



PROVINCIAL COMMODITY
INVESTMENT PLAN
FOR

BUFFALO DAIRY

2018 - 2020



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List of Abbreviations & Acronyms

A and D	Alienable and Disposable
ACFT	Annual per Capita Food Threshold
ACPT	Annual per Capita Poverty Threshold
AES	Agro-Edaphic Suitability
AIP	Annual Investment Plan
ADP	Annual Development Plan
ARMM	Autonomous Region in Muslim Mindanao
BALA	Bohol Livestock Aide
BEMO	Bohol Environment Management Office
BFAR	Bureau of Fisheries and Aquatic Resources
BODACO	Bohol Dairy Cooperative
BODPA	Bohol Dairy Producers Association
BOI	Board of Investments
BONACGA	Bohol Native Chicken Growers Association
BPSFPC	Bohol Provincial Seaweed Farmers Producers Cooperative
CCA	Climate Change Adaptation
CDA	Cooperative Development Authority
CLUP	Comprehensive Land Use Plan
CPT	Commodity Prioritization Tool
CSO	Civil Society Organization
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DRRM	Disaster Risk Reduction and Management
DTI	Department of Trade and Industry
ELA	Executive Legislative Agenda
EO	Executive Order
E-VSA	Expanded Vulnerability and Suitability Assessment
FA	Farmers' Association
FMR	Farm-to-Market Road
GAP	Good Agriculture Practices
GEF	Global Environmental Facility
I-BUILD	Intensified Building-Up of Infrastructure and Logistics for Development
IEC	Information Education Campaign
IP	Indigenous People
I-PLAN	Investment for AFMP Planning at the Local and National Levels
I-REAP	Investments for Rural Enterprises and Agricultural and Fisheries Productivity
LGU	Local Government Unit
M&E	Monitoring and Evaluation
MCPI	Marine Colloids for Pilipino Integrity
MLGU	Municipal Local Government Unit
MOA	Memorandum of Agreement
MPA	Marine Protected Area
NCIP	National Commission on Indigenous Peoples
NDA	National Dairy Agency

NGA	National Government Agency
NMIS	National Meat Inspection Service
NOL	No Objection Letter
NPCO	National Project Coordination Office
NSCB	National Statistical Coordination Board
OPA	Office of Provincial Agriculturist
OPV	Office of Provincial Veterinarian
PCA	Philippine Coconut Authority
PCC	Philippine Carabao Center
PCIC	Philippine Crop Insurance Corporation
PCIP	Provincial Commodity Investment Plan
PCPT	Provincial Core Planning Team
PDC	Provincial Development Council
PDPFP	Provincial Development Physical Framework Plan
PGBh	Provincial Government of Bohol
PLGU	Provincial Local Government Unit
PMIU	Provincial Program Management and Implementing Unit
PO	People's Organization
PPDO	Provincial Planning and Development Office
PRDP	Philippine Rural Development Project
PSA	Philippine Statistics Authority
RBMES	Results-Based Monitoring and Evaluation System
RDS	Raw Dried Seaweed
RPC	Rice Processing Center
RPCO	Regional Project Coordination Office
RROW	Road Right-of-Way
SEAFDEC	South East Asian Fisheries Development Center
SES	Social Environmental Safeguard
SIAP	Seaweed Industry of the Philippines
SP	Sangguniang Panlalawigan
SRC	Semi Refined Carrageenan
SSS	Social Security System
SWCF	Soil and Water Conservation Foundation
TWG	Technical Working Group
VCA	Value Chain analysis

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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 (2013-2019) designed to establish an inclusive and market-oriented agri-fishery sector through strategic investments in priority commodity value chains. It is a poverty reduction platform that aims to improve the incomes and food security of the rural poor. Through a Memorandum of Agreement, the Department of Agriculture (DA) and the Province of Bohol have come into a joint partnership in implementing the PRDP. Both DA and the Province will partner with local government units (LGUs) and the private sector in providing key infrastructure, facilities, technology, and information that will raise incomes, productivity, and competitiveness in the countryside.

To ensure the successful implementation of the Project, the Governor issued Executive Order No. 05, Series of 2015, creating the Provincial Core Planning Team (PCPT) that is chaired by the Provincial Agriculturist. The PCPT is tasked as the principal mechanism through which the Provincial Commodity Investment Plan (PCIP) will be prepared. The PCIP of Bohol is a 3-year strategic plan (2017-2019) that highlights the identified priority commodities of the province for an inclusive, value-chain based and climate smart agriculture that will contribute to the vision towards a strong and balanced agri-industrial province.

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

To enhance the value chain approach of planning, scientific tools are used such as the Expanded Vulnerability and Suitability Assessment (E-VSA). It is a user-based online tool available at the PRDP website that uses the VSA result as a database and is collaborated with socio-economic parameters.

Another important tool used to identify priority commodities is the Commodity Prioritization Tool (CPT). The major criteria for this tool are: suitability, market potential, impact on the poor, and the number of beneficiaries. The identified priority commodities of the province are: coconut, dairy, native chicken, swine, buffalo dairy, cassava, inland fishery, mariculture (seaweed), cacao and coffee. These identified commodities that are of great importance to the agricultural development of Bohol will undergo the value chain analysis. As soon as the value chain report will be approved it will start the preparation and integration of the commodity into the PCIP.

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

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

Chapter I: Development Background

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

Technologies to maximize the upland areas have not yet been fully accepted and practiced by farmers. There is low level of adoption and application of location specific agri-aqua technologies. Many of the rural poor are landless, or have limited farm lands, which may not be appropriate to achieve viable financial returns. Insufficient farm equipment, support infrastructure and production and postharvest facilities also is a challenge in the sector that needs improvement of existing farm equipment and the provision of additional farm machineries and support facilities. Development of agricultural lands has also been impeded by lack of accessibility and poor road networks that link farms to production support facilities and markets. Bohol's development challenges can be summarized as pertaining to underutilization of agricultural lands and small, limited landholdings with an average farm size of only 0.6 hectare; poor farm to market road system; and low production due to inefficient and insufficient modern farm or agricultural technologies.

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

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

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

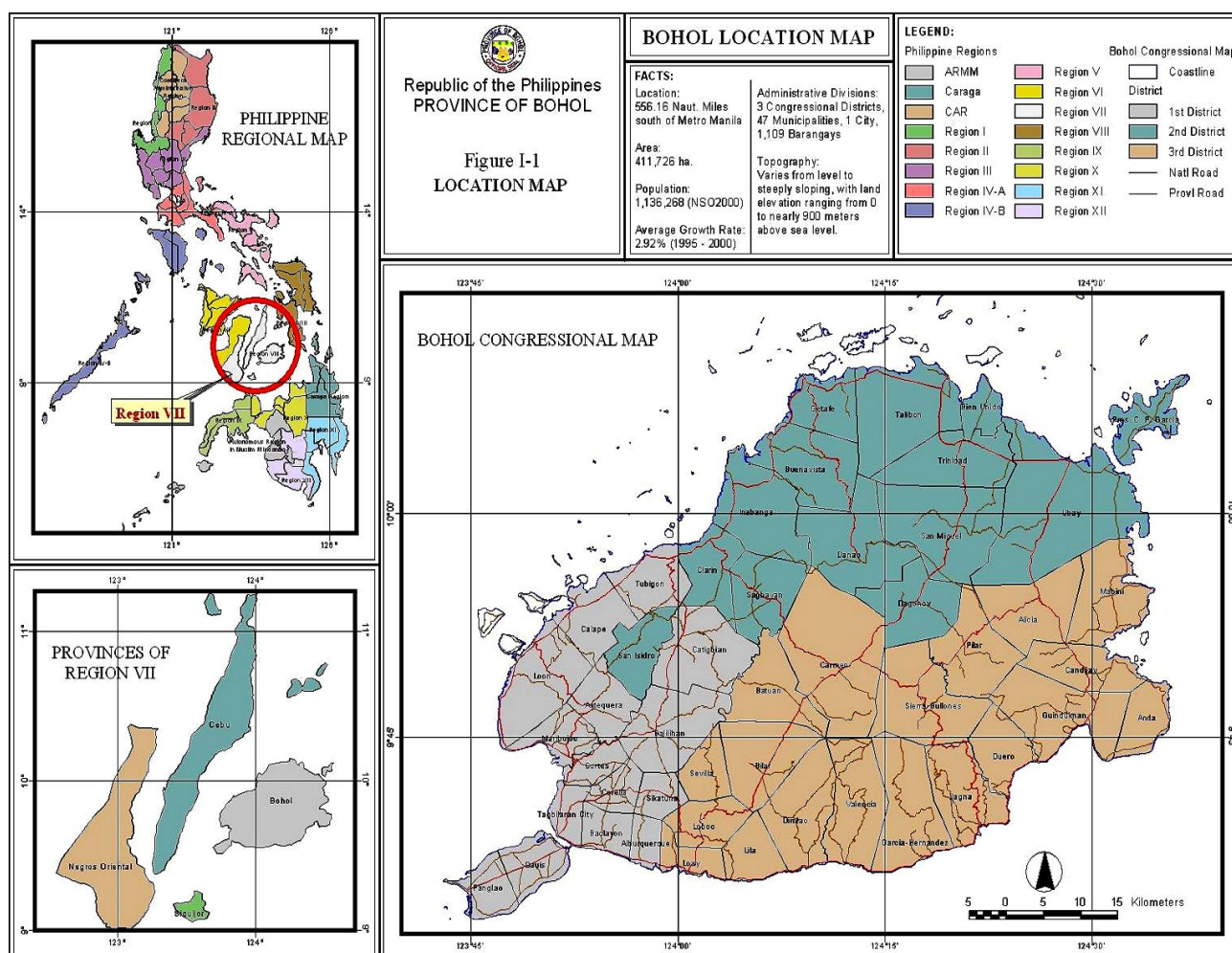
Geographic Profile

• Location

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

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

Map 1. Bohol Location Map



- **Topography and Slope²**

Topography Range

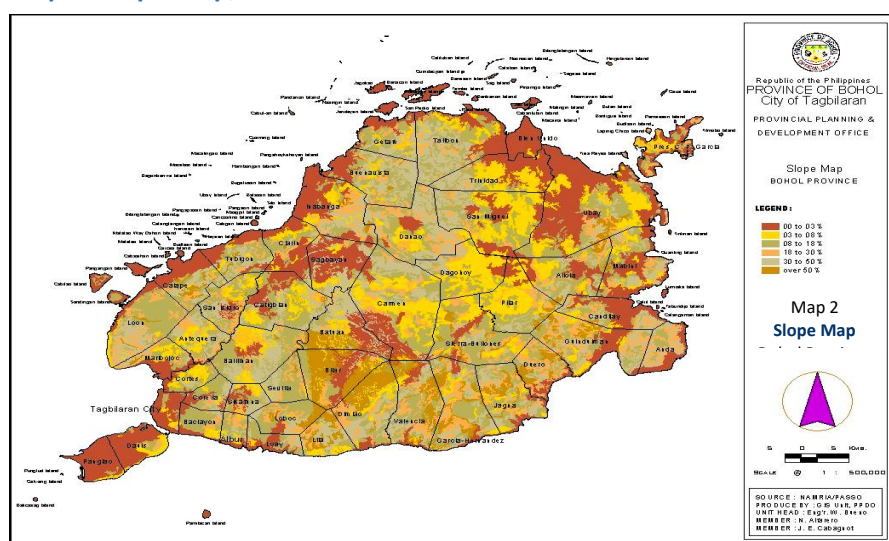
Bohol's terrain is variable from nearly flat at the plains to low rolling, moderate to very steep sloping with 5 to 50 meters high cliffs in the Sierra-Bullones limestone formation. The more rugged terrain is found in the southern part of the province although the Ubay volcanic rocks and Boclol serpentinite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



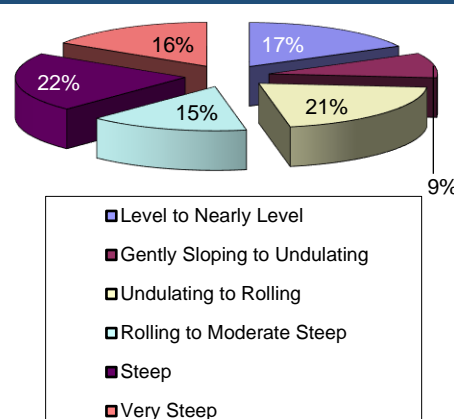
² Bureau of Soils and Water Management, DA, Region 7, Cebu City

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%

Figure 1. Slope Classification in Bohol



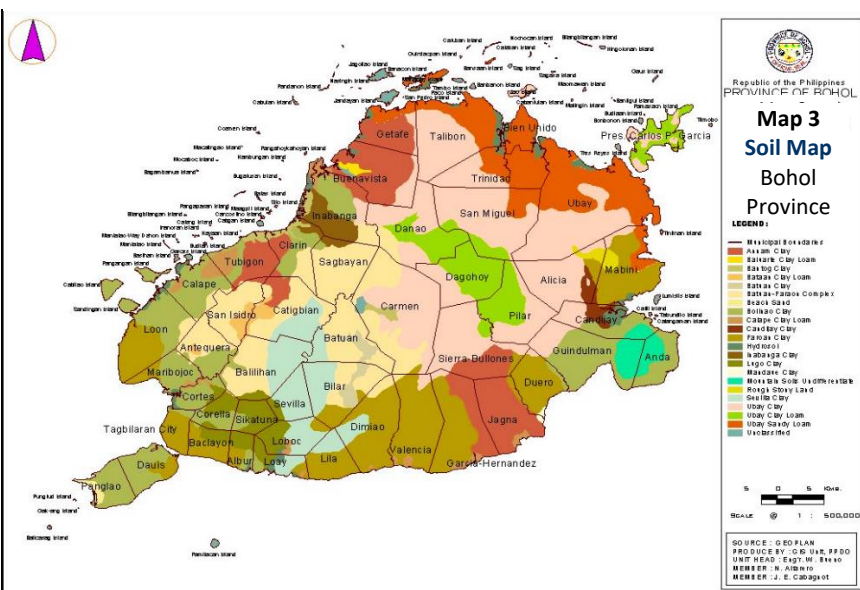
Source: **BSWM, DA, Region7, 1992**

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

Map 3. Soil Map, Bohol Province



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

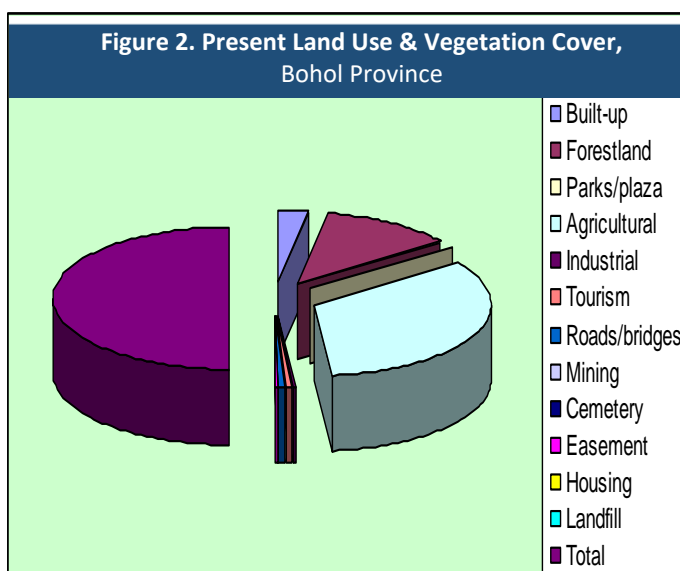
• Existing Land Use and Vegetative Cover⁵

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 (*Map 4*). Almost one-half of the province's total land area is covered by grassland/shrubland, while one-third of its total area is utilized for agricultural activities. About 67% of Bohol's land is used for agriculture while forestland occupies 25% of the province's total land area.

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

Table 2. Existing Land Use Distribution in Bohol

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



Source: *Approved Municipal/ City Land Use Plan*

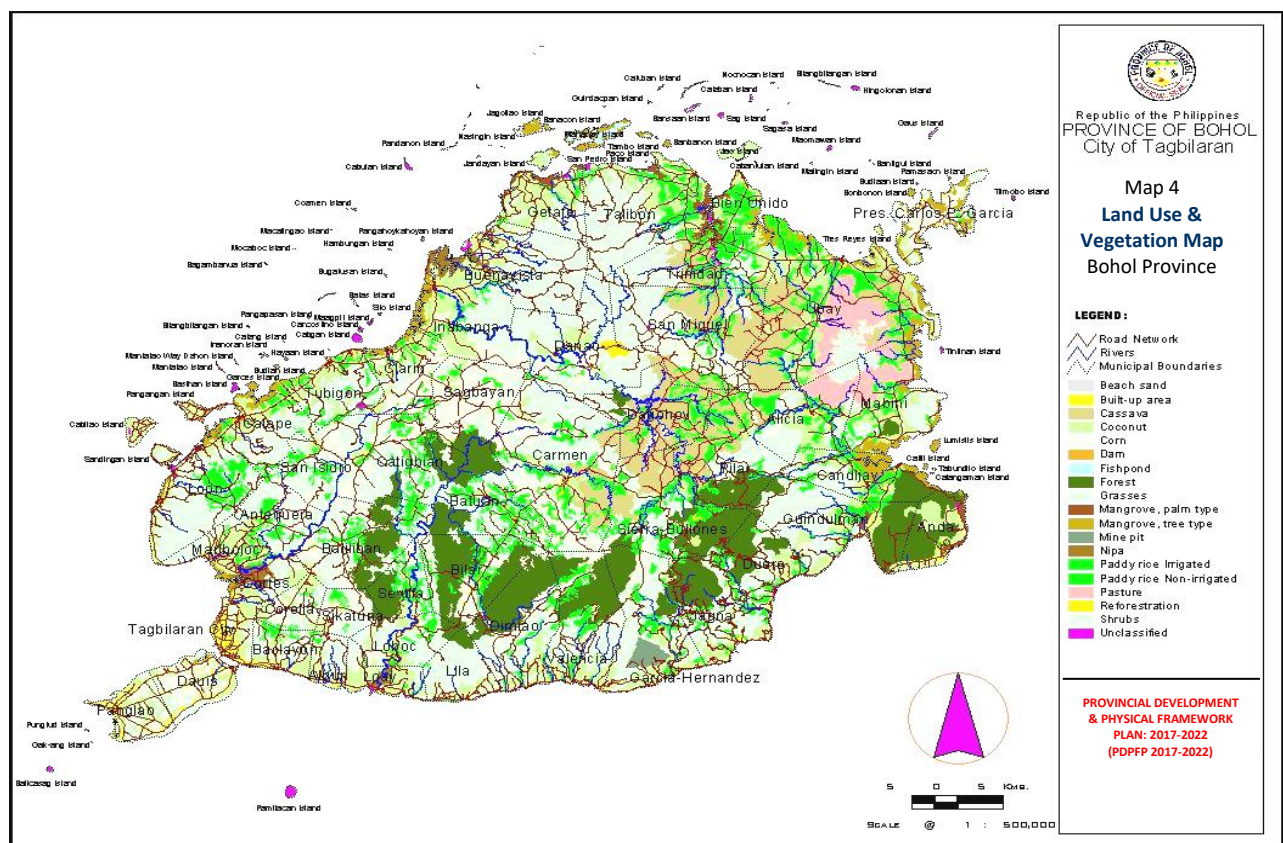
Mangrove forests play a very vital role in shaping the ecology and economy of the Boholanos. Ecologically, mangroves are among the most productive coastal resources of Bohol as they serve not only as feeding, breeding and nursery grounds for many aquatic and terrestrial animals, but also as a protective 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.

⁵ Bohol Ecological Profile of DENR, 1992

⁶ Bohol Ecological Profile, DENR 1992

⁷ Bohol Coastal Environment Profile of 2002

Map 4. Land Use and Vegetation Map, Bohol Province



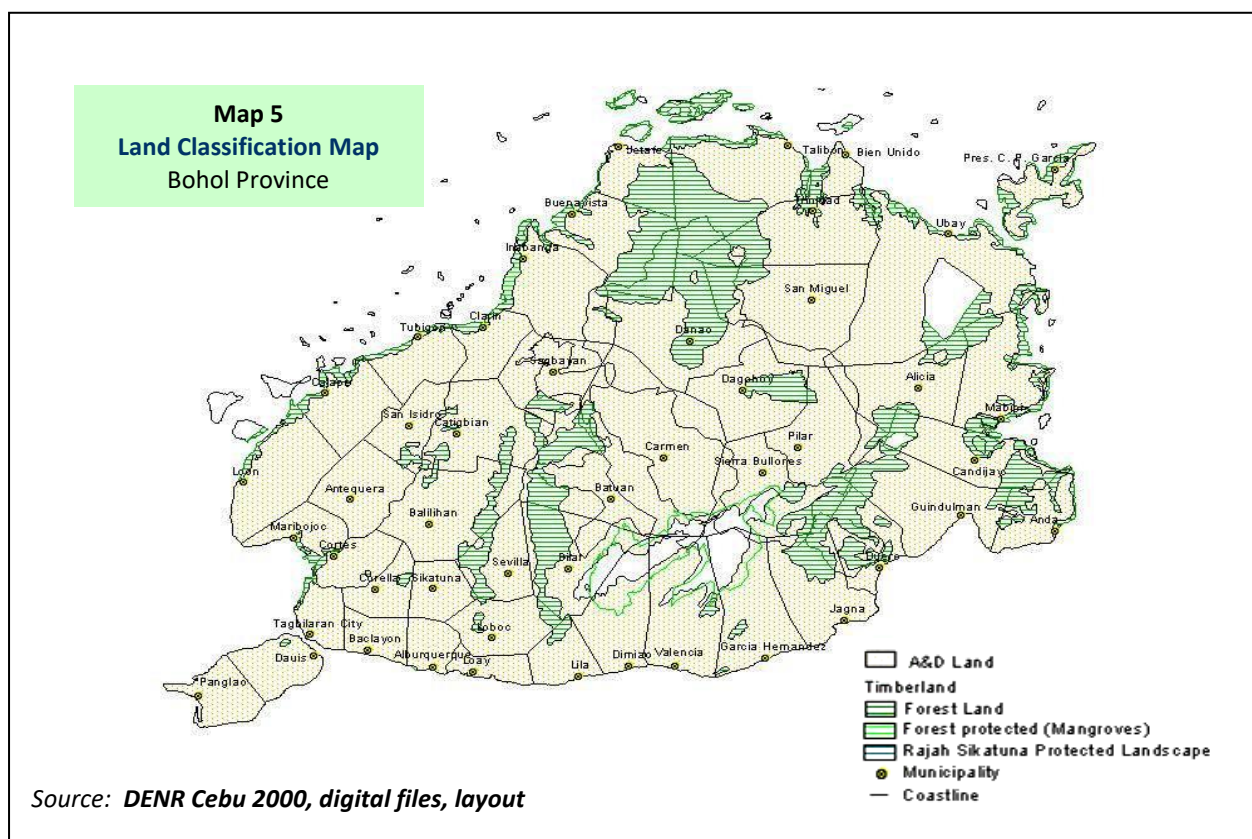
- **Land Classification**⁸

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

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

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

Map 5. Land Classification Map, Bohol Province



- **Physical Resources**

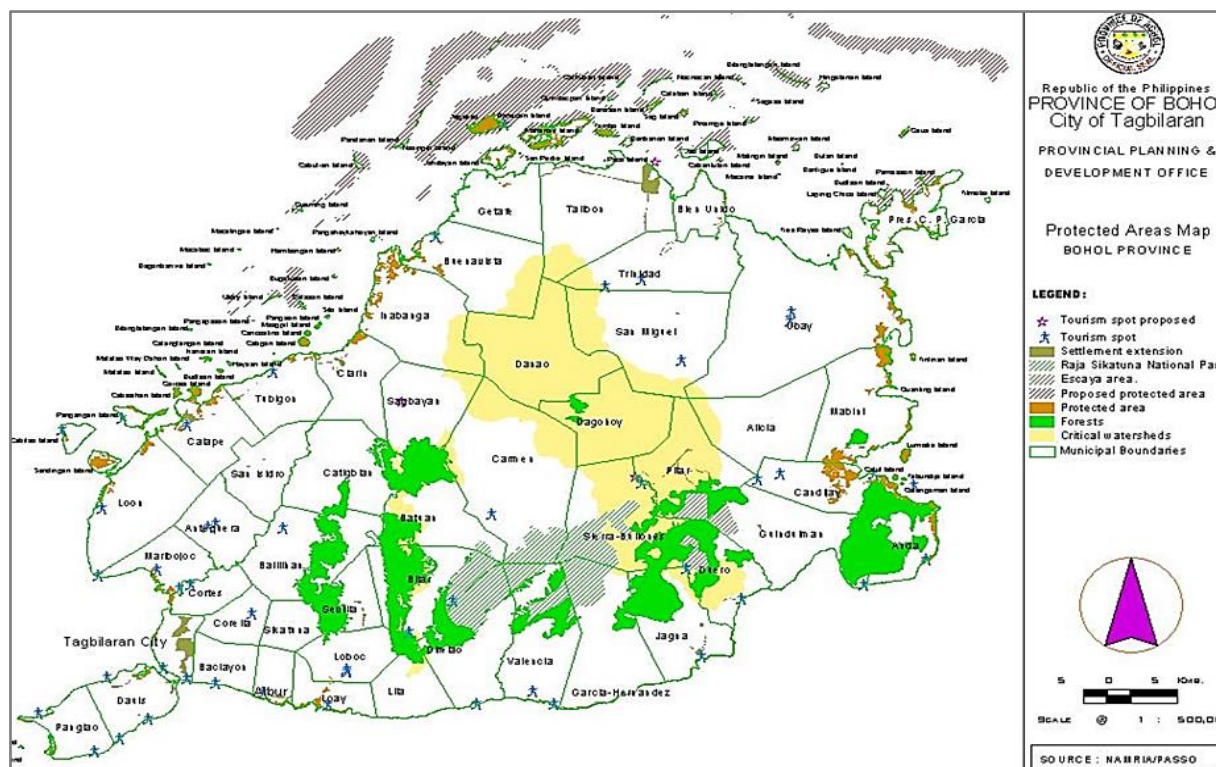
Bohol is endowed with a rich biodiversity and natural resources that play an essential role in guiding its future development for agriculture, industry, tourism, settlements, culture and infrastructure in both the medium and long-term time frame. It has a high diversity of flora and fauna found in the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

