



## Executive Summary



# BOHOL CY 2006-2026 AGRICULTURE MASTER PLAN







Republic of the Philippines  
**PROVINCE OF BOHOL**  
City of Tagbilaran

## **OFFICE OF THE GOVERNOR**

### *Message*



I am proud and happy to present the **CY 2006-2026 Bohol Agriculture Master Plan** painstakingly crafted through the cooperation and partnership between the Provincial Government of Bohol and the Philippines-Australia Human Resource Development Facility (PAHRDF).

The Province of Bohol takes pride as being blessed with the bounties of natural resources and the diligence and industry of its people. Together, the two become an infallible source of strength for the Boholanos in our effort to climb out of the pit of poverty. Thus, this provincial leadership, in concert with various stakeholders, took the ambitious initiative of crafting this 20-year Agriculture Master Plan with the view of attaining and sustaining economic development by way of optimizing the agricultural productivity of our farmers. The envisioned agricultural growth will march abreast of the flourishing of our tourism industry, the two being the main economic drivers of our Province.

As with the other development blueprints of our Province, the Bohol Agriculture Master Plan is vital to the attainment of our vision, mission and goals. With the consistent guidance and support of the stakeholders and the implementors, this Plan will make a potent tool in turning the countryside into the nucleus of economic development. In the coming years, I hope to see before us highly productive and self-sufficient Boholano farmers who will take the lead in our march towards progress.

At this opportune time, I extend my sincere thanks and appreciation to all those who endeavored for the realization of the Bohol Agriculture Master Plan — the technical staff from the PPDO, OPA, OPV, BPRMO, BEMO, and most specially the Philippines-Australia Human Resource Development Facility (PAHRDF), our key partner who provided us the much-needed technical assistance and guidance. I fervently hope that our collaboration will span beyond the Plan's timeframe of twenty (20) years as I look forward to enjoying with you all the gains of our mutual labors.

*Abante Bohol sa kauswagan!*

October 10, 2005; Tagbilaran City, Bohol.

  
**ERICO B. AUMENTADO**  
Governor



Republic of the Philippines  
**PROVINCE OF BOHOL**  
City of Tagbilaran

## **OFFICE OF THE VICE GOVERNOR**

---

### *Message*

With great interest and utmost confidence, I welcome the Provincial Government's latest innovation – the Bohol Agriculture Master Plan for 2006-2026.

For the past decade, the province of Bohol has been head strong in its efforts to uplift its struggling agricultural sector. Before coming up with the Master Plan, there had been previous agriculture-based government programs which were worthwhile although unconsolidated. Such scattered approach worked as a drawback since different projects may have the same town-recipients to the disadvantage of others.

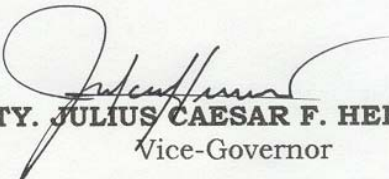
By consolidating the programs and identifying the zonal beneficiaries, we are able to provide a more evenly distributed program. With its five key activities namely, (1) Sustainable Integrated AgriBusiness Project; (2) Fishery Resources Development and Management; (3) Livestock Integration for Food and Enterprise Project; (4) Natural Resource Development and Management Project; and (5) Local Social and Institutional Strengthening, we hope to diversify the agricultural programs best suited for each of the identified production zone communities of development.

With our partnership with the Philippines-Australia Human Resource Development Facility (PAHRDF) through a technical assistance contract with the Orient Integrated Development Consultants, Inc., we look forward to a smooth implementation of the project.

But most importantly we seek the support, cooperation and understanding of the Boholano people, to whom the success of this master plan largely rests on. Together we can make this plan a reality.

Thank you.

