

Provincial Commodity Investment Plan (With Climate Change Adaptation PAPs)





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List of Abbreviations & Acronyms

ACFTAnnual per Capita Food ThresholdACPTAnnual per Capita Poverty ThresholdAESAgro-Edaphic SuitabilityAIPAnnual Investment PlanADPAnnual Development PlanARMMAutonomous Region in Muslim MindanaoBALABohol Livestock AideBEMOBohol Environment Management OfficeBFARBureau of Fisheries and Aquatic ResourcesBODACOBohol Dairy CooperativeBODACABohol Dairy CooperativeBONACGABohol NetwetmentsBONACGABohol NetwetmentsBONACGABohol NetwethentsBONACGACooperative Development AuthorityCLUPComprehensive Land Use PlanCPTComprehensive Land Use PlanCPTCommodity Prioritization ToolCSOCiVil Society OrganizationDADepartment of AgricultureDENRDepartment of Scince and TechnologyDRRDepartment of Scince and TechnologyDRRDepartment of Scince and TechnologyDRRExecutive Legislative AgendaEOExecutive CoderEVSAExpanded Vulnerability and Suitability AssessmentFAFarmers' AssociationFMRFarmers' AssociationGAPGood Agriculture PracticesGEFGlobal Environmental FacilityI-BUILDIntensified Building-Up of Infrastructure and Logistics for DevelopmentIECInformation Education CampaignIPIndigenous PeopleI-PLANInvestment For AFMP Planning at the Local and Nation	A and D	Alienable and Disposable
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MCPIMarine Colloids for Pilipino IntegrityMLGUMunicipal Local Government UnitMOAMemorandum of AgreementMPAMarine Protected Area	M&E	Monitoring and Evaluation
MLGU Municipal Local Government Unit MOA Memorandum of Agreement MPA Marine Protected Area	MCPI	Marine Colloids for Pilipino Integrity
MOA Memorandum of Agreement MPA Marine Protected Area	MLGU	Municipal Local Government Unit
MPA Marine Protected Area	MOA	Memorandum of Agreement
	MPA	Marine Protected Area
NCIP National Commission on Indigenous Peoples	NCIP	National Commission on Indigenous Peoples
5 1	NDA	National Dairy Agency
	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
РСРТ	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

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INTRODUCTION

Bohol is one of the selected recipient provinces of the Philippine Rural Development Project (PRDP). PRDP is a six-year project designed to establish an inclusive and market-oriented agrifishery 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.

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

The interim approach in updating the PCIP for PRDP Scale-Up implementation focuses on the integration of Climate Risk Vulnerability, particularly the incorporation of Major Climate Risks and Risk Adaptation Measures in the existing PCIP Matrices. This approach will likewise serve as a bridge for planners at all levels to progressively familiarize themselves on climate-resilient investment planning.

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 Slope²

• 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 Range³

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

Soil Types⁴

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 the province in are predominantly brown having moderate to high inherent fertility (Map 3).



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

Existing Land Use and Vegetative Cover⁵

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 (s 3). 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	<mark>Use Distribut</mark> i	ion in Bohol		
Land Use Category	Area	Percent	Figure 2. Present Land Use & Vegetation Cover	,
Built-up	21,882	5.32%	Bohol Province	
Forestland	101,271	24.61%		C
Parks/plaza	196	0.05%		
Agricultural	273,950	66.56%		
Industrial	2,672	0.65%		C
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

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 hectares⁷. The most popular man-made mangrove forest in Bohol is around Banacon Island in Getafe town comprising an area of 1,750 hectares.

Built-up Forestland Parks/plaza Agricultural Industrial Tourism Roads/bridges Mining Cemetery Easement Housing Landfill Total

⁵ Bohol Ecological Profile of DENR, 1992

⁶ Bohol Ecological Profile, DENR 1992

⁷ Bohol Coastal Environment Profile of 2002





Land Classification⁸

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 are 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





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.



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.

Risk Profile⁹

The Province of Bohol is prone to a wide range of natural and human-induced hazards such as flooding, rain-induced landslides, earthquake, storm surges, liquefaction, fire, air and water pollution, and contaminated land. Inappropriate location and design of developments can aggravate exposure to and impact of hazards and climate change impact like sea-level rise, storm surges, among others.

Hydrometeorological Hazards

Bohol's climate, as classified by PAGASA, belongs to Corona's 4th Type which is characterized by rainfall more or less evenly distributed throughout the year. Intensification of the southwest monsoon usually occurs during the months of July to October. The rainfall varies from about 1,200 mm/yr. around the coast to slightly more than 2,200 mm per year in the mountainous areas in the province. Based on the climatological records of Tagbilaran City weather station, the province has an annual average of 161 rainy days. Average rainfall and trend have illustrated a declining trend of 250 mm over a period of 35 years of about 7mm a year due likely to climatic change in the Southeast Asian Region. The coastal area of the province is warm in contrast with the interior part, which is colder especially during the night. Mean temperature is at 27.40 degrees Celsius.

• Flooding

Flood-prone areas in Bohol include the influence areas of the eleven major rivers namely: Inabanga, Loboc, Abatan (Maribojoc), Moalong (Loon), Ipil (Trinidad), Soom (Trinidad), Carood (Mabini), Lumbay (Pilar), Alejawan (Duero), Manaba (Garcia) and Panangatan (Dimiao) Rivers. Aside from the areas where the rivers are located, the following towns were sites of flooding in 2011, namely: Jagna, Valencia, Guindulman, Alicia, Bien Unido, Clarin, Sagbayan, and Antequera. These areas adjacent to the rivers have been the subject of seasonal destructive flash flooding which caused substantial damage to agricultural land and crops, infrastructure, dwelling and occasional loss of lives. The primary factor which contributes to the occurrence of these hazards is the denudation of the forest cover in the upper watershed areas and river tributaries. This causes heavy siltation resulting in the incapability of the river waterways to handle heavy flash flood water flow from the rain catchment area (PDPFP 2016-2028).

Based on the disaster risk analysis data as of 2020 (PDPFP 2016-2028) and on historical data. the municipalities with agriculture at risk to flooding are the following: Candijay, Alicia, Pilar, Batuan, and Mabini in terms of Agri-fisheries while Buenavista, Mabini, and Sevilla for fisheries alone, and they are considered as priority LGUs. Livestock at risk are mostly in Alicia, Candijay, Guindulman, and Mabini.



Map 7. Flood Susceptibility Map, Bohol Province

Source: PPDO Bohol

⁹ Bohol Provincial Disaster Risk Reduction and Management Plan 2023-2025

• Storm Surge

Storm Surge, as defined by the PAGASA, is **the abnormal rise in sea level that occurs during tropical cyclones**. It is caused by strong winds and low atmospheric pressures produced by tropical cyclones. Most of the storm surge-prone areas are located in the southeastern, southwestern, northern and western portions of Bohol. The inundation coverage is estimated based on geomorphologic analysis and observation in the areas during interviews/surveys. The surge heights are computed using the data gathered during surveys in reference to the significant tropical cyclone occurrences and from storm surge model results.



Source: PPDO Bohol

The 30 coastal LGUs (Tagbilaran City, Panglao, Baclayon, Dauis, Alburquerque, Loay, Lila, Dimiao, Valencia, Garcia Hernandez, Jagna, Duero, Guindulman, Anda, Candijay, Mabini, Ubay, Trinidad, Pres. Carlos P. Garcia, Bien Unido, Talibon, Getafe, Buenavista, Inabanga, Clarin, Tubigon, Calape, Loon, Maribojoc, Cortes) with island barangays are prone to storm surge if aggravated by strong typhoons (PDPFP 2016-2028). Among the listed municipalities: Getafe, Panglao, Talibon, Calape, Tubigon, Inabanga, Candijay, Ubay, Loon and Tagbilaran City are the notably with high population at risk.

Based on current data available, 30 coastal LGUs are under high risk in agricultural areas to Storm Surge. The highlighted municipalities with agriculture at risk of storm surge are Talibon, Bien Unido, Ubay, Pres. Calros P Garcia, Panglao, Baclayon, Getafe, Anda, Mabini and Guindulman based on observation and discussions. Fish cages and seaweeds production areas are mostly affected.

Rain-Induced Landslide

Landslides, as defined by the Philippine of Volcanology Institute and Seismology (PHIVOLCS), is the mass movement of rock, soil, and debris down а slope due to gravity. Landslides triggered by intense rainfall are called Rain-Induced Landslides (RIL).

Map 9. Rain-Induced Landslide Susceptibility Map, Bohol Province



Source: PPDO Bohol

There are seven (7) municipalities in the province which are determined to be the priority LGUs considering frequent landslide occurrence and their severity, namely: Jagna, Valencia, Sagbayan, Sierra Bullones, Garcia-Hernandez, Dimiao and San Isidro. In addition to these, the municipalities of Duero, Bilar, Loboc and Sevilla are also considered to be more exposed than the risk analysis data and considered the priority LGUs as well.

The agriculture areas at risk to RIL are highly observed in Sagbayan, Sierra Bullones, Jagna, Garcia-Hernandez and Duero, based on experience. A total of 176,775 hectares are potentially affected by rain-induced landslides in Bohol Province.

• Drought/El Niño

El Niño is the projected increase in temperature that will result in drought and drought-like conditions in the municipality. Drought is projected to have a high impact on the municipalities with mostly agriculture and fisheries.

Geological Hazards

Outline of Geological Hazards in Bohol

Geological hazards result from geologic processes acting on or beneath the earth's surface. These include earthquake, earthquake-induced hazards (ground shaking, ground rupture, earthquake-induced landslide, liquefaction, and tsunami), and volcanic hazards.

Bohol is prone to geologic hazards like ground shaking, liquefaction, earthquake-induced landslide and tsunami because of the presence of East Bohol Fault and another fault located in the Bohol Sea going to Mindanao Sea facing the southern part of Bohol. The presence of Negros Trench and PFZ Central Leyte Fault may also contribute to the generation of earthquake. Geologic hazards result from geologic processes acting on or beneath the earth's surface. These include movement of plates in the earth's crust or from local concentration of heat and are a source of



Source: PPDO Bohol

hazards to people and their natural and built- up environment on the earth's surface.