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

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

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

Map 6. Protected Areas Map, Bohol Province



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

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

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

• Natural Hazards

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

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

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

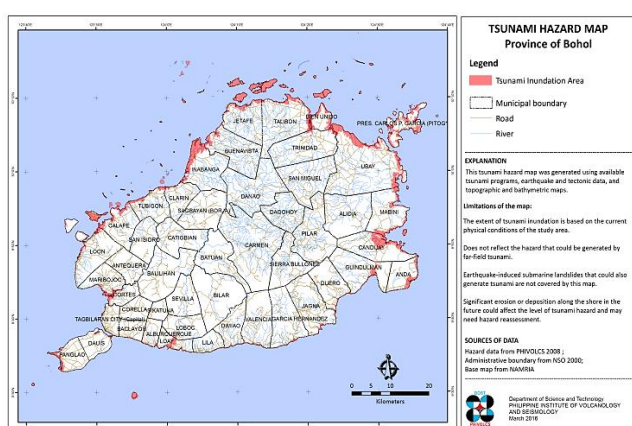
Municipality	Geologic Hazards				Hydro-Meteorologic Hazards			
	EQ	Liquefaction	EIL	Tsunami	Floods	RIL	SS	Others
Alburquerque								
Alicia								
Anda								
Antequera								
Baclayon								
Balilihan								
Batuan								
Bien Unido								
Bilar								
Buenavista								
Calape								
Candijay								
Carmen								
Catigbian								
Clarin								
Corella								
Cortes								
Dagohoy								
Danao								
Daus								
Dimiao								
Duero								
G-Hernandez								
Getafe								
Guindulman								
Inabanga								
Jagna								
Lila								
Loay								
Loboc								
Loon								
Mabini								
Maribojoc								
Panglao								
Pilar								
Pres. Garcia								
Sagbayan								
San Isidro								
San Miguel								
Sevilla								

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

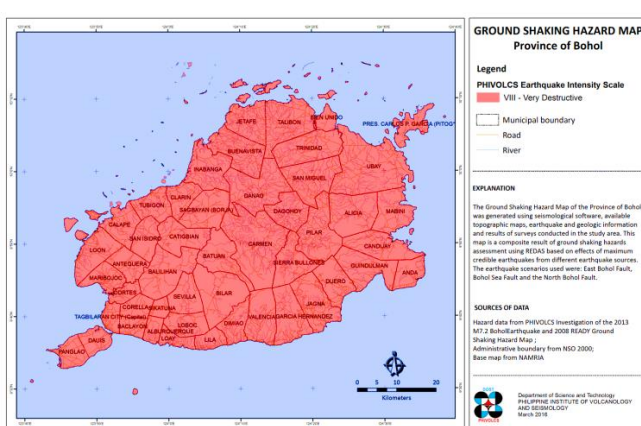
Source: *Bohol VA Report 2014*

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

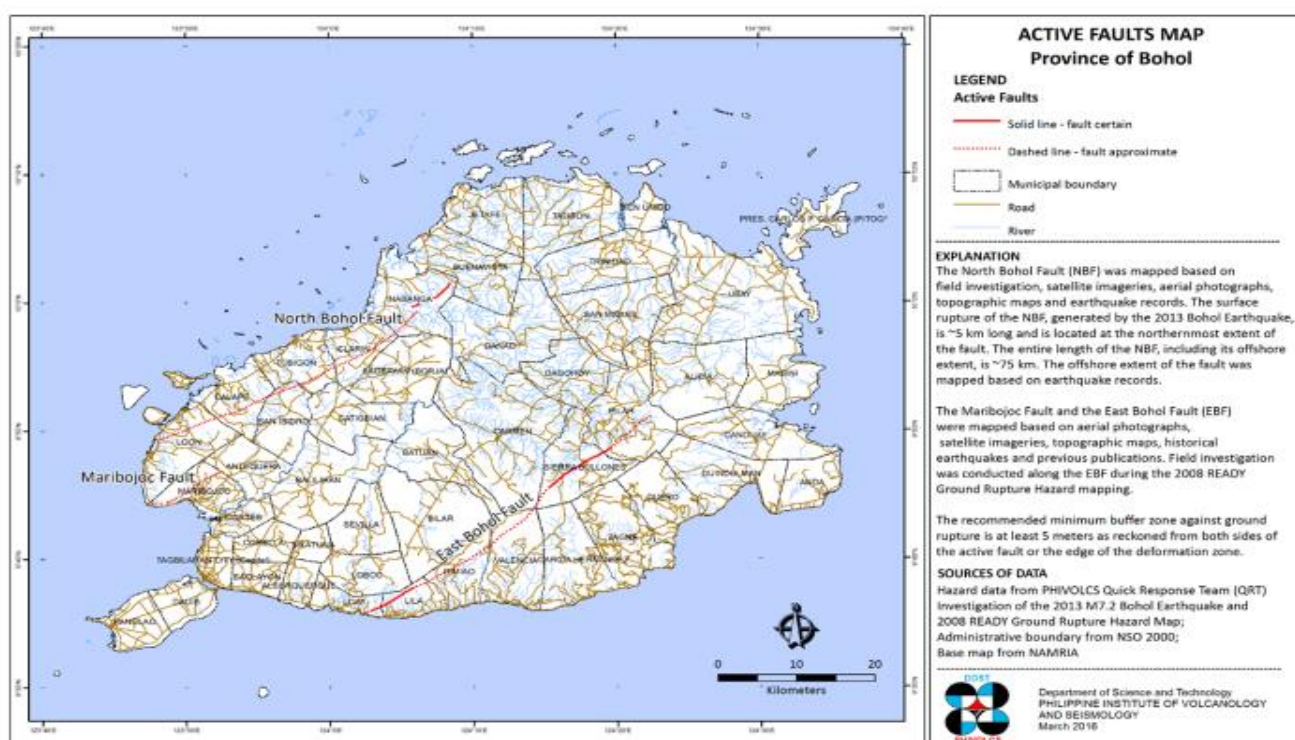
Map 7. Tsunami Hazard Map, Bohol Province



Map 8. Ground Shaking Hazard Map, Bohol Province



Map 9. Active Faults Map, Bohol Province



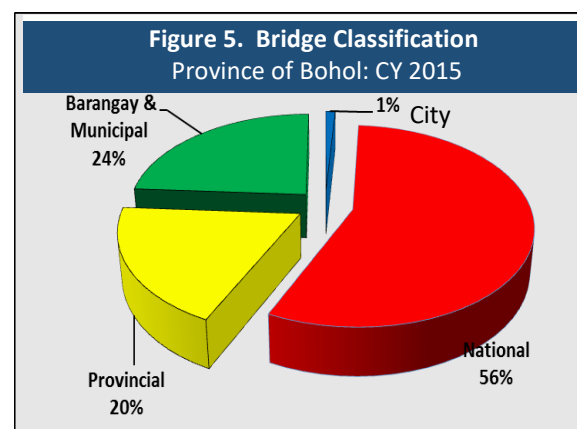
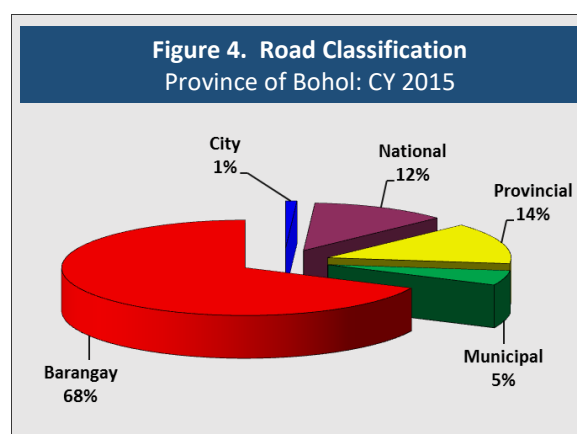
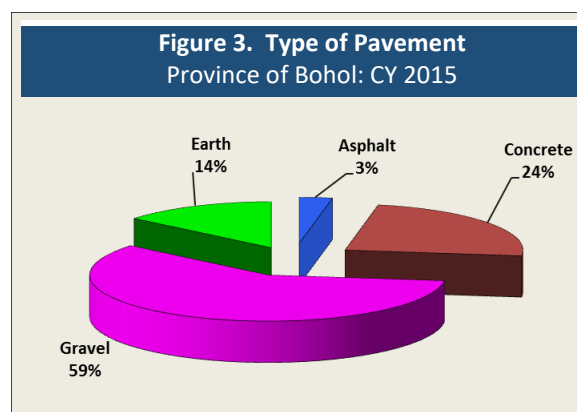
After the Great Bohol Earthquake and strong typhoons in in 2013, which caused the lives of Boholanos and destroyed Billions worth of properties, the public and government have strengthened their awareness and readiness for better disaster risk reduction management at the local level. Capacities are continually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

• Infrastructure ⁹

In 2015, Bohol's **total road** length is 6,059.42 kilometers. Of these roads, 12% is classified as national road and 14% provincial roads. The city road only accounts 1% while municipal road 5%. Barangay roads have the longest stretch of roads, accounting 68%. In terms of type of pavement, most of the province's roads are still gravel, which may be attributed to local roads. Concrete roads account 24%, and continue to increase in length as both national and local governments sustain their projects for road concreting. Asphalt road, on the other hand, shared 3% of the total road length. Meanwhile, 14% of the province road remains to be earth roads, which are mostly classified as barangay roads.

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

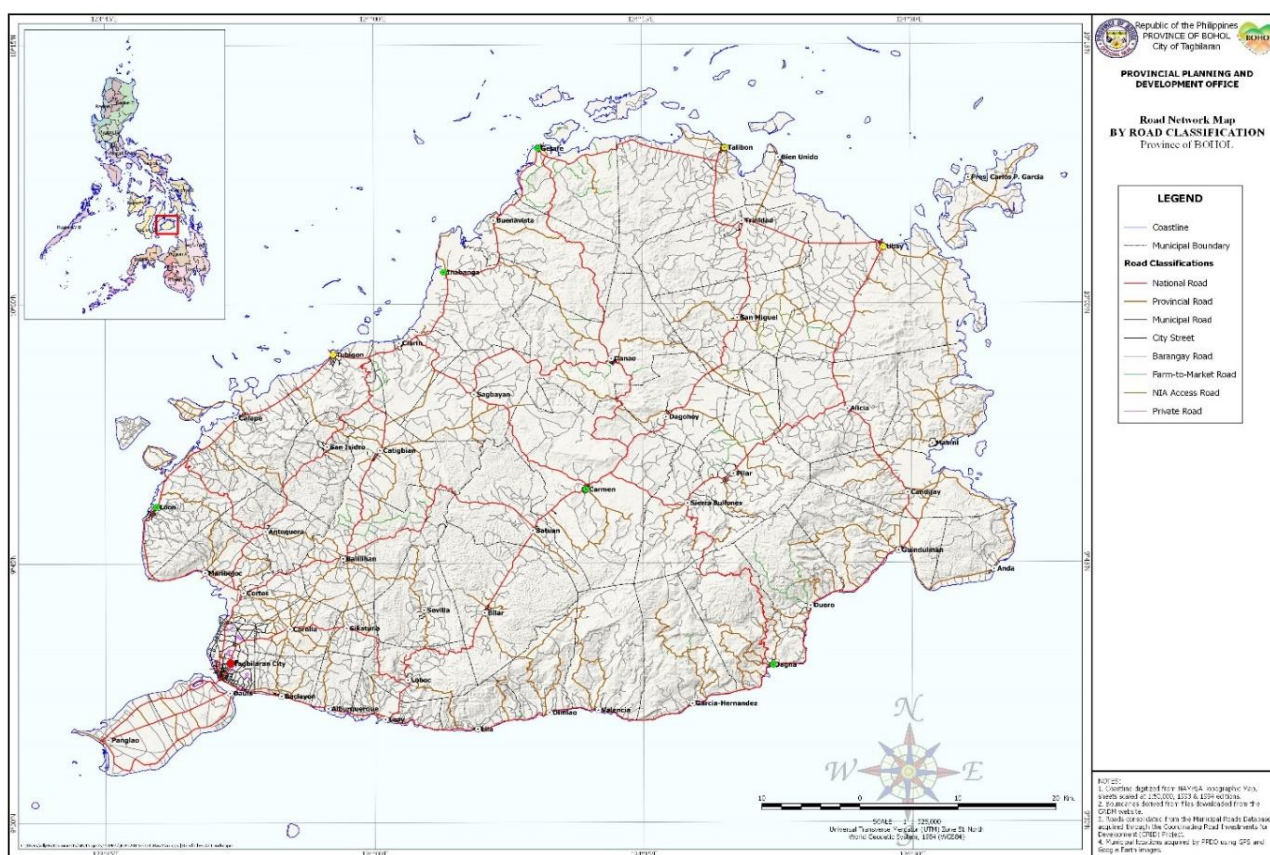
Majority of the bridges in the province are under the jurisdiction of the national government, which accounts 56%. The Provincial Government is maintaining 1,601 linear meters of 20% of these bridges. The rest of the bridges are managed and maintained by the city/ municipal and barangay local governments.



Source:
Department of Public Works & Highways (DPWH)

⁹ Department of Public Works and Highways (DPWH)

Map 10. Road Network Map, Bohol Province



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

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

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

Socio Economic and Demographic Profile

• Population

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

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

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

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

BASIC FACTS OF BOHOL PROVINCE

**Population : 1.255 Million (2010)
1.313 Million (2015)
1.324 Million (2016 Projection)**

Income Class: 1st Class Province

Land Area : 411,726 hectares (411.726 Km²)

Pop. Growth Rate : 0.87% (2010-2015)

No. of Household : 261,408 (2010)

Average HH Size: 4.8 (2010)

Pop. Density : 322 persons/ Km² (2016)

Administrative Units

: 1 City; 47 Municipalities

: 1,109 Barangays

: 3 Congressional Districts

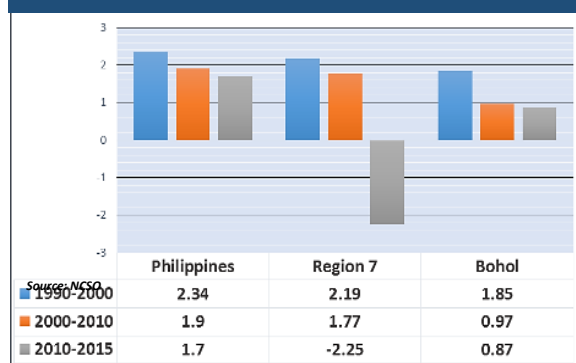
Coastline: 654 kilometers of coastline

Municipal waters : 6,245 square kms

Coastal barangays = 304

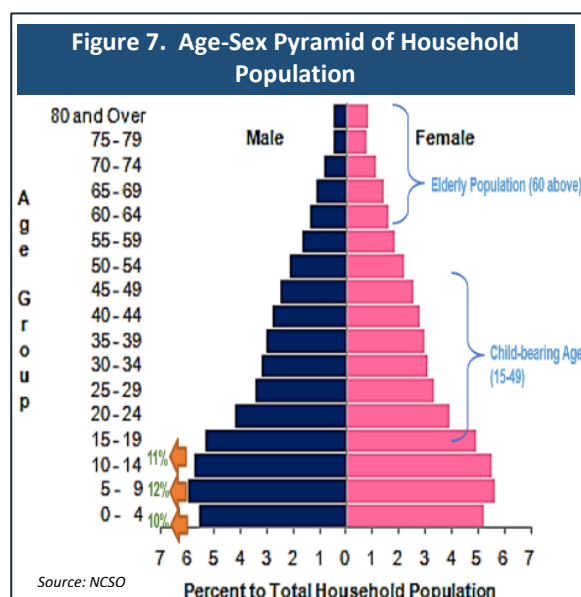
No. of islets = 72 islets

Figure 6. Average Annual Growth Rate



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

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



Bohol's Indigenous Peoples' (IP)

- **ESKAYA TRIBE**

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



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

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



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

- **ATI**

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



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

- **BADJAO**

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



The Badjaos are what are considered as sea gypsies. The Bajaos have been a nomadic, seafaring people, living off the sea by trading and subsistence fishing. They generally live in the sea using “bankas” as houses if not on stilt houses along the seashore. Their primary source of income is

deep sea fishing. At present, there are 78 families in the community and a population of 545 people.

• Poverty Situation

The reduction, if not the elimination of poverty continues to be a challenge in Bohol with a number of its families still considered as poor. However, Bohol's Poverty Incidence as well as its Subsistence Incidence¹⁰ among families has been steadily decreasing since 2006. From 40.3 percent in 2006, poverty incidence among families lowered to 30.6 percent in 2012, then to 21.7 percent in 2015 or a decrease of about 20 percent over a period of nine years (Table 5).¹¹ This translates to a total of 60,279 poor families in 2015 from 97,368 poor families in 2006. In the same period, the proportion of Boholanos in extreme poverty whose incomes are not sufficient to meet basic food needs registered at 7.2 percent numbering 20,135 Boholano families in extreme or subsistence poverty.

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

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

Table 4. Poverty Profile, Bohol Province

Annual Per Capita Poverty & Food Thresholds, Poverty & Subsistence Incidence & Magnitude of Poor Families & Other Poverty Indicators in Region 7 & Bohol Province, 1991, 2006, 2009, 2012 and 2015

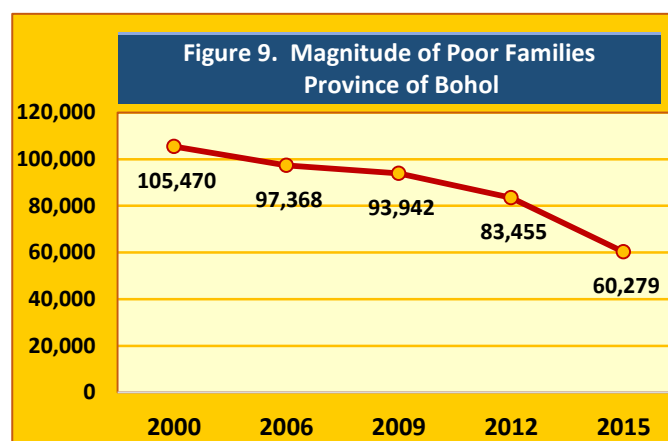
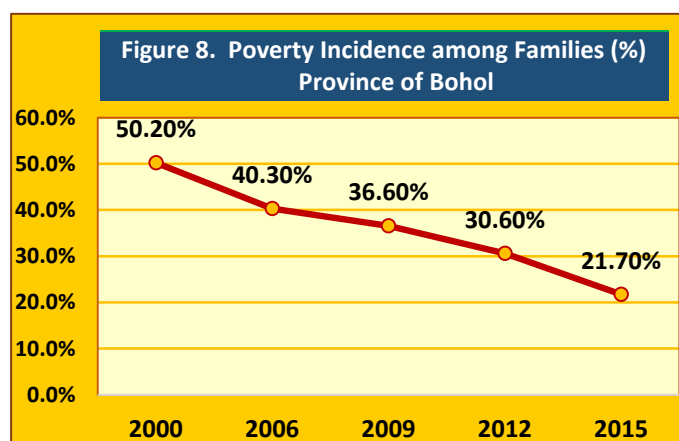
Region/ Province	Annual Per Capita Poverty Threshold (in Pesos)				Poverty Incidence among Families (%)				Magnitude of Poor Families			
					Estimates (%)				Estimate			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES	13,357	16,871	18,935	21,753	21.0	20.5	19.7	16.5	3,809,283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

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

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

Region/ Province	Annual Per Capita Food Threshold (in Pesos)				Subsistence Incidence among Families (%)				Magnitude of Subsistence Poor Families			
					Estimates (%)				Estimate			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES	9,308	11,780	13,232	15,189	8.8	7.9	7.5	5.7	1,596,850	1,553,082	1,610,865	1,303,549
Region VII	9,765	11,635	13,048	15,357	14.9	11.1	11.1	9.8	200,484	161,818	175,581	164,496
Bohol ^{b/}	9,831	11,596	13,155	14,249	21.9	16.6	12.2	7.2	52,901	42,619	33,288	20,135
Cebu	10,519	12,360	13,049	15,139	11.6	9.7	7.0	6.8	95,289	86,825	68,383	68,345
Siquijor ^{c/}	9,756	11,500	12,863	15,136	18.7	5.9	8.7	18.8	3,672	1,236	1,916	6,495
Region/Province	Income Gap				Poverty Gap				Severity of Poverty			
	2006	2009	2012	2015	2006	2009	2012	2015	2006	2009	2012	2015
PHILIPPINES												
Region VII	30.8	27.7	28.1	27.9	9.4	7.2	7.2	6.6	4.0	2.8	2.9	2.6
Bohol	33.6	28.7	24.5	25.7	13.5	10.5	7.5	5.6	6.0	4.3	2.6	2.1
Cebu	29.8	28.4	26.3	26.3	7.6	6.3	5.0	4.7	3.1	2.6	1.9	1.8
Siquijor ^{a/}	33.9	21.0	25.0	25.7	8.7	5.7	6.0	12.6	3.5	1.6	2.0	4.3
Note: a/ Caution in utilizing the estimate for these provinces due to its very small sample size.												
b/ Coefficient of variation of 2015 subsistence incidence among population is greater than 20%.												
c/ Caution in utilizing the estimate for these provinces due to its very small sample size.												

