12] Cassava Value Chain Report, RPCO, 2017

Figure 26. Cassava Root Processing into Value-Added Products



Lately, cassava is acquiring an increased role in rural development as raw material for many industrial applications. One of its major industrial uses consists mainly of cassava-based starch including hydrolyzed, modified and native starches. These starches are used for manufacturing various products in food processing, paper, cardboard, plywood, textiles, pharmaceuticals and chemicals, and feed industries. More recently likewise, cassava has become the major source for the production of ethanol as energy experts have discovered the plant to be a rich source of oil that can be processed into bio-diesel and serve as an alternative source of energy.

Cassava is also used as an alternative raw material to molasses production. It can also be used to make glucose, fructose, or lactose as substitute for sucrose in making beverages. For medicine, cassava is used to mix with active pharmaceutical materials to make capsules and tablet. The crop can also be used for textile in yarn sizing and material planting; and it is also used in food production, as cassava starch which is used for production of instant noodles, tapioca pearls and seasoning sauce.

In the country, cassava tubers are also used largely as a major ingredient for livestock feeds. These tubers are chipped and dried to be sold as granules to feed millers. Cassava chips can be either in peeled or unpeeled form.

Figure 27. Cassava Chips and Fresh Tubers

In Central Visayas major used of Cassava or Tapioca is for production of starch, dried chips and granules for animal feed component and for food, either consumed directly or further processed into cassava-based food products. These product forms and uses are highlighted in orange in Figure 26.

Aside from being a staple in most marginal areas in the region, local cassava recipes include puto, pichi-pichi, cassava cake, nilupak, chips or cabcab, and polvoron, among others.

Table below shows the recommended cassava varieties for food and industrial usage in the country.

Table 7. Recommended Cassava Varieties

Description	Variety	Average Yield (MT/Ha)	Starch Content (%)	Dry Matter Content (%)	HCN Content
Varieties with low to high hydrocyanic acid for industrial uses such as: flour, animal feeds and ethanol production	UPL Ca-3 (Sultan 1)	40-50	20.9	33.5	Moderate
	PSB Cv-10 (Mcol 1684)	41.5	21.1	33.5	High
	UPL Ca-2 (Lakan 1)	35.45	25.0	36.4	Low
	PSB Cv-11 (Lakan 2)	25.0	21.8	34.1	Low
	PSB Cv-12 (Lakan 3)	24.1	21.5	33.9	Low
	SB Cv-14 (CMP21-15)	29.4	20.3	33.4	Mod
	PSB Cv-15 (Lakan 4)	24.0	21.9	34.2	Mod
	NSIC Cv-22 (KU-50)	31.3	27.0	38.0	Mod
	NSIC Cv-30 (Rayong 5)	32.4	29.4	40.1	Low
Varieties with low hydrocyanic acid (HCN) for food	UPL Ca-2 (Lakan 1)	35.45	25.0	36.4	Low
	PSB Cv-11(Lakan 2)	25.0	21.8	34.1	Low
	PSB Cv-12 (Lakan3)	24.1	21.5	33.9	Low
	PSB Cv-15 (Lakan4)	39.4	21.9	34.2	Mod
	NSIC-Cv 30 (Rayong 5)	32.4	29.4	40.1	Low

Source: Department of Agriculture, Cassava Techno guide

In Central Visayas, farmers mostly plant Lakan varieties and Rayong 5. Both varieties are good for food, feed, starch, and ethanol production that is why they are also called all-purpose variety**.** SMFI assemblers use and recommend to their farmers the Rayong 72 which originated from Thailand which is known for its high yield (31 MT/Ha) and medium starch content.

2. Production Trends

Global Production

Since 2000, the world's annual cassava production has increased by an estimated 100 million metric tons, driven in Asia by demand for dried cassava and starch for use in livestock feed and industrial applications, and in Africa by expanding urban markets for cassava food products (FAO, 2013).

The world cassava production was contributed by 105 countries. Table 8 and Figure 28 below present the global production trend and the production share of the top producing countries.

Table 8. World Cassava Production for 2010-2014 (in MT)

Rank	Country	2010	2011	2012	2013	2014	Ave. Growth in %
	World	**243,052,52**	**255,440,979**	**258,419,410**	**263,314,863**	**270,293,801**	**2.70%**
1	Nigeria	42,533,180	46,190,248	50,950,292	47,406,770	54,831,600	6.90%
2	Thailand	22,005,740	21,912,416	29,848,491	30,227,542	30,022,052	9.10%
3	Indonesia	23,918,118	24,044,024	24,177,372	23,936,920	23,436,384	-0.50%
4	Brazil	24,967,052	25,349,542	23,044,557	21,484,218	23,242,064	-1.54%
5	Republic of Congo	15,013,710	15,024,172	16,000,000	16,500,000	16,608,900	2.59%
6	Ghana	13,504,086	14,240,867	14,547,279	15,989,940	16,524,000	5.22%
7	Viet Nam	8,595,600	9,897,913	9,735,723	9,757,681	10,209,882	4.59%
8	Cambodia	4,247,419	8,033,843	7,613,697	8,000,000	8,835,330	24.86%
9	India	8,059,800	8,076,000	8,746,500	7,236,600	8,139,430	0.93%
10	Angola	13,858,681	14,333,509	10,636,400	16,411,674	7,638,880	-5.38%
24	**Philippines**	**2,101,454**	**2,209,684**	**2,223,144**	**2,361,561**	**2,540,254**	**4.89%**

Source: ***Food and Agriculture Organization (FAO)***

As presented in Table 8, world cassava production is increasing with a 2.70% annual growth. According to FAO, growth in cassava production is being fueled by the demand for food in the African continent and increasing industrial applications of cassava in East and Southeast Asia, especially for ethanol and starch.

Nigeria is the world's top producer with Thailand and Indonesia steadily catching-up in the second and third spot respectively.

Philippines is among the top 25 producers of cassava in the world. Compared with its Asian neighbors, the country with less than 1% contribution to the global production has still a long way to go if it were to compete globally (Figure 3). However, the 4.89% average annual growth in cassava production is a good indication of the increasing supply to cater local demands.

Figure 28. Cassava Global Production for 2014

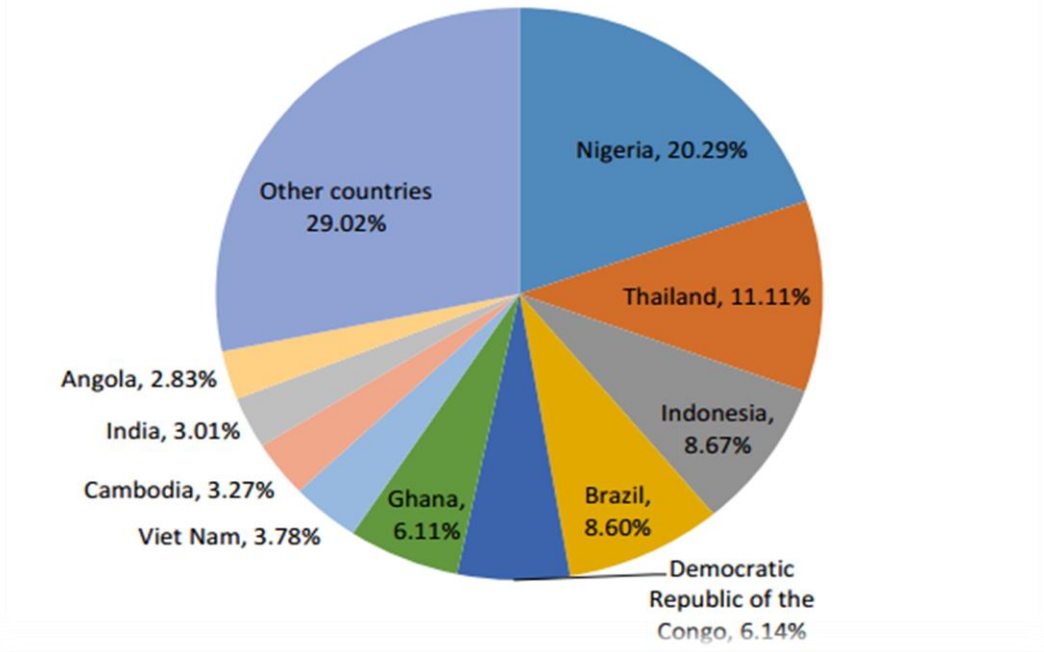


Figure 28 presents the percentage share of top producing countries in 2014. Nigeria has the highest contribution with more than 20% of the global production. Thailand comes second followed by Indonesia, Brazil, and Congo.

More than 40 countries in Africa compose more than half of the world's cassava production. For the continent, cassava is essentially a food crop – around 90 percent of harvested roots are destined for human consumption, while around 10 percent is semi-processed as on-farm animal feed. Africans' consumption of cassava is higher than that of any other staple food, including maize. Almost all of it is consumed as fresh roots or after processing into fermented flour products. By some estimates, urban Nigerians consume cassava at the rate of 0.2 kg per day (FAO, 2013).

Asia contributes to around a third of world production with Thailand's dominating contribution of 11.11%. Thailand's cassava is used mainly for production of starch and processed into cassava chips and pellets which are mostly for export. They are also showing great efforts towards transformation for industrial uses such as in production of plywood, paper and textiles, sweeteners, fructose, alcohol and fuel ethanol.

On the other hand, Indonesia mainly utilizes cassava for food consumption. They consider it the most important tuber crop and the third most important food crop after rice and maize. Although cassava is grown in all Indonesian island, Java is the major producers (55% of total

production), then followed by Sumatra (30 %). In Java cassava is planted by small farmers (less than 1.0 land area) and mostly in mixed cropping, in marginal soils and upland areas.

Philippines' share is almost insignificant with less than 1% of the total world production.

Table below shows the top ten countries in terms of cassava area harvested.

Table 9. World Cassava Area Harvested 2010-2014 (in Ha)

Rank	Country	2010	2011	2012	2013	2014	Ave Growth in %
	World	**19,640,936**	**20,587,845**	**23,510,820**	**23,939,301**	**24,225,200**	**5.51%**
1	Nigeria	3,481,900	4,120,166	6,401,996	6,741,300	7,102,300	21.09%
2	Congo	1,854,754	1,860,000	1,980,000	2,050,000	2,056,420	2.65%
3	Brazil	1,789,769	1,733,541	1,692,986	1,525,918	1,567,683	-3.15%
4	Thailand	1,168,454	1,135,388	1,362,119	1,385,111	1,348,996	4.06%
5	Indonesia	1,183,047	1,184,696	1,129,688	1,065,752	1,003,293	-4.01%
6	Ghana	875,013	889,364	868,550	875,185	889,000	0.41%
7	Mozambique	1,254,294	1,293,568	762,598	780,000	870,300	-6.01%
8	Uganda	415,000	426,148	851,000	851,000	852,000	25.62%
9	Tanzania	873,000	739,794	954,509	863,678	800,000	-0.78%
10	Angola	889,619	1,072,478	1,062,865	1,167,948	755,874	-1.43%
24	**Philippines**	**217622**	**221235**	**217,225**	**217,146**	**216,775**	**-0.09%**

Source: ***Food and Agriculture Organization (FAO)***

The global production area for cassava has also been increasing at an annual average growth rate of 5.51%. Cassava area in 2010 was 19.64 million hectares which increased to 24.22 million hectares in 2014. The top three countries in terms of area harvested are Nigeria, Congo, and Brazil with 7,102,300 Ha, 2,056,420, and 1,567,683 Ha respectively.