• Ground Shaking

The immediate effect of an earthquake is **Ground Shaking**. PHIVOLCS describes ground shaking as the *disruptive up, down and sideways vibration of the ground during an earthquake*.



Map 11. Ground Shaking Hazard Map, Bohol Province

Source: PPDO Bohol

According to recent hazard map, majority of the provincial agricultural lands are highly exposed to ground shaking with a total exposed agricultural area of about 168,307 hectares or 70% of the total agricultural land area is within the very high to high exposure area.

At very high risk to ground shaking are the 36 municipalities and one (1) city of the province of Bohol with agricultural areas exposed to ground shaking. Out of these towns, the 27 municipalities and one (1) city have their entire agricultural areas highly exposed to ground shaking. At risk are the municipalities of Carmen, Ubay, Pilar, San Miguel, Alicia, Guindulman, Trinidad, Sierra Bullones, Candijay, Dagohoy, Garcia Hernandez, Jagna and Valencia having more than 10,000 hectares of their agricultural area highly exposed to ground shaking (PDPFP 2016-2028).



Source: PDPFP 2016-2028

• Liquefaction

Liquefaction is the phenomenon wherein sediments, especially near bodies of water, behave like liquid similar to a quicksand. Such could lead to sinking and/ or tilting of structure above it, sand boils and fissures.

According to current data, all coastal municipalities and one (1) city, including island barangays of Bohol are highly susceptible to liquefaction. The municipalities of Ubay, Bien Unido, Panglao and Pres. Carlos P. Garcia are observed to be highly affected by liquefaction based on data and discussions. The moderately susceptible areas include some





Source: PPDO Bohol

barangays located in the different municipalities of Ubay, Trinidad, San Miguel, Talibon, Candijay, Duero, Jetafe, Buenavista, Tubigon, Calape, Panglao, Dauis and Cortes. The coastal municipalities located in the southeastern, northeastern and northwestern portions of Bohol have more areas exposed to the liquefaction hazard compared to those situated in southern Bohol. Municipalities with low exceedance liquefaction are portions of Ubay, Alizia, Pilar, Dagohoy, Carmen, Batuan and Bilar. The worst scenario is when there is high excess liquefaction which would affect the Central Business District (CBD) and urban barangays of coastal municipalities (Bohol PDPFP, 2016-2028).

There are agricultural areas that at risk to liquefaction along coastal municipalities as well and these are located in the municipalities of Ubay, Pres. C.P. Garcia, Bien-Unido and Panglao.

• Earthquake-Induced Landslide

Earthquake-Induced Landslides (EIL) are described by PHIVOLCS as the *down slope movement of rocks, solid, and other debris commonly triggered by strong shaking.* It causes erosion as well as burial and blockage of roads and rivers. Similar to rain-induced landslides (RIL), an earthquake-induced landslide could destroy houses and cause injury or death to residents living near sloped areas. It could likewise damage vegetative cover and croplands, as well as access roads to agritourism, commercial, residential, and other key built-up areas.

Map 14. Earthquake-Induced Landslide Hazard Map, Bohol Province



Source: PPDO Bohol

The municipalities of Lila, Dimiao, Valencia, Loboc (man-forest), Bilar (east-side), Garcia-Hernandez, Sierra Bullones, Duero, Jagna, Sevilla, Loay, and Candijay are observed to be with the highest susceptibility based on current data and experience.

The agricultural areas, except fishery areas, at risk to EIL are in Dimiao, Loboc, Valencia, Sierra Bullones, Garcia-Hernandez, Guindulman, Jagna, Pilar, Alicia and Carmen. In relation to this, the municipalities such as Dimiao,

Lila, and Loboc have agricultural land areas that are highly susceptible to EIL. Furthermore, the agricultural areas of Loon, Calape, Tubigon, Inabanga, Clarin, Buenavista, Valencia, Pilar, Bilar, Guindulman, Candijay, S. Bullones, Carmen are also at risk to EIL.

• Tsunami

Tsunami refers to the *series of waves caused commonly by an earthquake under the sea*. It causes flooding, coastal erosion, drowning of people, and damage to properties.

According to current data, all coastal municipalities are highly susceptible to tsunami. The population, agriculture, including fisheries at risk to Tsunami are located in 30 coastal LGUs. Inundation of rivers caused by pressure from tsunami may affect the municipalities of Inabanga, Pres Carlos P. Garcia, Candijay, Loay, Loon, Anda, Maribojoc, Cortes, Duero and Loboc, hence they are considered as priority LGUs.



Source: PPDO Bohol

Infrastructure ¹⁰

In 2022, Bohol's total road length is 6,152.19 kilometers. Of these roads, 12% are classified as national roads and 14% provincial roads. The city roads only account for 1% while municipal roads 5%. Barangay roads have the longest stretch of roads, accounting for 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 for 35%, and continue to increase in length as both national and local governments sustain their projects for road concreting. Asphalt roads, on the other hand, shared 3% of the total road length. Meanwhile, 18% of the province roads remain to be earth roads, which are mostly classified as barangay roads.

As to bridges, there are 8,419.64 linear meters of bridges within the road network in the province and 64% of this total length is composed of concrete. Steel bridges account for 27% while bailey bridges are 7%. There are still timber bridges in the province, which shared a total length of 2%.

Majority of the bridges in the province are under the jurisdiction of the national government, which account for 61%. The Provincial Government is maintaining 1,509.00 linear meters or 18% of these bridges. The rest of the bridges are managed and maintained by the city/ municipal and barangay local governments.







Source: Department of Public Works and Highways



Map 16. Road Network Map, Bohol Province

As to **seaport**, 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 two airports, namely, the Bohol-Panglao International Airport (BPIA) and the Ubay Airport which classified as a community airport with a runway of 1.2 km that serves as a feeder airport. Only the BPIA handles commercial flights and passenger traffic with direct flights to and from Manila and international flights. 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, the road network in Bohol consists of circumferential road along the coastline and interior that connects the interior municipalities. The Tagbilaran Eastern Road (TER) connects Tagbilaran to Ubay via Jagna while the Tagbilaran Nothern Road (TNR) completes the loop from Ubay to Tagbilaran via the northern town of Tubigon. However, the province experienced the number of registered vehicles had a decreasing trend in 2018-2023 but increased slightly in 2021 to 2022. Before the COVID-19 pandemic in 2018, the number of vehicles registered in Bohol reached 124,744, yet this has decreased to 108,093 in 2023. Moreover, the preference for motorcycles stayed on top because of its affordability and lower maintenance cost compared to four-wheeled vehicles.

Socio Economic and Demographic Profile

Population

Based on the latest 2020 Census on Population, Bohol's population reached 1.394 Million, showing a 1.06% average annual increase from the 2010 population count. Such annual growth rate is lower than the Central Visayas' growth rate of 1.74%. Bohol's population growth, however, is lower than that of the 1.67% national annual growth rate. With this growth, estimated population of the province in 2024 is pegged at 1.398 Million and will further increase to 1.402 Million in 2025.

Among the 48 localities, Tagbilaran City has the highest population with 104,976, followed by municipalities of Ubay, Talibon, Dauis, Carmen, Inabanga, Tubigon, Loon, Panglao and Jagna. Sikatuna is the least populated municipality with only 6,906 population.

The population of Bohol has been fluctuating from 0.97% average annual increase (2000-2010) down to 0.87% (2010-2015) and bounced back to 1.26% (2015-2020).

The municipality of Panglao has the highest growth rate in the Province (3.37%). Among the top 10 localities with high growth rates include Dauis, Corella, Trinidad, Sagbayan, Getafe, Baclayon, Cortes, and Tubigon. The municipality of Dimiao has remained to have a negative population growth rate of -0.18% (2010-2020).

Based on the 2020 Census, the population structure of Bohol shows bigger group of younger people (with 29.7% belonging to age



Population: 1.255 Million (2010) 1.313 Million (2015) 1.394 Million (2020) Income Class: 1st Class Province Land Area: 411,726 hectares (411.726 Km²) Population Growth Rate: 1.06% (2010-2020) No. of Household: 322,022 (2020) Ave. HH Size: 4.3 (2020) Pop. Density: 292 persons/km² (2020) **Administrative Units:** 1 City, 47 Municipalities 1,109 Barangays **3** Congressional Districts Coastline: 654 Km. of coastline Municipal Waters: 6,245 Km² Coastal Barangays: 304 Brgys. No. of Islets: 72 islets



Source: OpenSTAT, PSA

group under 15 years old). Female reproductive Age (Child-bearing age) comprised 49.6%. Males outnumbered females in the 0-59 years old. Females outlived the males in the older age groups. Those aging 60 and over comprised 10% of Bohol's Population. From 24.5 in 2010, the median age for Boholanos rose to 25.7 years old for both sexes. This means that half of the total population was below 25.7 years old. For the female population, the median age was 26.3, higher by 2.4 years against their male counterpart. Moreover, 50.9 percent of the total population were males and 49.1 were females. This translated to a sex ratio of 104 males for every 100 females. Among the municipalities, Buenavista had the highest sex ratio of 108 while Tagbilaran City had the lowest sex ratio of 98.

Bohol's population density is 292 persons per sq. km in 2020, which is higher compared to the 275 persons per sq. km in 2015. In 2010, the province's population density was only 263 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 Citv (2,876/km²), Dauis (1,211/km²), Bien Unido (974/km²), Panglao (834/km²), Cortes (671/km²), Baclayon (652/km²), Tubigon (585/km²), Talibon (507/km²), Maribojoc (449/km²), and Calape (439/km²). On the other hand, the least densely populated areas include Sevilla (97/km²), Dimiao



Source: OpenSTAT, PSA

(110/km²), Danao (124/km²), Antequera (126/km²), Sierra Bullones (131/km²), Bilar (143/km²), Balilihan (147/km²), San Isidro (165/km²), Trinidad (180/km²) and Sikatuna (181/km²).

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. Bohol's Poverty Incidence as well as its Subsistence Incidence¹⁰ among families has been steadily decreasing since 2015 despite the pandemic in 2020. From 21.7 percent in 2015, poverty incidence among families lowered to 15.5 percent in 2018, which rose to 19.1 percent in 2021 post-COVID pandemic and eventually lowered to 14.8 percent om 2023.¹¹ In the same period, the proportion of Boholanos in extreme poverty whose incomes are not sufficient to meet basic food needs registered at 4.0 percent in 2023.