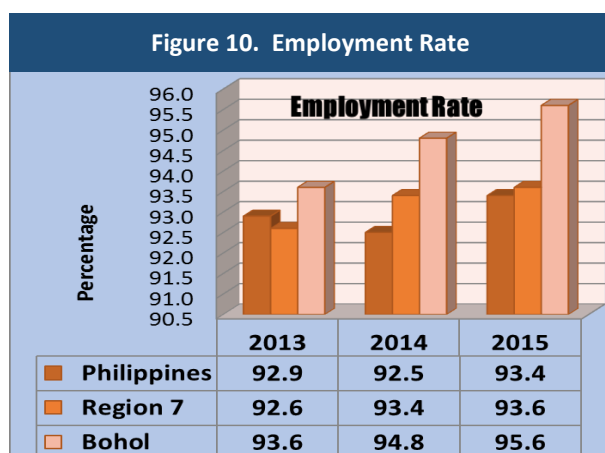
Bohol's poverty incidence has consistently decreased from 2000 to 2015. From a high 50.2% in 2000, poverty incidence improved to 21.70% in 2015 which, for the time, is lower than the regional average of 23.6%. In terms of magnitude of poor families, a total of 60,279 families were considered poor in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



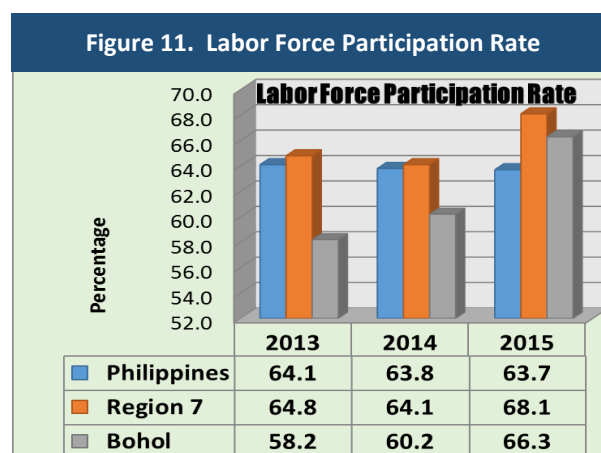
Source: National Statistical Coordination Board (NSCB)

• Employment

In terms of employment in the Province, employment rate has improved over the past three years. Based on the Labor Force Survey of the Philippine Statistics Authority (PSA), employment rate in the year 2015 is pegged at 95.6%, which is higher to the 93.6% and 94.8% in the year 2013 and 2014, respectively. It can also be noted that the employment rate of Bohol is consistently higher compared to the national and regional averages for the three-year period. Meanwhile, labor force participation rate of the Province has also increased during the same period, with 66.3% in 2015, higher than the 58.2 in 2013 and 60.2% in 2014.



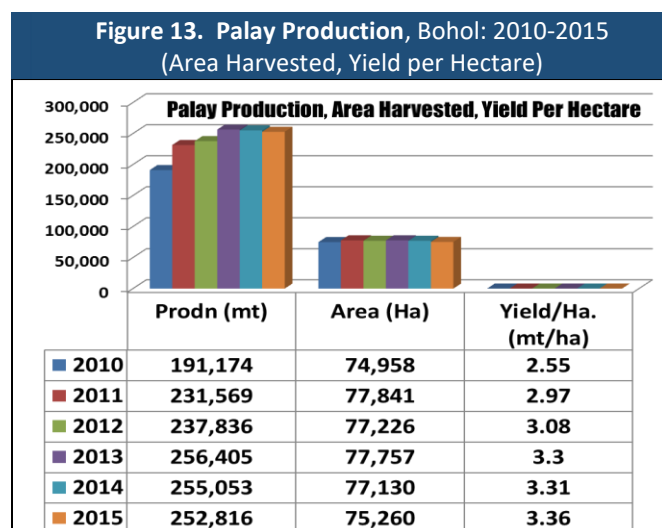
Source: *Philippine Statistical Authority (PSA)*



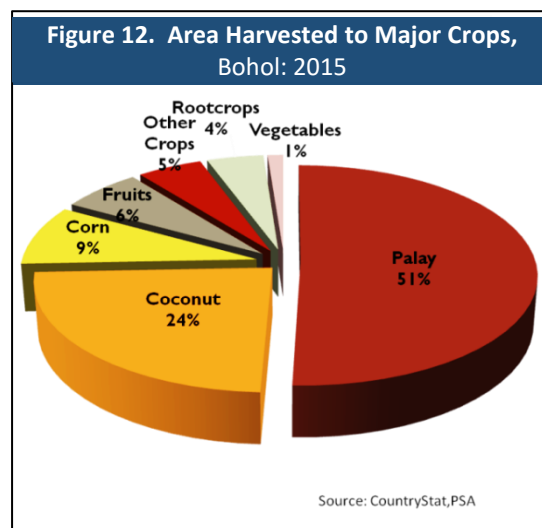
• Economy and Priority Industries

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

Agriculture is the largest sector in terms of providing employment as well as in land use. Of the total land area of the province, 273,950 hectares (66%) are available and use for agriculture. 148,673 hectares or 54% of this area is planted with and harvested of major crops. Among the major crops plated in the area include palay (51%),



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

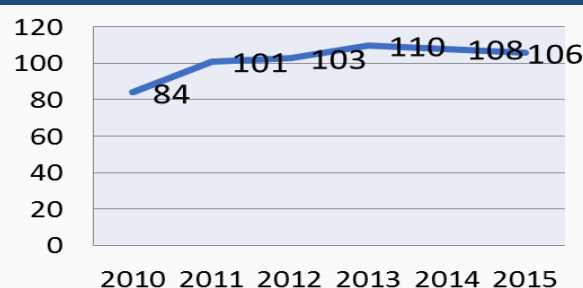


coconut (24%), corn (9%), fruits, root crops, and vegetables. The rice production in the province is generally on the uptrend for the last six years, with increasing yield per hectare despite the effects of El Niño. With the introduction of right mix of technology, appropriate varieties of seeds, and continuing support to farmers, average yield per hectare has reached to 3.36

metric tons in 2015, which is way better to the 2.55 tons back in 2010. Irrigated lands provided the highest yield of 3.91 metric tons/hectare while rain fed rice land yielded an average of 2.82 metric tons/ hectare.

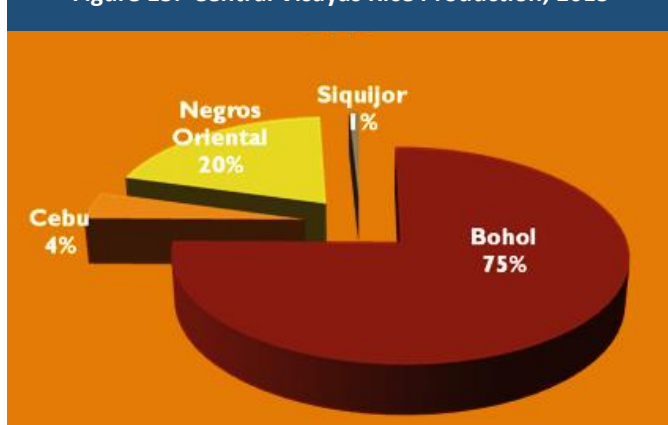
Bohol remains to be a rice sufficient province with rice sufficiency levels sustained above 100% since 2011. With estimated per capita consumption of 109.367 kilograms per year, the estimated demand for rice for 2015 is at 152,527 metric tons, which is within the rice supply of the province for that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

Figure 14. Rice Sufficiency, Bohol: 2010-2015



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

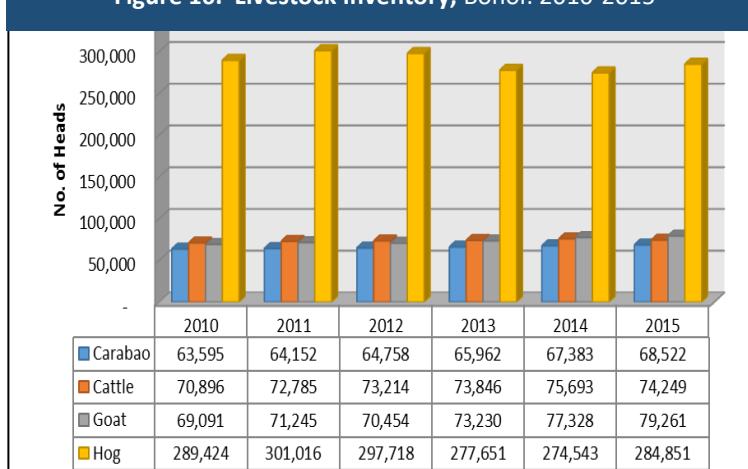
Figure 15. Central Visayas Rice Production, 2015



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

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

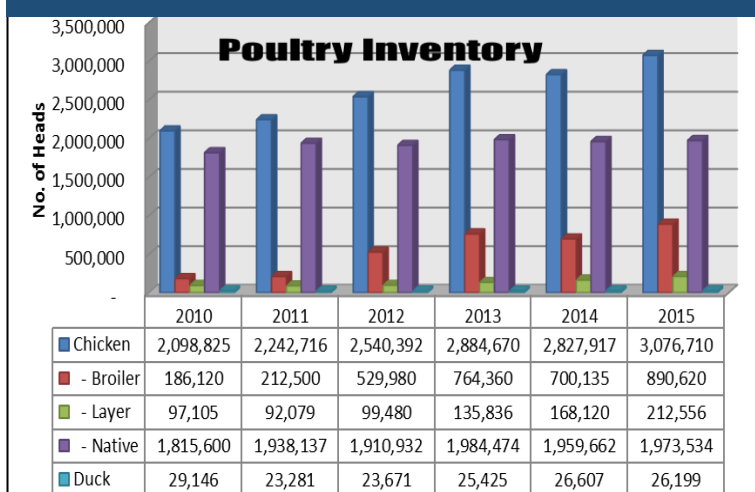
Figure 16. Livestock Inventory, Bohol: 2010-2015



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

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

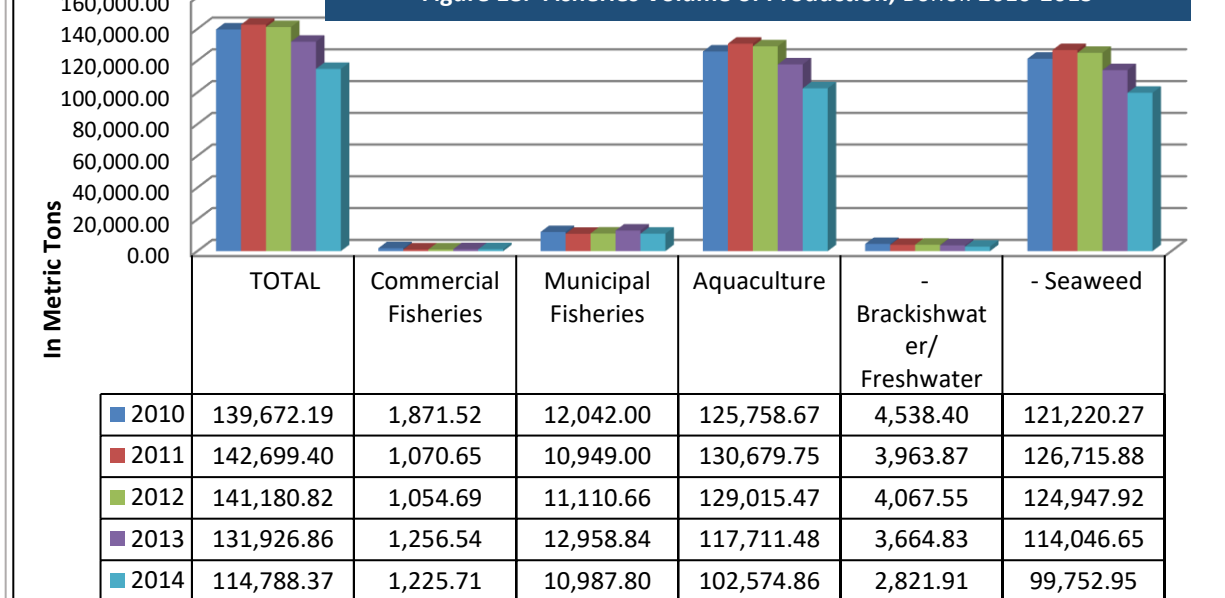
Figure 17. Poultry Inventory, Bohol: 2010-2015



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

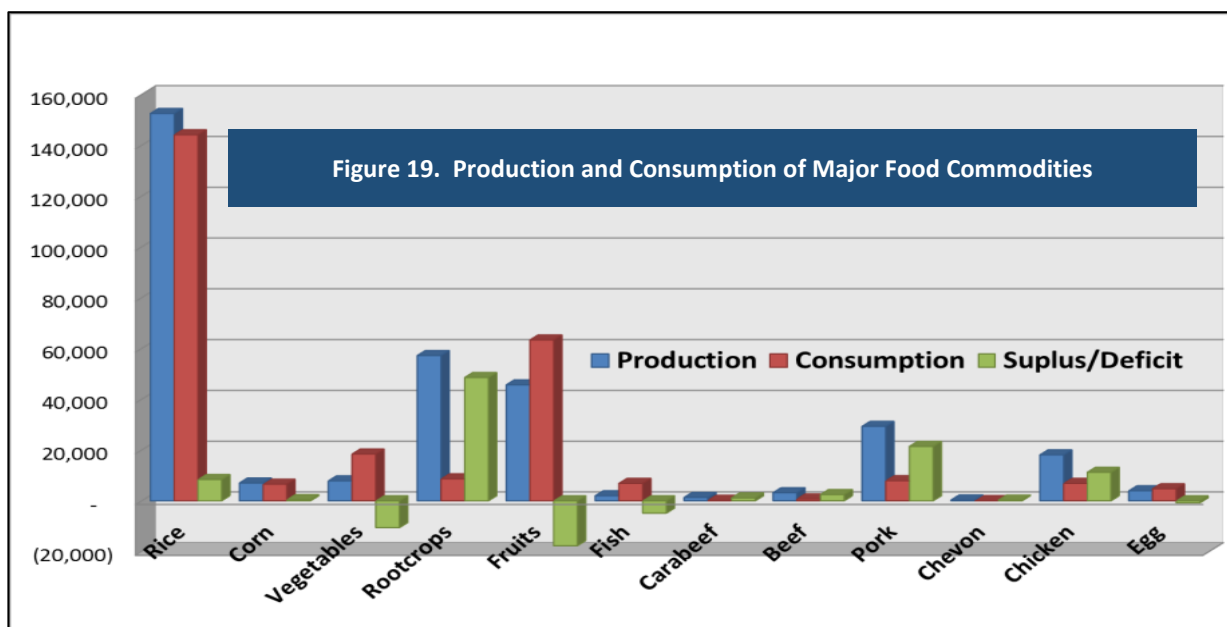
For **fisheries**, production from aquaculture remains to be highest contributor to the volume of fishery production in the province. In 2014, aquaculture posted 47% share in total production and closely followed by seaweeds accounting 46% share. Municipal fishery shared only 5% of the production, with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

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



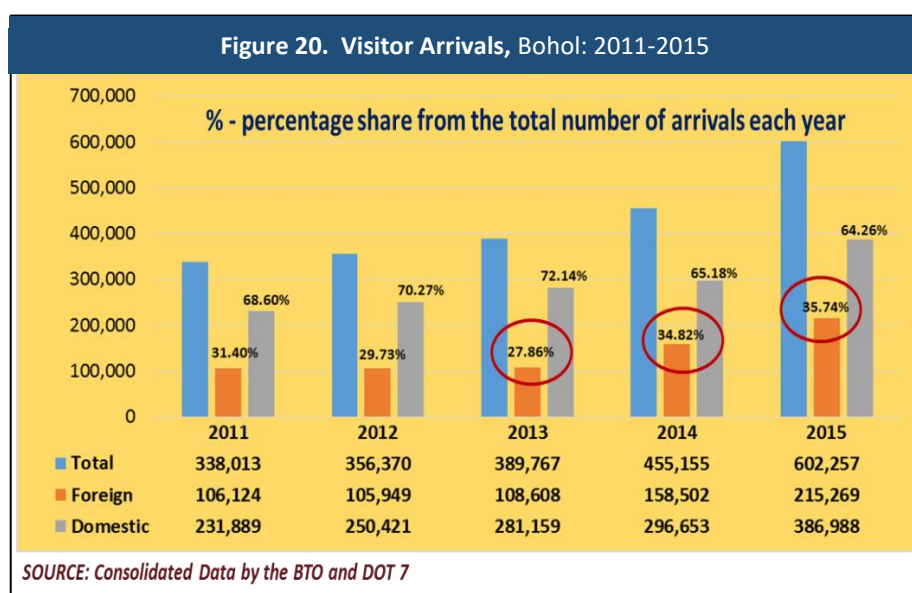
Source: *CountryStat, Philippine Statistical Authority*

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











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

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



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

Figure 21. Top 10 Foreign Travelers, 2014-2015

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

SOURCE: Consolidated Data by the BTO and DOT 7

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

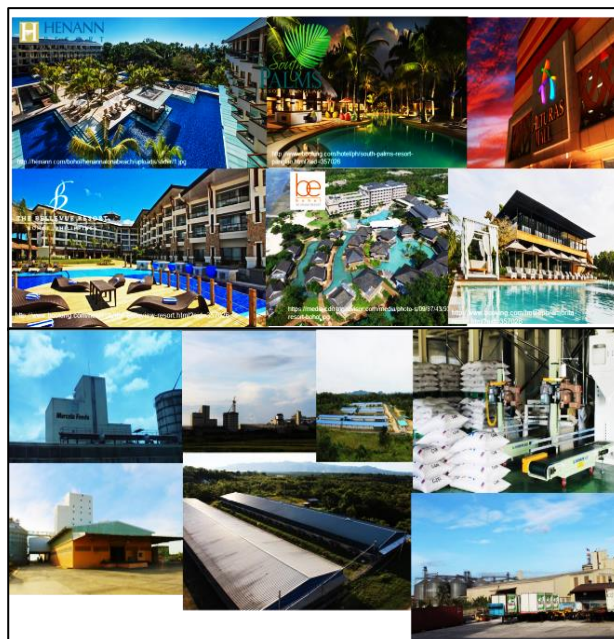
Local and foreign industry players continue to pour in investments in this sector considering the consistent and stable growth of the tourism industry in the province and bright outlook of the future. Improvement of infrastructure and support facilities in the province has also entice larger investments through the years. For accommodation services, for example, the number of accommodation facilities has doubled for the period of six years. Based on the data available, number of accommodation facilities in year 2015 has reached to 360, which is twice the number of facilities in 2009. Correspondingly, the number of rooms has more than doubled in the period, with total rooms of 6,370 in 2015, which is significantly higher than that of 2,982 in 2009.

Table 5. No. of Accommodation Facilities

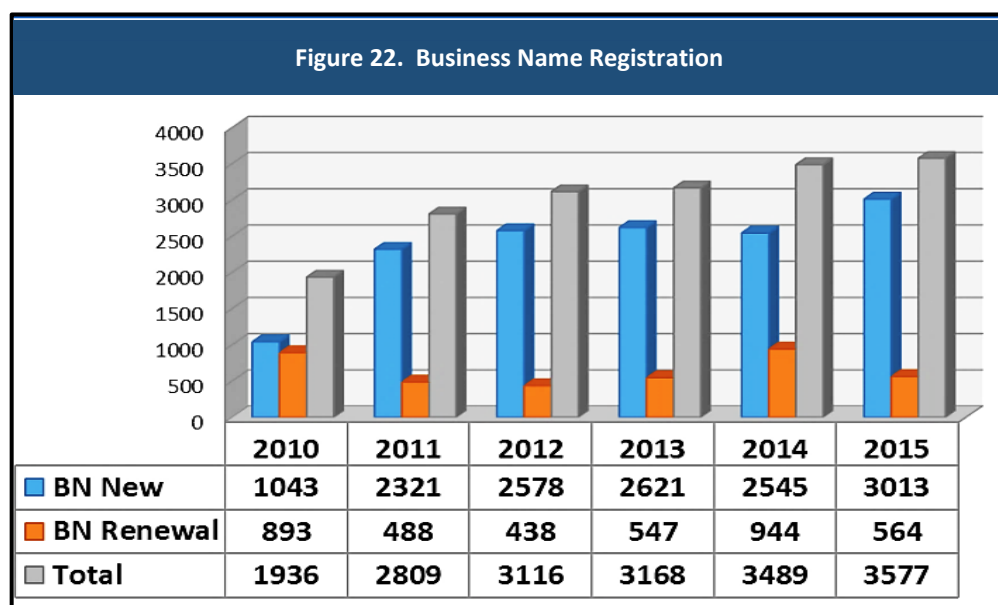
Year	No. of Accommodation Facilities	No. of Rooms
2009	180	2,982
2012	232	3,375
2015	360	6,370

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

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

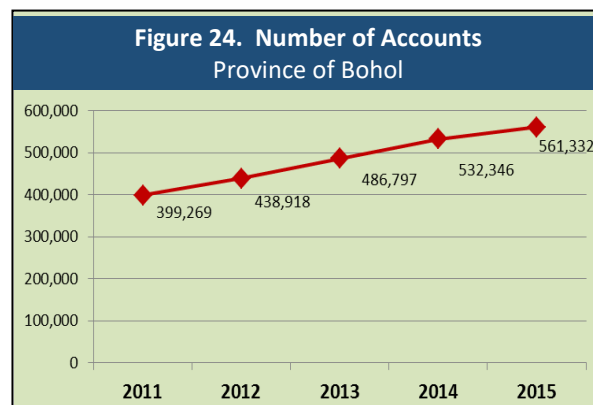
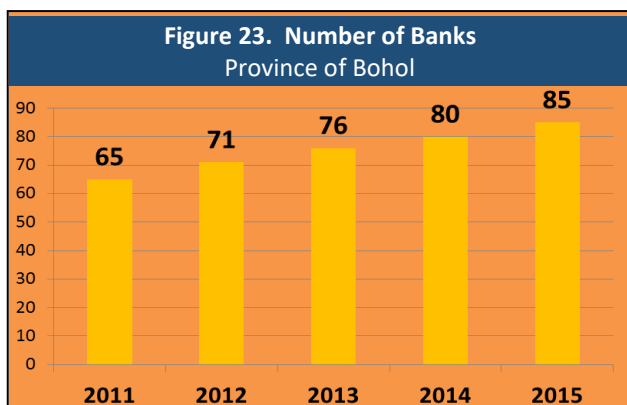


Furthermore, the operation of cooperatives in the province is also thriving to provide socio-economic benefits to its members. In 2015, there were already 565 cooperatives in Bohol (with 299 CDA-compliant cooperatives), operating with P2.54 Billion total assets and with a total membership reaching to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



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

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



Source: *Philippine Deposit Insurance Corporation (PDIC)*

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

Chapter II: Development Vision and Framework of the Province

- **Over-all Vision Statement and Development Goals**

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

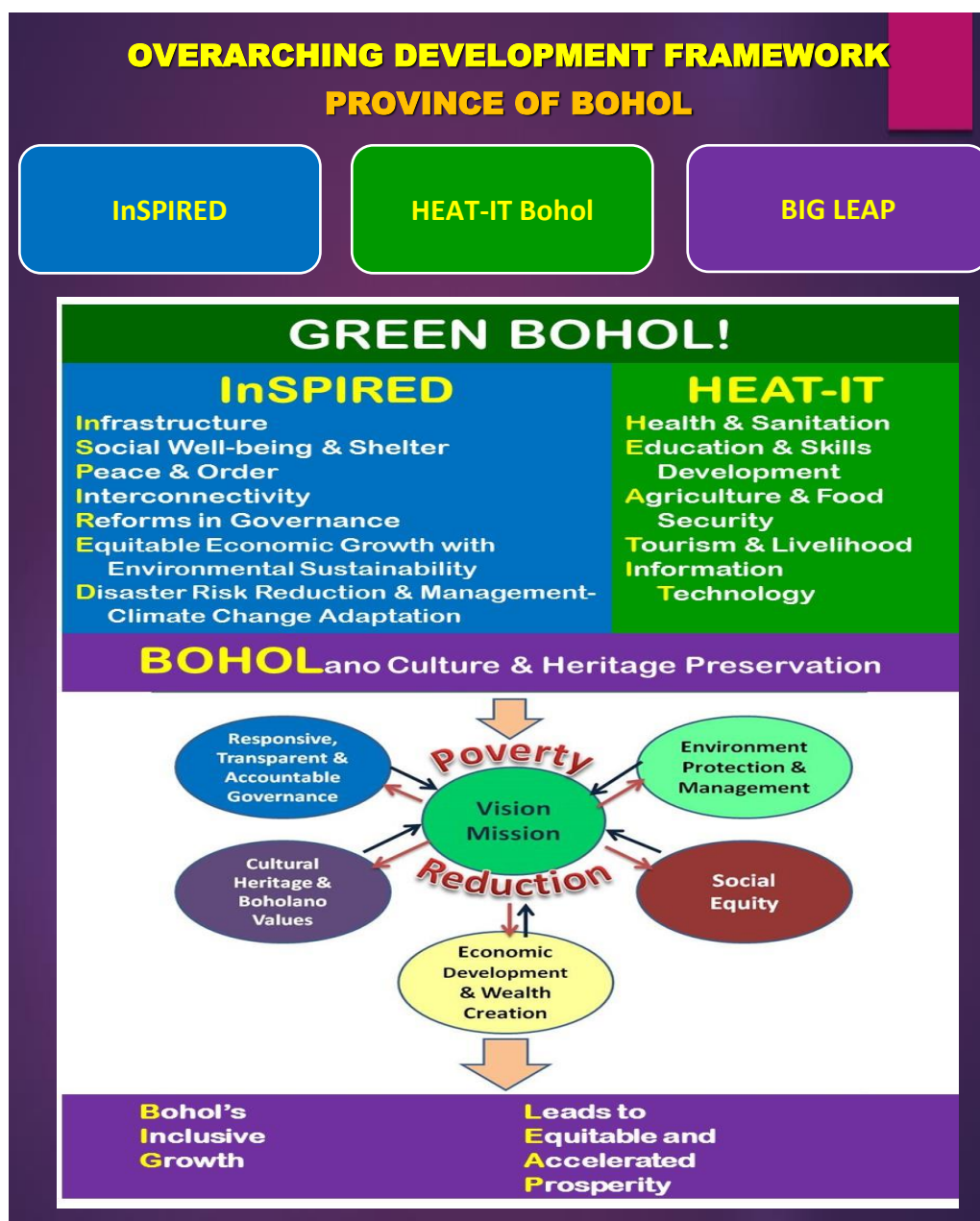
The vision and mission statements, for several provincial administrations, have been adopted and revalidated to ensure that the province's goals, strategies and programs are aligned with such long-term development state. Below are the vision and mission statement of the Province of Bohol.