Table below shows the top ten countries in terms of cassava production yield from 2010 to 2014.

Table 10. Top Ten Countries in Terms of Yield from 2010-2014 (in Hg/Ha)

Rank	Country	2010	2011	2012	2013	2014	Average Growth in %
	World	**123,748**	**124,074**	**109,966**	**110,045**	**111,569**	**-2.41%**
1	India	347,555	364,770	385,818	349,594	356555	0.83%
2	Suriname	252,560	228,356	241,965	298,608	279,569	3.35%
3	Barbados	200,000	181,176	183,333	187,500	276,500	10.38%
4	Lao People's Democratic Republic	250,797	238,699	241,246	277,567	269,501	2.10%
5	Cambodia	209,953	217,414	225,882	228,571	245,747	4.04%
6	Cook Islands	273,171	274,722	263,158	257,500	237,500	-3.39%

Rank	Country	2010	2011	2012	2013	2014	Average Growth in %
7	Malawi	204,311	215408	223,883	228,041	233,614	3.42%
8	Indonesia	202,174	202,955	214,018	224,601	233,595	3.70%
9	Bahamas	221,795	225,128	223,000	225,000	227,500	0.64%
10	Thailand	188,332	192,995	219,133	218,232	222551	4.40%
41	**Philippines**	**96,564**	**99,879**	**102343**	**108,755**	**117,184**	**4.98%**

HG/HA - Hectogram per hectare, 1 MT= 10,000 Hg
Source: ***Food and Agriculture Organization (FAO)***

In spite of the increase of the volume and area of production, however, the yield has decreased (Table 10). The world average cassava yield in 2010 was 123748 Hg/Ha which declined to 111569 Hg/Ha in 2014.

Cassava yield vary per country. Cassava cultivar, season of planting, soil type and fertility are factors that affect productivity. Countries in Africa for example, wherein over 50 percent of the global crop is cultivated, experienced a series of constraints, including the occurrence of pests, diseases, a low application of inputs, the relatively slow dissemination of improved cassava varieties, poor farming practices and civil strife are identified key constraints which led to a regressing yield and or slow development.

India ranks 1st in terms of productivity with 356555 Hg/Ha in 2014, surpassing all the top producing countries remarkably. According to a publication by ACIAR in 2014, the high yield in India arises because cassava is a local specialty food, cultivated largely under favorable moisture conditions. Also, unlike Africa wherein cassava remains a smallholder's crop, India performs under intensive production system, often with abundant irrigation.

Like many of its Asian neighbors, the Philippines also experienced an upward trend with 4.98% annual growth which is mainly due to the increase in production areas and active advocacies both by public and private sector in the development of cassava for the feedstock industry. This is a great opportunity for the country to further enhance production as studies and papers by FAO revealed that under optimal conditions, cassava yields can reach 80 MT per hectare, compared to the current world average yield of just 12.8 MT.

Domestic Production

Cassava is one of the main agricultural crops in the country. In 2014, about 217,000 Filipino farmers depend on cassava production. Table below shows Philippine Cassava production from 2011 to 2015.

Table 11. Volume of Cassava Production in the Philippines for 2011-2015, per Region (in MT)

Regions	Year					Average growth in %
	2011	2012	2013	2014	2015	
PHILIPPINES	**2,209,684.04**	**2,223,181.56**	**2,361,560.80**	**2,540,254.04**	**2,710,919.05**	**5.28%**
ARMM	**1,007,453.58**	**1,018,968.97**	**1,035,107.18**	**1,045,232.76**	**1,024,179.70**	**0.42%**
NORTHERN MINDANAO	**551,122.51**	**558,954.78**	**601,288.53**	**663,579.69**	**728,845.14**	**7.30%**
CAGAYAN VALLEY	**70,059.85**	**66,919.61**	**77,722.57**	**135,866.95**	**240,104.72**	**40.80%**
SOCCSKSARGEN	**43,385.96**	**47,851.78**	**89,868.15**	**121,822.78**	**114,397.73**	**31.89%**
CENTRAL VISAYAS	**128,156.39**	**109,571.33**	**90,697.63**	**90,556.48**	**114,035.45**	**-1.49%**
BICOL REGION	**110,020.07**	**111,235.65**	**113,789.70**	**109,020.85**	**108,629.48**	**-0.29%**
EASTERN VISAYAS	**78,805.43**	**81,918.12**	**90,331.26**	**79,975.63**	**84,215.71**	**2.01%**
ZAMBOANGA PENINSULA	**30,352.44**	**30,053.28**	**52,310.18**	**77,185.06**	**81,339.42**	**31.50%**
WESTERN VISAYAS	**61,920.93**	**62,408.07**	**62,560.37**	**61,237.54**	**59,621.63**	**-0.93%**
CALABARZON	**47,979.66**	**49,019.74**	**49,934.00**	**51,398.10**	**51,315.52**	**1.70%**
CENTRAL LUZON	**10,032.25**	**18,428.23**	**18,681.84**	**20,504.51**	**20,516.54**	**23.72%**
MIMAROPA	**12,858.36**	**13,540.62**	**16,705.30**	**19,025.46**	**19,721.97**	**11.56%**
DAVAO REGION	**14,510.79**	**14,453.74**	**15,968.61**	**17,958.23**	**18,605.07**	**6.54%**
CARAGA	**23,609.35**	**20,100.81**	**17,699.89**	**17,180.75**	**18,201.31**	**-5.95%**
ILOCOS REGION	**17,745.88**	**17,562.81**	**17,274.43**	**17,512.65**	**13,812.20**	**-5.61%**
CAR	**1,670.59**	**2,194.02**	**11,621.16**	**12,196.60**	**13,377.46**	**118.91%**

Source: ***PSA,*** *2016*

As per record, the country's domestic cassava production from 2011-2015 is increasing at a gradual phase (Table 11). Significant growth were observed from 2013 up to 2015 mainly caused by the increase of contract growing schemes under the San Miguel Corporation especially in Bukidnon, Isabela, and Cagayan. According to PSA's quarterly bulletin on important root crops, support from LGUs and the Department of Agriculture also helped in the sustained growth of production.

Autonomous Region of Muslim Mindanao (ARMM) is the consistent top producing region, with an annual average production of 1,026,188.44 MT. It is followed by Northern Mindanao, Cagayan Valley, SOCCSKSARGEN, Central Visayas, and Bicol Region.

Central Visayas is in the 5th place with apparent reduction in the years 2013 and 2014. The steep decline of 14.6% in 2012 to 2013 is mainly caused by the temporary stop of Philstarch operation in Bohol. Philstarch is one of the biggest markets of cassava in the region which runs in a contract-growing scheme. Philstarch was then bought by Liwayway Marketing Corporation. Typhoon Haiyan and the 7.2 magnitude earthquake also devastated the region in 2013 which was also felt by the cassava industry. Nonetheless, Central Visayas is recovering, and showed an increase in performance of 25.93% growth in 2015.

Figure 29. Philippine Cassava Production for 2015

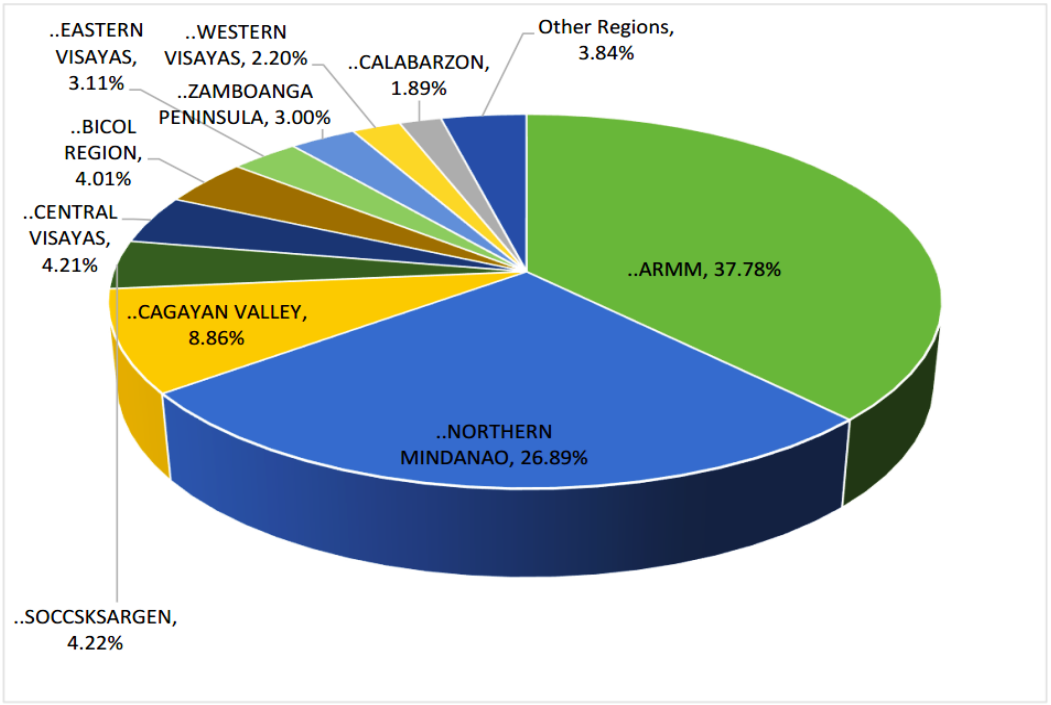


Figure above shows the cassava production share of each region in 2015. ARMM is leading with 37.78% of the country's total production. The high production volume of cassava in the region is attributed to two factors, namely: i) cassava is a staple food crop in Sulu Archipelago and among Muslim population in Lanao and Cotabato; and ii) the presence of Matling Industrial & Commercial Corporation (MICC) which started cassava production way back in 1954.

ARMM is closely followed by Northern Mindanao with 26.89%. Largest production area in Northern Mindanao is located in Bukidnon wherein farmers generally consider cassava as one of their main sources of income. San Miguel Corporation also has a large presence in the area.

A far third is the Cagayan Valley region with only 8.86% of the country's cassava.