Furthermore, the Annual Per Capita Poverty Threshold of the province had been decreased from Php 26,853 in 2021 to Php 15,175 in 2023. The Annual Per Capita Food Threshold of Php 18,743 in 2021 to Php 10,602 in 2023. In terms of income gap in 2023, the measured amount of income required by the poor in order to uplift from poverty was estimated at 25.4% based on PSA preliminary results.

¹¹ Families with income below the food threshold; subsistence incidence is often referred to as the proportion of Boholanos in extreme or subsistence poverty

Table 3. 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, 2015, 2018, 2021 and 2023

Region/	Annu	al Per Cap	ita Poverty	Threshold	Pov	Poverty Incidence among Families (%)				Magnitude of Poor Families			S
Province		(11	i Pesos)			Estimates (%)				Estimate ('000)			
	2015	2018	2021	2023	2015	2018	2021	2023	2015	201	18	2021	2023
PHILIPPINES	21,753	25,814	28,79	4 33,29	6 16.5	12.1	13.2	10.9	3,747	3,00	05	3,482	2,992
Region VII	21,914	25,968	3 32,42	3 34,55	3 23.6	12.2	22	12.3	394	18	1	354	207
Bohol	20,437	26,108	3 26,85	3 30,98	1 21.7	15.5	19.1	14.8	60	47	7	61	49
Cebu	21,740	25,914	33,65	7 35,60	5 17.9	11.3	22.8	11.7	179	13	4	293	157
Region/	Ann	ual Per Ca	pita Food 1	hreshold	Subsi	Subsistence Incidence among Families (%)				nitude of s	Subsister	ice Poor F	amilies
Province		(11	i Pesos)			Estima	ates (%)			Estimate ('000)			
	2015	2018	2021	2023	2015	2018	2021	2023	2015	201	18	2021	2023
PHILIPPINES	15,189	18,126	5 20,04	6 22,99	4 5.7	3.4	3.9	2.7	1,303.5	5 839.	.54 1	,032.63	741.73
Region VII	15,357	18,033	3 22,67	9 24,04	9 9.8	2.6	8.1	3.2	164.50	38.2	24	130.18	53.42
Bohol ^{b/}	14,249	18,245	5 18,74	3 21,63	6 7.2	2.9	6.2	4	20.14	8.9	0	19.94	13.33
Cebu	15,139	17,959	23,40	0 24,79	8 6.8	2.5	8.6	3	68.35	29.3	34	110.25	40.09
Design (Duou			Incon	ne Gap			Pover	ty Gap	Severity of Poverty			:y	
Region/Prov	ince	2015	2018	2021	2023	2015	2018	2021	2023 2015 2018		2018	2021	2023
PHILIPPI	NES												
Region	VII	27.9	19.2	25.8	20.53	6.6	2.34	5.69	2.52	2.6	0.72	2.15	0.81
Boh	ol	25.7	18.11	23.92	21.53	5.6	2.8	4.57	3.19	2.1	0.79	1.58	1.05
Ceb	u	26.3	19.58	26.19	20.21	4.7	2.22	5.97	2.36	1.8	0.7	2.29	0.75

Bohol's poverty incidence among families reduced by 39% in 2018, however in 2021 the poverty incidence gradually increased until 2023, this may be caused by COVID-19 pandemic and Typhoon Odette that brought devastating effect to the province. From a low percentage in 2018 (15.50%) to increased percentage in 2023 (23.10%). In terms of magnitude of poor families, a total of 76,850 families were considered poor in 2023, which was higher compared to year 2018.



Source: 2023 Full Year Poverty Statistics, (PSA)

Source: 2023 Full Year Poverty Statistics, (PSA)

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



Source: Philippine Statistical Authority (PSA)

Economy and Priority Industries

The economy of Bohol is largely based on agricultural activities that 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 farmer's 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.

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 ha (66%) are available and use for agriculture. Meanwhile, 149,598.74 hectares of this area is planted and harvested with major crops. Among the major crops in the area includes palay (47%), coconut (36%), corn (6%), fruits (4%), other crops (4%), root crops (2%) and vegetables (1%).



Source: OpenStat, Philippine Statistics Authority

Crops Production

A staple food for Rice. many Boholanos wherein producing locally ensures food security for the province. It is mainly produced by small farmers, with a total of 72,630 hectares area planted. The irrigated and rainfed rice area is approximately 41,738 and 30,892 hectares, respectively. The total palay production in 2024 was about 234,801.78 metric tons.

The province of Bohol remains to be rice sufficient with a sufficiency level of 90.34% and continued to hold its title as "Rice Basket "in Central Visayas. The volume of production and area planted with palay has been increasing from 2019 to 2024. This came as the rice harvest season in Bohol is mid-way and the Boholano farmers have registered high yield performance both in hybrid and inbred rice being planted in rainfed and irrigated areas in the province.



Source: OpenStat, Philippine Statistics Authority

At the regional setting, Central Visayas rice production is largely dependent on the Province of Bohol. In 2024, the province accounted 74% of the region's rice production, which is significantly higher compared to the production share of the other provinces.





Source: Department of Agriculture Region VII





Corn. A staple crop to many Boholanos next to rice. There are two varieties of corn produced in the province, white corn and yellow corn. The total area planted for corn was about 8,589 hectares, produced by local farmers. In 2024, area planted for white and yellow corn is approximately 6,905 and 1,684 ha., respectively. The total corn production in 2024 was about 11,340.75 metric tons.



Vegetables. There are two types of vegetables grown in the province, the leafy and fruit vegetables. The leafy vegetables include pechay, kangkong and green onions while the fruit vegetables are ampalaya, eggplant, okra, squash, string beans, tomato and ginger. Some lettuce, cabbage and chayote are commonly grown in the highland areas of Duero, Jagna, Sierra Bullones, Candijay and Guindulman. Eggplant has the most extensive area of 318 hectares and showed the highest volume of production of 1,626.84 metric tons in 2023.



Coconut. Coconut is a major commercial crop in Bohol. The towns with vast areas planted with coconuts are Balilihan, Antequera, Valencia, Garcia Hernandez, Ubay and Inabanga. As of 2023, in terms of agricultural land usage with an approximate area of 53,585.45 hectares, of which 4,028,713 bearing trees. Furthermore, there were 89,322 coconut farmers registered in the National Coconut Farmers Registry System (NCFRS).



Rootcrops. In 2023, Bohol's major rootcrops posted a production of 18,974.35 metric tons. The decline in production was brought by the damaging effect of Typhoon Odette. Cassava remains to be the dominant crop with a total production of 9,456.60 metric tons. Camote and ubi produced 3,677.13 metric tons and 3,546.77 metric tons, respectively. Gabi, on the other hand, posted 2,293.85 metric tons. As of 2023, a total of 3,151.68 hectares of land have been harvested with major rootcrops.



Fruit Crops. As of 2023, the total area planted was 6,398.49 hectares with banana having the largest area covering 3,148.77 hectares, followed by mango with 2,215.68 hectares. PSA report shows an overall production of fruits in the province with an output of 19,867.53 metric tons where banana is the dominant fruit in the province in terms of production volume at about 15,498.36 metric tons compared to pineapple with a total production of 792.28 metric tons.

Livestock and Poultry Production •

Bohol is self-sufficient in livestock and poultry such as swine, carabao, cattle, goat, chicken and duck. Bohol's livestock and poultry industry is a major contributor to the region's total production. In terms of livestock inventory, the livestock numbers have been gradually decreasing from year 2021 to 2024. Moreover, hog still remains to be the largest in number composing 53% of the entire livestock inventory of Bohol which accounted 257,038 heads in 2024, followed by goat (91,694 heads), carabao (73,919 heads), and cattle (66,150 heads). In addition, Bohol, being one of the top producers of hog, has remained to be free from African Swine Fever (ASF) and has tightened its borders from any possible entry of transboundary diseases including the Avian Influenza or bird flu.



Source: OpenStat, Philippine Statistics Authority

Carabao. As of 2024, carabao inventory reached to 68,001 heads, decreasing compared to previous years. The province plays a vital role in providing good quality carabaos for breeding, draft and meat for its neighboring provinces. In terms of production, Bohol had a total production at about 2,520.68 metric tons, as of 2024.



Cattle. The inventory of cattle in 2024 indicated 66,150 heads showing a downward trend from previous years. Based on the PSA data, Bohol ranks second to Cebu and accounted for 19.06% of the total 346,994 cattle in the region. Moreover, Bohol ranked third in terms of volume of production in the entire region at about 3,755.06 metric tons, as of 2024.



Goat. The production of goat in the province showed 589.52 metric tons, as of 2024. In terms of goat inventory, Bohol ranked third which had 91,694 heads, accounted 14.94% of the total 613,628 goat in the region, as of 2024.



Hog. Hog population of the province as of 2024 is recorded at 257,038 heads (PSA), where 165,604 heads on smallhold farming, 89,778 heads on commercial farming and 1,656 heads on semi-commercial farms. In region 7, Bohol ranks third contributing 27.45% of the regional total population of 936,452 heads as of 2024. The Province of Bohol still remained free from African Swine Fever (ASF) which helped sustained the production of hogs. In terms of production, Bohol showed 46,939.90 metric tons in 2024 which ranked third of the total 218,202.62 metric tons production of the region.

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

On the other hand, **poultry inventory** in the province showed irregular trends from 2020 to 2024. Bohol poultry inventory in 2024 accounted for more than 3 million birds that are predominantly composed of chicken.

Chicken. The chicken population in the province include broiler, layer and native or improved. As of 2024, Chicken remains as the top poultry commodity of Bohol with 3,227,974 heads, much lower than 2023 inventory that accounted 4,029,559 heads. Out of these inventories, 56% is attributed from native chicken production, followed by broiler with 56%, layer with 17% and gamefowl which accounted for 0.5%. In terms of production, Bohol produced 36,644.20 metric tons of chicken, as of 2024.



Source: OpenStat, Philippine Statistics Authority

• Fisheries Production

In terms of **fisheries production**, aquaculture still remains to be the highest contributor to the volume of fishery production in the province. In 2024, aquaculture posted 44.3% share in the total volume of fishery production where the 24.22% came from seaweed production and 20.09 percent contributed from brackishwater/freshwater production, followed by municipal fisheries accounting 41.45%, next was the commercial fisheries which accounted 14.24%.