Tagbilaran City  
*October 6, 2005*



**ATTY. JULIUS CAESAR F. HERRERA**  
Vice-Governor



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 (FULL COUNCIL) HELD ON OCTOBER 5, 2005 AT THE PEOPLE'S MANSION, TAGBILARAN CITY.**

In Attendance:

Gov. Erico B. Aumentado.....Chairman, Presiding

and

Majority of the Members of the PDC Full Council

### **PDC FULL COUNCIL RESOLUTION NO. 01-2005**

#### **A RESOLUTION ADOPTING THE BOHOL AGRICULTURE MASTER PLAN (BAMP) 2006-2026 AND ENDORSING THE SAME TO THE SANGGUNIANG PANLALAWIGAN FOR APPROVAL**

**Whereas**, the Provincial Government of Bohol has focused its development agenda on spreading economic development throughout the province, with the ultimate aim of uplifting the living condition of Boholanos by making them more productive and self-reliant, particularly in agriculture;

**Whereas**, there has been a strong clamor among the province's stakeholders to craft a Master Development Plan for Agriculture to guide the sector's direction, development and growth;

**Whereas**, in partnership with the Philippines-Australia Human Resource Development Facility (PAHRDF), through the assistance of Orient Integrated Development Consultants, Inc. (OIDCI), the Provincial Government of Bohol has crafted this Development Plan, undergoing a comprehensive and multi-sectoral planning process, ensuring proper consultation among stakeholders, including farmers and producers, identification of priority areas for development, and determination of specific projects for agricultural sub-sectors;

**Whereas**, this Development Plan, officially termed the Bohol Agriculture Master Plan (BAMP) 2006-2026, identifies a two-point strategy for achieving the goals of productivity and self-reliance through: a) food security at the household level; and b) agri-industrialization geared towards adding value to new products while creating more jobs and livelihood opportunities;

**Whereas**, the BAMP 2006-2026 consists four (4) major productive components, namely: a) Sustainable Integrated Agribusiness Project (SIAP); b) Livestock Integration for Food and Enterprise (LIFE) Project; c) Fishery Resources Development and Management (FRDM) Project; and d) Natural Resources Development and Management (NRDM) Project;

**Whereas**, after initial presentation to the PDC Executive Committee, the proposed BAMP has been reviewed, revised and fine-tuned to better address Bohol's agricultural development needs and potentials;

**Whereas**, given all of its features as discussed above, the BAMP 2006-2026 strategically supports the Bohol Poverty Reduction Program and overall development planning goals;

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

**To adopt the Bohol Agriculture Master Plan (BAMP) 2006-2026 and endorse the same to the Sangguniang Panlalawigan for approval.**

**UNANIMOUSLY ADOPTED.**

- 0 -

I hereby certify to the correctness of the foregoing Resolution.

  
**JUANITO G. CANGBANGAY**  
Prov'l Planning & Dev't Coordinator  
Head, PDC Secretariat

ATTESTED:

  
**ERICO B. AUMENTADO**  
Governor  
Chairman, PDC-Bohol

# EXECUTIVE SUMMARY

BOHOL AGRICULTURE MASTER PLAN: CY 2006-2026



BOHOL PROVINCIAL GOVERNMENT



PAHRDF

An Australian Government Initiative





---

# EXECUTIVE SUMMARY

## 1.0 INTRODUCTION

The conceptual framework of the Bohol Agriculture Master Plan attempts to present the overall guide framework generally for Provincial LGU and specifically the municipalities to implement the Bohol Agriculture Master Plan in an effective and sustainable manner in response to the need for a proactive, directional and sustainable agriculture and resource management. It also tries to illustrate and reinforce the often-overlooked role of the Provincial Government through its frontline key offices tasked and mandated to deliver services geared towards agricultural productivity. Moreover, it illustrates the huge potential of the key agencies involved to offer technical assistance, systematize and standardize initiatives in the province, as well as being the “institutional memory conduit” of what key agencies, PLGU’s, NGO’s and other major key players are doing in Bohol for an effective, productive and sustainable agriculture and resource management.