Table 12. Production Trends in Central Visayas, per Province

YEAR	2011	2012	2013	2014	2015	Average Growth in %
CENTRAL VISAYAS						
Volume (MT)	128,156.39	109,571.33	90,697.63	90,556.48	114,035.45	**-1.49%**
Area Planted (Ha)	15,893.50	11,521.00	10,624.32	8,759.00	9,400.00	**-11.38%**
Yield (MT/Ha)	8.06	9.51	8.54	10.34	12.13	**11.54%**
BOHOL						
Volume (MT)	89,642.90	67,595.72	48,006.00	39,715.50	63,307.00	**-2.86%**

YEAR	2011	2012	2013	2014	2015	Average Growth in %
Area Planted (Ha)	8,917	5,193	4,505	3,083	3,813	**-15.72%**
Yield (MT/Ha)	10.05	13.02	10.66	12.88	16.60	**15.28%**
Cebu						
Volume (MT)	17,275.28	20,180.92	20,407.50	21,035.35	20,256.11	**4.33%**
Area Planted (Ha)	2,423	2,483	2,395	2,445	2,420	**0.00%**
Yield (MT/Ha)	7.13	8.13	8.52	8.60	8.37	**4.27%**
Negros Oriental						
Volume (MT)	17,922.52	18,465.68	19,203.25	26,203.20	26,982.65	**11.61%**
Area Planted (Ha)	3,669	3,160	3,262	2,749	2,680	**-7.22%**
Yield (MT/Ha)	4.89	5.84	5.89	9.53	10.07	**21.98%**
SIQUIJOR						
Volume (MT)	3,315.69	3,329.01	3,080.88	3,602.43	3,489.69	**1.69%**
Area Planted (Ha)	885	685	462	482	487	**-12.45%**
Yield (MT/Ha)	3.75	4.86	6.67	7.47	7.17	**18.72%**

*Source: Computations based on **Philippine Statistics Authority** Data*

Production trend in Central Visayas are presented in Table 12. Bohol is the leading province in the region in terms of production with 63, 407 MT in 2015 followed Negros Oriental, Cebu, and Siquijor with 26,982 MT, 20,256, and 3,489 respectively.

As discussed earlier, a huge decrease in Bohol's cassava production was felt in 2013 but it returned in 2015. However, in other provinces, mainly Negros Oriental, huge efforts were made to increase production during the last 3 years. According to a report in Philippine Star, significant growth have been observed in the province from 2015 and 2016 in area harvested due to high demand and marketing assistance from San Miguel Foods Incorporated (SMFI).

In terms of yield, Bohol is also the leading province in the region with 16.60 MT/Ha performances in 2015 and a remarkable 15.28% annual growth. The province has been planting high-yielding varieties to cater both demands from two large companies - SMFI and Liwayway Marketing Corporation (LMC).

Tables 13 below show the top ten producing municipalities in the Province of Bohol.

Table 13. Top Ten Producing Municipalities in the Province of Bohol

Municipality (MT)	Production* (Ha)	Physical Area*	Yield (MT/Ha)**	No. of Farmers*
1) Carmen	7,500	300	25	600
2) San Miguel	3,865.50	214.75	18	176
3) Mabini	3,256	203.50	16	131
4) Ubay	5,175	172.50	30	113
5) Dagohoy	2,107	150.50	14	100
6) Trinidad	2,563	102.55	25	57

7) Pilar	2,021.20	81.50	25	185
8) Danao	742.50	67.50	11	158
9) Sierra Bullones	600	50	12	75
10) Sagbayan	290.85	41.55	7	70

*Source: ***Bohol PPDO, 2017,** ** Production in MT divided by Physical Area in Ha*

Carmen is the top producing municipality for Bohol with 7,500 MT of cassava produced. This is distantly followed by San Miguel and Mabini with 3, 865.50 MT and 3, 256 MT respectively. These three municipalities also is the top three towns with the biggest area planted with cassava in the province.

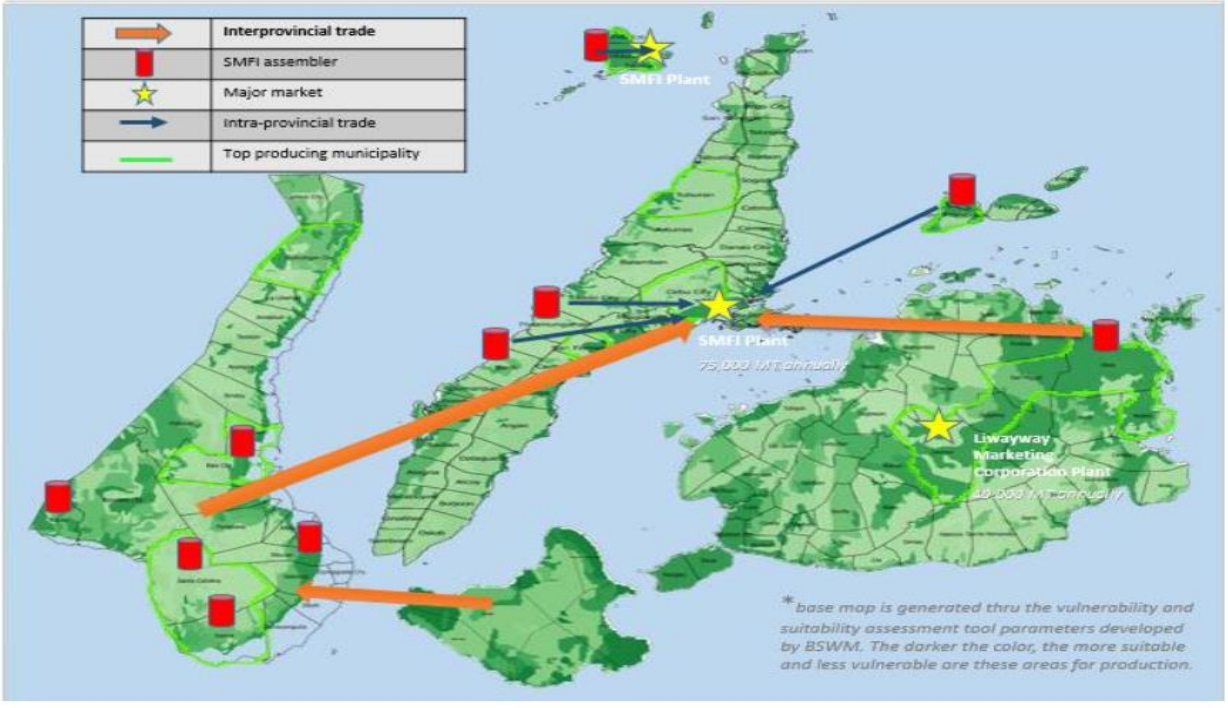
It is in Carmen, Bohol that Liwayway Marketing Corporation (LMC), which is one of the biggest producers of cassava-based starch in the country has a plant. Most of their cassava contract growers are located in the area which is strategic for company.

In terms of yield, it is in Ubay that cassava growers has the highest productivity- averaging at 30 MT per hectare. As presented, yield in the municipalities highly varies. Aside from varying geographical characteristics of each area, different cultural management practices by farmers and the type of varieties planted may also be factors to be considered.

3. Value Chain Mapping

Cassava is considered one of important food crops in the Philippines. Aside from being a food crop, it also has huge non-food applications, the most notable among which are its varied uses in the feeds and starch industries, pharmaceutical, and energy industries. The following figure illustrates the typical flow of cassava in Region 7.

Figure 30. Geographical Flows of Products in the Study Areas



The figure above shows the flow of cassava in the region. The base map used for this figure is generated using the vulnerability and suitability assessment parameters used by the EVSA tool of the project. The darker the color more suitable and less vulnerable the given area is.

Also highlighted are the top five producing municipalities per province. As can be observed, most of the top producing areas are also the most suitable and less vulnerable. Assembler in the region which serves as main consolidation points for cassava in the region is also located in top producing areas for cassava. This is a good indication for the cassava industry in the region as marketing areas or consolidation points must be placed in strategic areas to minimize transport costs and losses.

Considering that the region is a well-known industrial hub in the country, big companies which require large volume of cassava in their operations are present. They are considered top markets for cassava as large amount of the root crop is sold to these establishments. The top markets in the region are San Miguel Foods Inc. and Liwayway Marketing Corporation wherein majority of the cassava in the region is being sold to. Since almost 99% of the cassava intended for inputs to animal feed production is supplied to San Miguel Foods Inc. Cassava granules are brought to their plant either in Bantayan or Consolacion, Cebu by their assemblers in various municipalities located in Cebu and Negros Oriental.

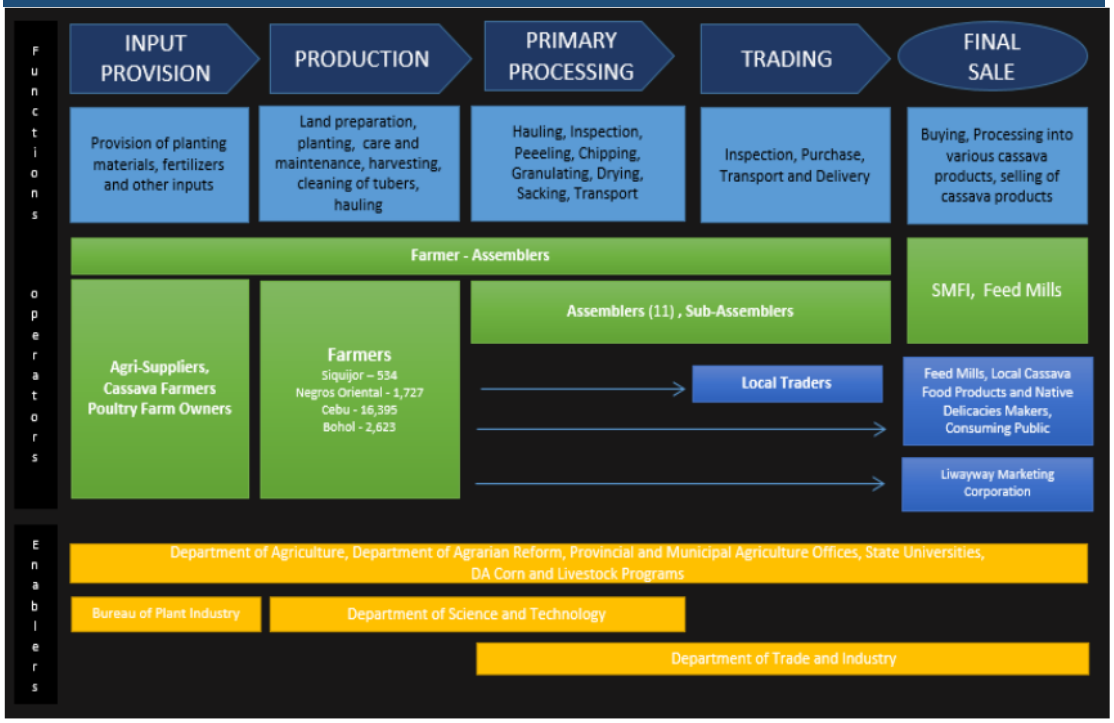
Since only one assembler is located in the Province of Siquijor and is now not shipping regularly to SMFI due to constraints in complying with the volume requirement, they sell their dried chips to assemblers in the near province of Negros Oriental. Cassava production in Siquijor, however, is generally for food consumption and traded or consumed with-in the province.