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

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

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



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

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

- **Social Well-being and Shelter:** development interventions and services for vulnerable groups, persons with disabilities including the conduct of mobile services. Collaboration with various stakeholders for the relocation of vulnerable communities as well as the completion of the construction of core shelter for the earthquake victims in the province. Enhancement of disaster preparedness and response capabilities shall also be continued. Through fund-sourcing, shall establish rehabilitation service facility. Also, to continue to advocate for the prevention of illegal recruitment and human trafficking.
- **Peace and Order:** this is a continuing concern in the province, not just for anti-illegal drugs but for all forms of criminality including efforts to maintain internal security. Convergence for anti-criminality programs through the Provincial Peace and Order Council (PPOC) and Joint Task Force Dagon. Support shall be continued for the enhancement of capabilities of law enforcement agencies/ LGUs including the upgrading of facilities and equipment to fight and prevent crimes. Jail decongestion program and designation of additional anti-illegal drug court shall be supported in collaboration with appropriate national government agencies. A drug rehabilitation center will also be constructed.
- **Interconnectivity:** sustaining partnerships and collaboration among LGUs, NGAs, CSOs, and the Private Sector in pursuing common development goals, through counterparting arrangements and sharing of technologies and skills. Strategic convergence with stakeholders for various socio-economic development initiative implementation in the province. Also to improve physical interconnectivity through various infrastructure projects for information technology, power, water, communications, roads and bridges.
- **Reforms in Governance:** The PGBh shall continue to initiate reforms for more efficient, developmental, accountable and responsive governance. Strategies to achieve these include increase in local revenue generation, improvement of systems and processes and policy implementation especially for public financial management and human resource capacity development. The operation of local special bodies shall also be strengthened and local codes needed shall be enacted/ reviewed.
- **Equitable Economic Growth with Environmental Sustainability:** the PGBh shall continue to improve the performance of the province's economic drivers on agriculture, tourism, trade and investments and new industries for IT – based services in collaboration with stakeholders. The establishment of micro-small-medium enterprises shall be supported and the operation of the Negosyo Center and Business One Stop Shop shall be sustained. In doing this, the protection and preservation of the environment shall be underscored and benefits shall trickle down to the grassroot level.
- **Disaster Risk Reduction & Management/ Climate Change Adaptation:** Considering that the province is prone to multiple natural hazards, building capacities and awareness for disaster preparedness, mitigation, response shall be heightened. Among the strategies to be supported are: establishment of early warning system, awareness campaign at the community level, strengthening of local DRRM offices, upgrading of capabilities and facilities/ equipment, and mainstreaming of DRRM to local development plans.

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

- **Health and Sanitation:** pursuing programs to improve hospital and sanitation services, hospital facilities and equipment upgrading, special universal Philhealth Program, medicine and medical supply management, specialization of hospital services, and sustaining effective health programs.
- **Education and Skills Development** – improving school facilities, providing other avenues to develop the skills of labor force, which are responsive to the industries available in the province, implementation of the Dynamic Learning Program, establishment / operation of municipal libraries, CPG Scholarship Program, and strengthening partnerships with various national government agencies and stakeholders to pursue education and skills development.
- **Agriculture and Food Security:** Continue to implement and expand the services for agriculture, fisheries, livestock sectors thru the different programs of the provincial government, NGAs and other LGUs. Modernization of agri-livestock and fishery facilities, promotion of agri-business, strengthening agri-database, and capacity development for project implementers.
- **Tourism and Livelihood:** this shall include support to product development of new tourism sites and improvement of existing sites. Extensive promotion and marketing for Bohol's tourism industry, provision of infrastructure support to tourism, and creative tourism development.
- **Information Technology:** Though this is mainly driven by the private sector, the Province is working closely for the availability of needed resources (human resource and skills) and infrastructure support (reliable power, communication network) for the IT industry, as well as facilitating, with LGUs to provide an investment-friendly environment for IT. Also to be sustained are the implementation of the Bohol Information System Strategic Plan, and the development/ maintenance of processes and application software/ systems.

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

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

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

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

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

- **Agriculture Sector Vision and Goals**

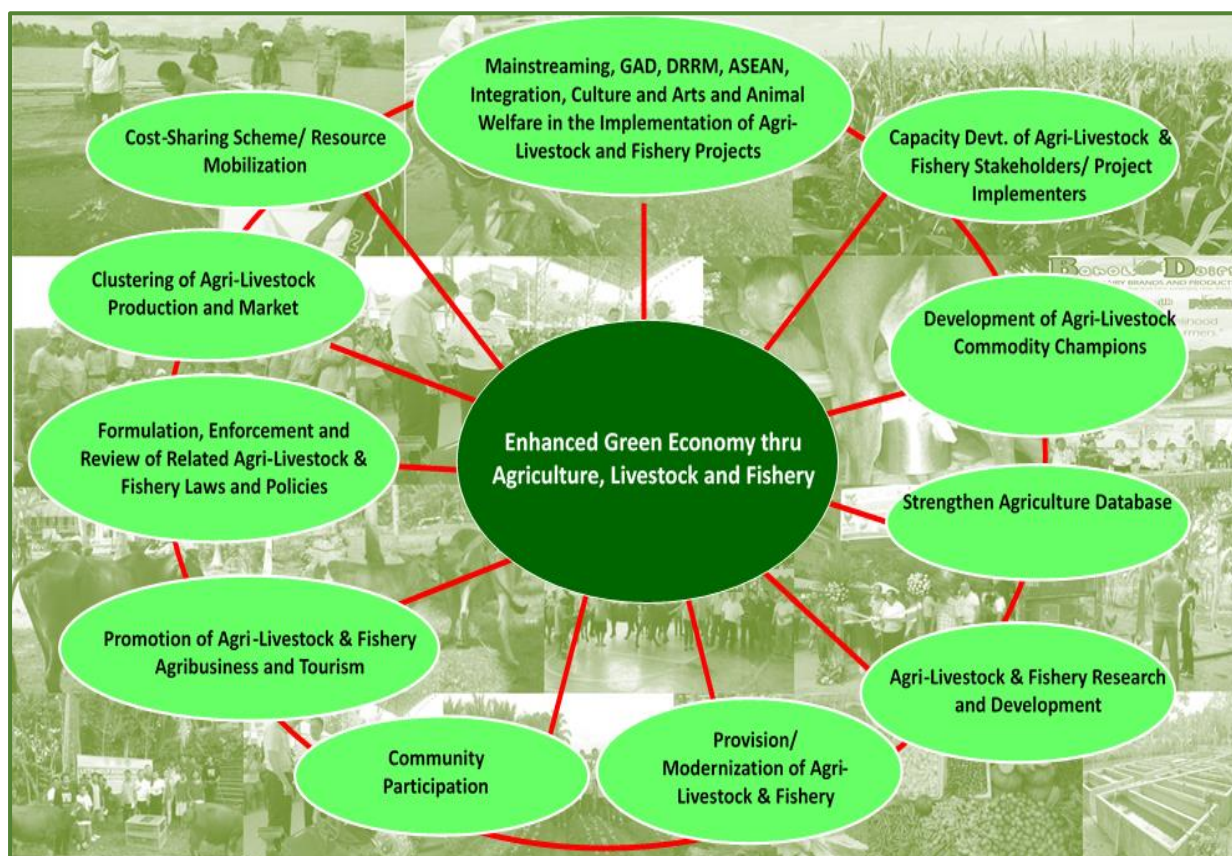
Agriculture is one of the economic drivers of Bohol and is the main source of livelihood of majority of the Boholanos. It provides income and livelihood to farmers and fisher folks and their dependents. Agriculture also enables traders, processors, retailers, and other groups to, directly or indirectly,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

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

The Provincial Government also desires to develop its high-value crops, vegetables, banana, mango, coconut and other economically beneficial crops like palm oil and cassava. Fishery development in the province is also being prioritized, considering that Bohol is a major source of fishery products in Region VII. As to livestock and poultry development, the Provincial Government has been continually responsible in improving and safeguarding the said industries with the promotion of native chicken and the ongoing research on the development of a Boholano strain of native chicken.

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

Figure 25. Agriculture Goals and Strategies



Chapter III: Priority Commodity Chains Development

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

Table 6. Priority Commodities, Bohol, 2015

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

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

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

Commodity Value Chain 3: BUFFALO DAIRY¹²

A) Commodity Profile

- **Product Description**

Buffalo are large members of the Bovidae family. There are two types of buffalo; the African or Cape buffalo and the Asian or water buffalo. In the Philippines, the buffalos in the country are under the Water Buffalo type and locally called as Carabao. The water buffalos are the largest bovine which includes yak, bison, zebu, wild cattles and others.



The water buffalos have been domesticated by humans for more than 5,000 years. Humans use the meat, milk, leather (hide) and horns of water buffalos. According to Encyclopedia Britanica it is the “living tractor of the East”. As cited in Buffalo Bulletin (Nov 2013) by Wanapat, M and Kang, S, buffalos are long-time ruminant animals contributing to the integrated farming systems as a source of draft power, transportation, on-farm manure, meat, milk and livelihood of the farmers. Buffalos are usually raised by rural farmers and are well-adapted by the harsh environment. Buffalos are also capable of utilizing low quality roughages especially agricultural crop-residues and by-products hence their potential are remarkable in the meat and milk production using locally available feed resources.

There are two types of water buffalos, the swamp type and river type. The swamp water buffalos are mainly found in Southeast Asia. They are aptly called as swamp buffalos because of their preference to wallow in muddy ponds and swamps. The carabao native to the Philippines and Guam falls under this type. Swamp type buffalos are domesticated and used as a draught animal. They mainly used in the cultivation in rice paddies, for carrying heavy loads and transportation. They thrive in cool weather conditions and are considered as pets because of their ability to work.

The river type of water buffalos is a common breed from the Indian sub-continent. They are usually found in India, Pakistan, Turkey and Egypt. The river buffalo’s primary purpose is for its milk production. These buffalos produce milk at a large extent that is why they are also reared as pets. They thrive in moderate weather conditions and they mostly stay in rivers and clean waters.

¹² Value Chain Analysis: Buffalo Dairy, Central Visayas, Department of Agriculture, February 2017

Table 7. Common Breeds of Buffalo in the Philippines

SWAMP TYPE	RIVER TYPE
Philippine Carabao (Native)	Murrah Buffalo
	
<p>The native Philippine carabao is a swamp type buffalo. Carabaos like to wallow in swamps and marshlands. The color is light grey and lighter in the legs and outside the body and the ears. Horn is generally curved toward and inward to form a semi-circle from the base of the head. Upper surface of horns has grooves. Low wide and heavy built body with sufficient type of draft and meat. The average mature weight for male is 500 kgs while the female is 425 kgs. Average milk production is 1.45-2.64 kgs/day.</p>	<p>This breed originates from India. Jet black in color with white switch in the tail and have a soft and fine skin texture. Murrah buffalos are massive and stocky in built with light neck and head. They have short limbs with broad hips and drooping quarters and wedge shape conformation. Udder and teats of Murrah buffalos are well developed. The average size of male and female Murrah buffalos is 625 and 525 kgs. Average milk yield is 5-7 kg. Per day.</p>

Source: *Livestock Division, DA-RFU VII* (www.mix.ph.com/carabao-production-introduction-breeds/)

The Philippine carabaos are mostly used for working and for meat production, while the Murrah buffalo imported from Bulgaria is for milking purposes. Murrah buffalo produces more milk than the native carabao having an average milk yield of 5-7 kg./day as compared to 1.45-2.64 kg./day of the native carabao. These two breeds can also be found in Bohol and two more others through cross breeding.

Figure 26. Picture of Buffalo Crossbreeds**1st GENERATION CROSS****2nd GENERATION BACKCROSS**

There are 2 known crossbreeds in Bohol. The 1st generation cross is 50% native buffalo and 50% Murrah. The 1st Generation produces milk of 4.5 to 7 liters per day. The 2nd Generation Backcross is 75% Murrah Buffalo and 25% Native Buffalo. The 2nd generation produces an average of 6 to 8 liters of milk per day.

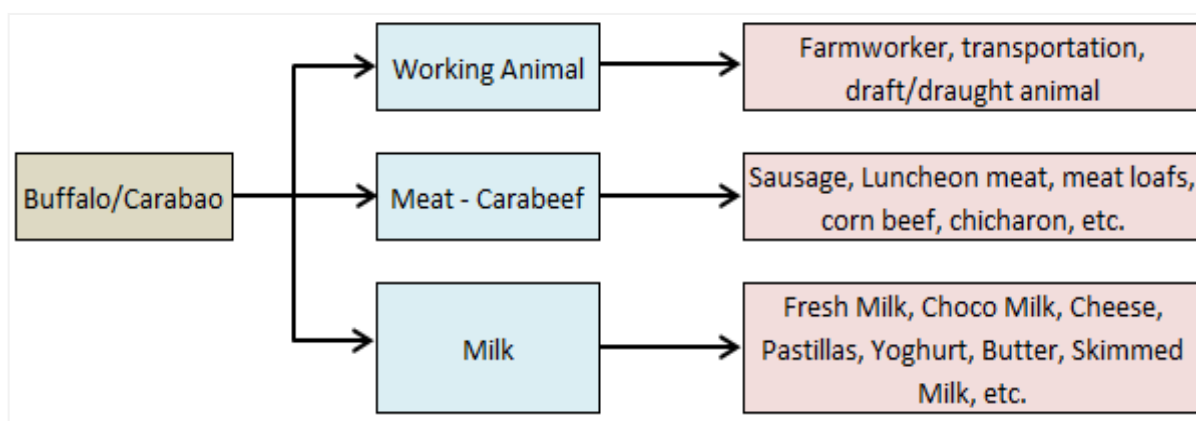
In summary, Bohol has 5 breeds of buffalo - the native carabao, the 1st generation crossbreed, the second generation crossbreed, the Riverine types of buffalo which includes the American Murrah buffalo and Bulgarian Murrah buffalo, and lastly the Italian Murrah buffalo.

In the Philippines, buffalos or commonly called as carabao, kalabaw in tagalog and kabaw in bisaya is the

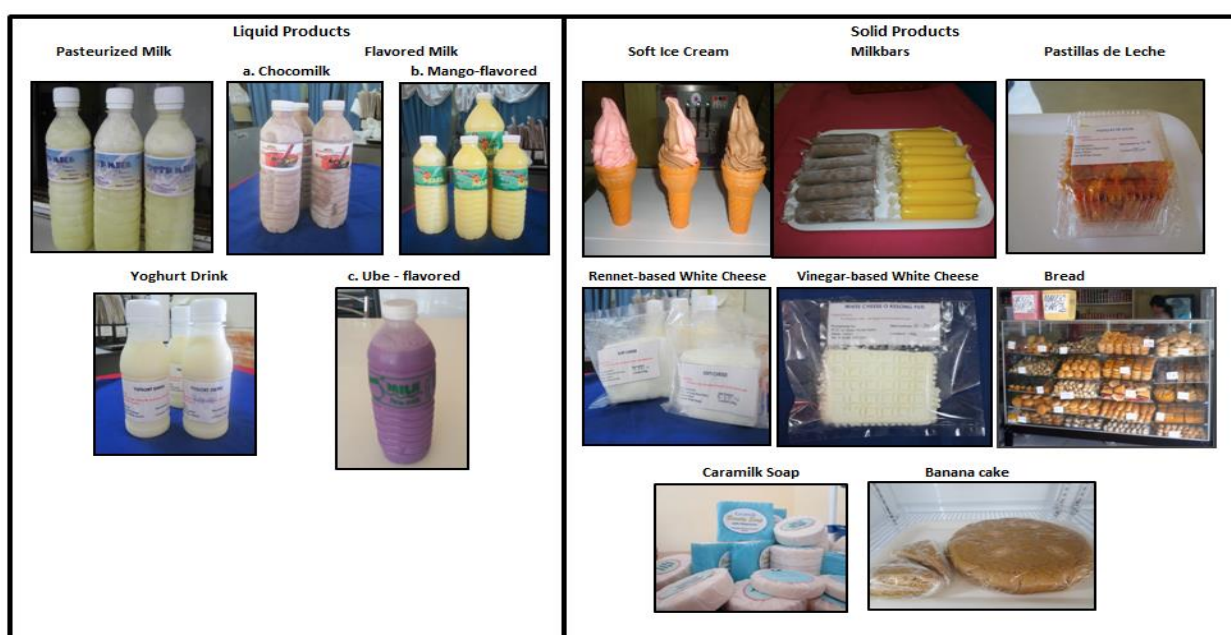
national animal in the country. The carabao symbolizes strength and hardwork for the Filipinos. For the Filipino farmers, the carabaos are considered as the farmer's best friend and also known as the "beast of burden." The carabao is a very important animal especially for Filipino farmers. Since most of the farmers especially rice farmers in the country are smallholders and have less capital to purchase machines, they use the carabao to plow the field. Carabaos are also used as transportation and as draft animals. Wooden carts are attached to the animal to carry heavy loads or loads are carried by the carabaos on their back and travel from the mountains to the markets located near the main roads.

As seen on figure below, there are also other uses of carabao in the country. Carabaos are also raised for their meat and milk. As cited in the PCAARD-DOST web site, carabeef or the meat from the carabaos are important component of comminute proportions such as sausages, luncheon meat, meat loaf and canned corn beefs wherein it is partly carabeef. Because of the carabeef's inherent high water holding, meat product manufacturers utilize carabeef extensively. Consumers also attracted to carabeef products because it does not lose much its original form when cooked. Aside from that, carabeef is priced much lower than beef. In Bohol, the carabeef are also used for tapa and chicharon.

Figure 27. Functions and uses of Carabao in the Philippines



Milk is another product that is produced from carabaos. According to FAO, buffalo is the second largest source of milk in the world accounting 13% of the total production next to cattle which encompasses 83%. Milk from carabaos is further processed into other product formats both in liquid or solid forms. Liquid forms include fresh milk, choco milk, flavoured milk and yoghurt drinks. Solid form includes white cheese or "*kesong puti*", pastillas, mozzarella cheese. In other countries, buffalo milk is also used for butter, butter oil or ghee, soft and hard cheese, condensed and evaporated milk, skimmed milk, buttermilk and etc.

Figure 28. Different Milk Products in Bohol

Shown on Figure 28 above are the different milk products from Buffalo dairy found in the province. The products are categorized into liquid and solid products. Liquid products include the pasteurized milk, flavoured milk (chocolate and mango) and yoghurt drink. Another liquid product not in the picture is the raw milk and homogenized milk. Solid products includes ice cream, milkbars which also have chocolate and mango flavours, pastillas de leche, white cheese and bread loafs. Also included are soap bars made from carabao milk.

Domestic Production

The Philippine Carabao Center - Ubay Stock Farm (PCC-USF) maintains herd of purebreds, crossbreeds, and native breeds. The stock farm serves a satellite gene pool and breeder farm for their dispersal program and research thrusts.

Table 8. PCC Current Inventory

	Philippine Carabao	USMB x BMB	BMB	USMB	Total
Female	83	105	77	24	289
Male	20	124	50	0	89
Total	103	229	127	24	378

USMB – US Murrah Buffalo

BMB – Bulgarian Murrah Buffalo

Source: *Philippine Carabao Center (PCC), 2017*

Buffalos are found in almost all regions in the Philippines as these are common domestic animals, utilized by small hold farmers engaged in mixed farming system with 1-5 heads per family. Table 4 shows that the buffalo population in the Philippines is steadily increasing from 2014 to 2017 with average annual growth rate of -0.26% mainly due to sharp decrease in 2013-2014.

Table 9. Buffalo Inventory in the Philippines, 2013-2017 (by heads)

	2013	2014	2015	2016	2017	Ave. Annual Growth Rate
PHILIPPINES	2,912,842	2,847,445	2,854,838	2,877,091	2,881,894	-0.26%
WESTERN VISAYAS	310,114	313,592	312,583	311,366	306,855	-0.10%
BICOL REGION	257,943	269,100	278,331	288,641	302,610	4.07%
CAGAYAN VALLEY	258,092	252,830	247,171	242,831	235,936	-2.22%
EASTERN VISAYAS	280,210	234,612	233,613	230,637	225,421	-5.06%
CENTRAL LUZON	204,094	211,966	217,665	223,978	223,036	0.33%
SOCCKSARGEN	235,330	222,195	213,500	211,722	208,684	-2.94%
CENTRAL VISAYAS	172,662	174,501	177,952	181,531	183,676	1.56%
CALABARZON	172,016	171,388	171,696	170,091	176,002	0.59%
ILOCOS REGION	161,197	157,057	160,310	163,561	165,850	0.73%
DAVAO REGION	162,009	162,621	162,801	162,219	160,519	-0.23%
Others	699,175	677,583	679,216	690,514	693,305	-0.20%

Source: *Philippine Statistics Authority, 2017*

Table 9 shows the trend of supply and disposition of carabaos. Buffalo inventory posted a decrease between 2011 to 2013 by 2.36% and recovered by the end of 2015 by 0.78%. The decreasing buffalo inventory from 2011-2013 is marked by decreasing population and increased death losses due to diseases. 2013-2015 posted increasing buffalo inventory mainly due to the decreased death losses and slaughtered carabaos, despite the decrease of live born calves.

Table 10. Carabao Inventory by Farm Type and Use Classification

	2011	2012	2013	2014	2015	% Share 2015
Total	3,075,259	2963980	2,912,842	2,847,445	2,854,838	100%
Backyard	3,063,741	2,951,714	2,900,681	2,835,818	2,842,768	99.58%
Commercial	11,518	12,266	12,161	11,627	12,070	0.42%
Slaughtered**	481287	461929	457073	461493	453699	15.89%
Dairy**	14,681	15,677	16,364	16,829	17,299	0.61%
Farm Work*	2,579,291	2,486,374	2,439,405	2,369,123	2,383,840	83.50%

* Computed value, assuming carabao has no other use aside from meat and milk

** PSA industry data

Source: *Philippine Statistics Authority*

Table 10 shows the breakdown of the inventory according to farm type and purpose, with 99.58% owned by backyard farmers and 83.50% utilized for farm work of the 2.85 million carabaos. This shows that a huge percentage of carabaos in the country, which are mostly owned by backyard farmers, are utilized for agricultural work. The carabao as a meat (15.89%, assuming that all slaughtered carabaos are utilized for carabao meat) and milk (0.61%) source, remains a potential yet to be maximized.