Source: OpenStat, Philippine Statistics Authority

Comparing the production and consumption of major food commodities in the year 2023, the province of Bohol has surplus production for corn, carabeef, beef, pork, chevon, chicken and eggs. Food commodities where the province have recorded deficit in terms of production include rice, vegetables, fruits, rootcrops, fish and marine products.



Source: OpenStat, Philippine Statistics Authority

Tourism

Tourism is another industry, which is sustained by both the private sector and government. The tourism industry further boomed after the province was designated as Bohol Island UNESCO Global Geopark in 2023 - the only one in the Philippines and largest in Asia. In 2023, the tourist arrivals increased by 89 percent compared to 2022. Domestic visitors hold the majority share of the total arrivals accounted 68 percent in 2023. Meanwhile, foreign visitors shared 32.95 percent and OFW's with 0.05 percent in 2023.



Source: Department of Tourism Region 7) and Bohol Provincial Tourism Office

		Domestic		Foreign		OFW's		TOTAL	
	2019	854,853		720,364		6,687		1,581,904	
	2020	109,237		68,104		0		177,341	
	2021	178,654		1,127		0		179,781	
	2022	503,368		32,310		125		535,803	
	2023	686,875		325,499		480		1,012,854	

Figure 21. Visitor Arrivals, Bohol: 2019-2023

Table 4.	Тор	10 Foreigr	n Tourist	Travelers,
		Bohol: 2	023	

50101.2020		
	Korea	41.90%
*)	China	9.98%
*	Taiwan	7.82%
	USA	5.98%
	Germany	2.72%
	France	2.64%
	Japan	2.64%
58	Hongkong	2.02%
*	Canada	2.00%
	United Kingdom	1.62%
	Others	20.70%

In terms of foreign visitors in the province for 2023, Koreans dominated the tourism market, sharing 41.90%. It is followed by Chinese with 9.98% share, Taiwan (7.82%), USA (5.98%), Germany (2.72%), France and Japan (2.64%), Hongkong (2.02%), and United Kingdom (1.62%).

In terms of regional scale, as of 2023 Bohol accounted 18% of the total visitor arrivals in Central Visayas. Meanwhile, Cebu as the major gateway and hub in the region accounted a significant share of 74%.

Source: DOT 7 and BPTO
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 industry prospects. Improvement of infrastructure and support facilities in the province has also enticed larger investments through the years. In terms of accommodation facilities, the number of available rooms increased by 20% from year 2019 to 2023.



Source: Department of Tourism Region 7 (DOT 7) and Bohol Provincial Tourism Office (BPTO)

Bohol opened its doors to entice more investments into the province. Investment areas in the province are focused on eco-tourism, light industries and agro-industrial development. Recently, two major investors are opening up in Bohol, namely, the **SM Supermalls**, the country's largest retail mall (in the city) and the **JW Marriot Panglao Resort and Spa** (Marriot remains the world's largest hotel chain in terms of the number of rooms globally) located in Panglao - among many other resorts and hotels. Another promising industry in Bohol is the Information and Communications Technology, particularly for business process and knowledge process management outsourcing. In 2019, two major BPO companies (TaskUS and iBex.) had been established in the province which are currently employing around 5,000 with 85% being Boholanos. This sector has a potential in contributing to the economic growth of the province. Furthermore, with the improvement of information and communications technology highway, following the installation of fiber optic technology in Bohol by private telecommunication firms, the province may soon provide significant employment opportunities to its capable workforce for such related services.

Additionally, in terms of **trade**, **investments and livelihood**, an estimate of more than Php 1 billion worth of investments were poured in the province for new hotels, resorts and malls. Furthermore, the Bohol Economic Development and Promotion Office reported a total of Php 29.3 billiion new investments in 2023.

The **micro, small, and medium enterprises (MSMEs)** in the province has an important role in the province local economy, stimulating economic activities even in rural and far-flung areas. However, MSMEs sector had shown irregularities over the period, with yearly increases and decreases observed. Additionally, number of business name registered decreased from 9,344 in 2022 down to 7,763 registered business names in 2023. The employment generated from MSMEs

5,377

5,077

5,713

4,634

26,010

8,602

8,399

9,344

7,763

42,437

also decreased from 34,473 in 2022 to 6,640 in year 2023. Meanwhile, the investment generated was Php 1,163,731,619.85 in year 2023.

lable :	5. Milcro Small Medium Enterprises (MiSWES) Business Name Registration and Employment Generated: 2019-										
2013,	2013, Province of Bohol										
	BN Registrations Employment Gen					nerated	Bui	isness Own	Investments Generated		
Year	New	Renewal	Total	Male	Female	Total	Male	Female	Total	(in million pesos)	
2019	7,280	1,049	8,329	3,560	2,757	6,317	3,120	5,209	8,329	994,419,278.00	

22,981

33,649

34,473

6,640

104,060

3,225

3,322

3,631

3,129

16,427

Table 5. Micro Small Medium Enterprises (MSMEs) Business Name Registration and Employment Generated: 2019-
2013, Province of Bohol

11,336

26,781

27,001

3,379

71,254

6,273 Source: Department of Trade and Industry- Bohol

1,007

1,135

1,485

1,597

8,602

8,399

9,344

7,763

42,437

11,645

6,868

7,472

3,261

32,806

2020

2021

2022

2023

Total

7,595

7,264

7,859

6,166

36,164

Moreover, the operation of cooperatives in the province is also thriving to provide socio-economic benefits to its member. As of 2023, there are 701 Registered Cooperatives in Bohol. Of the total cooperatives registered, only 191 cooperatives are operating and compliant to CDA requirements, operating with a total asset of Php 6,196,761,233.58 and with a total membership reaching to 158,798.

The banking sector of the province had been growing with an increasing number of banks established in Bohol. As of 2022, there were 125 banks established in the province where 8 banks were added from the 117 banks in year 2021. In terms of total number of accounts, it also rose from 724,999 in 2018 to 857,454 in 2022. Additionally, total bank deposits grew from 50,934,448 in 2018 to 69,329,749 in 2022.



Source: Philippine Deposit Insurance Corp. (PDIC)



10,866,297,832.33

1,725,935,647.38

11,795,279,732.17

1,163,731,619.88

26,545,664,109.76



Source: Philippine Deposit Insurance Corp. (PDIC)

In terms of **Gross Domestic Product (GDP)**, the Province of Bohol posted a growth of 7.05% in 2022 estimated at Php 171.09 billion, higher than the 4.3% growth rate registered in the previous year. Bohol Province represents the third largest economy in the Central Visayas region following Cebu Province and Cebu City.



Source: Philippine Statistics Authority (PSA)

In 2022, all industries in the province grew except for Agriculture, forestry, and fishing which declined by 9.5%. In terms of share of the major industries to the economy of the province, wholesale and retail trade, and repair of motor vehicles and motorcycles had the largest share, accounting 33.1%, followed by, Agriculture, forestry and fishing with a share of 11.7%, then, closely followed by financial and insurance activities at 8.8%.



Source: Philippine Statistics Authority (PSA)

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.



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.

Recognizing the important role of planning in governance, the Provincial Governor, Vice Governor, members of the Sangguniang Panlalawigan and the members of the Management Executive Board (MEB) crafted a roadmap, which specify the priority strategies that will serve as its Agenda in next three years. The Strategic Governance Roadmap 2025 of the Provincial Government of Bohol (PGBh) aims to position Bohol as a "Smart-Resilient Province advancing Climate-Smart Agriculture and Sustainable Tourism." It still identifies the two economic drivers of agriculture and tourism as the primary industries that will bring the progress of its constituents and bring back the normalization of the economic and social activities that were greatly affected by the COVID-19 pandemic.

Strategic Governance Roadmap of the Provincial Government of Bohol (PGBh)

While supporting the existing Vision and Mission for the Province of Bohol, the Roadmap establishes to position Bohol as a Smart-Resilient Province advancing Climate-Smart Agriculture and Sustainable Tourism. It means that information and communication technology will be utilized to support the further progress of the two economic drivers of agriculture and tourism and the processes of governance for the welfare of the public. The roadmap, likewise, contains the Strategic Change Agenda and the Core Values that are expected from each employee of the PGBh.



Contained in the roadmap are nine (9) Strategic Change Agenda that are envisioned to provide the impetus for accelerating the necessary development of Bohol, which will benefit the majority of the Bol-anons.

• Strategic Change Agenda Mind Maps

The means to achieve this position is through the Strategic Change Agenda, which are divided into the 5 Core of Sustainable Environment, Climate-smart Agriculture, Sustainable Tourism, MSMEs/Entrepreneurship, Human Capital/Workforce and the 4 Support of Governance, Infrastructure and Utilities, Health and Social Services and Information and Communication Technology (ICT). Each of the Change Agendum is contextualized in a Mind Map that shows the Objective, Measures, and the Key Results Areas (KRAs).

Divided into five (5) Core and four (4) Support, each Agendum aims to transition governance with each respective objective:

- a) Develop a resilient and green Bohol through the implementation of sound environmental program for *Environmental Sustainability*;
- b) Transition from conventional agricultural practices to *Climate-smart Agriculture*;
- c) Innovate tourism management practices in the province for Sustainable Tourism;
- d) Foster a business-enabling environment for resilient and competitive MSMEs that will contribute to the provincial economy for *MSMEs/Entrepreneurship*;
- e) Expand workforce in agriculture and tourism sectors and align their skills to match the current and emerging industry demands for *Human Capital/Workforce*;
- f) Institute reforms and improvements to shift from compartmentalized to strategic local *Governance*;
- g) Build resilient Infrastructure and Utilities anticipating future demands;
- h) Make resilient communities by creating an inclusive *Health and Social Services* in the province; and
- i) Integrate information systems to digitalize government, agriculture, and tourism processes to streamlined services for the *Information and Communication Technology*.

• Deliverables for the Planning Period

A presentation of the deliverables for each year of the planning period is presented after each Mind Map. Each table contains the proposed programs, projects and activities (PPAs) that will support each Key Result Areas (KRA). The targets will be the measure upon which assessment will be made to know the status of its accomplishment.

• Core Values

The Roadmap also contains the Core Values of Competence, Professionalism and Integrity, which each officer or employee of the PGBh is expected to adhere and put at heart.