Liwayway Marketing Corportation (LMC) which uses cassava for their flour and starch production is located in Carmen, Bohol. More than 60% of Bohol's cassava production is sold to LMC by their various contract-growers coming from various municipalities in the province. The remaining 40% is either consumed with-in the province for food or processing of native delicacies or sold to an assembler of SMFI.

Most cassava intended for food consumption are sold in local wet markets with-in the provinces as fresh tubers or processed into cassava-based food-products.

Figure below depicts the Value Chain Map of Cassava in Region 7.

Figure 31. Cassava Value Chain Map in Central Visayas



Cassava farmers in the region, upon harvest, normally sell their fresh cassava tubers to wholesale traders or cooperatives that further process them by converting these to chips and then granules before being sold to large feeds manufacturers as most smallholders don't have chippers or granulators.

In areas where SMFI Assemblers are already established, farmers are mostly manually chipping their cassava as a form of value adding by using sharp bolos or knives. After drying, they will be brought to assemblers for granulation.

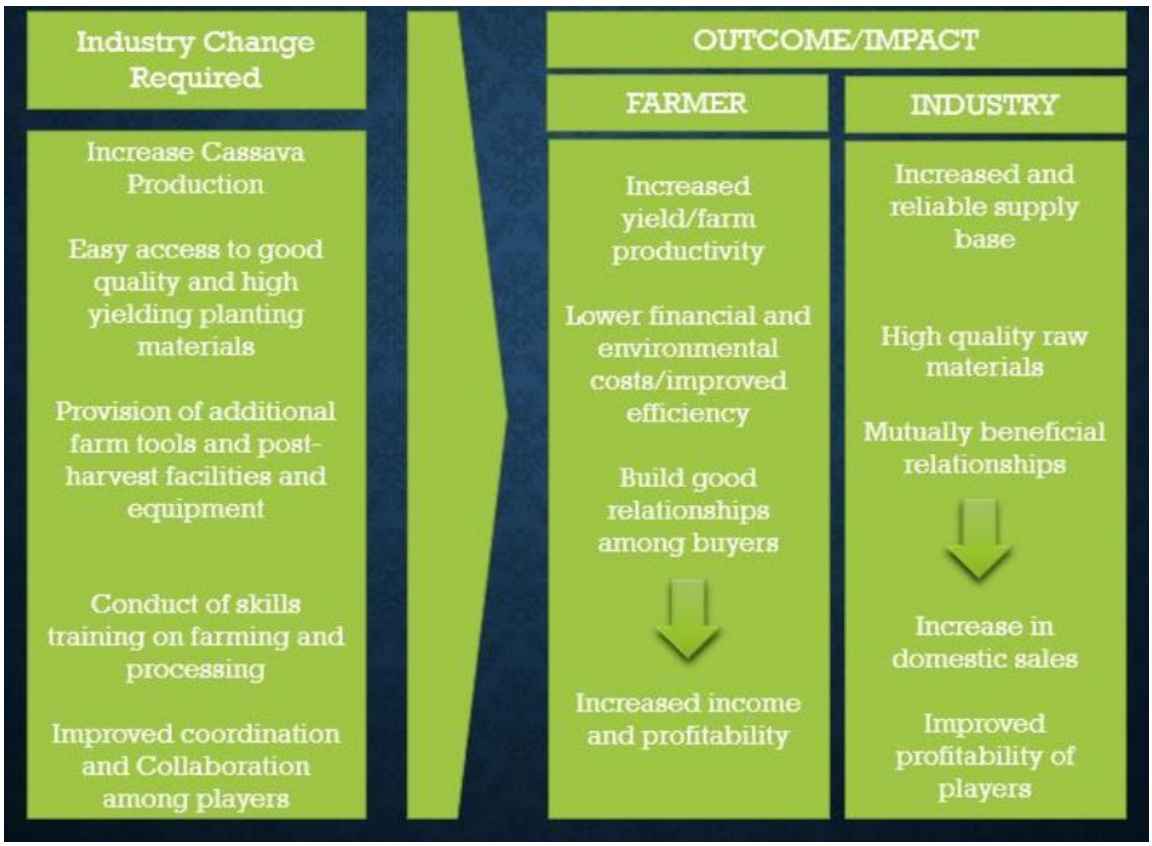
The Liwayway Marketing Corporation which uses cassava for production of starch buys fresh tubers directly from farmers under their contract growing scheme. Makers of cassava cakes and other native cassava-based delicacies buy fresh tubers directly from farmers under their contract growing scheme.

Makers of cassava cakes and other native cassava-based delicacies buy fresh tubers directly from the farmers and or local wet markets wherein root crop traders are usually present.

4. Competitiveness Vision

Based on the data gathered and consultation with the players of the industry, the following competitiveness vision was developed for the next 3-5 years.

Figure 32. Competitiveness Vision for Cassava in Central Visayas



B) Investment Plan

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

There is a growing interest of the provincial local government in strengthening the cassava industry since the province is among the number one tourists destination of the country and there is an increasing demand of livestock and poultry products wherein cassava is the primary source of feeds.

On the other hand, to increase production is to capacitate the farmers on new technology on cassava production and provision of high quality planting materials. There is a need for adaptation trials for the farmers to observe and benchmarking for cassava producing areas that excels in this industry. Farm machineries are also among the top priorities in the provision of farmer assistance.

Cassava production and marketing encounter problems because of its bulk inputs and during harvesting. Farm-to-market roads are the best intervention. Transport vehicles are most welcome intervention next to farm to market. They need to produce more to justify the need.

The growers must be organized and registered so that group selling is achieved. There must be constant supply to sustain the demand from the buyers

Marketing system must be also established. Producers must sell in group so that vehicle could be provided in transporting. One program intervention is the provision of technical assistance through trainings to improve the knowledge and skills of the growers to prevent wastes of the fresh tubers during harvest due to rottening.

The project envisions to attracting more growers and investors who will embark on cassava production in commercial scale. This will contribute to the generation of employment and livelihood opportunities in the agricultural sector thus contribute to the overall economic growth of the province.

Summary and Rank of Constraints

Table 14 shows the constraints of the cassava 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. More importantly, the parity in 'ranking' means that when one constraint is not addressed simultaneous with other constraints, the proposed intervention for one constraints may be undermined or weakened if other constraints are not simultaneously addressed.

Table 14. Summary and Rank of Cassava Value Chain Constraints

Constraints	Rank
INPUT SUPPLY SEGMENT	
Limited supply of good quality high-yielding varieties for planting materials.	**1st**
Inadequate information and limited access to sources of good quality planting materials and high-yielding varieties.	**1st**
PRODUCTION	
Manual Operations and lack of farm equipment.	**2nd**
Lack of know-how on sustainable farming practices/Good Agricultural Practices and appropriate cultural management and practices.	**1st**
High cost of inputs and labor.	**1st**
PROCESSING	
Poor postharvest handling	**2nd**
Limited processing equipment and facility	**2nd**
Inadequate storage facility	**2nd**
TRADING	
High demand but limited volume traded due to low production	**2nd**
Inadequate storage and transport facilities	**2nd**
SUPPORT SERVICES	
Limited outreach of existing service providers	**3rd**
IINTERFIRM RELATIONSHIP	
Unorganized farmers	**3rd**

Table 15. Summary of Opportunities

Opportunities	Rank
INPUT SUPPLY	
Availability of high-yielding varieties	**1st**
PRODUCTION	
Available technology	**1st**
The use of organic fertilizer could lower production cost.	**2nd**
There are existing producers of organic fertilizer and an abundance of supply of agri-waste materials that can be used for organic fertilizer production.	**2nd**
PROCESSING	
Value-adding products increase production value.	**3rd**
Available technology for processing.	**3rd**
TRADING	
High demand	**1st**
New market outlets for expansion	**2nd**
Presence of big feed mill plants in the region.	**1st**
SUPPORT SERVICES	
DA has available technicians in each municipality and provides production and support	**1st**

Expanded–Vulnerability and Suitability Assessment (E-VSA)

Only 4 parameters were used in the assessment and selection of priority sites using the EVSA as a tool, namely: poverty incidence; area in hectares; production in metric tons; and the number of farmer growers by municipality. The data on area planted, production in metric tons and number of farmer growers are sourced from the Municipal Agricultural Offices.

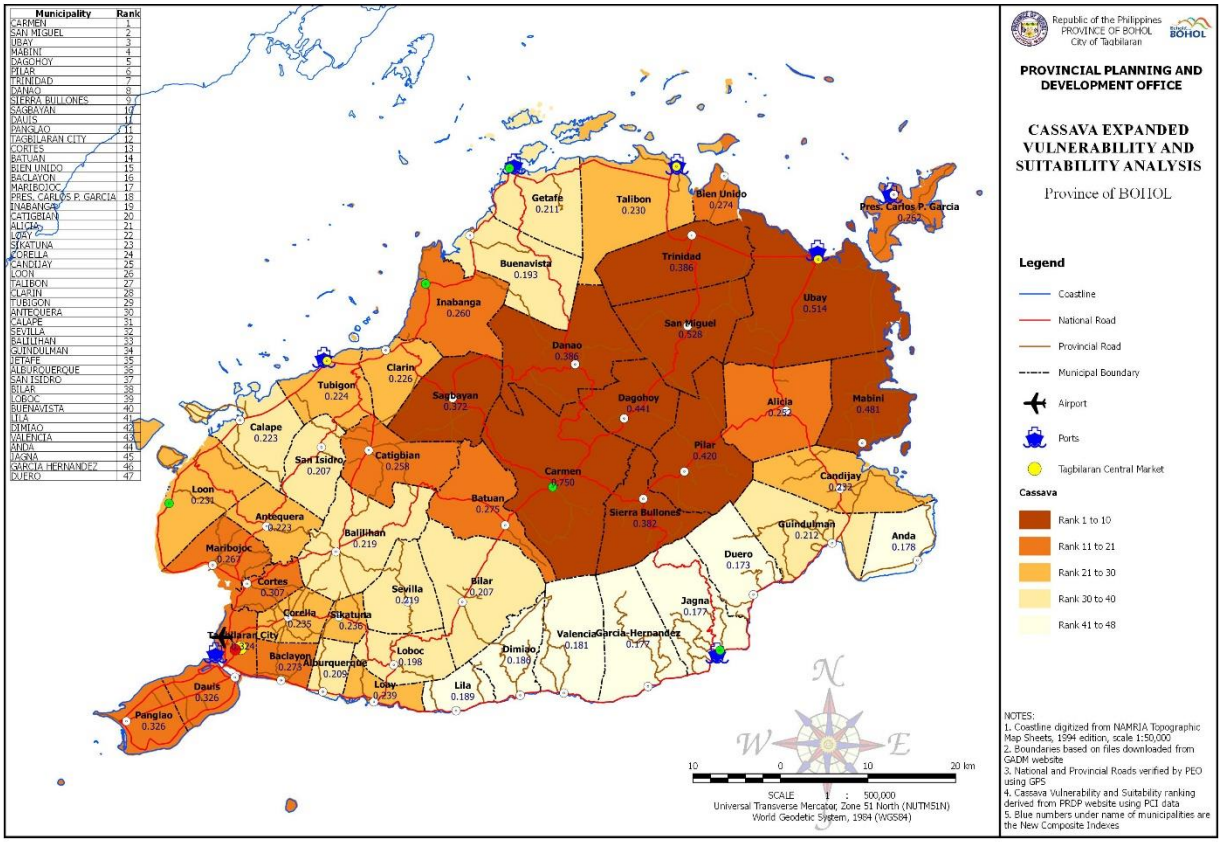
For poverty incidence, the weight of 0.001 was assigned based on the premise that cassava production can be done in municipality with vast uplands may it be poorest or not, thus the suitability matters most. The area in hectare parameter was assigned a weight of 0.2, production parameter in metric tons 0.099 and finally the number of growers was assigned a weight of 0.2 based on the idea that no matter how suitable the areas is, if there are no growers the industry cannot continue.