The provincial leadership in partnership with the Philippines-Australia Human Resource Development Facility (PAHRDF) through a technical assistance contract with the OI DCI has provided guidance in the crafting of the 20-year Bohol Agricultural Master Plan. To materialize this, fifteen (15) technical staff from the Offices of the Provincial Planning and Development Office (PPDO), Provincial Agriculture Office (OPA), Provincial Veterinarian Office (OPV), Bohol Poverty Reduction Management Office (BPRMO) and Sangguniang Panlalawigan-Special Project Unit undergo a five (5) module training course and actual application sessions. An additional two (2) participants from the Bohol Environment Management Office (BEMO) were included on the later part of the training module to ensure the integration of natural resource management in the production and development aspect.

The purpose of the training is to upgrade the skills and competencies of the selected technical staff in development planning and to come up with a Bohol agriculture and natural resource master plan to support the priority agenda of the provincial government in reducing poverty incidence particularly in the identified production zone communities. This development initiative will ultimately contribute to the attainment of the province vision as a **“prime eco-cultural tourist destination and a strong agro-industrial province in the Visayas”**.

The Bohol Agriculture Master Plan is anchored on sound environmental principles as the foundation and insurance for the sustainable growth and development of the province with primary consideration on the need to produce more food for the growing population simultaneous with addressing the protection and management of the local environment. The plan identifies key production development intervention or a mix of priority programs and projects that shall be the basis for investment promotion and programming by the provincial and city/municipal governments.

Essential to the development planning is the availability of reliable information, which will provide an understanding of the current situation of the province. This form part of the training process given to the participants and followed by application sessions. The strategies in getting information includes data gathering from secondary sources conduct of Participatory Rural Rapid Appraisal, survey and inventory using guide questions, identifying data gaps and the sources of information. The information contained in the profile are meant to act as one of a 'snapshot' of agriculture and natural resources of the province. These were analyzed and further verified through references and documented studies.

The profile indicates a major shortfall in agricultural productivity coupled with natural resources degradation where production are build upon. These analysis serves as the basis for defining the over-all development context, planning principles, strategies and development direction for the formulation of the agriculture and natural resources plan. It integrates a variety of strategies to ensure a nutritionally balanced supply of basic food commodities for the first five (5) years and gradually shift to agri-industrialization beginning on the sixth year onwards.

The Bohol Agriculture Master Plan has undergone a series of consultation with various stakeholders, from the planners, policy makers, local chief executives, selected national government agencies and non-government organizations, Provincial Development Council - Executive Committee officials and the Provincial Legislative/Sangguniang Panlalawigan officials. Each consultation event have been properly documented and all relevant comments and suggestions during the consultation have been considered and integrated in the final draft of the master plan.

## **2.0 RESOURCE PROFILE AND SITUATION ANALYSIS**

### **2.1 Summary of Provincial Resource Profile**

#### **2.1.1 Physical and Natural Resource Attributes**

The island Province of Bohol is located in the central part of the Philippine Archipelago with bearings of north latitude 9 degrees 30 minutes and 10 degrees 15 minutes and east longitude 123 degrees and 40 minutes. It is surrounded by the island of Cebu at the northwest, Leyte at the northeast and Mindanao at the south border (see [Figures I-1 & I-2](#)). Bohol is about 1 hour and 45 minutes directly south of Manila and 30 minutes southeast of Mactan Island, Cebu. It has 654 kilometers of coastline and 6,245 square kilometers of municipal waters covering the major islands and islets. Its provincial capital, Tagbilaran City, is about 390 nautical miles south of Manila.

Bohol, is one of the four(4) provinces in Central Visayas, is an island province with an approximate land area of 411, 726 hectares. It comprises 47 municipalities and one city, Tagbilaran City, serving as its provincial capital. Bohol is further politically grouped into three (3) congressional districts with a total of 1,109 barangays.