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 needs to be fully harnessed to enhance agricultural productivity and improve the incomes and welfare of farmers and fisherfolks.

Consistent with this drive and with consciousness that agriculture is 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 agriindustrialization. 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 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 effort of the province is guided by its vision for a Green Bohol, a Competitive and Sustainable Agro-industrial Province in the Visayas. The figure below presents the mind map of the agriculture sector with the overall goal for a Climate-Smart Agriculture aiming for a transition from Conventional Agriculture to Climate-Smart Agriculture through resilient agriculture production, agri-fishery modernization and agri-clustering.



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

			Priority Commodities							
Criteria		Weight		VEGETABLE	CASSAVA		TILAPIA-HITO -IF			
Citteria	vve	igin	Raw	Weighted	Raw	Weighted	Raw	Weighted		
			Score	Score	Score	Score	Score	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			6	1.80	6	1.80	3	0.90		
Total Weighted Score				4.68		5.94		3.12		
RANK				4th		5th		6th		

			Priority Commodities								
Critoria	Weight		S	WINE	MARICULTURE		CACAO		COFFEE		
Citteria			Raw	Weighted	Raw	Weighted	Raw	Weighted	Raw	Weighted	
			Score	Score	Score	Score	Score	Score	Score	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	
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: <u>CASSAVA¹¹</u>

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 29). 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.

¹¹ Cassava Value Chain Report, RPCO, 2017



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.



In Central Visayas major use 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 30.

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	UPL Ca-3 (Sultan 1)	40-50	20.9	33.5	Moderate				
high hydrocyanic	PSB Cv-10 (Mcol 1684)	41.5	21.1	33.5	High				
acid for industrial	UPL Ca-2 (Lakan 1)	35.45	25.0	36.4	Low				
uses such as: flour,	PSB Cv-11 (Lakan 2)	25.0	21.8	34.1	Low				
animal feeds and	PSB Cv-12 (Lakan 3)	24.1	21.5	33.9	Low				
ethanol production	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	UPL Ca-2 (Lakan 1)	35.45	25.0	36.4	Low				
hydrocyanic acid	PSB Cv-11(Lakan 2)	25.0	21.8	34.1	Low				
(HCN) for food	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 31 below present the global production trend and the production share of the top producing countries.

Table	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 31). However, the 4.89% average annual growth in cassava production is a good indication of the increasing supply to cater local demands.



Figure 31 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	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	889,6 <u>1</u> 9	1,072,478	1,062,865	1,167,9 <mark>48</mark>	755,874	-1.43%					
24	Philippines	217622	221235	217,225	217,146	216,775	-0.09%					
			· ·· /=+ 0)									

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 1	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%				

	Provincial Commodity Investment Plan (PCIP) for Cassava, Bohol 2024										
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)											
Pagians	Year										
Regions	2011	2012	2013	2014	2015	in %					
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 was 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 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.

Table 12. Production	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%						

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

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 is 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 has 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 te	n producing municipalities	in the Province of Bohol.
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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			

	Provincial Commodity	Investment Plan	(PCIP)) for Cassava,	Bohol	2024
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Municipality (MT)	Production* (Ha)	Physical Area*	Yield (MT/Ha)**	No. of Farmers*
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.



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 Corporation (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.

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.



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

Table 15. Summary of Opportunities	
Opportunities	Rank
INPUT SUPPLY	
Availability of high-yielding varieties	1 st
PRODUCTION	
Available technology	1 st
The use of organic fertilizer could lower production cost.	2 nd
There are existing producers of organic fertilizer and an abundance of supply of	2 nd
PROCESSING	
Value-adding products increase production value.	3 rd
Available technology for processing.	3 rd
TRADING	
High demand	1 st
New market outlets for expansion	2 nd
Presence of big feed mill plants in the region.	1 st
SUPPORT SERVICES	
DA has available technicians in each municipality and provides production and support	1 st

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	Poverty ncidenceArea (in has.)Production (in M. T.)Farmers/ 		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		





	Table 17. Investment Plan Summary					
	Drenered Interventions	Est	imated Co	st (P 000,	000)	Denk
	Proposed Interventions	Year 1	Year 2	Year 3	Total	капк
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)			Pank	
	Year 1	Year 2	Year 3	Total	Ralik
 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		I		I	
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					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					13
trainings and technical services	0.3	0.3	0.4	1.00	-
16 Promote Bulk procurement of inputs	0.5	0.5	0.4	1.00	14
- Bulk procurement of inputs					
17 Continuous research on alternative source of inputs					36
2 recording to send ust d	1.00			1.00	30
- 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

Droposed Interventions	Est	imated Co	st (P 000,	000)	Bank
Proposed Interventions	Year 1	Year 2	Year 3	Total	капк
 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					16
specific purpose of level pays of labor rate					
- 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					18
- 14 trainings (for feeds, starch & food industry)	1.00	0.4		14	
	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 warehouses	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					22
warehouse facilities with fumigation rooms to POs					
appropriate for storing cassava fresh tubers, dried					
chips and granules	F 00			F 00	
- 2 established/ upgraded warehouses and	5.00			5.00	
27. Operationalization of warehouse					23
- 2 Operations guidelines approved & adopted					
28. Provision of transportation support to POs for its					24
operation					
 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	

Draw and later mentions	Est	imated Co	st (P 000,	000)	Bank
Proposed Interventions	Year 1	Year 2	Year 3	Total	капк
- 3 market matching conducted	0.3	0.3	0.3	0.9	
SEGMENT: SUPPORT SERVICES					
32. Allocate funds for the hiring of additional technical					28
extension workers/technician					
 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					31
growers and traders					
 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					34
cassava					
- A cash incentive is sustained	0.25	0.25	0.25	0.75	
SEGMENT: INTERFIRM RELATIONSHIP	•		•		
37. Organization & strengthening of cassava farmers					32
associations & cooperatives					
- 10 associations/cooperatives of cassava farmers					
duly registered/accredited					
- Technical and organizational support provided					
38. Facilitate the federation of registered cooperative for					33
cassava farmers				-	-
 1 Registered the Federation of Cassava farmers 					
GRAND TOTAL	160.87	21.67	21.87	7,964.19	

PCIP Matrix for Bohol Cassava

Key Gap/ Constraint in	Brief Description of Potential	Target Result/	Target Access to be covered			Major Bisks Risk Adapt	Risk Adaptation	Proposed Lead and	Estimated Project Cost (000,000)		roject)00)	Proposed		
VC Dept.	Intervention	Outcome	Y1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
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	High yielding varieties are susceptible to Diseases (Witches Broom or CPD) Ubay: - Drought - Storm surge and salt water intrusion	Enrolment to PCIC Crop Insurance For Drought, Pest and Diseases - Production Cassava Varieties Resistant to drought and Pest and Diseases (lakan 1) Mapping of storm surge and salt water intrusion zones to establish production areas away from possible storm surges or salt water intrusion.	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	Erosion: Dagohoy, Carmen, Mabini, Sagbayan, S- Bullones, Mabini, Danao Landslide (Rain Induced): Sagbayan, Sierra Bullones Tropical Cyclone: Ubay, Trinidad, San	Sloping agricultural land technology (SALT) and contour farming techniques to mitigate erosion and landslide risks. Construct small farm reservoirs to harness and maximize water from tropical cyclones, mitigate	MLGU/PO DA BPI PLGU (OPA)	10	5	5	PLGU MLGU DA-PRDP		

Key Gap/ Brief Description of Constraint in Potential		Target Result/	Target Access to be covered			Major Picks	Risk Adaptation	Proposed Lead and	Estimated Project Cost (000,000)		roject)00)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3	- iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	Production of tissue	- 1 Government	BES, Gabi,			Miguel, Mabini, Danao Flood: Mabini, Pilar Drought: Carmen, Mabini, Pilar, San Miguel, Ubay Storm Surge: Mabini, Ubay Ubay:	effects of flood and address the need for water during droughts. Mangrove Reforestation using appropriate species to act as water breaks during storm surges. Enrolment PCIC	PLGU (OPA)	5			PLGU		
	culture for cassava planting materials in coordination with government facilities	Facility for cassava tissue culture operational	Ubay			-Drought -storm surge -salt water intrusion	Crop Insurance For Drought, Pest and Diseases: Production Cassava Varieties Resistant to drought and Pest and Diseases (lakan 1) Mapping of storm surge and salt water intrusion zones to establish production areas away from possible storm surges or salt water intrusion.	DA				DA-PRDP		
	Provision of funds allocation	10 multiplication farms/nurseries allocated funds for operation	Ubay Dagohoy Carmen	Sagbayan Trinidad Pilar	San Miguel S- Bullones Mabini Danao	Erosion: Dagohoy, Carmen, Mabini, Sagbayan, S- Bullones, Mabini, Danao	Sloping agricultural land technology (SALT) and contour farming techniques to mitigate erosion	DA-Corn PLGU (OPA) MLGU ATI PO BPI	0.9	0.9	1.2	PLGU MLGU ATI DA-PRDP		

Key Gap/	Brief Description of	Target Result/	Target Access to be covered			Najor Bisks Ris	Risk Adaptation	Proposed Lead and	Estimate Cost (0		roject)00)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3	iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
						Landslide (Rain Induced): Sagbayan, Sierra Bullones Tropical Cyclone: Ubay, Trinidad, San Miguel, Mabini, Danao Flood: Mabini, Pilar Drought: Carmen, Mabini, Pilar, San Miguel, Ubay Storm Surge: Mabini, Ubay	and landslide risks. Construct small farm reservoirs to harness and maximize water from tropical cyclones, mitigate effects of flood and address the need for water during droughts. Mangrove Reforestation using appropriate species to act as water breaks during storm surges.							
	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		Include DRRM related topics in the training course to increase awareness of farmers in mitigating risks during production season.	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-	Conduct IEC activities on the use and source of recommended cassava varieties	Daily Radio plugging conducted (P10,000/month)	Province wi	de	<u>.</u>			PLGU (OPA) MLGU DA-Corn	0.12	0.12	0.12	PLGU MLGU DA-Corn DA-PRDP		