Table 11. Buffalo Inventory in Central Visayas, 2013-2017 (by heads)

	2013	2014	2015	2016	2017	% Annual Growth	% Share 2017
CENTRAL VISAYAS	172,662	174,501	177,952	181,531	183,676	1.59%	100.00%
Bohol	65,962	67,383	68,522	69,576	70,057	1.55%	38.14%
Cebu	46,909	47,098	47,722	48,414	49,213	1.23%	26.79%
Negros Oriental	58,985	59,199	60,864	62,664	63,474	1.90%	34.56%
Siquijor	806	821	844	877	932	3.91%	0.51%
Backyard							
CENTRAL VISAYAS	172,144	173,953	177,403	181,011	183,113	1.59%	99.69%
Bohol	65,488	66,883	68,014	69,092	69,583	1.56%	99.32%
Cebu	46,909	47,098	47,722	48,414	49,213	1.23%	100.00%
Negros Oriental	58,941	59,151	60,823	62,628	63,385	1.88%	99.86%
Siquijor	806	821	844	877	932	3.91%	100.00%
Commercial							
CENTRAL VISAYAS	518	548	549	484	474	-2.12%	0.26%
Bohol	474	500	508	484	474	0.00%	0.68%
Cebu	0	0	0	0	0	0.00%	0.00%
Negros Oriental	44	48	41	36	89	25.57%	0.14%
Siquijor	0	0	0	0	0	0.00%	0.00%

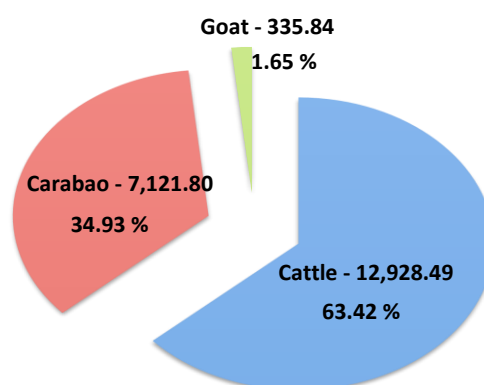
Source: *Philippine Statistics Authority*

Central Visayas is 7th among all regions with 6.37% share of the country's buffalo headcount. Table 11 shows that the buffalo population in the region has not been affected by the Typhoon Yolanda in 2013 and continued to increase at a growth rate of 1.59%. All provinces showed increasing buffalo population with Siquijor posting the highest growth rate by 3.91%. In addition, 99.69% percent of buffaloes in the region are owned by backyard farmers, with less than 1% growing in commercial farms.

Bohol has the highest buffalo population at 38.14% in 2017 due to the flourishing local buffalo dairy industry. PCC, Provincial Local Government of Bohol, and involved municipalities pursued programs on the development of crossbreeds, provision of veterinary supplies and vitamins, and establishing enterprise. Demand for the local buffalo dairy products from institutional buyers, schools, and government feeding programs have enabled the buffalo dairy farming in the province to be a profitable enterprise, with the Bohol Dairy Producers Association (BoDPA) as the main driver.

Philippine Milk Production

In the Philippines, there are 3 milk sources: cattle, carabao and goat. Table 12 shows that cattle has the highest dairy population with 55.17%, followed by the carabao (40.07%) and goat (4.77%). Cattles and carabaos comprise more than 95% of the dairy population, as these are the most common domestic animals in households. Furthermore, milk production was followed by the carabao at 34.93%. Juxtaposing population and milk production suggests that cattles have higher milk yield pre head ratio compared to

Figure 29. Distribution of Milk Production by Animal Type, Philippines, 2015 ('000L)

carabao. If milk yield of dairy carabaos are improved, it can add the milk supply provided mostly by cattle milk.

Table 12. Dairy Animal Inventory by heads (2012-2016)

Animal Type	2012	2013	2014	2015	2016	Annual Growth Rate	% share 2016
Total	36,547	39,069	40,322	41,781	44,432	10.22%	100.00%
Cattle	19,292	21,067	21,605	22,498	24,512	6.76%	55.1%
Carabao	15,677	16,364	16,829	17,299	17,802	3.39%	40.07%
Goat	1,578	1,638	1,888	1,984	2,118	8.56%	4.77%

Source: *Dairy Industry Performance Report*

To improve the genetic potential for milk and meat production, PCC implemented the Genetic Improvement Program, to conserve the local existing germplasm and introduce high milk-producing riverine breeds. This maximizes the benefits from both specie to meet immediate and long term requirements of the rural poor and growing human population. Gene pool of existing local swamp buffaloes are maintained in institutional farms for the conservation and propagation of Philippine carabaos. Farmers-cooperators are given selected native carabaos for breeding and farming activities. National Gene Pool and satellite gene pool in PCC regional centers also produce semen from elite riverine breeds utilized for the artificial insemination (AI) program nationwide. Natural mating is also undertaken through the PCC Bull Loan Program facilitated by trained village based AI technicians (VBAITs).

The Enterprise Development Program supports the establishments of community organizations and cooperatives of smallholder farmers to develop profitable carabao-based enterprise. This is supplemented by access to superior breeding animals of farmers, infrastructure support for production and processing, training of technicians and farmers for the best practices of carabao growing, and business development.

Table 13. Central Visayas Buffalo Milk Production (in Liters)

PROVINCE	2014	2015	2016	Annual Growth Rate	% share 2016
Bohol	136,052.72	139,577.42	149,256.83	4.85%	89.65%
Cebu	13,018.50	7,588.00	17,231.75	32.36%	10.35%

Source: *Philippine Carabao Center, 2016*

Table 13 shows that milk production in the region is increasing for the past two years at a rate of 5.50%. Bohol posted the highest milk production with 89.65% share. This is mainly attributed to the higher buffalo population, presence of PCC institutional facilities and growing local buffalo dairy industry. Cebu, on the other hand, only contributed 10.35% to the total milk production but nonetheless had a higher growth rate at 32.36

Table 14. Dairy Carabao Inventory in Bohol by Sex and Age, 2017

Farm Type	Female			Male			Total	% share
	Calf	Heifer	Cow	Calf	Jr. Bull	Sr. Bull		
Individual Farmers	45	71	189	34	5	4	348	47.93%
PCC-USF	54	113	122	77	3	9	378	52.07%
Total	99	184	311	111	8	13	726	100%

Source: *Philippine Carabao Center, 2017*

Table 14 shows the carabao inventory in Bohol, nearly equally shared between PCC-USF (government institutional farm) at 52.07% and individual farmers (47.93%). The inventory shows 81.82% of the total are female carabaos, while males are 18.18%. This translates to a milk yielding population as female carabaos are dominant. Male calves, at most 2 years old, consist 84.09% of the male population. This set of young male carabaos can be used for the expansion of the local buffalo population through the Bull Loan Program of the PCC.

Female calves and heifers are potential sources of milk, once these animals are impregnated and properly cared for. They consist 47.64% of the female population and could add to the current milk source, there is also a 4.5:1 female to male ratio in the dairy carabao inventory. Currently, there are 77 pregnant heifers and cows out of 594 females.

Table 15. Buffalo Dairy Production in Bohol by Farm Type (2014-2016) (in Liters)

Farm Type	2014	2015	2016	Annual Growth Rate	% share 2016
Individual Farmers	54,129.87	58,128.06	72,174.13	16.67%	48.36%
Institutional Farms	81,922.85	81,449.36	77,082.70	-2.95%	51.64%
Total	136,052.72	139,577.42	149,256.83	4.85%	100.00%

Source: *Philippine Carabao Center, 2016*

There are two main sources of milk in Bohol. Individual farmers and the PCC-USF, which is a government institutional farm. Dairy farmers in Bohol are mostly found in the dairy zones identified by the PCC located in 6 municipalities: Alicia, Dagohoy, Inabanga, Mabini, San Miguel, and Ubay disaggregated in Table 15. From 2014-2016, dairy production in Bohol has increased by 4.85%. It is notable to see the 16.67% increase of milk production by the individual farmers, while PCC posted -2.95%. The decrease in the milk production of PCC was pronounced in 2016, the same year the farmers posted a sharp increase in milk production.

In August 2015, Bohol Dairy Producers Association (BoDPA) transformed to a major dairy enterprise which carried out toll processing and milk collection through its cooperative/association units. Milk was bought by BoDPA and toll processed at PCC, and marketed throughout the province. The revenues of BoDPA made farmers aware of the profit from the buffalo dairy business and this attracted them to maximize their milk production. According to PCC, farmers were considered to be beginners in terms of proper milk extraction and collection in 2015. However, with the desire to increase their income from milk production, the farmers learned the proper practices of milk extraction and collection. This led to the increase in milk production in 2016.

Table 16. Milking Carabaos and Milk Production on Top-Producing Municipalities, 2016

Municipalities	Milking Carabao (heads)					Volume of Milk Produced (L)	No. of Farmers
	CB	IMB	RB	SB	Grand Total		
Alicia	11		3	16	30	6,210.73	23
Dagohoy		1	1	16	18	2,480.55	14
Inabanga				9	9	252	9

Mabini	48	3	28	40	119	23,552.68	74
Pilar	4		1	6	11		
San Miguel	18		2	18	38	3,192.29	33
Ubay	96	4	29	78	207	37,362.17	155
Total	177	8	64	183	432	73,050.42	308

CB-Cross Breeds; IMB-Italian Murrah Buffalo; RB-Riverine Breeds; SB Swamp Breeds

Source: *Philippine Carabao Center, 2016*

Table 16 shows the milking carabaos in Bohol, with Ubay posting the highest inventory and volume of milk produced. This is because PCC-USF is taken into account, which is located in Ubay. Next to Ubay is Mabini which also has the 2nd highest carabao dairy population and volume of milk produced. Pilar has not posted volume of milk production as the animals are yet to mature. These areas were the selected areas of PCC for dairy production, adjacent municipalities to Ubay where PCC-USF is situated. Carabaos of the dispersal programs facilitated by the PCC were distributed throughout these municipalities, which are also prioritized for the free vitamin, injections, supplements, biologics, and vaccinations. It should also be observed that there is a 1:1.4 farmer to milking carabao ratio.

Nature and Structure of the Industry

- Value Chain Mapping

Figure 30. Geographical Flow of Buffalo Dairy

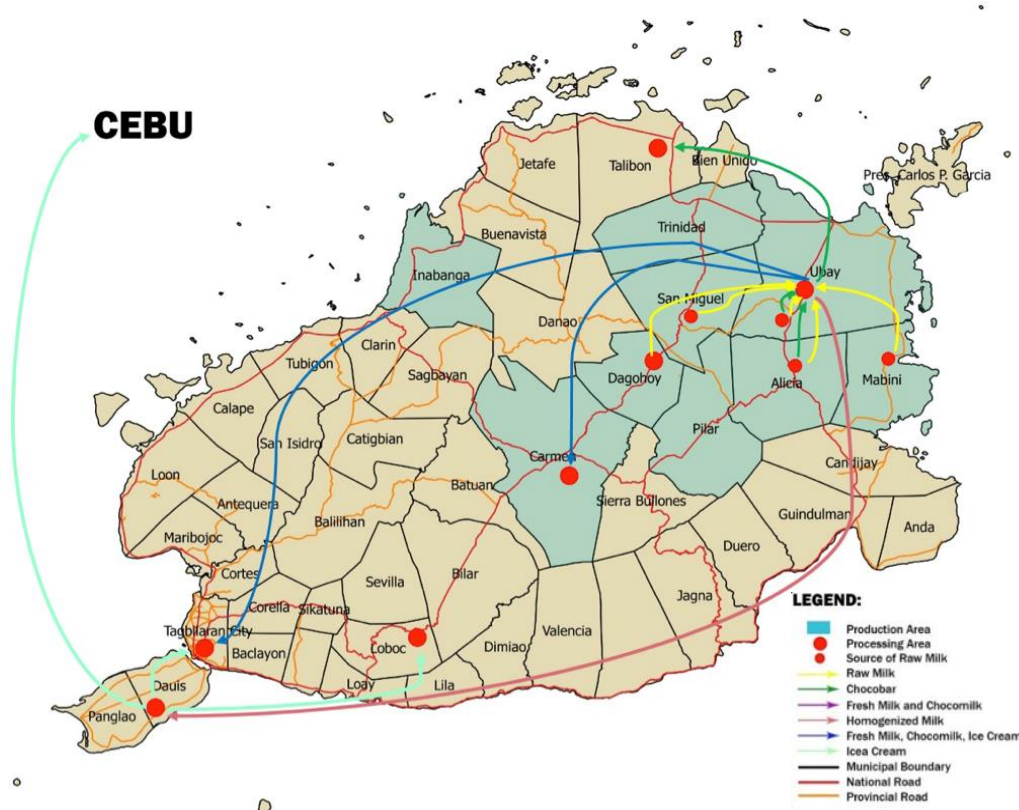
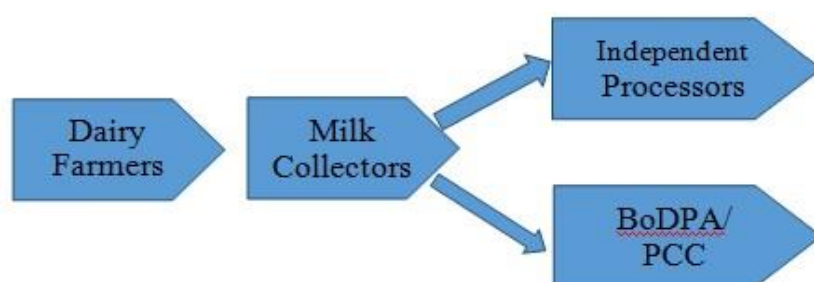


Figure 30 above shows the geographical flow of raw buffalo milk and select processed dairy products. Market flow of buffalo dairy is mostly within the province – collected, processed, and distributed through the partnership between PCC and BoDPA. Homogenized ice cream by Bohol Be Farm is distributed outside of Bohol to outlet(s) in Cebu. PCC also supplies the milk outside of Bohol, to avoid market conflict with BoDPA.

BoDPA facilitates the distribution of dairy products processed by toll in PCC to various hotels, resorts, malls, coffee shops, tourism sites and selected outlets across the province. Cooperatives and farmers' Association also process and distribute chocobars, pastillas de leche, soap, and choco milk. The most popular are cheesy sweets, torta, pastillas, fresh milk and ice cream. Pasteurized milk is also being distributed to various schools and barangays in line with the milk feeding program of the government. This is in line with the directive of the Provincial Local Government of Bohol to link up the province's dairy production with the tourism industry to create awareness and product in the market.

Main processor is the PCC, producing fresh milk, homogenized milk. Flavored milk (mango and choco), white cheese, and pastillas de leche. Homogenized milk is supplied to Bohol Bee Farm to be processed to their own homogenized ice cream. Select cooperatives also process various products albeit at lower volumes. The partnership between PCC and BoDPA works such that the milk collected from individual farmer are processed by a toll fee of P10.00/liter in the PCC processing center, and marketed within Bohol. Milk is collected and consolidated through the cooperative and association units to BoDPA and delivered to PCC. Figure 31 shows the flow of raw milk in Bohol. Milk produced in the PCC-USF is processed and marketed by PCC to locations outside Bohol, with identified buyers from Cebu and Leyte.

Figure 31. Flow of Raw Milk in the Province of Bohol



The farmer-producers of Bohol sell their milk to Bohol Dairy Producers Association (BoDPA) through their respective cooperatives/association, wherein most of them are members. Incentives are given to the farmers through the patronage refund from their respective cooperatives maintaining a stable market and price for their product. Figure 32 shows the product flow across processors, wholesaler-retailers to the end consumers.

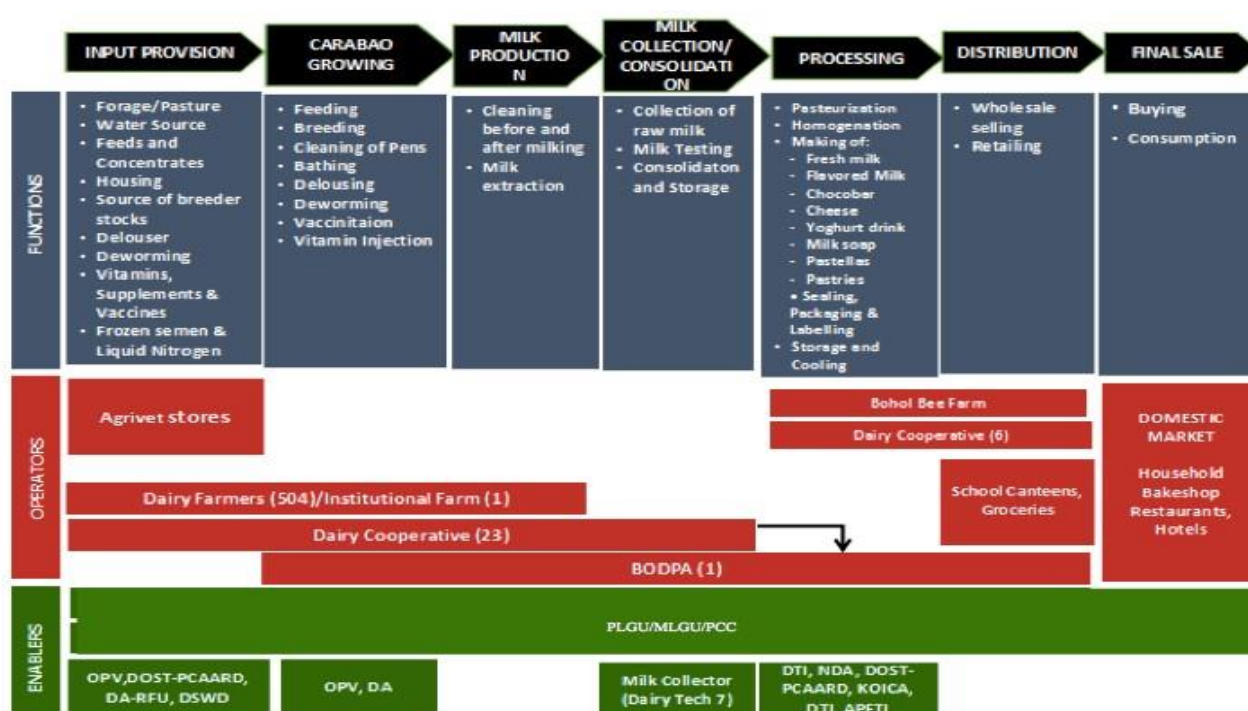
Figure 32. Flow of Pasteurized Milk and Milk Products



There are various players in the buffalo dairy industry in Bohol which perform input provision, carabao growing, milk production, milk collection/consolidation, processing distribution, and final sale. The players involve are the dairy farmers, input providers, dairy cooperatives, processors, and distributors. The whole chain is illustrated in Figure 33 below.

Input provision involves sourcing of breeder stocks or semen, farm inputs such as forage, feeds, concentrates, veterinary supplies, water and supplements, for the care and maintenance of the animal. The chain moves forward to carabao-growing which involves feeding, breeding, sanitary and health maintenance. For milk production, farmers extract milk from the carabao which are then collected and consolidated into collection centers, which are normally the cooperatives. Up to this segment, dairy farmers and cooperatives work together to ensure good breeding and raising practices and production of good quality milk. Processing and distribution is undertaken by BoDPA, ensuring constant supply of raw milk to PCC's processing facilities and delivering the products to various outlets and establishments.

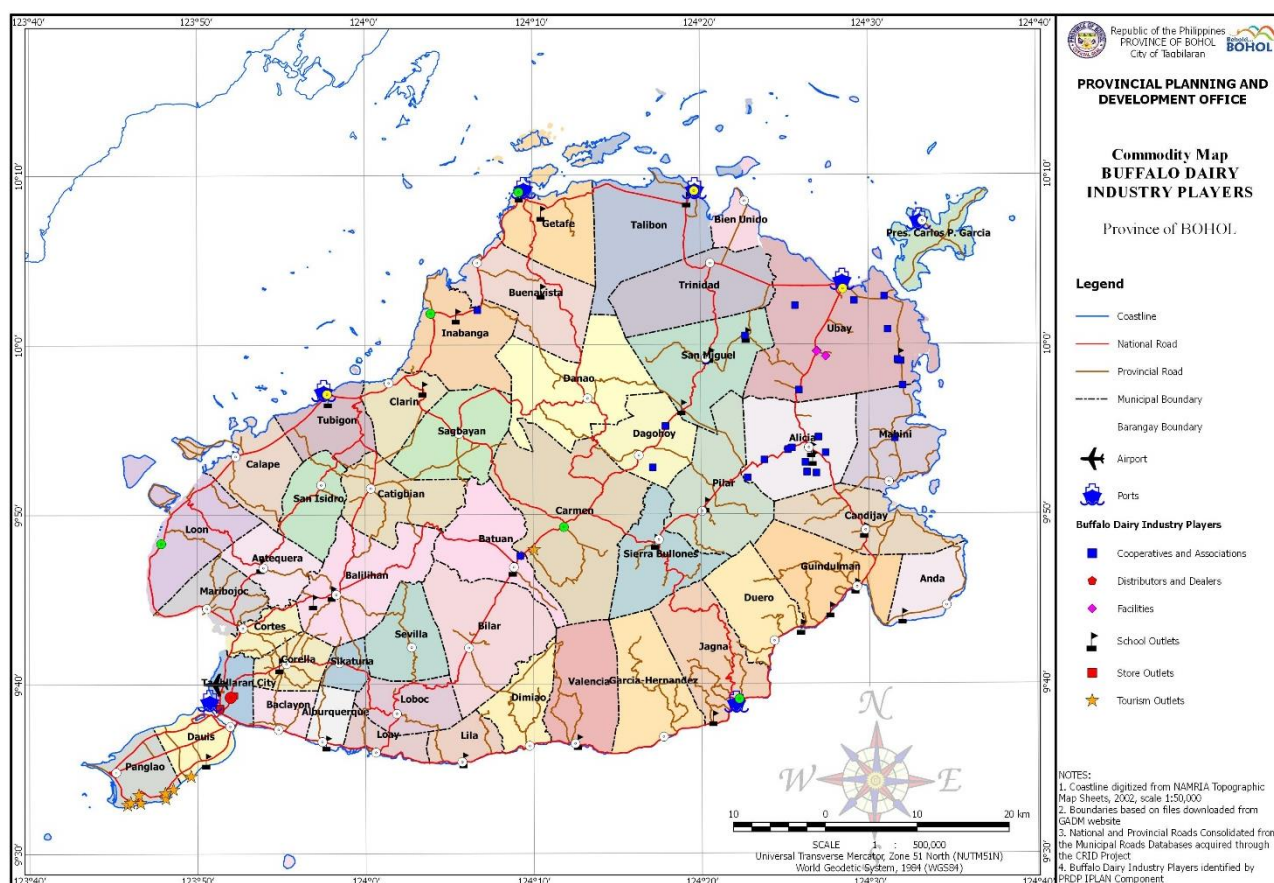
Figure 33. Buffalo Dairy Industry Value Chain Map



Enablers involved throughout the whole chain are the Provincial Local Government of Bohol thru the Office of the Provincial Veterinarian (OPV), the local government units (LGUs), and PCC which is mandated to promote and develop the carabao dairy industry. They provide assistance to players through trainings pertaining to various segments of the chain, dispersal programs, free vitamins injections, supplements, vaccines, toll processing and partnership on usage of facilities and equipment. The Department of Agriculture (DA) Department of Science and Technology – Philippine Council for Agricultural, and Natural Resourced Research and Development (DOST – PCAARRD), Department of Social Welfare and Development (DSWD) provide capability trainings and material inputs under provision and carabao-growing. Department of Trade and Industry (DTI), National Dairy Authority (NDA), DOST-PCAARRD, Korean International Cooperation Agency (KOICA), Advocate of Philippine Fair Trade Inc. (APFTI) have executed assistance in the processing of dairy-based products.

Commodity Map

Map 11. Commodity Map: Buffalo Dairy Industry Players



Competitiveness Vision

Within the next 3 years, dairy buffalo industry in the province will have increased productive and healthy dairy herd producing increased volume of quality safe milk and milk-based products using standard state of the art facilities and equipment, managed by enterprising dairy farmers organizations/ cooperative who are responsive to the growing market demands and working harmoniously with other stakeholders within the dairy buffalo value chain and is compliant with industry policies.

B. Investment Plan

The Provincial Government of Bohol recognizes dairy as one of the commodity champions that has potential as an industry to boost profitable income and help minimize if not eliminate malnutrition in the communities. This recognition is manifested through the Dairy Development Program implementation with strong partnership with institutions leading the dairy industry like the Philippine Carabao Center (PCC) and the National Dairy Authority (NDA). The introduction of dairying particularly in carabaos has slowly shifted the impression for the carabao as just a farming buddy into an economic opportunity and enterprising venture. The VCA conducted tells that buffalo dairying in the province is still on its infant stage where aggressive and strategic promotional awareness and activities have yet to be done. Foremost, the dairy herd should be amplified to increase milk yield with nutrition and animal health given equal attention to produce quality and good volume of milk. Support facilities should be operational within standards while government support and regulations should be in place with governing bodies to provide guidance. Eventually, the increase in milk yield will bring about farmers' income, expanded economic activities and strengthen the operation of farmer organizations with strong horizontal and vertical relationships with all other participants in the value chain. Considering the province as a prime tourist destination, the increasing health consciousness and the on-going program of the government to reduce malnutrition among children, milk and milk products are assured of its market.