The system-generated results in Table 16 show the ranking of the 10 municipalities that are into cassava production, namely: Carmen, San Miguel, Ubay, Mabini, Dagohoy, Pilar, Trinidad, Danao, Sierra Bullones and Sagbayan. The table below shows the ranking and composite index of municipalities with competitive advantage in cassava production based on the parameters identified.

Table 16. Ranking and Prioritization of Municipalities

MUNICIPALITY	POVERTY INCIDENCE	AREA (in has.)	PRODUCTION (in M. T.)	FARMERS/ GROWERS	NEW COMPOSITE INDEX	NEW RANK
CARMEN	38.4	300	7500	600	0.74965	**1**
SANJ MIGUEL	42.7	214.75	3865.5	176	0.52773	**2**
UBAY	39.6	172.5	5175	113	0.51392	**3**
MABINI	46.8	203.5	3256	131	0.48105	**4**
DAGOHOY	40.7	150.5	2107	100	0.44075	**5**
PILAR	38.8	81.5	2021.2	185	0.4203	**6**
TRINIDAD	39.7	102.55	2563	57	0.38634	**7**
DANAO	42.7	130.0	2163	220	0.38569	**7**
SIERRA BULLONES	35.1	98.0	2843	180	0.38234	**8**
SAGBAYAN	24.0	150.0	2257	150	0.37214	**9**

Map 21. Expanded-Vulnerability and Suitability Assessment Analysis (E-VSA) Map



Map 32. Commodity Map: Cassava Industry Players

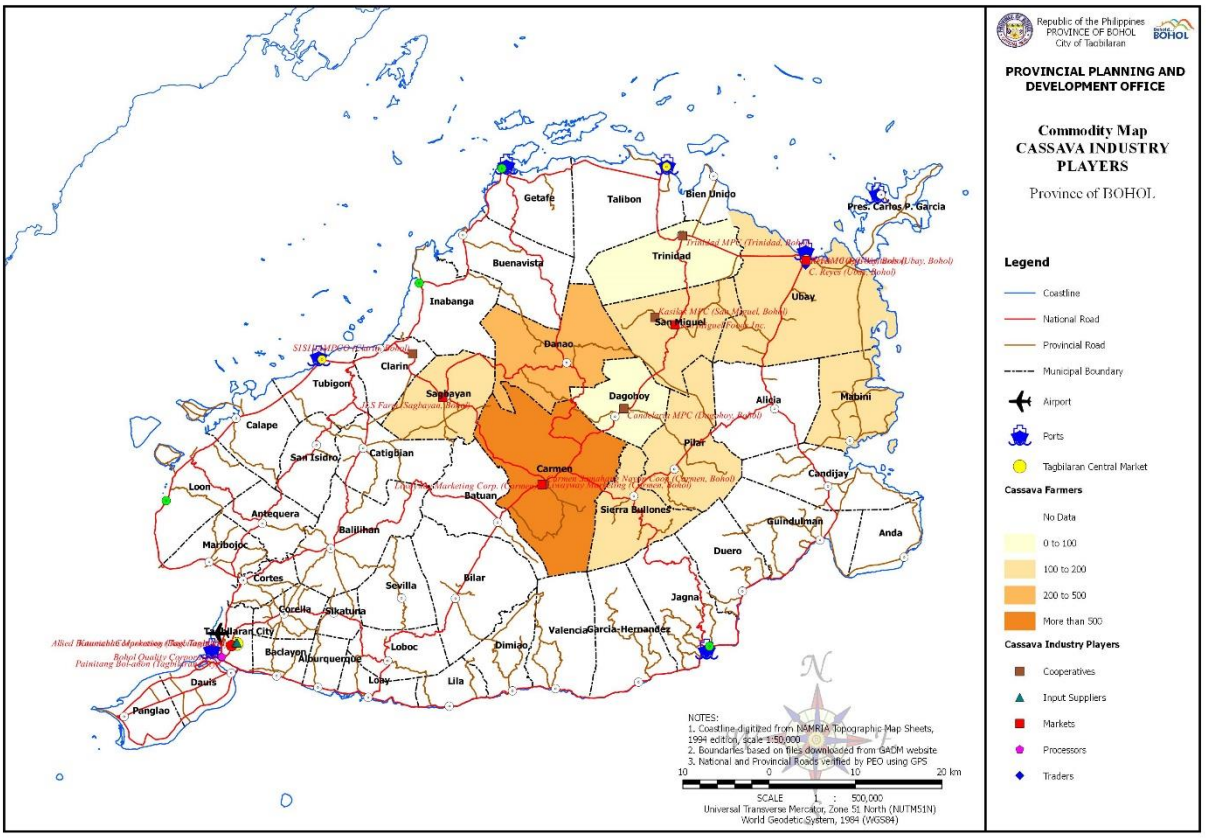


Table 17. Investment Plan Summary

Proposed Interventions	Estimated Cost (P 000, 000)				Rank
	Year 1	Year 2	Year 3	Total	
1. Establishment, accreditation and operationalization of certified nurseries for propagation of good quality planting materials of high yielding varieties including golden yellow variety					**10**
- 1 PLGU accredited & certified nursery operational	1.00	0.5	0.5	**2.00**	
- 10 municipal (MLGU/PO managed) accredited, certified & operational nurseries	10.00	5.00	5.00	**20.00**	
2. Production of tissue culture for cassava planting materials in coordination with government facilities					**5**
- 1 Government Facility for cassava tissue culture operational	5.00			**5.00**	
3. Provision of funds allocation					**7**
- 10 multiplier farms/nurseries allocated funds for operation	0.9	0.9	1.2	**3.00**	
4. Development of farmer capacity for propagation and multiplication of planting materials to expand reach of available cassava stalks					**1**
- 10 capacitation trainings	0.3	0.3	0.4	**1.00**	
5. Conduct IEC activities on the use and source of recommendation cassava varieties					**3**
- Daily Radio plugging conducted (10,000/month)	0.12	0.12	0.12	**0.36**	

Proposed Interventions	Estimated Cost (P 000, 000)				Rank
	Year 1	Year 2	Year 3	Total	
- 10,000 leaflets of IEC materials produced and distributed (50.00/copy)	0.5	0.5		**1.00**	
6. Subsidized fertilizer cost					**4**
- 20,000 bags subsidized	10.00	10.00	10.00	**30.00**	
7. Trainings & studies/ researches about cassava diseases and infestation					**9**
- 10 trainings / seminars					
SEGMENT: PRODUCTION					
8. Provision of farm equipment and machineries					**8**
- 12 units of 4WD tractors and implements	24.00			**24.00**	
- 12 units of cassava ridger	3.6			**3.6**	
- 12 units of cassava digger	3.6			**3.6**	
- 12 units of cassava planter	6.00			**6.00**	
- 12 units of cassava hauler	24 .00			**24.00**	
9. Establish a program for consistent adoption of good agricultural practices (GAP) and continue provision of technical assistance					**6**
- GAP program established					
10. Establishment of cassava technology demonstration areas					**2**
- 10 sites	0.9	0.9	1.2	**3.00**	
- 1 demo farm in the university	0.3	0.3	0.3	**0.9**	
11. Integrate sustainable agriculture/farming as part of the curriculum	*	*	*		**38**
- Revised/enriched BSA curriculum					
12. Conduct several researchers on cassava production					**37**
- 3 researches conducted	0.3	0.3	0.3	**0.9**	
13. Provision of capacitation trainings					**11**
- 10 trainings	1.00				
14. Conduct cassava festival					**12**
- 2 Cassava Festival	0.3		0.3	**0.6**	
15. Promote balanced fertilization thru capacitation trainings and technical services					**13**
- 10 trainings conducted	0.3	0.3	0.4	**1.00**	
16. Promote Bulk procurement of inputs					**14**
- Bulk procurement of inputs					
17. Continuous research on alternative source of inputs					**36**
- 3 researches conducted	1.00			**1.00**	
18. Set-up and / or upgrading and operationalize of existing organic fertilizer production facilities including assistance to comply with accreditation requirements					**35**

Proposed Interventions	Estimated Cost (P 000, 000)				Rank
	Year 1	Year 2	Year 3	Total	
- 1 PLGU organic fertilizer production center operational	5.00			**5.00**	
19. Provision of funds support for operationalization of organic production facilities					**15**
- 10 PO managed organic production facilities operational	10.00			**10.00**	
20. Organization of cassava planters/growers with specific purpose of level pays of labor rate					**16**
- 10 organization organized					
21. Clustering of farms/areas (avoid planting below one-hectare)					**17**
- 10 municipalities					
SEGMENT: PROCESSING					
22. Conduct of trainings on proper post-harvest handling and processing of cassava to comply with market requirements					**18**
- 14 trainings (for feeds, starch & food industry)	1.00	0.4		**1.4**	
23. Establishment and operationalization of POs thru provision of equipment					**19**
- 10 units chipping machine	1.5			**1.5**	
- 10 granulating machine	2.5			**2.5**	
- 10 drying facilities/ equipment	3.00			**3.00**	
SEGMENT: TRADING					
24. Establishment of cassava warehouse in strategic areas					**20**
- 10 cassava warehouse	15.00			**15.00**	
25. Direct marketing of fresh cassava tubers to traders/processors					**21**
- 10 Marketing agreement executed.					
26. Establishment/upgrading and operationalization of warehouse facilities with fumigation rooms to POs appropriate for storing cassava fresh tubers, dried chips and granules					**22**
- 2 established/ upgraded warehouses and operational manage by POs	5.00			**5.00**	
27. Operationalization of warehouse					**23**
- 2 Operations guidelines approved & adopted					
28. Provision of transportation support to POs for its operation					**24**
- 10 hauler trucks provided to functional POs for its operation	20.00			**20.00**	
29. Construction or rehabilitation of access roads such as FMRs				**7,759.78**	**25**
30. Product development/ value adding of cassava					**26**
- 10 capacitation Trainings	1.00			**1.00**	
31. Establish market linkage					**27**
- 3 invest forum conducted	0.3	0.3	0.3	**0.9**	