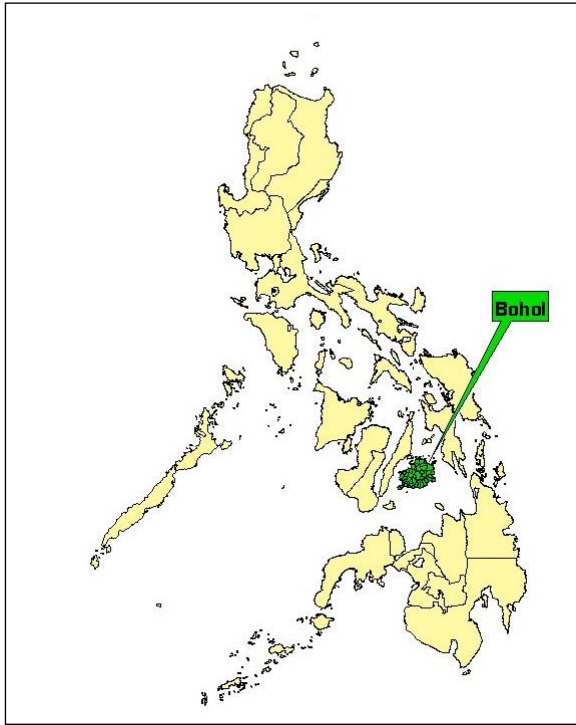


Figure I-1. Vicinity Map Philippines

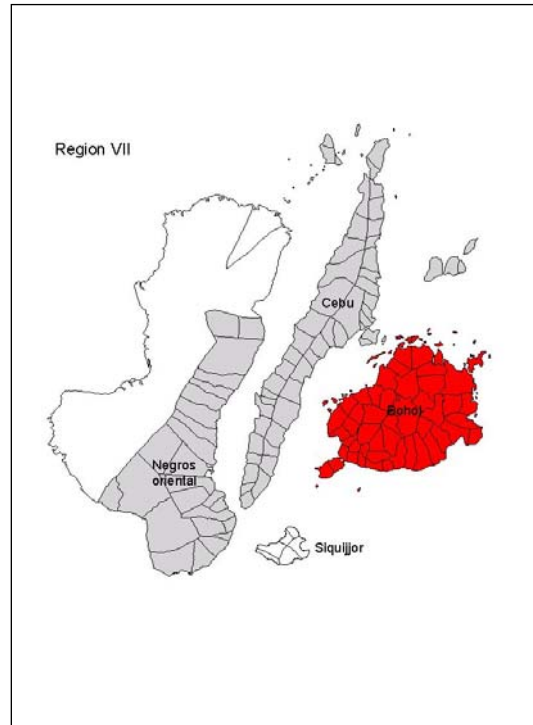


Figure I-2. Vicinity Map Central Visayas

As to general land classification, about 74% or 310,455 hectares are alienable and disposable, while the remaining 25% or 101,271 are classified as timberland or forest area (refer [Figure I-3](#)).