Key Gap/ Constraint in	Brief Description of Potential	Target Result/	Target Access to be covered			Major Risks	Risk Adaptation	Proposed Lead and	Estimated Proje Cost (000,000)		roject 000) Proposed sources			
VC Dept.	Intervention	Outcome	¥1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
yielding varieties														
		10,000 leaflets of IEC materials produced and distributed (P50.00/copy)	Province wi	de				PLGU (OPA) MLGU DA-Corn	0.5	0.5		PLGU MLGU DA-Corn DA-PRDP		
Lack of government assistance in terms of fertilization and pest control	Subsidized fertilizer cost	20,000 bags subsidized	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao					PLGU (OPA) MLGU DA-Corn	10	10	10	PLGU MLGU DA-Corn DA-PRDP		
	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: <u>P</u>	RODUCTION													
Manual operations and lack of farm equipment and machineries	Provision of farm equipment and machineries	Farm Equipment & Machineries:	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San	*	*	Erosion: Dagohoy, Carmen, Mabini, Sagbayan, S- Bullones, Mabini, Danao	Enrolment to PCIC Crop Insurance Sloping agricultural land technology (SALT) and contour	PLGU (OPA) MLGU DA-Corn				PLGU MLGU DA-PRDP PhilMECH		
		12 units of 4WD tractors and implements	Miguel S-Bullones Mabini Danao			Landslide (Rain Induced): Sagbayan, Sierra Bullones	farming techniques to mitigate erosion and landslide risks.		24				Distribution be based on cultivated areas	
		12 units of cassava ridger				Tropical Cyclone: Ubay, Trinidad, San	Construct small farm reservoirs to harness and maximize water		3.6				Provision of ridger to all delivered tractors	

Key Gap/ Brief Description of Constraint in Potential		Target Result/	Target A	Access to be	covered	- Maior Risks	Risk Adaptation	Proposed Lead and	Proposed Estimated Pro Lead and Cost (000,00		timated Project Cost (000,000)			Dert	
VC Dept.	Intervention	Outcome	Y1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank	
		12 units of cassava digger				Miguel, Mabini, Danao Flood: Mabini, Pilar	from tropical cyclones, mitigate effects of flood and address the need for water		3.6				Distribution be based on cultivated areas		
		12 units of cassava planter				Drought: Carmen, Mabini, Pilar, San Miguel,	dui Drought: Carmen, Ma Mabini, Pilar, Re San Miguel, usi	during droughts.Drought:Carmen,Mabini, Pilar,San Miguel,using appropriate		6				Distribution be based on cultivated areas	
		12 units of cassava hauler				Ubay Storm Surge: Mabini, Ubay	species to act as water breaks during storm surges.		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	*	*		Incorporate DRRM topics on GAP Establishment program to increase risk awareness in the agri-fishery sector	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	Erosion: Dagohoy, Carmen, Mabini, Sagbayan, Sierra Bullones, Mabini, Danao Landslide (Rain Induced): Sagbayan, Sierra Bullones	Enrolment to PCIC Crop Insurance. Sloping agricultural land technology (SALT) and contour farming techniques to mitigate erosion and landslide risks as well as planting trees as wind breaks.	PLGU (OPA) MLGU ATI BPI DA-Corn	0.9	0.9	1.2	DA-Corn BPI PLGU MLGU ATI			

Key Gap/	Brief Description of	Target Result/	Target Access to be covered			Major Picke	Risk Adaptation	Proposed Lead and	Estimated P Cost (000,0		roject)00)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3	- Wajor Kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
						Tropical Cyclone: Ubay, Trinidad, San Miguel, Mabini, Danao Flood: Mabini, Pilar Drought: Carmen, Mabini, Pilar, San Miguel, Ubay Storm Surge: Mabini, Ubay	Construct small farm reservoirs to harness and maximize water from tropical cyclones, mitigate effects of flood and address the need for water during droughts. Mangrove Reforestation using appropriate species to act as water breaks during storm surges.							
		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 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	*	*		Incorporate DRRM topics on training programs to increase risk awareness in the	PLGU (OPA) MLGU DA-PRDP DA-Corn BPI ATI	1			DA BPI PLGU MLGU BPI ATI		

Key Gap/ Constraint in	Brief Description of Potential	Target Result/	Target Access to be covered			Major Picks	Risk Adaptation	Proposed Lead and	Estimated P Cost (000,		roject)00)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
			San Miguel S-Bullones Mabini Danao				agri-fishery sector.							
	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		
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 addressed thru farm mechanizat ion	
	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	*	*	Ubay: Drought, Storm surge, Salt water intrusion	Enrolment to PCIC Crop Insurance Introduce drought as well as pest and diseases resistant varieties in established	PLGU	5			PLGU DA-PRDP		
Key Gap/	Brief Description of	Target Result/	Target A	ccess to be	covered	Maior Diala	Risk Adaptation	Proposed Lead and	Estim Cos	ated Pi t (000,0	oject 100)	Proposed		
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VC Dept.	Intervention	Outcome	Y1	Y2	Y3	- iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	accreditation						facilities.							
	requirements						Manning of storm							
							surge and salt							
							water intrusion							
							zones to establish							
							both production							
							areas and facilities							
							away from							
							possible storm							
							surges or salt							
							water intrusion.							
	Provision of funds	10 PO managed	Ubay			Erosion:	Enrolment to PCIC	PLGU	10			PLGU		
	support for	organic	Dagohoy			Dagohoy,	Crop Insurance.	MLGU				MLGU		
	operationalization	production	Carmen			Carmen,		DA-Corn				DA-PRDP		
	of organic	facilities	Sagbayan			Mabini,	Sloping	PO				DA-Corn		
	production facilities	operational	Trinidad			Sagbayan, S-	agricultural land					ATI		
			Pilar			Bullones,	technology (SALT)							
			San			Mabini, Danao	and contour							
			Miguel				farming							
			S-Bullones			Landslide (Rain	techniques to							
			Iviabini			Induced):	mitigate erosion							
			Danao			Saguayan,	and landslide risks							
						Sierra Bullones	troos as wind							
						Tronical	hreaks							
						Cyclone: Ubay	breaks.							
						Trinidad San	Construct small							
						Miguel, Mabini.	farm reservoirs to							
						Danao	harness and							
							maximize water							
						Flood: Mabini,	from tropical							
						Pilar	cyclones, mitigate							
							effects of flood							
						Drought:	and address the							
						Carmen,	need for water							
						Mabini, Pilar,	during droughts.							
						San Miguel,								
						Ubay	Mangrove							
							Reforestation							
						Storm Surge:	using appropriate							
						Mabini, Ubay	species to act as							

Key Gap/	Brief Description of	Target Result/	Target A	Access to be o	covered	Major Risks	Risk Adaptation	Proposed Lead and	Estim Cos	ated Pi t (000,0	roject 100)	Proposed		
VC Dept.	Intervention	Outcome	Y1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
							water breaks during storm surges.							
	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 San Miguel S-Bullones Mabini Danao					PLGU (OPA) MLGU DA-Corn PO				PLGU MLGU DA-Corn PO	Not identified in the VCA	
Segment: P	ROCESSING													
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	10 POs operational provided with the following Equipment :	Ubay Dagohoy Carmen Sagbayan			Erosion - Dagohoy, Carmen, Mabini,	Enrolment to PCIC Crop Insurance.	PLGU (OPA) MLGU DA-PRDP				PLGU MLGU DA-PRDP		

Key Gap/	Brief Description of	Target Result/	Target A	ccess to be o	covered	Maior Diala	Risk Adaptation	Proposed Lead and	Estim Cos	nated P t (000,0	roject)00)	Proposed		
VC Dept.	Intervention	Outcome	Y1	Y2	Y3	iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	provision of equipment		Trinidad Pilar			Sagbayan, S- Bullones,	agricultural land technology (SALT)	PhilMECH				PhilMECH		
		10 units chipping machine	San Miguel			Mabini, Danao	and contour farming		1.5					
		10 granulating machines	S-Bullones Mabini			Landslide (Rain Induced) -	techniques to mitigate erosion		2.5					
		10 drying facilities/ equipment	Danao			Sagbayan, Sierra Bullones	and landslide risks as well as planting trees as wind		3					
						Tropical Cyclone - Ubay, Trinidad, San	Construct small							
						Danao	harness and maximize water							
						Pilar Pilar	cyclones, mitigate effects of flood							
						Drought - Carmen, Mabini, Pilar.	and address the need for water during droughts.							
						San Miguel, Ubay	Mangrove							
						Storm Surge- Mabini, Ubay	using appropriate species to act as water breaks during storm							
Inadequate storage facility	Establishment of cassava warehouse in strategic areas	10 cassava warehouses	Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao			Erosion: Dagohoy, Carmen, Mabini, Sagbayan, S- Bullones, Mabini, Danao Landslide (Rain Induced): Sagbayan, Sierra Bullones	surges. Enrolment to PCIC Crop Insurance. Sloping agricultural land technology (SALT) and contour farming techniques to mitigate erosion and landslide risks as well as planting	PLGU (OPA) MLGU DA-PRDP DA-Corn PEO	15			PLGU MLGU DA-PRDP DA-Corn PEO		

Key Gap/	Brief Description of	Target Result/	Target A	Access to be	covered	Major Disks	Risk Adaptation	Proposed Lead and	Estim Cos	ated P t (000,0	roject 000)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3	iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	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			Cyclone: Ubay, Trinidad, San Miguel, Mabini, Danao Flood: Mabini, Pilar Drought: Carmen, Mabini, Pilar, San Miguel, Ubay Storm Surge- Mabini, Ubay	breaks. Construct small farm reservoirs to harness and maximize water from tropical cyclones, mitigate effects of flood and address the need for water during droughts. Mangrove Reforestation using appropriate species to act as water breaks during storm surges.	PLGU (OPA) MLGU DA-Corn				PLGU MLGU DA-Corn		
Segment: T	RADING													
Inadequate storage and transport facilities	Establishment /Upgrading and operationalization of warehouse facilities with fumigation rooms to POs appropriate for storing cassaya	2 established/ upgraded warehouses and operational managed by POs	Ubay San Miguel			Tropical Cyclone- San Miguel, Ubay Drought- Ubay, San Miguel Storm Surge- Ubay Salt Water	Construct small farm reservoirs and other rain collection systems to harness and maximize water from tropical cyclones, mitigate	PO PLGU (OPA) MLGU DA-Corn PEO	5			PLGU MLGU DA-PRDP DA-Corn PEO		