Proposed Interventions	Estimated Cost (P 000, 000)				Rank
	Year 1	Year 2	Year 3	Total	
- 3 market matching conducted	0.3	0.3	0.3	**0.9**	
SEGMENT: SUPPORT SERVICES					
32. Allocate funds for the hiring of additional technical extension workers/technician					**28**
- Funds provided for technical support	1.00	1.00	1.00	**3.00**	
33. Capacity Building of extension workers & Ka-ABAG					**29**
- 10 training conducted	0.4	0.3	0.3	**1.00**	
- 1 exposure/educational trips	0.3			**0.3**	
34. Provision of transportation support					**30**
- 10 vehicle provided (Motorcycle)	0.6			**0.6**	
35. Database management and profiling of cassava growers and traders					**31**
- Registry and profile of cassava growers, processors and traders establishment.					
- 10 (Desktop) ICT equipment provided	0.6			**0.6**	
36. Sustain cash incentives for Agri Extension Workers for cassava					**34**
- A cash incentive is sustained	0.25	0.25	0.25	**0.75**	
SEGMENT: INTERFIRM RELATIONSHIP					
37. Organization & strengthening of cassava farmers associations & cooperatives					**32**
- 10 associations/cooperatives of cassava farmers duly registered/accredited					
- Technical and organizational support provided					
38. Facilitate the federation of registered cooperative for cassava farmers					**33**
- 1 Registered the Federation of Cassava farmers					
GRAND TOTAL	**160.87**	**21.67**	**21.87**	**7,964.19**	

C. PCIP Matrix for Bohol Cassava

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
SEGMENT: INPUT SUPPLY												
Limited supply of good quality high-yielding varieties for planting materials	Establishment , accreditation and operationalization of certified nurseries for propagation of good quality planting materials of high yielding varieties including golden yellow variety	- 1 PLGU accredited & certified nursery operational	BOATech. Center Gabi, Ubay	BOATech. Center Gabi, Ubay	BOATech. Center Gabi, Ubay	PLGU (OPA) DA BPI	1	0.5	0.5	PLGU DA-PRDP		
		- 10 municipal (MLGU/PO managed) accredited , certified & operational nurseries	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones Mabini Danao	MLGU/PO DA BPI PLGU (OPA)	10	5	5	PLGU MLGU DA-PRDP		
	Production of tissue culture for cassava planting materials in coordination with government facilities	- 1 Government Facility for cassava tissue culture operational	BES, Gabi, Ubay			PLGU (OPA) DA	5			PLGU DA-PRDP		
	Provision of funds allocation	10 multiplication farms/nurseries	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones	DA-Corn PLGU (OPA) MLGU	0.9	0.9	1.2	PLGU MLGU ATI		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
		allocated funds for operation			Mabini Danao	ATI PO BPI				DA-PRDP		
	Development of farmer capacity for propagation and multiplication of planting materials to expand reach of available cassava stalks	10 capacitation trainings	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones Mabini Danao	DA-Corn BPI PLGU (OPA) MLGU ATI	0.3	0.3	0.4	DA-PRDP BPI PLGU MLGU		
Inadequate information and limited access to sources of good quality planting materials and high-yielding varieties	Conduct IEC activities on the use and source of recommended cassava varieties	Daily Radio plugging conducted (P10,000/month)	Province wide			PLGU (OPA) MLGU DA-Corn	0.12	0.12	0.12	PLGU MLGU DA-Corn DA-PRDP		
		10,000 leaflets of IEC materials produced and distributed (P50.00/copy)	Province wide			PLGU (OPA) MLGU DA-Corn	0.5	0.5		PLGU MLGU DA-Corn DA-PRDP		
Lack of government assistance in terms of fertilization	Subsidized fertilizer cost	20,000 bags subsidized	Ubay Dagohoy Carmen Sagbayan Trinidad			PLGU (OPA) MLGU DA-Corn	10	10	10	PLGU MLGU DA-Corn DA-PRDP		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
and pest control			Pilar San Miguel S-Bullones Mabini Danao									
	Trainings & studies/researches about cassava diseases and infestation	10 trainings/seminars	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones Mabini Danao	DA-Corn PLGU (OPA) MLGU ATI PO BPI				PLGU MLGU DA-Corn DA-PRDP		
Segment: PRODUCTION												
Manual operations and lack of farm equipment and machineries	Provision of farm equipment and machineries	Farm Equipments & Machineries:	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	*	*	PLGU (OPA) MLGU DA-Corn				PLGU MLGU DA-PRDP PhilMECH		
		12 units of 4WD tractors and implements					24				Distribution be based on cultivated areas	
		12 units of cassava ridger					3.6				Provision of ridger to all delivered tractors	
		12 units of cassava digger					3.6				Distribution be based on cultivated areas	

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
		12 units of cassava planter					6				Distribution be based on cultivated areas	
		12 units of cassava hauler					24				Distribution be based on cultivated areas	
Lack of know-how on sustainable farming practices/ Good Agricultural Practices and appropriate cultural management and practices	Establish a program for consistent adoption of good agricultural practices (GAP) and continue provision of technical assistance	GAP program established	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	*	*	PLGU (OPA) MLGU ATI BPI DA-Corn				DA-Corn BPI PLGU MLGU ATI		
	Establishment of cassava technology demonstration areas	10 sites	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones Mabini Danao	PLGU (OPA) MLGU ATI BPI DA-Corn	0.9	0.9	1.2	DA-Corn BPI PLGU MLGU ATI		
		1 demo farm in the university	SUCs-BISU	SUCs-BISU	SUCs-BISU	SUCs-BISU	0.3	0.3	0.3	SUCs-BISU DA-PRDP BPI		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
										PLGU thru OPA		
	Integrate sustainable agriculture/farming as part of the curriculum	Revised/enriched BSA curriculum	SUCs-BISU	SUCs-BISU	SUCs-BISU	SUCs-BISU	*	*	*	SUCs-BISU		
	Conduct several researches on cassava production	3 researches conducted	SUCs-BISU	SUCs-BISU	SUCs-BISU	SUCs-BISU BPI DA-Corn MANA	0.3	0.3	0.3	SUCs-BISU DA-PRDP BPI PLGU thru OPA		
	Provision of capacitation trainings	10 trainings	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	*	*	PLGU (OPA) MLGU DA-PRDP DA-Corn BPI ATI	1			DA BPI PLGU MLGU BPI ATI		
	Conduct of Cassava Festival	2 Cassava Festival	Tagbilaran			PLGU (OPA) MLGU ATI BPI DA-Corn	0.3		0.3	PLGU MLGU ATI BPI DA-Corn		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
High cost of inputs & labor	Promote balanced fertilization thru capacitation trainings and technical services	10 trainings conducted	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S-Bullones Mabini Danao	PLGU (OPA) MLGU DA-PRDP DA-Corn ATI	0.3	0.3	0.4	PLGU MLGU DA-PRDP DA-CORN	High cost of labor could be address thru farm mechanization	
	Promote Bulk procurement of inputs	Bulk procurement of inputs	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU MLGU						
	Continuous research on alternative source of inputs	3 researches conducted	Ubay Carmen San Miguel			PLGU (OPA) MLGU DA-PRDP DA-Corn BPI ATI	1			PLGU MLGU DA-PRDP DA-Corn ATI		
	Set-up and /or upgrading and operationalize of existing organic fertilizer production facilities including assistance to comply with	1 PLGU organic fertilizer production center operational	BOATech, Gabi, Ubay	*	*	PLGU	5			PLGU DA-PRDP		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
	accreditation requirements											
	Provision of funds support for operationalization of organic production facilities	10 PO managed organic production facilities operational	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU MLGU DA-Corn PO	10			PLGU MLGU DA-PRDP DA-Corn ATI		
	Organization of cassava planters/growers with specific purpose of level pay of labor rate	10 organization organized	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			MLGU DA-Corn PLGU thru OPA				MLGU DA-Corn PLGU thru OPA		
Fragmented production areas	Clustering of farms/areas (avoid planting below one-hectare)	10 municipalities	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar			PLGU (OPA) MLGU DA-Corn PO				PLGU MLGU DA-Corn PO	Not identified in the VCA	

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
			San Miguel S-Bullones Mabini Danao									
Segment: PROCESSING												
Poor postharvest handling	Conduct of trainings on proper post-harvest handling and processing of cassava to comply with market requirements	14 trainings (for feeds, starch & food industry)	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	Dauis Balilihan Albur Corella	*	PLGU (OPA) MLGU DA-Corn ATI DTI	1	0.4		PLGU MLGU DA-PRDP DA-Corn DTI	Year 2 - For food purposes	
Limited processing equipment and facility	Establishment and operationalization of POs thru provision of equipment	10 POs operational provided with the following Equipment :	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU (OPA) MLGU DA-PRDP PhilMECH				PLGU MLGU DA-PRDP PhilMECH		
		10 units chipping machine					1.5					
		10 granulating machine					2.5					
		10 drying facilities/ equipment					3					
Inadequate storage facility	Establishment of cassava warehouse in strategic areas	10 cassava warehouses	Ubay Dagohoy Carmen			PLGU (OPA) MLGU DA-PRDP	15			PLGU MLGU DA-PRDP		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
			Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			DA-Corn PEO				DA-Corn PEO		
	Direct marketing of fresh cassava tubers to traders/processors	10 Marketing agreement executed	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU (OPA) MLGU DA-Corn				PLGU MLGU DA-Corn		
Segment : TRADING												
Inadequate storage and transport facilities	Establishment /Up grading and operationalization of warehouse facilities with fumigation rooms to POs appropriate for storing cassava fresh tubers, dried chips and granules	2 established/ upgraded warehouses and operational manage by POs	Ubay San Miguel			PO PLGU (OPA) MLGU DA-Corn PEO	5			PLGU MLGU DA-PRDP DA-Corn PEO		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
	Operationalization of warehouse	2 Operations guidelines approved & adopted	Ubay San Miguel			PO PLGU (OPA) MLGU DA-Corn				PO PLGU MLGU DA-Corn		
	Provision of transportation support to POs for its operation	10 hauler trucks provided to functional POs for its operation	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	*	*	PLGU MLGU DA-PRDP DA-Corn	20			PLGU MLGU DA-PRDP DA-Corn		
Poor roads for transport of cassava products	Construction or rehabilitation of access roads such as FMRs	449.92 kms of FMRs constructed 408.01 kms of FMRs rehabilitated	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	*	*	PLGU (OPA) MLGU DA-PRDP PEO	7,759.78			PLGU MLGU DA-PRDP PEO	Not identified in the VCA	
Low buying price	Product development/ value adding of cassava		Ubay Dagohoy Carmen Sagbayan Trinidad			PLGU (OPA) MLGU DA-Corn ATI DTI	1			PLGU MLGU DA-Corn ATI DTI		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
			Pilar San Miguel S-Bullones Mabini Danao									
	Establish market linkage	3 investment forum conducted	Tagbilaran	Carmen	Ubay	PLGU (OPA) MLGU DA-Corn ATI DTI	0.3	0.3	0.3	PLGU MLGU DA-Corn DA-PRDP ATI DTI		
		3 market matching conducted	Tagbilaran	Carmen	Ubay	PLGU (OPA) MLGU DA-Corn ATI DTI	0.3	0.3	0.3	PLGU MLGU DA-Corn DA-PRDP ATI DTI		
Segment : SUPPORT SERVICES												
Limited outreach of existing service providers/ Weak extension support services	Allocate funds for the hiring of additional technical extension workers/technicians	Funds provided for technical support	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	PLGU MLGU DA-PRDP DA-Corn	1	1	1	PLGU MLGU DA-PRDP DA-Corn	Not identified in VCA	