Summary and Rank of Constraints

The constraints indicated in the value chain of dairy buffalo are herein ranked according to priorities. It can be noted that top priority are given to constraints that affect mostly the production of milk and milk products. However, those that follow are inter-related having one constraint affected and or connected to the next constraints. These also show that proposed interventions are not "stand alone"; it will be simultaneously responded with convergence of resources by a number of players in the value chain.

Table 17. Summary and Rank of Dairy Buffalo Value Chain Constraints

Constraints	Rank
• Lack of dairy breeds & high price in purchasing dairy breeds	1
• High cost of commercial feeds & limited access to formulated feeds	1
• Insufficient veterinary medicine due to inaccurate inventory of buffalo	3
• Limited areas for forage production	1

Constraints	Rank
• Limited potable water system for drinking water source of buffaloes, as water from deep wells is unsafe for consumption	1
• Limited materials for silage making in some backyard farms	1
• Lack of water storage during long summers & El Niño season	1
• Limited forage during long droughts	1
• Limited potable water system (PWS) and lack of electric pump for cleaning and feeding of buffalos because not all deep wells in the area are well covered and cemented	2
• Low calf drop rate against confirmed pregnancies	2
• Low pregnancy rate of female carabaos due to the following:	
a) <i>Non-compliance of farmers to the recommended proper care & management of carabao</i>	1
b) <i>Inadequate nutrition</i>	1
c) <i>Unpreparedness of the carabao in terms of physical & physiological conditions (e.g. low body condition score & with reproductive problem)</i>	1
d) <i>Poor monitoring & follow-up of the carabaos condition especially to interior barangays due to absence of service vehicles, gas & food allowance of the technicians</i>	3
• Slow adoption rate of farmers of new technology	2
• Shelter for the buffaloes	1
• High mortality of purebred carabaos (15% in Bohol) due to diseases, heat stroke & accident (ie. Strangulation & snake bites)	1
• Poor housing facilities & pens for milking in many backyard farms, leading to milk contamination	1
• Poor milk production performance of dairy carabao due to poor nutrition & management *	1
• Milk yield not maximized due to lack of temporary cold storage	2
• Poor road conditions & worn out service vehicles which cause delayed delivery, milk spoilage & high cost of transportation	1
• Inadequate milk collection centers & lack of cold storage facilities in collection centers	2
• Lack of processing facilities & dairy processing equipment at the cooperative level	3
• Lack of FDA/ BFAD certification of the processed products	1
• Poor packaging materials & labeling of carabao milk products	2
• Limited laboratory facilities for research and development which could improve quality products (i.e. smell, texture of milk, temperature, expirations)	3
• Limited capital by home-based processors	2
• Poor road conditions which contributes to the early spoilage of liquid milk products	1
• Lack of vehicles for delivery & marketing (ie. Chiller vans to avoid spoilage of milk)	1
• Limited knowledge on operational management, branding, marketing & product promotion	1
• Limited awareness of Boholanos & nearby provinces on the availability and nutritional qualities of buffalo fresh milk from Bohol	2
• Higher market price compared to milk products from other animals	3
• More defined arrangement with retailers, as products not sold and nearing spoilage are returned to BoDPA	3
• Milk collectors or AI technicians are not available at all times to cater the needs of the raisers	3
• Limited transport vehicles of AI technicians and dairy technicians to extend services to far-flung barangays	1
• Limited access to financial services for investment capital and financing for inputs from formal credit companies	3

Constraints	Rank
• Limited financial capabilities of cooperatives to offer credit loans to members	3
• Lack of regular or structured updating of data from LGUs to OPV (Re: inventory, death losses, morbidity)	2
• Lack of vaccine supply with some LGUs not counter-parting allocations of OPV	3
• Not all BALA designates have background on agricultural or livestock systems, no clear cut incentives except insurance and trainings	3

Table 18. Summary of Opportunities

Opportunities
<p>Segment 1. Input Supply</p> <ul style="list-style-type: none"> • Increase in number of dairy buffalo breeds • Presence of indigenous low cost materials for housing construction (e.g. bamboo, nipa) • Available planting materials for grasses, legumes for forage development and agro-industrial by-products and waste (i.e. copra, cassava, rice straw) as feed ingredients • Areas with high pasture suitability • Training module for silage making is available for use by the farmers • Feed formulation of PCC available to farmers <p>Segment 2. Carabao Raising</p> <ul style="list-style-type: none"> • Inland water sources in the area surrounding the production areas • Vitamins, vaccines, delousers and other biologics given for free by PCC and PLGU/MLGU through their BAHA/BALA programs • Training modules for health provision (paravet) and ovarian palpation and proper care and management of carabaos are available and provided to the farmers • Available AI technicians and bull breeders who can be called by the farmers if they need assistance in the care and breeding of their animals <p>Segment 3. Milk Production</p> <ul style="list-style-type: none"> • Infusion of purebred and crossbreeding with local carabaos which are high milk producers • Sufficient knowledge on proper sanitation and milk extraction • Available training and technical assistance on proper milking and good hygiene and sanitation during milking • Customized housing pens for carabao milking are established by raisers <p>Segment 4. Milk Collection</p> <ul style="list-style-type: none"> • Proper milk handling by using stainless milk cans for collecting milk • Increasing dairy carabao population and increasing milk production in the province <p>Segment 5. Processing</p> <ul style="list-style-type: none"> • Available high-tech equipment for milk soap processing • Available modern milk processing techniques which reduces waste and spoilage • Presence of ISO certified PCC processing facilities • Observance of quality standards in the processing of products • Training and technical services on milk processing available at PCC, NDA and DTI

Opportunities**Segment 6. Distribution**

- High demand of choco milk and choco bars among younger consumers
- High demand for raw quality milk and dairy products due to increasing number of domestic and foreign tourists visiting Bohol
- Presence of ports and sub-ports especially in dairy zones which makes delivery of products easier and more efficient

Segment 7. Support Services

- Presence of institutions focus on dairy (PCC and NDA) in the region
- Provision of technical assistance from PCC and OPV
- Active involvement of PCC-accredited and knowledgeable VBAITs

Expanded-Vulnerability and Suitability Assessment (E-VSA)

Only 3 parameters were used in the assessment and selection of priority sites using EVSA as a tool, namely; inventory of dairy carabao, poverty incidence and the existing Peoples' Organizations (POs) with dairy-based enterprises. The data (2015) are sourced from the Philippine Carabao Center (PCC) except for poverty incidence which is from the PPDO.

For poverty incidence, an equivalent weight of 0.1 was assigned based on the idea that dairying cannot be a major factor in reducing if not totally eliminating poverty. It is contributory however to income generation and reducing malnutrition in the families particularly children. The 2 other parameters were assigned a weight of 0.2 respectively since dairy-based enterprises go hand in hand with existing dairy animals.

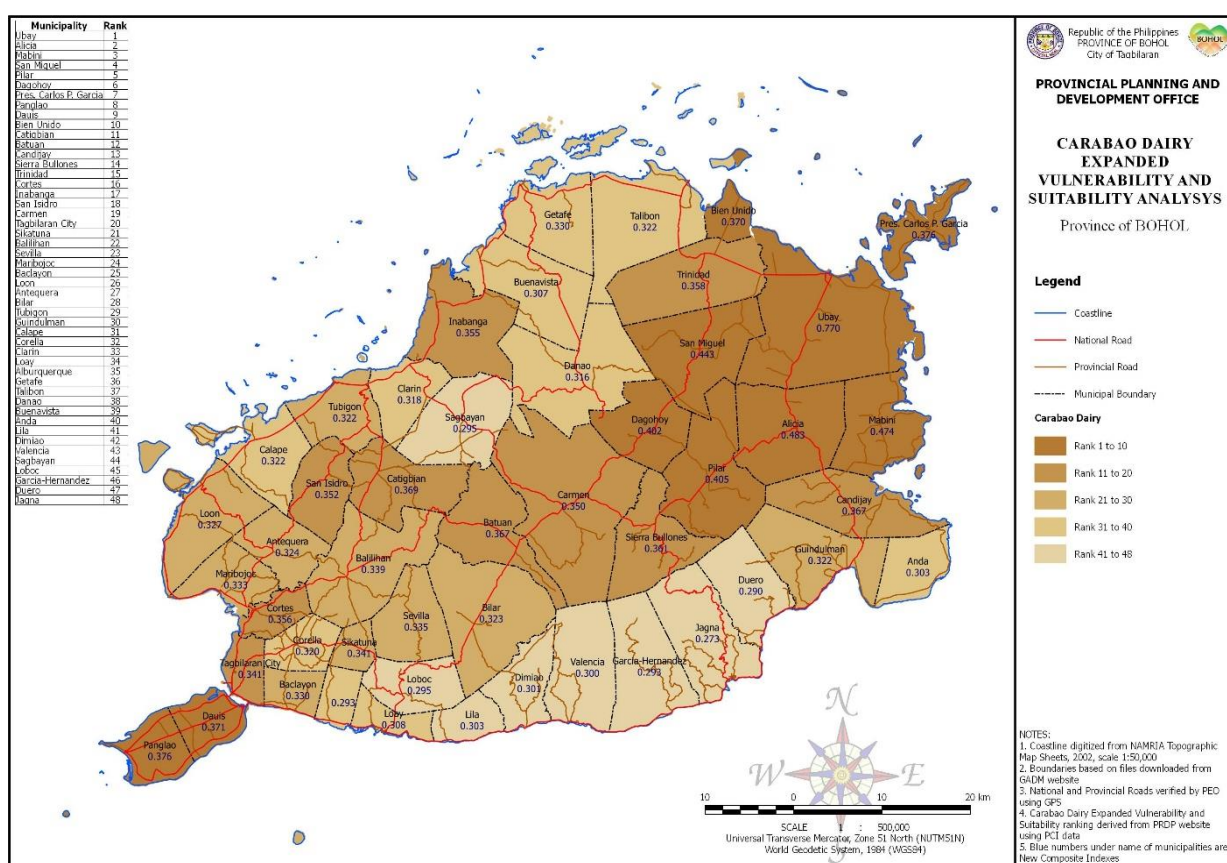
Table 19. Poverty Incidence Ranking of 47 Municipalities

Municipality	Inventory of Dairy Carabao	Poverty Incidence	Existing POs w/ Dairy-Based Enterprises	Old Composite Index	Old Rank	New Composite Index	New Rank
Ubay	1,863	50	6	0.5911	5	0.77018	1
Alicia	163	54	6	0.5524	12	0.48305	2
Mabini	496	58	2	0.5487	14	0.47412	3
San Miguel	149	54	3	0.5775	11	0.44334	4
Pilar	87	67	0	0.5828	9	0.40541	5
Dagohoy	20	62	1	0.5795	10	0.40218	6
Pres. C. P. Garcia	98	62	0	0.5354	19	0.37602	7
Panglao	0	33	0	0.6525	1	0.3755	8
Dauis	0	30	0	0.6525	1	0.37103	9
Bien Unido	0	64	0	0.5488	13	0.36992	10
Catigbian	0	51	0	0.5856	8	0.36892	11
Batuan	0	47	0	0.5946	4	0.36745	12
Candijay	183	52	0	0.5207	24	0.36743	13
Sierra Bullones	175	54	0	0.5045	29	0.36103	14
Trinidad	0	57	0	0.5467	15	0.35843	15

Municipality	Inventory of Dairy Carabao	Poverty Incidence	Existing POs w/ Dairy-Based Enterprises	Old Composite Index	Old Rank	New Composite Index	New Rank
Cortes	0	27	0	0.6315	3	0.35605	16
Inabanga	100	47	0	0.5383	17	0.3554	17
San Isidro	0	64	0	0.5131	27	0.35207	18
Carmen	0	56	0	0.5337	20	0.35043	19
Tagbilaran City	0	11	0	0.6501	2	0.34147	20
Sikatuna	0	46	0	0.5438	16	0.34056	21
Balilihan	0	52	0	0.5218	23	0.33851	22
Sevilla	0	52	0	0.5145	26	0.33486	23
Maribojoc	0	25	0	0.5905	6	0.33256	24
Baclayon	0	24	0	0.5887	7	0.33017	25
Loon	0	39	0	0.537	18	0.32671	26
Antequera	0	37	0	0.537	18	0.32372	27
Bilar	0	48	0	0.5022	31	0.32274	28
Tubigon	0	37	0	0.5337	20	0.32207	29
Guindulman	0	47	0	0.5037	30	0.322	30
Calape	0	40	0	0.5237	22	0.32155	31
Corella	0	32	0	0.5438	16	0.31966	32
Clarin	0	39	0	0.519	25	0.31771	33
Loay	0	28	0	0.533	21	0.30829	34
Alburquerque	0	25	0	0.5121	28	0.29336	35
Jetafe	0	60	0	0.4801	34	0.3296	36
Talibon	0	51	0	0.4918	32	0.32202	37
Danao	0	62	0	0.4473	40	0.31619	38
Buenavista	0	56	0	0.4474	39	0.30728	39
Anda	0	50	0	0.4574	37	0.30333	40
Lila	0	43	0	0.4777	35	0.30303	41
Dimiao	0	42	0	0.4765	36	0.30094	42
Valencia	0	50	0	0.4512	38	0.30023	43
Sagbayan	0	49	0	0.4442	42	0.29523	44
Loboc	0	33	0	0.491	33	0.29475	45
Garcia Hernandez	0	47	0	0.445	41	0.29265	46
Duero	0	52	0	0.4247	44	0.28996	47
Jagna	0	36	0	0.4377	43	0.27258	48

The system-generated results show the ranking of the 47 municipalities including the City of Tagbilaran (Table 19). It can be noted that the top 5 areas are considered dairy zones where most of the dairy production and processing activities are taking place.

Map 12. Expanded Vulnerability and Suitability Assessment Analysis (EVSA) Map



Investment Priorities

The over-all estimated investment cost for dairy buffalo is **P4,959,600,000.00** where the biggest bulk of the interventions which represents 87.99% is for the rehabilitation and upgrading of access roads while the development of the dairy buffalo industry amounts to P677,000,000.00. Farm to market road infrastructures play significant role in providing access and link from production sites to the market. Selected road sections have been identified in Annex 1.

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

Table 20. Summary of Investment for Dairy Buffalo
Province of Bohol

Proposed Interventions	Estimated Cost (P000,000,000)			
	Year 1	Year 2	Year 3	Total
SEGMENT 1: INPUT SUPPLY				
Total Segment 1 >	142.30	124.70	116.80	383.80
SEGMENT 2: CARABAO GROWING				
Total Segment 2 >	37.50	36.70	25.30	99.50
SEGMENT 3 : MILK PRODUCTION				
Total Segment 3 >	12.00	9.20	6.20	27.40
SEGMENT 4 : MILK COLLECTION /CONSOLIDATION				
Total Segment 4 >	4.50	3.00	2.00	9.50
SEGMENT 5 : PROCESSING				
Total Segment 5 >	19.50	13.50	47.50	80.50
SEGMENT 6 : DISTRIBUTION				
Total Segment 6 >	16.50	9.60	8.60	34.70
SEGMENT 7: SUPPORT SERVICES				
Total Segment 7 >	15.10	15.00	11.50	41.60
GRAND TOTAL	247.40	211.70	217.90	677.00
Construction/ Rehabilitation of Farm-to-Market Roads (Length - 282.07 kilometers)	1,653.20	1,653.20	1,653.20	4,959.60

C. PCIP Matrix for Buffalo Dairy

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
SEGMENT 1 : INPUT SUPPLY												
Lack of dairy breeds & high price in purchasing dairy breeds	Strengthen upgrading program a) Intensify campaign for AI services	- AI Services marketing conducted, campaign intensified down to barangays, increasing coverage from 34 to 47 municipalities	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BALA AI Techns.	1 M	1 M	1 M	PGBh-OPV MLGU		1
	b)Implement AI services “with a fee”	- 1 implementing guidelines with support provincial ordinance formulated, approved & adopted	Province wide	Province wide	Province wide	PGBh-OPV, SP, PCC, DA						3
	c) Sustain the provision of cash crop incentives to Municipal based AI Tech.	- 47 AI Technicians provided cash crop incentives	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, DA, PCC				DA PCC NDA		1
	d)Conduct of trainings	- Additional AI technicians trained, increasing number of regular AI Technicians from 34 to 47 & village-based technician from 15 to 60	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, DA, BAI,PCC, ATI	1 M	1 M	1 M	PGBh-OPV MLGU DA PCC ATI		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
		- 1 capdev program for AI developed, approved & implemented	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, DA, PCC, ATI, NDA				MLGU, DA, PCC, ATI, NDA		2
	e) Establishment , procurement & operation of support facilities and equipment	- Liquid nitrogen plant operational	Tagb. City			PGBh-OPV, DA RFO7	15.3 M	1 M	1 M	PGBh-OPV, DA-RFO7		1
		- 48 liquid nitrogen mother tanks procured	16 mun	16 mun	16 mun	DA RFO7, PCC	7.2 M			PGBh-OPV, DA, RFO7, PCC Donors (CONBUSAC)		2
		- 1,047 animal squeezer chutes installed in 1,047 mainland barangays	500 brgys	400 brgys	147 brgys	PGBh-OPV, MLGU, PCC DA-RFO7,	6.9 M	6.9 M	6.9 M	PGBh-OPV, MLGU, BLGU, DA-RFO7, PCC Donors (CONBUSAC)		3
	f) Registration of qualified breeders	- 1,000 dairy cara-cows ear tagged, registered & qualified as breeders	Alicia Carmen Dagohoy Mabini San Miguel Pilar Ubay	Bien Unido Candijay Sierra Bullones Talibon Trinidad Tubigon	Danao Inabanga Carmen	PGBh-OPV, MLGU, BLGU, PCC	0.5 M	0.5 M	0.5 M	PGBh-OPV, DA, PCC		1
	g) Upgrading of existing dispersal carabaos of the province	- 1,500 cara-heifers/ cara-cows upgraded with dairy breed	Buenavista Dagohoy Danao Getafe Inabanga	Province wide	Province wide	PGBh-OPV, MLGU, PCC	5 M	5 M	5 M	PGBh-OPV, MLGU, PCC		1

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			Y1	Y2	Y3		Y1	Y2	Y3			
	with dairy breed		San Miguel Talibon Trinidad Ubay Pilar Sierra Bullones									
	Operation of buy-back system	- Buy back fund provided to purchase breedable animals which are offsprings from AI	Province wide	Province wide	Province wide	PGBh-OPV, DA, PCC, MLGU	5 M	5 M	5 M	BAI, DA, PCC, PRDP		3
		- Implementing guidelines with support policies formulated, approved & adopted	Tagb. City			PGBh-OPV, SP, DA, PCC						3
	Operation of a “localized system” on carabao multiplier farm	- At least 1 carabao multiplier farm established	San Miguel			PGBh-OPV, SP, PCC, PO Farmers Private Individual			15 M	PCC, PRDP		2
		- Implementing guidelines formulated, approved & adopted	Tagb.									2
	Stock infusion & distribution	- 50 cara-heifer & carabulls procured	Ubay			PCC		7.5 M		PCC		3
		- Expansion of DSWD dairy dispersal program thru the SLP Program	Alicia Carmen Dagohoy Mabini San Miguel Pilar	Bien Unido Candijay Sierra Bullones Talibon Trinidad	Danao Inabanga Carmen	PCC, DSWD, PGBh-OPV				DSWD		3

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			Y1	Y2	Y3		Y1	Y2	Y3			
			Ubay	Tubigon								
High cost of commercial feeds & limited access to formulated feeds	Feed mill operation	- 3 feed mills established & operated by POs	Ubay	Carmen	Tubigon	PGBh-OPV, PCC, POs	5 M	5 M		PGBh- OPV, PCC, DA, PRDP		1
	Feed resource development & silage production & marketing	- Documentation of available feed ingredients	Province wide	Province wide	Province wide	PGBh-OPV, USF, PCC, DA	1 M			PGBh- OPV, PCC, DA		1
		- Feed ration developed using indigenous feed ingredients	Ubay			PGBh-OPV, USF, PCC, DA	0.5 M			PGBh- OPV, PCC, DA		1
		- 3 PO-based feed related capacity development/ trainings conducted	Ubay	Carmen	Tubigon	PGBh-OPV, USF, PCC, DA, ATI	2 M	2 M		PGBh- OPV, DA, ATI, PRDP		1
		- Silage production & marketing commercialized	Ubay	Carmen	Tubigon	PGs	5 M	5 M	5 M	PGBh- OPV, DA, PCC, PRDP		1
		- Utilization of farm by products such as rice straw, corn stover, cassava, etc. will be promoted, developed & adopted	Prov- wide	Prov- wide	Prov- wide	PGBh-OPV, USF, PCC, DA, OPA				PGBh- OPV, PCC, DA, OPA		1
	Operation of agricultural tractor for forage & animal feed development	- 3 agricultural tractors procured & operated with support implementing guidelines & policy	Ubay	Carmen	Tubigon	PGBh-OPV, USF, PCC, DA, PGs, POs/ Coop	2.5 M	2.5 M	2.5 M	DA, PRDP		2
	Operation of forage chopper	- 3 units forage/ grass chopper procured & operated with support	Ubay	Carmen	Tubigon	PGBh-OPV, USF, PCC, DA, PGs/ POs/	0.3 M	0.3 M	0.3 M	PGBh- OPV, DA,		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
		implementing guidelines				Coop				PCC, PRDP		
Insufficient veterinary medicine due to inaccurate inventory of buffalo	Fund sourcing/ allocation of funds for veterinary medicines	- Funds allocated for veterinary medicines	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BLGU, DA, PCC	3 M	3 M	3 M	PGBh- OPV, MLGU, BLGU, DA, PCC		1
		- Counter-parting scheme on fund allocation for veterinary medicines institutionalized	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BLGU, DA						1
	Inventory of carabaos	- Inventories conducted per barangay	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BLGU, BALA, PSA	3 M	3 M	3 M	PGBh- OPV, PCC, DA		1
		- 1 data collection tool formulated & adopted	Tagb. City									1
		- Breedable dairy animals validated & ear tagged	Province wide	Province wide	Province wide	PGBh-OPV, PCC, DA						3
	Implementation of unified animal health program for carabaos	- Unified animal health program for carabaos adopted	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BLGU, BALA, PCC	48 M	48 M	48 M	PGBh- OPV, PCC, DA, BAI		1
	Promote the use of ethno- veterinary medicine & NFTS technology	- 15 dairy POs adopting Ethno-vet. & NFTS Techno - 15 trainings/ capacity development conducted - Equipment & materials procured & distributed	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh-OPV, USF, MLGU, PO/ PG	0.7 M	0.6 M	0.2 M	PGBh- OPV, PCC, DA, LDC		3 3 3

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
Limited areas for forage production	Silage production & marketing	- 3 POs undergoing silage production & marketing	Ubay	Carmen	Tubigon	PGBh-OPV, USF, MLGU, POs, Coops	5 M	5 M	5 M	PGBh- OPV, DA, PCC, PRDP		1
	Expansion of forage production in potential areas like use of idle vacant lands & under tree crops & plantations	- 6 POs adopting forage development under orchard, silvi-pasture, along irrigation canals & under plantations	Ubay	Carmen	Tubigon	PGBh-OPV USF MLGU POs	0.5 M	0.5 M	0.5 M	PGBh- OPV, DA, PCC		2
	Promote & execute Lease agreement/ usufruct on land use	- Lease agreements executed	Dairy zones	Dairy zones	Dairy zones	PGBh-OPV, DENR						3
Limited potable water system for drinking water source of buffaloes, as water from deep wells is unsafe for consumption	Operate potable water system for livestock-related operations	- 5 water systems developed, constructed & operational	Ubay Alicia San Miguel	Trinidad Talibon Candijay Bien	Danao, Inabanga	PGBh, MLGU, BLGU	7 M	6 M	2 M	PRDP, PEO		2
		- Existing water system & sources improved	Dagohoy Pilar Mabini Carmen	Unido Sierra Bullones Tubigon								2
	Conduct regular water testing & quality monitoring	- Water testing & quality control at least 2 times year	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao, Inabanga	BEMO, PHO, Private	0.3 M	0.3 M	0.3 M	BEMO, PHO, Private		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
Limited materials for silage making in some backyard farms	Identification, documentation & info dissemination	- Available backyard silage materials identified & used	Province wide	Province wide	Province wide	PGBh-OPV, USF, DA, MLGU	0.2 M	0.2 M	0.2 M			1
	Procure & made available support materials & equipment for silage making	- Support materials & equipments made available (<i>i.e. bags, molasses</i>)				PGBh-OPV, USF, MLGU, PO/PG	3 M	3 M	3 M	PGBh-OPV, PCC, DA		1
Lack of water storage during long summers & El Niño season	Construction & operation of water storage facilities/ structures	- 26 barangay-based mini-dams/ small water impounding/ reservoirs, rain collectors established/ rehabilitated	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh, MLGU, BLGU, NIA, PEO	3.5 M	3 M	1 M	NIA, PEO, PGBh, DA, PRDP		3
		- 26 concrete water tanks constructed & operational	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh, MLGU, BLGU, PGs, POs	3.5 M	3 M	1 M	PEO, PGBh, DA, Cong. Fund, PRDP		3
		- Water containers/ barrels/ stainless water tanks procured & provided	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh, MLGU, BLGU, PGs, POs	1 M	1 M	1 M	PGBh, DA, Cong. Fund, PRDP		1