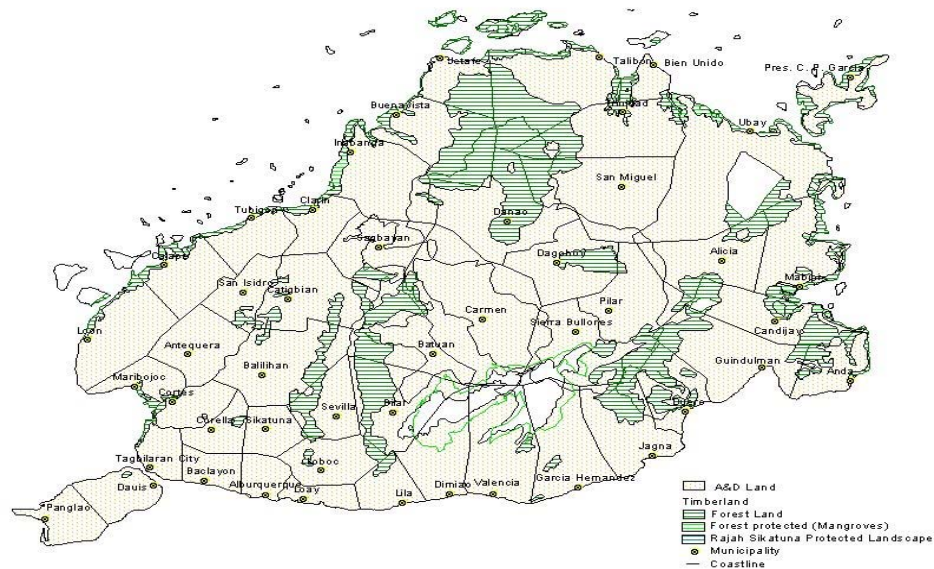


Figure I-3. Land Classification Map (DENR Cebu 2000, digital files, layout edited)

Of the total land area, approximately 66% or 273,950 hectares are utilized for agricultural production mainly palay, corn, coconut vegetables and rootcrops. The existing forestland accounts for 24.6% of the total land area. Built-up areas cover 9,678 hectares, the tourism and industrial use zones cover 1,888 hectares and 468 hectares, respectively. The other major land uses include the infrastructure and utilities right-of-ways 21,721.43 hectares, open spaces and parks 1,421 hectares and the mining and quarrying sites about 781 hectares.

Of the total timberland or forestland, about 23,940 or 24% is natural forest, classified as dipterocarp forest, second growth natural forest and mangrove. Bohol has a total NIPAS area of 75,766 hectares or about 75% of the forestland areas categorized as strict natural reserve, nature reserve, natural park, natural monument, wildlife sanctuary, protected landscapes and seascapes.

Bohol's inland water resources include 2,224 springs, 59 rivers, 200 creeks and river basins/watersheds which provide water for domestic and irrigation purposes. There are 11 major rivers in Bohol fed by tributaries emanating from upland watersheds.

The province has 30 coastal municipalities including the capital city of Tagbilaran that covers 304 barangays and 72 islands and islets. Municipal waters cover an area of 6,245.06 km<sup>2</sup> and a total shoreline length, excluding offshore island and islets, of 653.65 km. It is also acclaimed to have the biggest mangrove area of 14,502 hectares in Central Visayas. There are three (3) major fishing grounds in Bohol, namely: Bohol Sea, Cebu Strait and Danajon Bank with a total area of 27,352.5 km<sup>2</sup> inside and outside Central Visayas.

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

Based on the BSWM Region 7 data, 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 60 centimeters and its fertility is good throughout the province.

Most of the hills and ridges have meager to no soil cover due to fairly rapid surface drainage. Clay soils with fine textures are predominant throughout the province. The dominant soil type is Ubay Clay, which occupies the northeastern part of Bohol constituting 19.53 percent or 79,644 hectares. The soil derived from rock types are generally clay and silty with sandy soil limited in the coastal areas. Soils on steep to very steep 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.

The climate of Bohol falls under the 4<sup>th</sup> type of Corona's climatic classification, characterized by rainfall more or less evenly distributed throughout the year. The mean annual rainfall is 3.73 mm per day and mean temperature regime is 27.7°C. Bohol is outside of the typhoon belt zone of the country, as typhoon rarely passes the province.

### **2.1.2 Social Demographic Attributes**

Bohol's population of 1,137,268 in 2000 ranked 2<sup>nd</sup> in Central Visayas and 17<sup>th</sup> in the country, with a rapid population growth rate of 2.92% (CY 1995-2000) annually. Bohol's population is projected to double in 24 years, by the year 2024. Most of the population resides in the rural areas. The number of households as of 2000 census is 209,588 with an average family size of 5. The population is predominantly young with almost half below 22 years old.