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
	Capacity Building of extension workers & Ka-ABAG	10 training conducted	Ubay Dagohoy Carmen Sagbayan	Trinidad Pilar San Miguel	S-Bullones Mabini Danao	PLGU(OPA) MLGU DA-Corn BPI ATI	0.4	0.3	0.3	PLGU thru OPA MLGU DA-Corn ATI BPI		
		1 exposure/ educational trips	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU(OPA) MLGU DA-Corn ATI	0.3			PLGU MLGU DA-Corn ATI		
	Provision of transportation support	10 vehicle provided (Motorcylce)	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU MLGU DA-Corn	0.6			PLGU MLGU DA-Corn DA-PRDP		
	Database management and	Registry and profile of cassava growers,	Provincewide			PLGU thru OPA MLGU				PLGU MLGU DA-Corn		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
	profiling of cassava growers and traders	processors and traders established				DA-Corn						
		10 (Desktop) ICT equipments provided	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU thru OPA MLGU DA-Corn	0.6			PLGU MLGU DA-Corn DA-PRDP		
	Sustain cash incentives for Agri Extension Workers for cassava	Cash incentives is sustained	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao	PLGU thru OPA MLGU DA-Corn	0.25	0.25	0.25	PLGU MLGU DA-Corn DA-PRDP		
Segment : INTERFIRM RELATIONSHIP												
Unorganized farmers	Organization & strengthening of cassava farmers associations & cooperatives	10 associations/ cooperatives of cassava farmers duly registered/accredited	Ubay Dagohoy Carmen Sagbayan Trinidad	*	*	PLGU MLGU DA-Corn				PLGU MLGU DA-Corn		

Key Gap/ Constraint in VC Dept. in the province	Brief Description of Potential Intervention	Target Result/ Outcome	Target Access to be covered			Proposed Lead and Other Players	Estimated Project Cost (000,000)			Proposed sources of Funds	Remarks	Rank
			Y1	Y2	Y3		Y1	Y2	Y3			
			Pilar San Miguel S-Bullones Mabini Danao									
		Technical and organizational support provided	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			PLGU MLGU DA-Corn				PLGU MLGU DA-Corn		
	Facilitate the federation of registered cooperative for cassava farmers	1 Registered Federation of Cassava Farmers	Province wide			PLGU thru OPA MLGU Cooperatives DA-Corn						

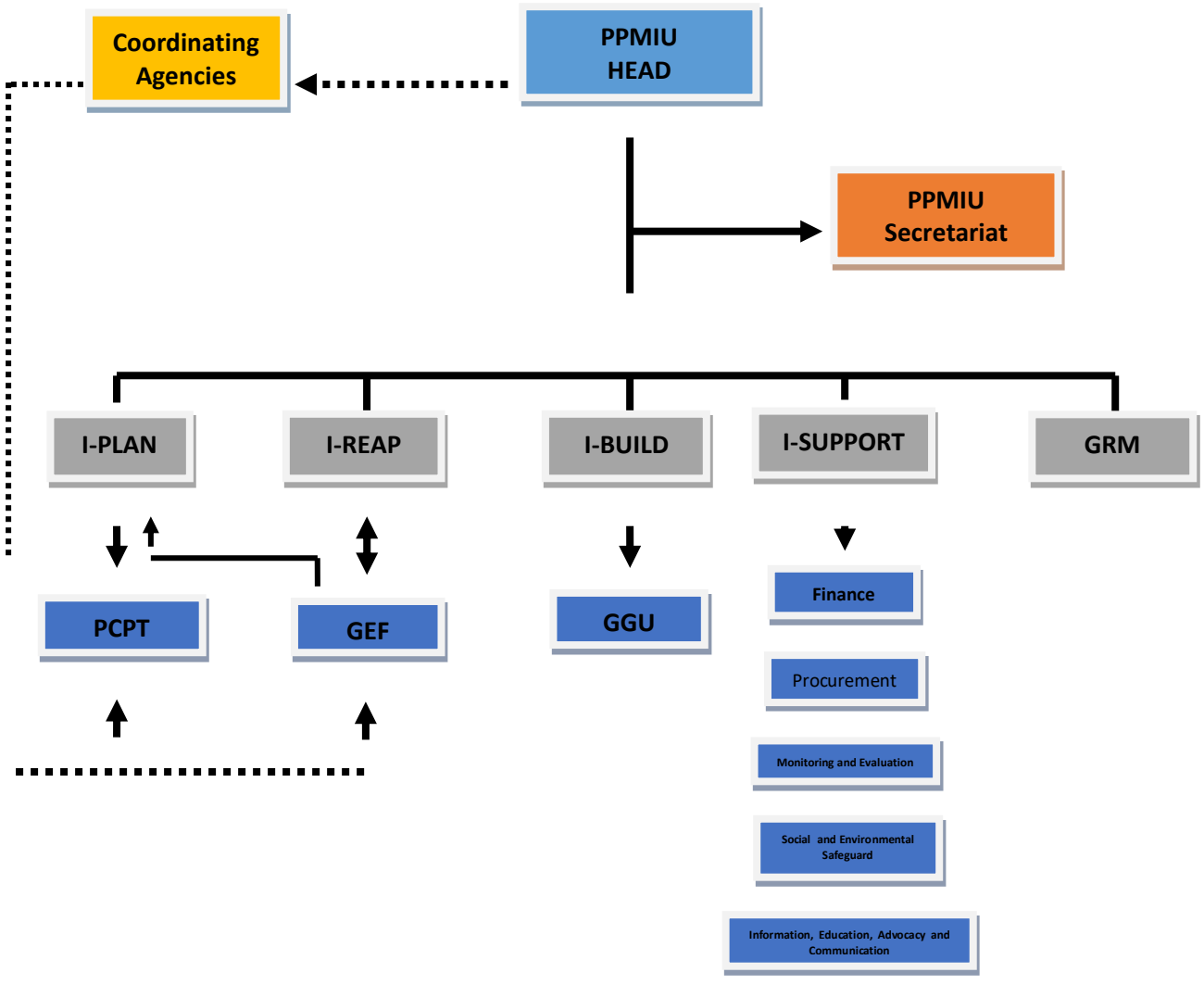
Chapter IV: Institutional Arrangements

- ## 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 Bohol Cassava PCIP

Republic of the Philippines
PROVINCE OF BOHOL
City of Tagbilaran

Behold... BOHOL

PROVINCIAL DEVELOPMENT COUNCIL

EXCERPT FROM THE MINUTES OF THE MEETING OF THE PROVINCIAL DEVELOPMENT COUNCIL HELD ON DECEMBER 11, 2017 AT THE PANDA TEA GARDEN SUITES, 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.05-2017

A RESOLUTION APPROVING THE PROVINCIAL COMMODITY INVESTMENT PLAN (PCIP) FOR CASSAVA OF THE PROVINCE OF BOHOL AND FAVORABLY ENDORSING THE SAME TO THE CENTRAL VISAYAS REGIONAL DEVELOPMENT COUNCIL (RDC-VII) FOR INCLUSION IN THE REGIONAL DEVELOPMENT INVESTMENT PROGRAM (RDIP) AND THE DEPARTMENT OF AGRICULTURE (DA) AND OTHER RELEVANT AGENCIES FOR SUPPORT AND FUNDING ASSISTANCE

WHEREAS, the Province of Bohol has identified the cassava crop as one of the 10 priority commodities that will be given preferential attention under the Philippine Rural Development Project (PRDP) of the Department of Agriculture (DA);

WHEREAS, being one of the identified priority commodities that are supportive to agricultural development of the province, a value chain analysis and the formulation of the Provincial Commodity Investment Plan (PCIP) for cassava have been undertaken as part of the necessary requisites to ensure effective implementation of interventions;

WHEREAS, the PCIP for cassava is a 3-year rolling consensus plan between the DA and Provincial Government of Bohol based on the value chain analysis that was conducted with strong participation of various stakeholders within the chain;

WHEREAS, the PCIP for cassava is a strategic plan that rationalizes the interventions within the various segments of the value chain of the commodity, and shall become the basis for PRDPs I-BUILD and I-REAP components in selecting eligible interventions/ sub-projects for funding and eventual actual implementation in the province of Bohol;

WHEREAS, the Provincial Core Planning Team (PCPT) presented the PCIP to this Body, giving emphasis on relevant information, gaps and constraints, and needed interventions for the said crop, identified through technical review and stakeholders' consultation involving suppliers, growers, processors, traders, municipal agriculturists, provincial and regional commodity coordinators, and other key players in the cassava industry;

WHEREAS, the PCIP for cassava, after review and deliberation, has been found by this Body to be relevant, well-grounded, responsive, and aligned with the provincial goals and priorities that will 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 Provincial Commodity Investment Plan (PCIP) for Cassava of the Province of Bohol and favorably endorse the same to the Regional Development Council (RDC) for inclusion in the Regional Development Investment Program (RDIP) and to the Department of Agriculture (DA) and other relevant agencies for support and funding assistance

RESOLVED FURTHER, to provide copies of this resolution to the DA, and other proper government agencies for subsequent endorsement, support and funding assistance.

UNANIMOUSLY ADOPTED.

-0-

I hereby certify to the correctness of the foregoing Resolution.