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			Y1	Y2	Y3		Y1	Y2	Y3			
Limited forage during long droughts	Massive plantation of adaptive forage plants that are drought tolerant and can maintain growth in the dry season	- 26 has. planted to forages	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh-OPV, USF, PG	0.2 M	0.2 M	0.2 M			1
	Silage production & marketing	- 3 POs undergoing silage production & marketing	Ubay	Carmen	Tubigon	PGBh-OPV, USF, MLGU, POs, Coops	5 M	5 M	5 M	PGBh-OPV, DA, PCC, PRDP		3
	Continue developing cropping systems (crops + forage) for food/ feed production	- Crop + forage cropping systems developed/ continued	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, OPA, PO/ PG						1
	Establishment & operation of a PO-operated forage nurseries/ parks	- 15 forage nurseries/ forage parks established & operated by POs	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh-OPV, USF, PCC, PO/ PG	0.2 M	0.2 M	0.2 M	PGBh-OPV, USF		2
SEGMENT 2: CARABAO GROWING												
Limited potable water system (PWS) and lack of electric pump for cleaning and feeding of buffalos	Provision/ acquisition of water storage & installation of water distribution lines	- 5 water systems developed/ constructed & operational	Ubay Alicia San Miguel Dagohoy Pilar Mabini	Trinidad Talibon Candijay Bien Unido Sierra Bullones	Danao Inabanga	PGBh, MLGU, BLGU, PO	7 M	6 M	2 M	PGBh, MLGU		2
		- Existing potable water system & sources improved										1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
because not all deep wells in the area are well covered and cemented		- Neighborhood water system established & operational by clustering of sources	Carmen	Tubigon								3
		- Water pumps, solar , STW installed/ constructed for personal & farm use of farmers										3
Low calf drop rate against confirmed pregnancies	Strengthen monitoring	- Pregnant animals monitored & calves dropped monitored, reported & validated	Province wide	Province wide	Province wide	PGBh-OPV, PCC, MLGU- AI Tech, VBAIT	0.5 M	0.5 M	0.5 M	PCC		1
Low pregnancy rate of female carabaos due to the following:	Capacity development of farmers	- 6 trainings conducted with emphasis on animal health, breeding, nutrition & reporting	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh-OPV, PCC, ATI, DA	0.7 M	0.6 M	0.2 M	PGBh- OPV, PCC, ATI, DA		2
	Adopt the farmer livestock school	- 6 batches of farmers participating & adopting the livestock school	Ubay Alicia San Miguel Dagohoy Pilar Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon	Danao Inabanga	PGBh-OPV, ATI, PCC, MLGU	2.1 M	1.8 M	0.6 M	PGBh- OPV, ATI, PCC, MLGU		2

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
	Conduct heat synchronization & AI services	- 26 barangay/ purok-based synchronization & AI services conducted	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, MLGU	1.2 M	1.4 M	0.4 M	PGBh-OPV, PCC, MLGU, DA		1
	Operation of breeding corrals/ stations in the barangays with a stationed breeder cara-bull	- 26 PO-operated communal breeding stations constructed & operational	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, MLGU, BLGU, PO/PG				PGBh-OPV, PCC, MLGU, BLGU, PRDP		2
a) Non-compliance of farmers to the recommended proper care and management of carabao	Execution of contracts & imposition of dairy carabao production & management policies	- All dairy farmers have executed contracts & adopted the policies on dairying	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PCC PO/ PG						1
b)Inadequate nutrition	Forage & pasture development	- All dairy farmers have planted & have available forages & pasture	Ubay Alicia San Miguel Dagohoy Mabini	Trinidad Talibon Candijay Bien Unido	Danao Inabanga	PGBh-OPV, USF, PCC, MLGU, PO/PG	0.5 M	0.5 M	0.5 M	PGBh-OPV, USF, PCC, MLGU		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
			Carmen	Sierra Bullones Tubigon Pilar								
	Formulation, production & utilization of a ration for dairy animals	- Dairy ration formulated & utilized	Ubay			PGBh-OPV, USF, PCC, DA	0.2 M			PGBh- OPV, USF, PCC, DA		2
c) Unprepared- ness of the carabao in terms of physical & physiological conditions (e. low body condition score & with reproductive problem)	Implement a conditioning/ flushing regime prior to breeding season	- All dairy farmers have practiced conditioning/ flushing of animals prior to breeding	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, USF, PCC, DA, PO/PG	1 M	1 M	1 M	PGBh- OPV, USF, PCC, DA		1
d) Poor monitoring & follow-up of the carabaos Condition especially to interior barangays due to absence of service	Establishment/ strengthen built- in monitoring & reporting system within the POs	- All dairy POs have practiced monitoring & reporting mechanisms	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PCC, PGBh- OPV, PO	0.5 M	0.5 M	0.5 M			1
	Strengthen the operation of the BALAs & village-	- Implementing guidelines (including criteria) formulated,	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, BABALA, PCC	2 M	2 M	2 M	PGBh- OPV,		3

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
vehicles, gas & food allowance of the technicians	based AI technicians	approved & adopted & institutionalized (<i>i.e</i> <i>BALAs are allowed to collect fees of certain services</i>)								MLGU, PCC		
Slow adoption rate of farmers of new technology	Farmer modeling	- 6 model dairy farmers developed & provided technical, equipment & facility support	Ubay Mabini	San Miguel Alicia	Tubigon Inabanga	PCC, PGBh- OPV, POs	2 M	2 M	2 M	PGBh- OPV, PCC, PRDP		1
	Capacity devt of farmers	- 2 educational & observation trips conducted	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PCC, PGBh- OPV, ATI	3 M	3.5 M	1 M	PGBh- OPV, PCC, ATI, PRDP		1
	Accreditation of dairy farmers/ farm	- All dairy farmers accredited/ certified	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, DA	0.6 M	0.7 M	0.2 M	PGBh- OPV, PCC, DA		3
		- Accreditation guidelines developed, approved & adopted										3
	- Organize dairy farmers	- No. of branches of Dairy POs created - 26 municipal Organizations formed & operational	Ubay Alicia San Miguel Dagohoy Mabini	Trinidad Talibon Candijay Bien Unido	Danao Inabanga	PGBh-OPV, PCC, DA	1 M	0.5 M	0.2 M	PGBh- OPV, PCC, DA		2

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					Column 11
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
			Carmen	Sierra Bullones Tubigon Pilar								
	Continuous program advocacy	- No. of barangay assemblies & purok meetings attended	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, ATI, BoDPA						2
Shelter for the buffaloes	Establishment/ construction of communal animal sheds	- 15 communal animal sheds following prescribed “ standards ” constructed	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, DA, PO/ PG	2 M	2 M	2 M	PGBh- OPV, PCC, DA, PO/ PG, PRDP		1
		- 1 management system/ implementing guidelines formulated, approved & adopted	Tagb.			PGBh-OPV, PCC, DA						1
High mortality of purebred carabaos (15% in Bohol) due to diseases, heat stroke & accident (ie.	Implement a carabao insurance system	- All dairy carabaos are insured	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones	Danao Inabanga	PGBh-OPV, PCC, DA, PCIC	4.1 M	4.1 M	1.6 M	PGBh, PCC, DA, PRDP		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
Strangulation & snake bites)				Tubigon Pilar								
		- 5 M indemnity fund provided	Tagb.	Tagb.	Tagb.	PGBh-OPV, PCC, DA	1.6 M	1.6 M	1.6 M	PGBh, PCC, DA, PRDP		2
	Adoption of a unified animal health program for dairy carabaos	- Unified animal health program for carabao formulated, approved & adopted/ implemented	Province wide	Province wide	Province wide	PGBh-OPV, PCC, DA	2 M	2 M	2 M			1
		- Counter-parting scheme on the allocation of drugs & biologics formulated, approved & adopted	Province wide	Province wide	Province wide	PGBh-OPV, PCC, DA, MLGU						1
	Capacity development of farmers	- 25 trainings conducted at PO level focusing on animal health & production management & disease incidence reporting	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, DA, MLGU, ATI	2 M	2.5 M	1 M	PGBh, PCC, DA, PRDP		1
SEGMENT 3 : MILK PRODUCTION												
Poor housing facilities & pens for milking in many backyard farms, leading to milk	Imposition of required “standard” housing facilities for backyard dairy farmers	- 1 “standard housing” facility developed & adopted - All backyard dairy farmers are using the	Ubay Alicia San Miguel Dagohoy Mabini	Trinidad Talibon Candijay Bien Unido	Danao Inabanga	PGBh-OPV DA, PCC	1 M			PGBh- OPV, DA, PCC, PRDP		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
contamination		"standard" housing design	Carmen	Sierra Bullones Tubigon Pilar								
	Capacity development of dairy farmers	- 2 trainings conducted on milk handling & hygienic practices	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV DA, PCC, ATI	3 M	3 M	3 M	PGBh-OPV, DA, PCC, ATI, PRDP		1
	Establishment of a communal milking parlor with a mechanical milking machine, solar power	- 3 communal milking parlors established	Mabini	Pilar	Alicia		3 M	3 M	3 M			3
Poor milk production performance of dairy carabao due to poor nutrition & management *	Establishment & operation of a PO-operated communal milking/ dairy farm	- 5 PO-operated communal dairy farms established & operational with support implementing guidelines	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, MLGU, NGO, PG/PO,	5 M	3 M		PGBh, PCC, MLGU, PRDP		1
Milk yield not maximized due to lack of temp. cold storage	Operation of cold storage facility	- 3 cold storage facilities procured & operational	Mabini	Pilar	Alicia	PGBh-OPV DA, PCC, PO/ PG	0.2 M	0.2 M	0.2 M	PGBh-OPV, DA, PCC, PRDP		3

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
SEGMENT 4 : MILK COLLECTION /CONSOLIDATION												
Poor road conditions & worn out service vehicles which cause delayed delivery, milk spoilage & high cost of transportation	Construction of new & rehabilitation of existing roads	- 282.07 kilometers of FMRs constructed/ rehabilitated	Ubay Alicia San Miguel Dagohoy Mabini	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-PEO, MLGU, BLGU	4.9B			PGBh-PEO, PRDP		1
	Operation of a refrigerated transport vehicle for milk or chiller van for milk	- Refrigerated transport vehicle procured & operational with support implementing guidelines/ policy	Ubay			PGBh, PCC, PO/PG	2.5 M			PRDP		1
Inadequate milk collection centers & lack of cold storage facilities in collection centers	Establishment & operation of milk collection centers	- 5 clusters of milk collection centers with cold storage facilities established & operational with support implementing guidelines/ policies	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, PO/PG	2 M	3 M	2 M	PGBh-OPV, PCC, PRDP		2
SEGMENT 5 : PROCESSING												
Lack of processing facilities & dairy processing equipment at the cooperative level	Procurement, operation & maintenance of an integrated processing facility & related equipment	- 2 integrated processing facilities & equipment procured & maintained	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones	Danao Inabanga	PGBh, PCC, PO/ PG, Donors, NGO	5 M	5 M	5 M	PGBh, PCC, PRDP		

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
				Tubigon Pilar								
		- 26 milk testing kits procured & utilized	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga					PGBh, PCC, PRDP		
	Product development expanded	- No. of value added products developed & available in the market (i.e. milk soaps, mozzarella cheese) - 1 study conducted on product acceptability & enhancement	Ubay Alicia San Miguel Dagohoy Mabini Carmen Tagb.	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV PCC, PO/ PG	4 M	4 M	4 M	PGBh- OPV, PCC, PRDP		2
	Estab. of quality (accredited) slaughter & meat processing facility	- 1 facility established according to “required standards” for the utilization of male calves & culled breeders	Ubay			PGBh-OPV, PCC, NMIS, BAI, DA			35 M			2
Lack of FDA/ BFAD certification of the processed products	Establishment & adoption OF production standards for FDA/BFAD certification	- FDA/ BFAD standards adopted in product development & marketing	Ubay			PGBh-OPV, PCC, PO/ PG						1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
	Retooling/ refresher on basic food safety for dairy product producers & processors	- 3 trainings conducted	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV PCC	2 M	1 M		PGBh- OPV PCC PRDP		3
Poor packaging materials & labeling of carabao milk products	Secure/ avail consultancy on labeling & packaging	- Enhanced packaging & labeling of products	Ubay			PGBh-OPV PCC						
		- Consultancy conducted/availed	Ubay			PCC PO/PG	1 M			PCC PRDP		1
Limited laboratory facilities for research and development which could improve quality products (i.e. smell, texture of milk, temperature, expirations)	Establishment & operation of a laboratory for dairy & dairy products standardization & quality control	- Laboratory established, approved & operational	Ubay			PGBh-OPV PCC, DA, BAI, NDA	6 M	2 M	2 M	PGBh- OPV, PCC, NDA, PRDP		3
	Participate in research fora, scientific summit/ congress	- Number of research fora, Congress participated				PGBh-OPV PCC	0.5 M	0.5 M	0.5 M	PGBh- OPV, PCC, PRDP		4
	Participate in product development & fairs	- Number of fairs participated				PGBh-OPV PCC	0.5 M	0.5 M	0.5 M	PGBh- OPV, PCC, PRDP		3

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
	Conduct R & D	- Number of researches conducted				PGBh-OPV PCC	0.5 M	0.5 M	0.5 M	PGBh- OPV, PCC, PRDP, BAR		4
Limited capital by home-based processors	Develop lending windows for home-based processors	- At least 1 lending window developed				DSWD, DOST-step program PGBh-OPV PCC, DA				DSWD, DOST- step program, DA		4
	Resource mobilization through submission of proposals, make representations or availment of grants & forging partnership with institutions & funders	- At least 2 proposals prepared, submitted & approved - At least 2 institutions & funders accessed										3
SEGMENT 6 : DISTRIBUTION												
Poor road conditions which contributes to the early spoilage of liquid milk products	Construction of new & rehabilitation of existing roads	- 282.07 kilometers of FMRs constructed/ rehabilitated	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-PEO MLGU BLGU				PEO, MLGU, PRDP		3
Lack of vehicles for delivery & marketing (ie. Chiller vans to	Operation & maintenance of delivery	- 3 transport vehicle procured & operational;	Ubay			PGBh-OPV PCC PO/ PG	5 M	1 M		PRDP		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
<i>avoid spoilage of milk)</i>	transport/ milk cars/ chiller vans	a) milk & milk products (mobile parlor) b) Other dairy-based products such as bread & pastries, c) soaps & related products										2 2
Limited knowledge on operational management, branding, marketing & product promotion	Capacity development on product devt, promotion & marketing thru:											
	a) Development of operations manual, standards & policies	- 1 Operations Manual formulated, adopted & implemented	Tagb. City			PGBh-OPV DA, PCC, PO/ PG	0.5 M			PGBh-OPV, DA		2
	b) Establishment of a Provincial Dairy Council	- 1 Provincial Dairy Council established & operational	Tagb. City			PGBh-OPV DA,PCC, NDA, BoDPA/ BODACO	0.3 M	0.2 M	0.2 M	PGBh-OPV, DA, PCC		1
	c) Institutionalize the Dairy Development Program	- Dairy Development Program institutionalized	Tagb. City			PGBh-OPV DA, PCC,NDA						1
	Conduct of regular dairy assessment & evaluation	- Quarterly assessments & evaluation conducted including onsite visits	Tagb. City	Ubay	Carmen	PGBh-OPV DA, PCC, NDA, PO/ PG	0.5 M	0.5 M	0.5 M	PGBh-OPV, DA, PCC		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
	Conduct survey on product acceptance in hotels, resto & snack bars	- 1 survey conducted that will serve as reference	Tagb. City Panglao Island	Ubay	Carmen	PGBh-OPV, PCC	0.3 M					1
Limited awareness of Boholanos & nearby provinces on the availability and nutritional qualities of buffalo fresh milk from Bohol	Promotions & campaign thru: a) Conduct of tasters' test	- 20 areas conducted with tasters' test	Duero Jagna Candijay Alicia Anda Dauis Dimiao Talibon	Anteq. Corella B-Unido Batuan Buenv. G-Hernd. Lila Tubigon Catigbian San Isidro Tagb. Panglao	Province wide	PGBh-OPV, PCC, PO/ PG	0.2 M	0.2 M	0.2 M	PGBh-OPV PCC		3
	b) Implement milk feeding in schools (with mascots)	- 20 schools adopting/ implementing mik feeding	Province wide	Province wide	Province wide	PGBh-OPV PCC, DSWD, DepED				DSWD, DepED		1
	c) Policy issuances on the following: - Inclusion of milk in the feeding menu	- Issuances formulated, approved, adopted/ implemented	Tagb. City			PGBh-OPV PCC, DSWD, DepED				PGBh, DSWD, DepED		2
	- Provincial directive for fresh milk as a welcome drink	- 1 provincial directive issued	Tagb. City			PGBh-OPV						1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
	or a meal component during catering services in trainings & seminars											
	d)Milk-based food cooking competition	- 3 competitions conducted	Tagb Panglao Island	Tagb. Ubay	Tagb. Carmen	PGBh-OPV PCC , NDA	0.5 M	0.5 M	0.5 M	PGBh-OPV, PCC, NDA		3
	e)Ads in tri- & social media	- at least 3 conducted in different forms of ads				PGBh-OPV PCC, BICTU	0.5 M	0.5 M	0.5 M			3
	f) Info drive	- Barangay assemblies, purok meetings, school PTA meetings, market days				PCC, BoDPA	0.2 M	0.2 M	0.2 M			2
	Operate stationary milk outlets/ milk & milk product shops in strategic areas	- 6 outlets/milk product shops established & operated by POs with solar-powered support equipment	Tagb. Panglao Island	Tagb. Ubay	Tagb. Carmen	PGBh-OPV PCC , NDA, BoDPA/ BODACO	3 M	3 M	3 M	PGBh-OPV, PCC, PRDP		2
		- Give priority to dairy product shops in government facilities such as Airport terminal, seaport terminal, bus terminal & other government facilities	Province wide	Province wide	Province wide							2
	Operate mobile dairy/ milk & milk product carts	- 2 mobile milk carts with solar-powered support equipment operated by POs	Tagb Panglao Is.			PGBh-OPV, PCC , PO/PGs	2 M			PGBh-OPV, PCC, PRDP		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
	Conduct of dairy festival/ congress	- 3 dairy festival/ congress conducted	Tagb	Ubay	Tubigon	PGBh-OPV, PCC, PO/PGs	1.5 M	1.5 M	1.5 M	PGBh-OPV, PCC, PRDP		1
	Enhance the/ implementation of Gatas sa Eswelahan para sa Kabataan Project	- 30 schools actively participating in the project	Province wide	Province wide	Province wide	PGBh-OPV PCC , POs, PGs	0.5 M	0.5 M	0.5 M	PGBh-OPV, PCC		1
Higher market price compared to milk products from other animals	Product development for value adding	- Enhanced existing products & developed new products				PGBh-OPV PCC , POs, PGs, Coops	1.5 M	1.5 M	1.5 M			3
	Price standardization in all outlets	- All dairy products in outlets have at least price standards				Dairy Po, BoDPA, BODACO						3
More defined arrangement with retailers, as products not sold and nearing spoilage are returned to BoDPA	Establishment & imposition of marketing agreements	- Marketing agreements approved & executed between parties				PO/ PG Estab.						1
SEGMENT 7: SUPPORT SERVICES												
Milk collectors or AI technicians are not available at all times to cater the needs of the raisers	Establish / implement PO-based milk collection & transport mechanism	- 26 PO milk collectors identified, trained & accredited by PO & PCC & provided transport support	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullone	Danao Inabanga	PGBh-OPV PCC, PO/ PG	2.5 M	2.5 M	2.5 M	PGBh-OPV, PCC, PRDP		2
		- 26 PO-based dairy technicians created, trained & operational								PGBh-OPV, PCC,		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
				Tubigon Pilar						PRDP		
	Strengthen the operation of village-based AI Technicians & BALA	- 60 village-based technicians & BALAs trained, accredited & operational	Province wide	Province wide	Province wide	PGBh-OPV PCC, MLGU	0.5 M	0.5 M	0.5 M			3
	Establishment & operation of a communication system for referral & assistance	- Referral flow/ system established & adopted	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, PO/ PG	0.5 M	0.5 M	0.5 M			1
	Establish built-in monitoring bodies & system	- 26 monitoring bodies within the POs established, trained & operational										1
Limited transport vehicles of AI technicians and dairy technicians to extend services to far-flung barangays	Provision of new motorcycles	- 6 new motorcycles procured	Ubay Alicia San Miguel Dagohoy Mabini Carmen	Trinidad Talibon Candijay Bien Unido Sierra Bullones Tubigon Pilar	Danao Inabanga	PGBh-OPV, PCC, DA, MLGU	1 M			PGBh-OPV, PCC, DA, MLGU		3
Limited access to financial services for investment capital and financing for inputs from	Conduct financial information forum with participation of credit/ financing providers	- Financial forum conducted	Tagb.			PGBh-OPV, PCC, DA	0.5 M	0.5 M	0.5 M	PGBh-OPV, PCC, DA		4

Key Gap/ Constraint in VC Development	Brief Description of Potential Intervention	Target Result/ Outcome	Target Areas to be Covered			Proposed Lead & Other Players	Estimated Project Cost			Proposed Sources of Funds	Remarks	Rank
			Column 6				Column 8					
Column 2	Column 3	Column 4	Y1	Y2	Y3	Column 7	Y1	Y2	Y3	Column 9	Column 10	Column 11
formal credit companies												
Limited financial capabilities of cooperatives to offer credit loans to members	Secure financial assistance/ loans from other sources (Banks, etc.)	- Financial assistance/ loans secured - No. of providers accessed - No. of business plans prepared, submitted & approved/ funded				PGBh-OPV, PCC, DA, PO/ PG, Coop				PCC, PRDP		1
	Increase CBUs of members	- All members have increased CBUs				PO/ PG, Coop						4
	Expand/engage in other income generating projects from: a) culls - undesirable calves - aging breeders b)carabeef utilization & processing c) fattening	- 1 project operational with support implementing guidelines formulated/ developed, approved & implemented				PGBh-OPV, PCC, PO/ PG/ Coops	1 M	1 M	1 M	PCC, PRDP		4
	Capacity development program on dairy enterprise	- 1 capdev program developed				PGBh-OPV, PCC, ATI	1.5 M	1.5 M	1.5 M			3
		- 6 trainings conducted				ATI				ATI		3
		- 2 exposure trips to successful dairy enterprise conducted				PGBh-OPV, PCC, ATI				PGBh-OPV, PCC, ATI		1
	Apply as conduit to ACPC											

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
Lack of regular or structured updating of data from LGUs to OPV (re- inventory, death losses, morbidity)	Strengthen the implementation of the Philippine Animal Health Information System (Phil- AHIS)	- 1 information system operational down to MLGUs with support ICT structures & manpower	Tagb Antequera Balilihan Catigbian Corella Cortes Dauis Panglao Sikatuna B-Unido Buenav. Dagohoy Sagbayan San Miguel Ubay Candijay Carmen Lila Mabini Pilar	Province wide	Province wide	PGBh-OPV DA BAI MLGU	1.5 M	2.8 M	0.5 M	PGBh- OPV, DA BAI, MLGU		1
	Institutionalize Livestock Data Base Management in Municipal Agricultural Offices	- Issuance of memo order for strengthening & regular updating of livestock data base of the MLGUs - Mobilize BALAs & PPM-sectoral committees in data generation	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, PSA, BLGUs, BALA	2.6 M	2.2 M	1 M	MLGU, DA		2