Key Gap/ Brief Description Constraint in Potential		Target Result/	Target A	Access to be o	covered	Major Picke	Risk Adaptation	Proposed Lead and	Estim Cos	nated Pr t (000,0	roject 000)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3	- iviajor kisks	Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	fresh tubers, dried chips and granules					Intrusion - Ubay (Moderate)	effects of flood and address the need for water during droughts. Mangrove Reforestation using appropriate species to act as water breaks during storm surges.							
	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	*	*	Erosion: Dagohoy, Carmen, Mabini, Sagbayan, S- Bullones, Mabini, Danao Landslide (Rain Induced): Sagbayan, Sierra Bullones Tropical Cyclone - Ubay,	Slope Stabilization Improve Drainage System Installation of Seawalls and Barriers Resilient Road Materials Conduct of Risk Assessment Maintenance and monitoring Surface Protection (Paving and Surfacing;	PLGU (OPA) MLGU DA-PRDP PEO		7,7	759.78	PLGU MLGU DA-PRDP PEO	Not identified in the VCA	

Key Gap/ Constraint in	Brief Description of	Target Result/	Target A	Access to be (covered	Major Picks	Risk Adaptation	Proposed Lead and	Estim Cos	nated Pi st (000,0	roject)00)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
						Trinidad, San Miguel, Mabini, Danao Flood: Mabini, Pilar Drought: Carmen, Mabini, Pilar, San Miguel, Ubay Storm Surge: Mabini, Ubay	vegetative cover) Reforestation Use of bioengineering for slope stability Sediment control Elevation & Structural Design (Bridges & causeways; Reinforced structures; elevated roads) Environmental Measures such as natural Buffers							
Low buying price	Product development/ value adding of cassava		Ubay Dagohoy Carmen Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao					PLGU (OPA) MLGU DA-Corn ATI DTI	1			PLGU MLGU DA-Corn ATI DTI		
	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		

Key Gap/ Constraint in	Brief Description of	Target Result/	Target A	Access to be o	covered	Major Picks	Risk Adaptation	Proposed Lead and	Estin Cos	nated Pi t (000,0	oject 100)	Proposed		
VC Dept.	Intervention	Outcome	Y1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
		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: <u>SI</u>	JPPORT 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	
	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 vehicles provided (Motorcylce)	Ubay Dagohoy Carmen					PLGU MLGU DA-Corn	0.6			PLGU MLGU DA-Corn		

Key Gap/	Brief Description of	Target Result/	Target A	Access to be o	covered	Major Bisks	Risk Adaptation	Proposed Lead and	Estim Cos	nated Pi st (000,0	roject 100)	Proposed		
VC Dept.	Intervention	Outcome	¥1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
			Sagbayan Trinidad Pilar San Miguel S-Bullones Mabini Danao									DA-PRDP		
	Database management and profiling of cassava growers and traders	Registry and profile of cassava growers, processors and traders established	Provincewic	le				PLGU thru OPA MLGU DA-Corn				PLGU MLGU 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: IN	gment: INTERFIRM RELATIONSHIP													
Unorganized farmers	Organization & strengthening of cassava farmers	10 associations/ cooperatives of cassava farmers duly	Ubay Dagohoy Carmen Sagbayan	*	*			PLGU MLGU DA-Corn				PLGU MLGU DA-Corn		

Key Gap/	Brief Description of	Target Result/	Target A	ccess to be	covered Major Risks	Risk Adaptation	Proposed Lead and	Estim Cos	ated Pi t (000,0	roject)00)	Proposed			
VC Dept.	Intervention	Outcome	Y1	Y2	Y3		Measures	Other Players	Y1	Y2	Y3	of Funds	Remarks	Rank
	associations &	registered/accredi	Trinidad											
	cooperatives	ted	Pilar											
			San											
			Miguel											
			S-Bullones											
			Mabini											
			Danao											
		Technical and	Ubay					PLGU						
		organizational	Dagohoy					MLGU				PLGU		
		support provided	Carmen					DA-Corn				MLGU		
			Sagbayan									DA-Corn		
			Trinidad											
			Pilar											
			San											
			Miguel											
			S-Bullones											
			Mabini											
	E 110 1 11		Danao					DI CILII						
	Facilitate the	1 Kegistered	Province with	be				PLGU thru						
	rederation of	Federation of												
	registered	Cassava Farmers						IVILGU						
	cooperative for							Cooperatives						
1	cassava farmers	1	1					DA-Corn	1		1			

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 the PPMIU, following a structured hierarchy to ensure efficient implementation of the program. Under the leadership of the Governor and the Provincial Administrator, the PPMIU Coordinator oversees key components: I-PLAN, I-BUILD, I-REAP, and I-SUPPORT, each with specialized sub-units catering to planning, infrastructure, enterprise development, and administrative support. Collaboration with national coordinating agencies and PRDP offices ensures alignment with broader development goals. The inclusion of monitoring and evaluation, social and environmental safeguards, and advocacy units highlights the program's commitment to sustainability, transparency, and inclusive growth. 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



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.

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I hereby certify to the correctness of the foregoing Resolution.

Head, PDC Secretariat

APPROVED: EDGARDO M. CHATTO Governor Chairman, PDC-Bohol

G. O. DTIS No.

PDC ExeCom Res. No. No. 57-2024 Endorsing the Updated Provincial Commodity Investment Plan with Climate Change Adaptation Programs and Projects



Republic of the Philippines PROVINCE OF BOHOL City of Tagbilaran



PROVINCIAL DEVELOPMENT COUNCIL

EXCERPT FROM THE MINUTES OF THE MEETING OF THE PROVINCIAL DEVELOPMENT COUNCIL EXECUTIVE COMMITTEE (EXECOM) HELD ON JULY 19, 2024 AT THE CAMBANGAY CONFERENCE ROOM, PROVINCIAL PLANNING AND DEVELOPMENT OFFICE, PROVINCIAL CAPITOL, LINO CHATTO DRIVE, COGON DISTRICT, TAGBILARAN CITY, BOHOL, PHILIPPINES

In Attendance:

Acting Gov. Tita V. BajaChairman, Presiding Officer and Majority of the Members of the PDC Executive Committee

PDC EXECOM RESOLUTION NO. 57-2024

A RESOLUTION FAVORABLY ENDORSING THE UPDATED PROVINCIAL COMMODITY INVESTMENT PLAN (PCIP) WITH CLIMATE CHANGE ADAPTATION PROGRAMS AND PROJECTS (PAPS) FOR THE DEPARTMENT OF AGRICULTURE - PHILIPPINE RURAL DEVELOPMENT PROJECT (DA PRDP) SCALE-UP FUNDING SUPPORT

WHEREAS, the Department of Agriculture – Philippine Rural Development Project Scale-Up (DA PRDP Scale-Up) is a World Bank-supported project designed to address gaps in value chains, climate resilience, and a more modernized agri-fishery sector;

WHEREAS, the Provincial Commodity Investment Plan (PCIP) is a 3-year rolling consensus plan reflecting agreements between DA and PLGUs with strong participation of the various stakeholders which rationalizes the upgrading strategies and interventions within the various segments of the value chain of commodities prioritized by the province including emergent commodities, and will contribute to the goals of the agriculture and fishery sector;

WHEREAS, the interim approach in updating the PCIP for PRDP Scale-Up implementation focuses on the integration of Climate Risk Vulnerability, particularly the incorporation of Major Climate Risks and Risk Adaptation Measures in the existing PCIP Matrices for the identified priority commodities of Bohol;

WHEREAS, after review and deliberation, the Updated Provincial Commodity Investment Plan (PCIP) with Climate Change Adaptation Programs and Projects (PAPs), has been found by this Body to be aligned with Bohol's strategic change agenda for a climate-smart agriculture and is supportive to the attainment of Bohol's development goals and objectives towards agricultural productivity through improvement of climate change resilient agricultural infrastructure, and is consistent with the Comprehensive Land Use Plans (CLUPs) of all concerned municipalities, and on top of all this, is consistent as well with the Provincial Development and Physical Framework Plan (PDPFP) of the Provincial Government of Bohol; and therefore, worthy of support and endorsement for Department of Agriculture - Philippine Rural Development Project (DA-PRDP) Scale-Up;

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

to favorably endorse the Updated Provincial Commodity Investment Plan (PCIP) with Climate Change Adaptation Programs and Projects (PAPs) for the Department of Agriculture -Philippine Rural Development Project (DA-PRDP) Scale-Up funding support.

RESOLVED FURTHER, to furnish a copy of the same Resolution to the Department of Agriculture Regional Office-7, for appropriate action.

UNANIMOUSLY ADOPTED.

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I hereby certify to the correctness of the foregoing Resolution.

MARIA IMELDA R. BORROMEO OIC - PPDO Bohol Head, PDC Secretariat

APPROVED:

TITA V. BAJA Acting-Governor Chairman, PDC-Bohol

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ANNEXES

	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
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

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

		Longth	Length for	
	Cassava Top Towns	(Km.)	Improvement	Needed Amount
		()	(Km.)	
	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
	PobBugsok 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 B. List of Cassava Industry Players, Bohol Province