JOHN TITUS J. VISTAL
PPDC-Bohol
Head, PDC Secretariat

APPROVED:

EDGARDO M. CHATTO
Governor
Chairman, PDC-Bohol

G.O. DTIS No._____

DATE_____

ANNEXES

Annex 1. Farm-to-Market Roads (FMR) for Bohol Cassava PCIP, Province of Bohol

	Cassava Top Towns	Length (Km.)	Length for Improvement (Km.)	Needed Amount
1	**Carmen**			
	Guadalupe-Monte Video Road	5.766	5.766	P 115,320,000.00
	Carmen-Vallehermoso Road	7.03	5.973	P 119,460,000.00
	Buenos-Aires-Nueva Vida-Monte Hermoso Road	7.6	7.097	P 141,940,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**40.40**	**38.84**	**P776,720.000.00**
2	**San Miguel**			
	Jct.(TER)-San Pascual (Ubay)-Mahayag (San Miguel) Rd	2.59	2.47	P 49,400,000.00
	San Miguel-Tomoc-Getafe Road (San Miguel Side)	8.71	8.47	P 169,400,000.00
	San Miguel-Bayongan-Bulilis-Mabuhay(Ubay) Rd	17.5	17.4	P 348,000,000.00
	Cambangay (San Miguel)-Soom(Trinidad) Road	7.1	7.1	P 142,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**55.90**	**55.44**	**P1,108,800,000.00**
3	**Mabini**			
	Cabulao-Ondol(Mabini)-Union(Ubay) Road	20.9	2.0	P 40,000,000.00
	Kaporsing-Abaca-San Roque Road, Mabini	6.915	6.8	P 136,000,000.00
	Jct.(Mabini-Cabulao)-Aguipo Road	1.1	1.0	P 20,000,000.00
	Jct.(TER) - Ilihan - Cabulao Road	5.16	5.16	P 103,200,000.00
	Jct.(TER)-Mabini-Cabulao-Lungsodaan-Pook Road	17.17	3.5	P 70,000,000.00
	Sta. Cruz-Minol-Banlas-Tambo Road	6.95	6.6	P 132,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**78.20**	**45.06**	**P 901,200,000.00**
4	**Ubay**			
	San Miguel-Bayongan-Bulilis-Mabuhay(Ubay) Rd	17.5	17.4	P 348,000,000.00
	Jct.(Soom)-Humay-Humay Road	3.305	3.305	P 66,100,000.00
	Road to Ubay Jr. High School	0.4	0.4	P 8,000,000.00
	Gabi Seed Farm, Ubay	1.01	1.01	P 20,200,000.00
	Road to Ubay Stock Farm	1.6	1.6	P 32,000,000.00
	Jct.(TER)-San Pascual (Ubay)-Mahayag (San Miguel) Rd	2.59	2.47	P 49,400,000.00
	Jct.(TER)-Ilihan-Cabulao Road	1.9	1.9	P 38,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**48.31**	**48.09**	**P 561,700,000.00**

	Cassava Top Towns	Length (Km.)	Length for Improvement (Km.)	Needed Amount
5	**Trinidad**			
	Cambangay (San Miguel)-Soom(Trinidad) Road	7.1	7.1	P 142,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**27.1**	**27.1**	**P 542,000,000.00**
6	**Dagohoy**			
	Road leading to Barangay Candelaria	8.0	8.0	P 160,000,000.00
	Road leading to Dagohoy Reforestration	1.3	1.3	P 26,000,000.00
	Road to Palayan ng Bayan	8.505	8.505	P 170,100,000.00
	Dagohoy - Caluasan - Bagumbayan (Pilar) Road	15.5	15.5	P 310,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**53.31**	**53.31**	**P1,066,100,000.00**
7	**Pilar**			
	Lungsodaan Street, Pilar - Bagacay Road	0.58	0.48	P 9,600,000.00
	Pilar-Bagacay Road	7.7	7.315	P 146,300,000.00
	Pilar-Inaghuban Road	7.75	6.913	P 138,260,000.00
	Pilar-Bayong Road	3.0	3.0	P 60,000,000.00
	Bagumbayan-Estaca Road	2.94	2.94	P 58,800,000.00
	Jct.(LIR)-Mahayag-Katipunan Road	10.548	10.41	P 208,200,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**52.52**	**51.06**	**P1,021,160,000.00**
8	**Danao**			
	Jct.(LIR)-Mahayag-Danao Road	15.855	12.0	P 240,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**35.855**	**32.0**	**640,000,000.00**
9	**Sierra Bullones**			
	Jct. (Jagna- Sierra Bullones)-Abachanan Road	3.7	3.2	P 64,000,000.00
	Magsaysay-Danicop Road	2.2	2.2	P 44,000,000.00
	Sierra Bullones Street	0.38	0.38	P 7,600,000.00
	Pob.-Bugsok Road	4.73	4.3	P 86,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**31.01**	**30.08**	**P 601,600,000.00**
10	**Sagbayan**			
	Pob.(Sagbayan)-Sagbayan Sur-Kabasakan Road	5.36	5.075	P 101,500,000.00
	Jct.(Carmen-Sagbayan via Bacane)-Canmano-Calatrava-Villafuerte Road	1.95	1.95	P 39,000,000.00
	Brgy. Roads	20.0	20.0	P 400,000,000.00
	Sub-Total	**27.31**	**27.03**	**P540,500,000.00**
	Grand Total	**449.92**	**408.01**	**P7,759,780,000.00**

Annex 2. List of Cassava Industry Players, Bohol Province

List of Cassava Growers

Name	Address
Carmen	
Ms. Crescensia Bacosmos	El Salvador
Ms. Fermina Genson	PoblacionNorte
Mr. Reducto, Narciso	Algeria, Carmen
Mr. Cesario Lansang	Algeria, Carmen
Mr. Jesus Acurda	Pob. Norte, Carmen
Mr. Vidal Jumawid	Bicao, Carmen
Mr. Mesias Café	Vallehermoso, Carmen
Mr. Bernardo ToribioJr.	Pob Sur, Carmen
Mr. Anito Auxillo	Bicao, Carmen
Ms. Fatima Grace Israel	Guadalupe, Carmen
Ms. Meriam Dano	Bicao, Carmen
Ms. Florencia Merto	Buenavista, Carmen
Ms. Lydia Bonhayag	Buenavista, Carmen
Ms. Eugenia Bag-ao	Buenavista, Carmen
Mr. Rogelio Iman	El Salvador, Carmen
Ms. Leliosa Bojo	El Progreso, Carmen
Mr. Teofilo Bungato	El Progreso, Carmen
Mr. Eulogio Legaspi	Nueva Fuerza
Mr. Narciso Giagonia	Vallehermoso, Carmen
Mr. Orlando Rivera	Pob. Norte, Carmen
Ms. Jesel Gengoni	Nueva Fuerza, Carmen
Mr. Crisologo Cesar	Katipunan, Carmen
Dagohoy	
Mr. Avelino Saraspe	Sta. Cruz
Mabini	
Mr. Silverio Miano	Abaca
San Miguel	
Mr. Manulo Tura	Cabangahan
Sierra Bullones	
Mr. Glenn Mahilom	La Union
Trinidad	
Mr. Dewel B. Puracan	Poblacion
Mr. Alejandro Trazo	La Victoria
Mr. Gerardo Orevillo	TagumNorte
Mr. Avelino Puracan	TagumNorte
Mr. Terso Humanoy	Guinobatan
Ms. Erlinda Albior	Guinobatan
Ms. Elsa Nuera	Bongbong
Mr. Oscar Balonga	Bongbong
Mr. Oscar Bona-os	Bongbong
Ms. Gabriela Dungog	Bongbong
Ms. Nemesio Dungog	Bongbong
Ms. Venancia Boncales	Kinan-oan
Mr. Virgilio Boncales	Kinan-oan

Mr. Ednato Avenido	Kinan-oan
Mr Lauro Autentico	M. Roxas
Mr. Demetrio Ogayon	M. Roxas
Mr. Alberto Baluca	Mahagbu
Mr. Nemesio Añasco	Mahagbu
Mr. Anecito Suarez	Poblacion
Mr. Artemio Ballon	Banlasan
Pilar	
Mr. Nardo Pesaña	Catagdaan
Mr. Cipriano Ellorimo	Poblacion
Mr. Eddie Lusica	Bagumbayan
Mr. Danilo Escabusa	Catagdaan
Mr. Vicente Muring	Catagdaan
Mr. Celestino Pesaña	Catagdaan
Mr. Antonio Genita	Bagumbayan
Mr. Flora Caverte	Bagumbayan
Mr. Alejandro Ayuman	Bagumbayan
Mr. Juanito Sabanal	Catagdaan
Mr. Roland Doydoy	Del Pilar
Ms. Dominga Dela Cruz	Del Pilar
Mr. Diosdado Escudero	Estaca
Mr. Rosendo Escudero	Estaca
Mr. Santiago Quimpan	Estaca
Ms. Pausta Butron	Lumbay
Ms. Lina Butron	Lumbay
Ms. Rizalina Cabangbang	Rizal
Mr. Raul Tusoy	Rizal
Mr. Benjamin Amila	Aurora
Ubay	
Mr. Apolinario Boiser	Benliw
Mr. Danilo Bacalso	Imelda
Mr. Deomedes Boyles	Benliw
Mr. Meliton Boyles Jr.	Benliw
Mr. Teodulo Cadorniga	Imelda
Mr. Elesio Boyles	Bood
Ms. Rufina Aspas	Calanggaman
Mr. Ernesto Rosal	Tipolo
Ms. Francisca Cuysona	Tipolo
Mr. Rodrigo Boiser	Tipolo
Ms. Guadalupe Gabisan	Tipolo
Ms. Glorieta Manuta	Union
Mr. Hector Yu	Sinandigan
Mr. Cereno Golosino	California
Mr. Tito Felisilda	California
Mr. Joel Tolentino	Benliw
Mr. Felix Cuysona	Imelda
Mr. Juliano Bucio	Benliw
Mr. Emmanuel Boyles	Benliw
Mr. Feliciano Dioquino	Imelda

Input Suppliers

Name	Address
Mr. Fermin Cadungog	Allied Botanical Corporation
Kaumahan Marketing	Dao District, Tagbilaran City

Processors

Name	Address
Mr. Reginald Ong	Bohol Quality Corporation
Engr. Arnold Labunog	Painitangbol-Anon, Tagbilarancit

Traders

Name	Address
Mr. Constatino Reyes	Ubay, Bohol
Ms. Erlinda Gomez	Liwayway Marketing Corporation, Carmen, Bohol

Support Services Providers

Name	Address
Mr. Jon Guillermo Mejares	Cassava Technician, Carmen, Bohol
Ms. Maxima Mante	Cassava Technician, Dagohoy, Bohol
Ms. Catherine Libres	Cassava Technician, Mabini, Bohol
Ms. Marcela Palma	Municipal Agriculturist, San Miguel, Bohol
Mr. Jimmy P. Jayoma	Municipal Agricultural Officer, Sierra Bullones, Bohol
Ms. Merriam Goyeneche	Cassava Technician, Trinidad, Bohol
Ms. Avelina C. Lopiceros	Municipal Agricultural Officer- Designate, Trinidad, Bohol
Ms. Crispina Caballero	Cassava Technician, Ubay, Bohol
Ms. Amaliacutamora	Cassava Technician, Ubay, Bohol

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

Presentation of Cassava VCA Results to Line Agencies, Municipal Agricultural Officers/Municipal Agriculturists and PCPT by RPCO-7 | April 26, 2017

PCPT Meeting for Discussion of Draft PCIP Matrix for Cassava | June 15, 2017

Technical Review of Draft PCIP for Cassava | August 25, 2017

Cassava Stakeholders' Consultation | September 7, 2017

PDC Presentation of Cassava PCIP | December 11, 2017