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
	Data-based implementation of animal health services (<i>ie. vaccination should be 70% of existing population</i>)	- Allocation of budget for health service facilitated	Province wide	Province wide	Province wide	PGBh-OPV, DA, MLGU				PGBh-OPV, DA, MLGU		1
Lack of vaccine supply with some LGUs not counter-parting allocations of OPV	Issuance of directives/ policies on counterpart allocation of MLGU & BLGUs on drugs & biologics	- 1 directive issued	Province wide			PGBh-OPV, MLGU						1
	Provision of start- up stocks on drugs through roll-over scheme	- Implementing guidelines developed, approved & implemented					2.5 M	2.5 M	2.5 M			3
		- Funds allocated				PGBh-OPV, DA, MLGU, DSWD				PGBh-OPV, DA, MLGU, DSWD		2
Not all BALA designates have background on agricultural or livestock systems, no clear cut incentives	Continuous capacity dev't program for BALAs	- 4 capacity development/ trainings conducted for new BALAs - Retooling/ refresher for existing 1,242 BALAs	Province wide	Province wide	Province wide	PGBh-OPV, MLGU, ATI	1 M	1 M	1 M	PGBh-OPV, ATI, MLGU		1

Key Gap/ Constraint in VC Development Column 2	Brief Description of Potential Intervention Column 3	Target Result/ Outcome Column 4	Target Areas to be Covered Column 6			Proposed Lead & Other Players Column 7	Estimated Project Cost Column 8			Proposed Sources of Funds Column 9	Remarks Column 10	Rank Column 11
			Y1	Y2	Y3		Y1	Y2	Y3			
except insurance and trainings	LGU/dairy POs to establish incentive system for BALAs	- 47 mun. / dairy POs with policy on provision of BALA incentives	Province wide	Province wide	Province wide	PGBh-OPV, MLGUs, PO/ PG, Coops						4

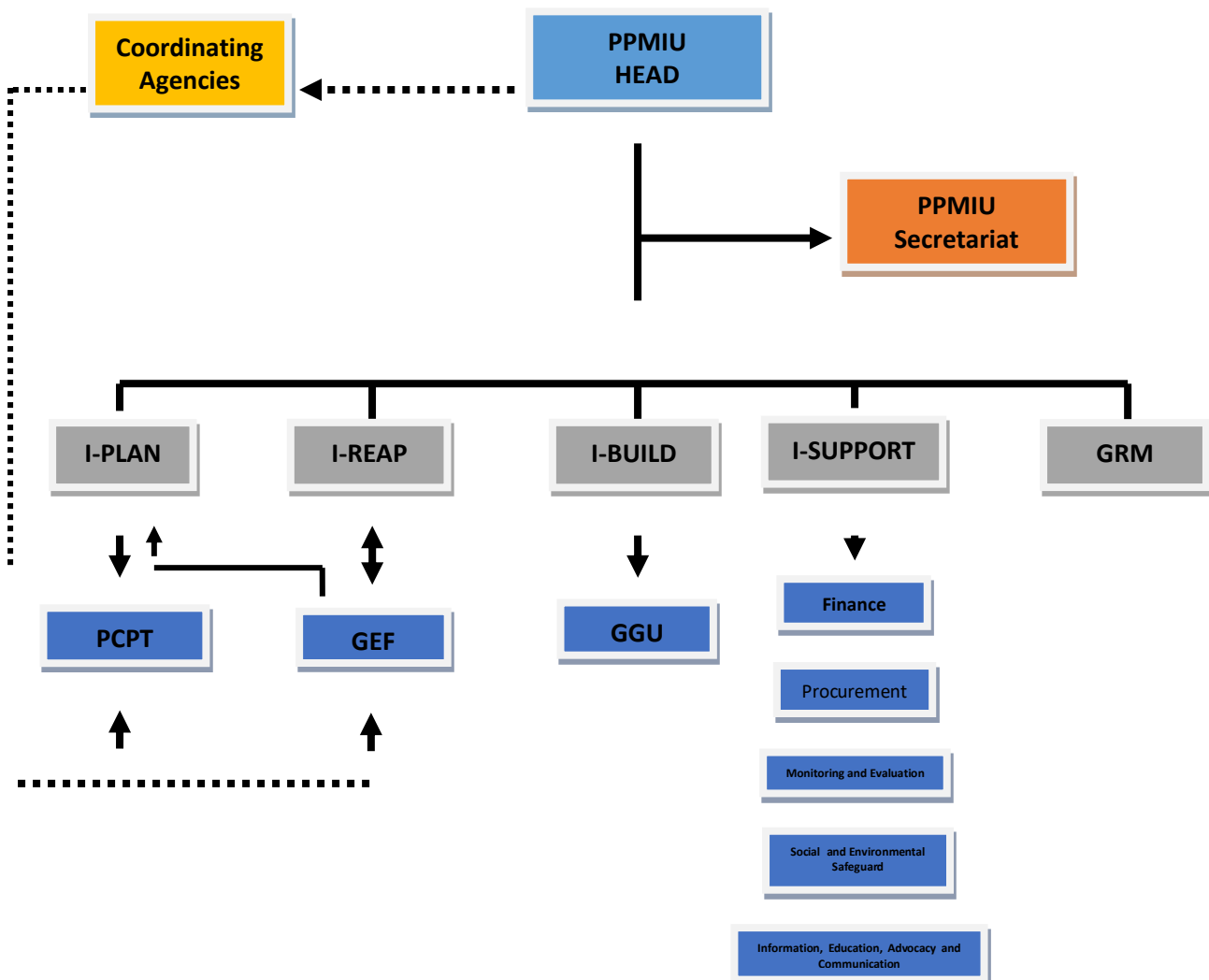
Chapter IV: Institutional Arrangements

• Implementation/ Supervision

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

• Organization and Management

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



- **Monitoring and Evaluation**

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

- 1) Oversee monitoring and evaluation of the I-REAP and I-BUILD components in the province;
- 2) Coordinate all M&E activities of the participating LGUs;
- 3) Implement and Maintain Program Monitoring Information System ensuring that system's problems are immediately attended to or reported to RPCO thru the PPMIU;
- 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 Buffalo dairy 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 (EXECUTIVE COMMITTEE) HELD ON SEPTEMBER 8, 2017 AT THE GOVERNOR'S MANSION, TAGBILARAN CITY, BOHOL, PHILIPPINES.

In Attendance:

Gov. Edgar M. Chatto.....Chairman, Presiding Officer
and

Majority of the Members of the PDC Executive Committee

PDC EXECOM RESOLUTION NO. 58-2017

A RESOLUTION APPROVING THE PROVINCIAL COMMODITY INVESTMENT PLAN (PCIP) FOR BUFFALO DAIRY 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 buffalo dairy as one of the 10 priority commodities that will be accorded attention under the Philippine Rural Development Project (PRDP) of the Department of Agriculture (DA);

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

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

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

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

WHEREAS, the PCIP for buffalo dairy, after review and deliberation, has been found by this Body to be relevant, well-grounded, responsive, and aligned with the provincial goals and priorities, and can 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 Buffalo Dairy 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 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 support and subsequent endorsement and funding assistance.

UNANIMOUSLY ADOPTED.

-0-

I hereby certify to the correctness of the foregoing Resolution.


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

APPROVED:


EDGARDO M. CHATTO
Governor
Chairman, PDC-Bohol

ANNEXES

Annex A.

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

Name of Roads		Length	Total Cost
1 Ubay			
	San Miguel-Bayongan-Bulilis-Mabuhay(Ubay) Road	17.50	348,000,000.00
	Jct.(Soom)-Humay-Humay Road	3.31	66,100,000.00
	Road to Ubay Jr. High School	0.40	8,000,000.00
	Gabi Seed Farm, Ubay	1.01	20,200,000.00
	Road to Ubay Stock Farm	1.60	32,000,000.00
	Jct.(TER)-San Pascual (Ubay)-Mahayag (San Miguel) Road	2.59	49,400,000.00
	Jct.(TER)-Ilihan-Cabulao Road	1.90	38,000,000.00
	Brgy. Roads	20.00	400,000,000.00
2 Mabini			
	Cabulao-Ondol(Mabini)-Union(Ubay) Road	20.90	40,000,000.00
	Kaporsing-Abaca-San Roque Road, Mabini	6.92	136,000,000.00
	Jct.(Mabini-Cabulao)-Aguipo Road	1.10	20,000,000.00
	Jct.(TER) - Ilihan - Cabulao Road	5.16	103,200,000.00
	Jct.(TER)-Mabini-Cabulao-Lungsodaan-Pook Road	17.17	70,000,000.00
	Sta. Cruz-Minol-Banlas-Tambo Road	6.95	132,000,000.00
	Brgy. Roads	20.00	400,000,000.00
3 Alicia			
	Pob. -Putlongcam - Mahayag FMR	7.00	140,000,000.00
	Napo - Putlongcam FMR	3.00	60,000,000.00
	Pob. - Untaga via Carangi FMR	4.00	80,000,000.00
	Pob. - Sudlon-Cagongcagong via Matin-ao FMR	8.00	160,000,000.00
	Jct.(LIR)-Mahayag-Katipunan Road	10.55	208,200,000.00
	Brgy. Roads	20.00	400,000,000.00
4 Dagohoy			
	Road to Palayan ng Bayan, Dagohoy	8.51	170,100,000.00
	Road to Dagohoy Reforestation	1.02	20,400,000.00
	Dagohoy-Caluasan Road	7.05	141,000,000.00
	Jct.(LIR)-Mahayag-Katipunan Road	10.55	208,200,000.00
	Brgy. Roads	20.00	400,000,000.00
5 San Miguel			
	Jct.(TER)-San Pascual (Ubay)-Mahayag (San Miguel) Road	2.59	49,400,000.00
	San Miguel-Tomoc-Getafe Road (San Miguel Side)	8.71	169,400,000.00
	San Miguel-Bayongan-Bulilis-Mabuhay(Ubay) Rd	17.50	348,000,000.00
	Cambangay (San Miguel)-Soom(Trinidad) Road	7.10	142,000,000.00
	Brgy. Roads	20.00	400,000,000.00
TOTAL		282.07	4,959,600,000.00

Annex 2. Directory of Farmer Organizations Engaged in Bohol Buffalo Dairy

NAME OF COOPERATIVE/ ASSOCIATION/ CLUSTER	MEMBERSHIP			ADDRESS	CHAIRMAN/ PRESIDENT	CONTACT NO.
	MALE	FEMALE	TOTAL			
1) Tamboan Farmers Multipurpose Cooperative	8	22	30	Tamboan, Carmen, Bohol	Jesusa Danila	9087520433
2) Progreso Womens and Workers Multipurpose Cooperative	17	46	63	Progreso, Alicia, Bohol	Monica Huiso	9074397785
3) Untaga Multi-Purpose Cooperative	8	25	33	Untaga, Alicia, Bohol	Shirley Molina	9981703179
4) Biabas Small Farmers & Dairy Association	10	6	16	Biabas, Ubay, Bohol	Ma. Victoria Marvida	9269269720
5) Riceland Paradise Multipurpose Cooperative	40	31	71	Benliw, Ubay, Bohol	Gaudencio Lagura	9056570495
6) Ubay Northwestern Dairy Breeders Association	22	16	38	Tuboran, Ubay, Bohol	Efren Raña	9994203539
7) Ubay Northeastern Dairy Breeders Association	13	20	33	San Vicente, Ubay, Bohol	Fernando Dupalco	9362654277
8) Katipunan Farmers' Association	12	23	35	Katipunan, Alicia, Bohol	Rosa Martin-ao	9071839021
9) San Miguel Dairy Breeders Association	18	12	30	Poblacion, San Miguel, Bohol	Jovino Nuez	9207973761
10) San Pascual Dairy Breeders Association	1	29	30	San Pascual, Ubay, Bohol	Virgilia Cutamora	9351651791
11) Bugang Farmers Association	8	14	22	Bugang, San Miguel, Bohol	Lita Aranas	9098552776
12) San Jose Dairy Buffalo Producers Association	24	7	31	San Jose, Mabini, Bohol	Grace Boyles	9057370825
13) Village Dairy Farmers Association	7	3	10	Candelaria, Dagohoy, Bohol	Alma Tusoy	9098990069
14) Malitbog Agrarian Reform Farmers Beneficiaries Cooperative	4	18	22	Malitbog, Dagohoy, Bohol	Jovita Gaudicos	9122605264
15) La Hacienda People's Organization	8		8	La Hacienda, Alicia, Bohol	Diodoro Platino	N/A
16) Union Carabao Raiser's Association	3	1	4	Union, Ubay, Bohol	Elpidio Boiser	9368065979
17) Cayacay Dairy Breeders Association	4	1	5	Cayacay, Alicia, Bohol	Annie Bual	N/A
18) Del Monte Dairy Breeders Association	2		2	Del Monte, Alicia, Bohol	Rogelio Ranili	9103514328
19) Putlongcam Dairy Breeders Association	3		3	Putlongcam, Alicia, Bohol	Kag. Marlino Mendez	N/A
20) San Roque Lungsodaan- Farmers and Fishermen Multi- purpose Cooperative	6		6	San Roque, Mabini, Bohol	N/A	N/A
21) Katarungan Small Coconut Farmers Multipurpose Cooperative	4		4	Katarungan, Ubay, Bohol	Jose Valleaser	9066271648
22) Cambaol Farmers Multipurpose Cooperative	1		1	Cambaol, Alicia, Bohol	Golosino	9165802575
23) Mahayag Dairy Breeders Association	7		7	Mahayag, Alicia, Bohol	Epenito Wahig	
TOTAL >>	230	274	504			

Annex 3. Directory of Bohol Buffalo Dairy Players

Name	Address	Contact Person	Contact Number	Value Chain Role
1) VANILLA SKY	Panglao, Bohol	Sandro	09301364743	Processor/ institutional buyer of raw milk
2) BOHOL BEE FARM	Panglao, Bohol	Vicky Wallace	09173041491 09177101062 09399046796	Processor/ institutional buyer of raw milk and homogenized milk
3) INABANGA COCONUT FARMERS ASSOCIATION	Baogo, Inabanga, Bohol	GAVINO JEMIDA	09098516037	Processor/ farmer raw milk producer
4) SAN MIGUEL DAIRY FARMERS ASSOCIATION	Poblacion, San Miguel, Bohol	Jovenio Nuez	09207973761	Processor/ farmer raw milk producer
5) KATIPUNAN ESCAYA FARMERS ASSOCIATION	Katipunan, Alicia, Bohol	Rosa Martin-ao	09071839021	Processor/ farmer dairy producer
6) RICELAND PARADISE MULTIPURPOSE COOPERATIVE	Benliw, Ubay, Bohol	Diomedes Boyles, Gaudencio Lagura	09361820002 09056570495	Farmer/ dairy producer, Processor
7) UBAY NORTHWESTERN Breeders Association	Tuburan, Ubay Bohol	Efren Rania	09104830192	Farmer raw milk producer, Processor
8) ADFAT Restaurant	Tubigon, Bohol	Ms. Maureen	09293968595	Retailer
9) AMARELA Resort	Panglao, Bohol	Atty. Nunag	09177747200	Retailer
10) ALUMBONG	Panglao, Bohol	N/A	N/A	Retailer
11) BOHOL BEACH CLUB	Panglao, Bohol	N/A	N/A	Retailer
12) GUISEPPE	Panglao, Bohol	N/A	N/A	Retailer
13) RONDOVIO CAFÉ	Panglao, Bohol	Vanessa Rondovio	09499228807	Retailer
14) AMORITA	Panglao, Bohol	N/A	N/A	Retailer
15) ALFRESCO BAY	Panglao, Bohol	N/A	09295863148	Retailer
16) Alicia Technical Vocational High School	Alicia, Bohol	Sheriema Cuyad	09120220104 09467454938	Retailer
17) Sierra Bullones Technical Vocational High School	Sierra Bullones, Bohol	N/A	09207093766	Retailer
18) Guinsularan High School	Duero, Bohol	Rovelia Achacoso	09301541059	Retailer
19) SCE/S	Sierra Bullones, Bohol	N/A	08293791149	Retailer
20) Tamboan Farmers Multipurpose Cooperative	Tamboan, Carmen, Bohol	Jesusa Danila	09087520433	Farmer raw milk producer
21) Progreso Women's and Workers Multi-purpose Cooperative	Progreso, Alicia, Bohol	Monica Huiso	09074397785	Farmer raw milk producer
22) Untaga Multi-Purpose Cooperative	Untaga, Alicia, Bohol	Shirley Molina	09981703179	Farmer raw milk producer
23) Biabas Small Farmers & Dairy Association	Biabas, Ubay, Bohol	Ma. Victoria Marvida	09269269720	Farmer raw milk producer
24) Bohol Dairy Producers Association	Lumangog, Ubay, Bohol	Shirley Molina Esterlyn Cotillas	09056570495 09164762509	Processor/ milk assembler
25) Ubay Northeastern Dairy Breeders Association	San Vicente, Ubay, Bohol	Fernando Dupalco	09362654277	Farmer raw milk producer
26) San Pascual Dairy Breeders Association	San Pascual, Ubay, Bohol	Virgilia Cutamora	09351651791	Farmer raw milk producer
27) Bugang Farmers Association	Bugang, San Miguel, Bohol	Lita Aranas	09098552776	Farmer raw milk producer
28) San Jose Dairy Buffalo Producers Association	San Jose, Mabini, Bohol	Grace Boyles	09057370825	Farmer raw milk producer
29) Village Dairy Farmers Association	Candelaria, Dagohoy, Bohol	Alma Tusoy	09098990069	Farmer raw milk producer
30) Malitbog Agrarian Reform Farmers Beneficiaries Cooperative	Malitbog, Dagohoy, Bohol	Jovita Gaudicos	09122605264	Farmer raw milk producer
31) La Hacienda People's Organization	La Hacienda, Alicia, Bohol	Diodoro Platino	N/A	Processor/ farmer raw milk producer

Name	Address	Contact Person	Contact Number	Value Chain Role
32) Union Carabao Raiser's Association	Union, Ubay, Bohol	Elpidio Boiser	09368065979	Farmer raw milk producer
33) Cayacay Dairy Breeders Association	Cayacay, Alicia, Bohol	Annie Bual	N/A	Farmer raw milk producer
34) Del Monte Dairy Breeders Association	Del Monte, Alicia, Bohol	Rogelio Ranili	09103514328	Farmer raw milk producer
35) Putlongcam Dairy Breeders Association	Putlongcam, Alicia, Bohol	Marlino Mendez	N/A	Farmer raw milk producer
36) San Roque Lungsodaan Farmers and Fishermen Multi-purpose Cooperative	San Roque, Mabini, Bohol	N/A	N/A	Farmer raw milk producer
37) Katarungan Small Coconut Farmers Multi-purpose Cooperative	Katarungan, Ubay, Bohol	Jose Valleaser	09066271648	Farmer raw milk producer
38) Cambaol Farmers Multi-purpose Cooperative	Cambaol, Alicia, Bohol	Mr. Golosino	09165802575	Farmer raw milk producer
39) Mahayag Dairy Breeders Association	Mahayag, Alicia, Bohol	Epenito Wahig	N/A	Farmer raw milk producer
40) Inabanga Coconut Farmers Association	Baogo, Inabanga, Bohol	Gavino Jemida	09098516037	Processor/ raw milk producer
41) DA-Ubay Stock Farm	Lumangog, Ubay, Bohol	Marianito Doydora	09778478811	Enabler
42) Philippine Carabao Center-Ubay Stock Farm	Lumangog, Ubay, Bohol	Guillerma Abay-abay	09296729433	Enabler
43) Office of the Provincial Veterinarian	Tagbilaran, Bohol	Aida R. Sumampong Daisy A. Basco	09306839989 09202406393	Enabler
44) LGU-UBAY (MAO)	Ubay, Bohol	Nena B. Alangilan	09261832971	Enabler
45) LGU-ALICIA (MAO)	Alicia, Bohol	Mansueta Mangayaay	09303944112	Enabler
46) LGU-SAN MIGUEL (MAO)	San Miguel, Bohol	Jessienen Pacomios	09093386246	Enabler
47) LGU-DAGOHY (MAO)	Dagohoy, Bohol	Peter I. Calamba	09061796360	Enabler
48) LGU-MABINI (MAO)	Mabini, Bohol	Norman H. Miano	09261212316	Enabler
49) PLGU-BOHOL	Tagbilaran, Bohol	Ma. Imelda Borromeo	09202517389	Enabler
50) BLUESKY	Panglao, Bohol	Santiago Fonacier	09423038140	Retailer

Annex 4. List of Schools Supplied by BoDPA

NAME OF SCHOOL	ADDRESS	YEAR STARTED	ESTIMATED MILK SUPPLY MONTHLY REQUIREMENT		
			Milkbar 65 ml (in pcs)	Flavored Milk (in liters)	Pasteurized Fresh Milk (in liters)
1) Alicia Technical Vocational High School	Alicia, Bohol	2011	800	65	
2) La Hacienda National High School	Alicia, Bohol	2011	1,200	40	45
3) San Jose National High School	Talibon, Bohol	2011	8,000	60	7
4) San Miguel Technical Vocational High School	San Miguel, Bohol	2011	6,800	90	7
5) San Roque National High School	Alburquerque, Bohol	2011	2,800	12	
6) Sierra Bullones Technical Vocational High School	Sierra Bullones, Bohol	2012	8,000		
7) Mahayag National High School	San Miguel, Bohol	2012	6,800	60	6

NAME OF SCHOOL	ADDRESS	YEAR STARTED	ESTIMATED MILK SUPPLY MONTHLY REQUIREMENT		
			Milkbar 65 ml (in pcs)	Flavored Milk (in liters)	Pasteurized Fresh Milk (in liters)
8) Faraon National High School	Jagna, Bohol	2012	2,000	30	20
9) Candijay Central Elementary School	Candijay, Bohol	2012	2,800	80	20
10) Guinsularan National High School	Duero, Bohol	2012	2,000	20	7
11) Tubigon West Central Elementary School	Tubigon, Bohol	2012	1,500	20	
12) Getafe Central Elementary School	Getafe, Bohol	2012	2,000	90	
13) Guindulman Central Elementary School	Guindulman, Bohol	2012	3,500	120	2
14) Cangawa National High School	Buenavista, Bohol	2012	1,000	20	
15) Inabanga National High School	Inabanga, Bohol	2012	2,500	15	5
16) Antequera Central Elementary School	Antequera, Bohol	2012	400	13	5
17) Lila National High School	Lila, Bohol	2012	3,100	10	5
18) Campao Oriental High School	Getafe, Bohol	2012	1,500	15	
19) Bugang National High School	San Miguel, Bohol	2012	500		
20) Nahawan National High School	Clarin, Bohol	2012	1,500	20	
21) Cong. Pablo Malasarte National High School	Balilihan, Bohol	2012	1,500	20	
22) Guinacot National High School	Guindulman, Bohol	2013	6,000		
23) Batuan Central Elementary School	Batuan, Bohol	2013	500	10	
24) Biabas Central Elementary School	Ubay, Bohol	2013	4,000	50	5
25) Candabong National High School	Anda, Bohol	2014	2,000	25	3
TOTAL			86,700	970	140

NOTES:

Estimated supply requirements per school are based on deliveries.

* Milkbar 65ml comprised about 23% milk

* Flavored milk per liter comprised 50% milk

* Pasteurized fresh milk contained 100% pure milk

Annex 5. Summary of Potential Dairy Buffalos for Recruitment

Municipality	No. of Animals (By Breed)				No. of Milking Animals from 2011 - 2014				No. of Potential Dairy Animals			
	SP	CB	RV	TOTAL	SP	CB	RV	TOTAL	SP	CB	RV	TOTAL
Alicia	336	150	0	486	7	11	0	18	329	139	0	468
Dagohoy	244	164	0	408	7			7	237	164	0	401
Mabini	543	265	133	941	28	45	26	99	515	220	107	842
Pilar	116	43	5	164	6	4	1	11	110	39	4	153
San Miguel	284	98	0	382	17	14	0	31	267	84	0	351
Ubay	754	749	215	1,718	50	91	23	164	704	658	192	1,554
Inabanga	161	54	0	215	8			8	153	54	0	207
Other Areas						8	6	12				
TOTAL	2,438	1,523	353	4,314	123	173	56	350	2,315	1,358	303	3,976

Provincial Core Planning Team

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

PHOTO DOCUMENTATION

Presentation of Buffalo Dairy VCA Results to PDC and PCPT by
RPCO-7 | **June 27, 2017**



Presentation & Technical Review of Buffalo Dairy PCIP Matrix | July 27, 2017



Stakeholders' Consultation for the Buffalo Dairy PCIP | August 9, 2017



PDC Presentation of Buffalo Dairy PCIP
| September 8, 2017