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

List of Cassava Growers

Name	Address
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

Annex C. Summary of Risk Profile of Municipalities, Bohol Province

	Indicators								Adaptive Capacity							
	Over-All Hazards	Tropical Cyclone	Flood	Erosion	Land Slide	Drought	Sea Level Rise	Storm Surge	Salt Water Intrusion	Econo Mic *	Natural *	Social *	Human *	Instituti- Onal *	Physical *	Anticipa- Tory Capitals *
Albuquerque	Low	Very Low	Low	Very High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Moderate	Very Low	Low	Moderate	Low
Alicia	High	High	Low	High	Low	Low	Very Low	Very Low	Very Low	Very Low	Low	Moderate	Low	High	Very Low	High
Anda	Moderate	High	Very Low	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Low	Very Low	Low	Moderate	Moderate
Antiquera	Low	Very Low	Very Low	High	Moderate	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very High	Very Low	Moderate	High	Moderate
Baclayon	Very Low	Very Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very High	Low	Moderate	Very Low	Very Low
Balilihan	Low	Very Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very High	Very Low	Moderate	Very High	Moderate
Batuan	Low	Very Low	Very Low	Moderate	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Low	Moderate	Very Low	Moderate
Bilar	Low	Very Low	Very Low	High	Very High	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low	Very Low	Moderate	Low	High
Buen Unido	Very High	Very High	High	Very Low	Very Low	Ver High	Very Low	Moderate	High	Low	High	Moderate	Very Low	High	Moderate	High
Buenavista	Very High	Very High	Low	Very High	Low	High	Low	Low	Very Low	Very Low	Low	Moderate	Very Low	Moderate	Very Low	Moderate
Calape	Moderate	Very Low	Moderate	Moderate	Moderate	Very Low	Moderate	Moderate	Very Low	Very Low	Moderate	Moderate	Low	High	Low	High
Candijay	Very High	High	Very High	Moderate	Low	Very Low	Moderate	Moderate	Very Low	Very Low	Very High	Low	Low	Low	Moderate	High
Carmen	Low	Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Moderate	Low	Moderate	Low	Moderate
Catigbian	Very Low	Very Low	Very Low	Moderate	Moderate	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very High	Low	Moderate	Moderate	Moderate
Clarin	Very Low	Low	Very Low	Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very High	Low	Very Low
Corella	Very Low	Very Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	High	Low	Moderate	Very High	High
Cortes	Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low	Very Low	Moderate	Low	High
CP Garcia	Very High	Very High	Very High	Low	Very Low	Very High	Very High	Moderate	Very Low	Low	Moderate	High	Low	Moderate	High	Moderate
Dagohoy	High	Moderate	Moderate	High	Low	Low	Very Low	Very Low	Very Low	Very Low	High	High	Very Low	High	Very High	High
Danao	High	High	Low	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Low	High	Very Low	High	Low	High
Dauis	Very Low	Very Low	Very Low	Very High	Very Low	Very Low	Very Low	Very Low	Very High	Low	Low	Low	Low	High	High	Moderate
Dimao	Low	Very Low	Very Low	Very High	Moderae	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Low	Very Low	Low	Low	Moderate
Duero	Low	Low	Very Low	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	High	Moderate	Low	Moderate	Very High	Low
Garcia Hernandez	Low	Very Low	Very Low	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Very High	Low	High	Moderate	Loe
Getafe	Very High	Very High	Very Low	Moderate	Very Low	High	High	High	Very Low	Very Low	Moderate	Very Low	Very Low	Very Low	Moderate	Moderate
Guindulman	Moderate	Moderate	Low	High	High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Low	High	High	Moderate

	Indicators									Adaptive Capacity						
	Over-All Hazards	Tropical Cyclone	Flood	Erosion	Land Slide	Drought	Sea Level Rise	Storm Surge	Salt Water Intrusion	Econo Mic *	Natural *	Social *	Human *	Instituti- Onal *	Physical *	Anticipa- Tory Capitals *
Inabanga	High	Moderate	Very High	Low	Very Low	Very Low	Moderate	Moderate	Very Low	Low	Very High	Moderate	Low	High	Very Low	High
Jagna	Low	Very Low	Very Low	Very High	High	Very Low	Very Low	Very Low	Very Low	Low	Low	High	Very Low	Moderate	High	Moderate
Lila	Low	Very Low	Low	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Very High	Very Low	Very High	Very High	High
Loay	Moderate	Very Low	Very High	Moderate	Moderate	Very High	Very Low	Very Low	Very Low	Very Low	Moderate	Very High	Very Low	High	High	Moderate
Loboc	Moderate	Very Low	Moderate	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Moderate	Low	Moderate	High	High
Loon	Low	Very Low	Low	Moderate	Moderate	Very Low	Very Low	Very Low	Very Low	Low	Low	Very High	Low	High	Moderate	High
Mabini	High	Very High	Moderate	High	Low	Very Low	Low	Low	Very Low	Very Low	Low	High	Low	Moderate	High	High
Maribojoc	Low	Very Low	Low	Moderate	Moderate	Very Low	Very Low	Very Low	Very Low	Low	Very High	Moderate	Low	High	High	High
Panglao	Very Low	Very Low	Very Low	Low	Very Low	Very Low	Very Low	Very Low	Very High	Low	Low	Low	Low	High	Moderate	High
Pilar	Low	Moderate	Very Low	Moderate	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	High	Very Low	Low	Moderate	High
Sagbayan	Low	Low	Very Low	High	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Very Low	Low	Moderate	Moderate
San Isidro	Low	Very Low	Very Low	Very High	Very High	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Vey Low	Moderate	Low	High
San Miguel	Moderate	Very High	Moderate	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	High	Moderate	Very Low	Moderate	High	High
Sevilla	Low	Very Low	Low	High	Moderate	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Very High	Low	Moderate	Moderate	Moderate
Sierra Bullones	Low	Very Low	Very Low	High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Moderate	Very Low	Moderate	Moderate	Low
Sikatuna	Low	Very Low	Very Low	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Moderate	Low	High	High	High
Tagbilaran	Very Low	Very Low	Very Low	Low	Very Low	Very Low	Very Low	Very Low	Very Low	Very High	Moderate	Low	Very High	Very High	Low	High
Talibon	Very High	Very High	Low	Moderate	Very Low	Very Low	Moderate	High	Moderate	Low	High	High	Low	High	Low	Moderate
Trinindad	Very High	Very High	Very High	Moderate	Very Low	Very Low	Very Low	Very Low	Very High	Very Low	Very Low	Very Low	Low	Moderate	Low	Moderate
Tubigon	Low	Very Low	Very Low	Moderate	Low	Very Low	Moderate	Low	Very Low	Low	Very High	Very High	Low	Moderate	Moderate	High
Ubay	Very High	Very High	High	Low	Very Low	Very Low	Very Low	Very High	Moderate	Moderate	Moderate	Moderate	Moderate	High	Very High	Very High
Valencia	Low	Very Low	Very Low	Very High	High	Very Low	Very Low	Very Low	Very Low	Low	Moderate	Very High	Very Low	Moderate	High	High

* Source: Bohol, Negros Oriental and Siquijor CRVA Completion Report ** Source: Bohol LDRRM Plan

*** Based on location of Major Dams

Annex D. Risk	Profile o	f Commodity	v per N	1unicipality
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	Production				
Municipality	Area	Key Hazards	Adaptive Capacity (AC)		
	(in ha.)				
Carmen	300	High - Erosion, Landslide	Very Low - Natural		
		(Earthquake Induced),	Low - Economic, Human		
		Drought	Moderate - Institutional, Physical,		
			Anticipatory		
			Very High - Social		
San Miguel	214.75	Very High - Tropical	Very Low - Economic, Human		
		Cyclone	Moderate - Social, Institutional		
		High - Drought	High - Natural, Physical, Anticipatory		
Ubay	172.5	Very High - Tropical	Moderate - Economic, Natural, Social,		
		Cyclone	Human		
		High - Drought, Storm	High - Institutional		
		Surge	Very High - Physical, Anticipatory		
		Moderate - Salt water			
		Intrusion			
Mabini	203.5	Very High - Tropical	Very Low - Economic		
		Cyclone	Low - Natural, Human		
		High - Flood, Erosion,	Moderate - Institutional		
		Drought, Storm Surge	High - Social, Physical, Anticipatory		
Dagohoy	150.5	High - Erosion	Very Low - Economic, Human		
			High - Natural, Social, Institutional,		
			Anticipatory		
			Very High - Physical		
Pilar	81.5	High - Flood, Landslide	Very Low - Economic, Human		
		(Earthquake Induced),	Low - Institutional		
		Drought	Moderate - Physical		
			High - Social, Anticipatory		
			Very High - Natural		
Trinidad	102.55	Very High - Tropical	Very Low - Economic, Natural, Social		
		Cyclone, Salt Water	Low - Human, Physical		
		Intrusion	Moderate - Institutional, Anticipatory		
Danao	130	Very High - Erosion	Very Low - Economic, Human		
		High - Tropical Cyclone	Low - Natural, Physical		
			High - Socia, Institutional, Anticipatory		
Sierra	98	High - Erosion, Landslide	Very Low - Economic, Human		
Bullones		(Rain Induced), Landslide	Low - Anticipatory		
		(Earthquake Induced)	Moderate - Natural, Social, Institutional,		
			Physical		
Sagbayan	150	High - Erosion, Landslide	Very Low - Economic, Natural, Human		
		(Rain Induced)	Low - Institutional		
			Moderate - Social, Physical, Anticipatory		

* Source: Bohol, Negros Oriental and Siquijor CRVA Completion Report

** Source: Bohol LDRRM Plan

*** Based on location of Major Dams

Annex E. Directory of Players of Cassava Industry

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



Component	Commodity	Agency/Office	Name
I-PLAN Subproject Co	omponent		
Component Head		Office of the Provincial Agriculturist (OPA)	OPA/ Dr. Larry M. Pamugas, PhD.
Commodity Experts	Crops	Office of the Provincial Agriculturist (OPA)	Mr. Ramil Rodela
		Department of Agriculture (DA -PATCO)	Mr. Roman Dabalos
	Las	Philippine Coconut Authority (PCA)	Mr. Jovencio Felisilda
	Seaweeds/Fisheries	Office of the Provincial	Ms. Queenie Atup
	8.10	Agriculturist (OPA)	
		Bureau of Fisheries and Aquatic Resources (BFAR)	Mr. Candido Samijon
	Livestock	Office of the Provincial Veterinarian	Mr. Ian Ray Tejada Ms. Isabelita Alipoyo
I-BUILD Subproject C Engineering	omponent /	Provincial Engineer's Office (PEO)	Engr. Camilo Gasatan Engr. Evelyn Ayuban
I-REAP Subproject Co	omponent	Office of the Provincial Ve <mark>terin</mark> arian	Dr. May Dallyn Paman
Planning		Provincial Planning and Development Office	EnP. Maria Imelda Borromeo Atty. Maria Contessa Butron-Arcaya
ON-CALL			
Environment and Na	tural Resources		EnP. Jovencia Ganub
Social Welfare and D	evelopment/GAD		Ms. Carmelita Tecson
Disaster Managemer	nt		Dr. Anthony Damalerio
Enterprise		N.	Ms. Gertrudes Fuentes
PAFC Representative			Mr. Apolonio Manatad

Annex F. Provincial Core Planning Team Composition

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



PDC ExeCom Presentation of the Updated PCIP Matrices