The average income of a Boholano family is P77,291.00 (NSO Family Income and Expenditure Survey, 2000). The major sources of income came from entrepreneurial activities, engaged by 50% of families, from wages and salaries (27%) and about 33% from other sources. In that same year, the average Boholano spent less than what they earned. Correspondingly, the average expenditure in 2000 for each family amounted to P66,907.00.

Bohol has 47.3% of its households below the poverty line in year 2000. Some of the factors cited for the high poverty incidence are: seasonal employment, particularly in agriculture; minimal opportunities for off-farm employment compared to the tremendous growth in labor force; decrease in the purchasing of the peso vis-à-vis the increase in prices of basic commodities; and rapid population growth.

As of 2004 population count, Bohol has an estimated 785,540 people who are 15 years old and over. This working age population constitutes about 64% of the total population. Between 2000 and 2004, the working age population expanded at an average of 1.6% annually.

From 2001 to 2003, the employment rate averaged 92.3% while the unemployment rate averaged at 8.76%. The agriculture sector continues to account for a greater portion in employment. Agriculture is the main source of economic activity in Bohol with a greater number of its people engage in farming and fishing. It provides employment to 54% of the total employed persons, followed by the services sector at 30% and the industry sector at 16%.

### **2.1.3 Agriculture and Fisheries**

Agriculture remains the biggest sector in the province in terms of working population and land use. More than half of its total land area is devoted to agricultural use. In terms of agricultural area distribution, coconut is the major crop in the province, utilizing approximately 38% of the agricultural land. Bohol as a rice-producing province utilizes approximately 32% of its agricultural land for rice production. Corn area accounts for 10%, while rootcrops is about 7%.

### 2.1.3.1 Crops Production

**Rice.** This staple food is mainly produced by small farmers, with landholdings ranging from 0.6 to 2.0 hectares, with a total area of 46,587 hectares. The total palay production in 2004 was about 150,526 metric tons, which translates to 2.36 metric tons average yield per hectare given the effective harvested area of 63,771 and 1.40 cropping intensity. Rice farming served as the primary source of subsistence and income for about 57,7780 farming households.

The irrigated and rainfed rice area is approximately 15,732 and 30,855 hectares, respectively. The existing irrigation facilities are: 215 Communal Irrigation Systems (CIS) with a service area of 8,949 hectares, Bohol Irrigation Project Stages I and II with service areas of 4,960 and 5,300 hectares, the Capayas Irrigation System and, several DA-assisted Small Water Impounding Projects (SWIP), Small Farm Reservoirs (SFR), Concrete Diversion Dams (CDD), and Shallow Tube Wells (STWs). Rainfed rice areas are usually planted to rice once a year .

**Corn.** Corn is the second staple crop planted to approximately 15,293 hectares in 2004. A corn farmer tills an uneconomic cornfield ranging from 0.5 to 1.5 hectares. Corn yields are about 2.19 metric tons and 0.92 metric tons per hectare per cropping for the hybrid and open pollinated variety, respectively.

**Vegetables.** There are two types of vegetables grown in the province; the leafy and fruit vegetables. The leafy vegetables include pechay, cabbage and green onions while the fruit vegetables are ampalaya, chayote, eggplant, okra, bell pepper, squash, tomato and watermelons. Cabbage and chayote are commonly grown in the highland areas of Duero, Jagna, Sierra Bullones, Candijay and Guindulman. The other vegetables are grown in the different lowland areas with an approximate land area of 1,823 hectares. Ampalaya has the most extensive area of 705 hectares and showed the highest volume of production of 1,296 metric tons in 2004.

**Coconut.** Coconut is the major crop in Bohol in terms of agricultural land usage with an approximate area of 38,951 hectares. Total coco palms are estimated at 5.02 million, of which about 93% are bearing, and 7% are non-bearing. The average planting density of coconut is 129 trees per hectare. The coconut production in 2004 is 123,962 metric tons.

**Oil Palm.** Oil Palm is an emerging commodity, which offers additional opportunities to hasten local economic growth and development. As of 2004, the total palms planted reached 4,285.46 hectares with 1,414 growers. The plantations are located in 14 municipalities of the 2nd and 3rd districts of Bohol.

**Mango and other Fruit Crops.** There are five (5) major fruit crops planted in the province, namely: banana, mango, papaya, pineapple and calamansi. As of 2004, the total area planted was 5,269 hectares with mango having the largest area covering 2,735 hectares. About 14,186 farmers are involved in mango planting which is dominated by backyard growers.

### 2.1.3.2 Livestock and Poultry Production

The major livestock and poultry commodities raised in the province include cattle, carabao, goat, hog, chicken and ducks.

**Ruminants.** The ruminants are cattle, carabao, goats and sheep. Ruminant production is predominantly backyard and is usually done through tethering and loose grazing under coconuts and open grasslands. Its population increased by about 8% over 5 years.

**Cattle.** The inventory of cattle in 2004 was 70,644 heads. A total of 77,597 heads of cattle were slaughtered in the past 5 years. Data showed an out-shipment of 7,244 heads while importation indicated a total of 3,853 heads. Those shipped-in are mostly coming from Mindanao and Cebu for local dispersal projects.

**Goat.** Goat population is approximately 55,000 heads as of 2004. A total of 5,554 heads were shipped-out to the provinces of Leyte and Cebu while a total of 470 heads were shipped-in coming from Negros Oriental and Siquijor.

**Hog.** Hog production is predominantly backyard, which accounted for 94.2% of the total population. As of 2004, the population is approximately 350,000 heads. For the past 5 years, a total of 148,286 heads were shipped-out to Cebu while 5,008 heads were shipped-in from Mindanao and Cebu.

**Chicken.** Native chicken constitutes about 96% of the poultry population, which is generally raised at the backyard level. They are shipped to Cebu, Manila and Cagayan de Oro.

**Duck.** Ducks only represent 1.6% of the total poultry population. For over 5 years, duck population has indicated a continuous decline where a greater percentage is manifested in 2004.

#### Other Poultry Products

**Eggs.** It is interesting to note that there is a high importation of table eggs into the province for the past 3 years, for a total of 37.38 million pieces of eggs mostly coming from Cebu and Cagayan de Oro.

**Balut.** Most of the balut sold in the province are coming from Manila and Cagayan de Oro. A continuous increase of balut importation into the province for the past 3 years has been noted.

### 2.1.3.3 Fish Production

**Municipal Fisheries.** The municipal waters cover an area of 624,506 hectares, with a coastal population of 480,247. There are 8,952 and 11,686 motorized and non-motorized fishing boats, respectively. There are 30 types of fishing gears commonly used. Total fish production in the province is 13,443 kg in 2004.

**Commercial Fisheries.** Commercial fisheries are those using vessel of more than 3.0 gross tons. There are 27 registered commercial fishing boats provincewide with an average of 9,559 metric tons in 2004.

**Aquaculture.** Aquaculture includes the production of commercial species like bangus, prawn, mudcrab, seaweeds, grouper and tilapia from brackish and freshwater fishponds. There are 340 fishpond operators in the province. Fishpond in mangrove areas is estimated at 4,738.2 hectares. Bohol has approximately 8,000 hectares suitable for seaweeds farming. The average yield is 40 metric tons fresh seaweeds per hectare per year with an average of 3 croppings yearly.

## 2.2 Land Resource Use Analysis

Bohol has delineated its land and water resources for a more rational and appropriate use. The total area actually devoted to agricultural use is about 45% of the total provincial land area and 54.5% of the total agricultural lands. A total of 75,766 hectares is under protection as initial component of the National Integrated Protected Area Systems. The total area classified as timberland or forest area in Bohol is 101,271 hectares or 24.4% of the total land area of the province. About 17% are covered with forest. The present forestland is way below the standard.

The actual forest vegetation cover is critically deficient. Natural forests is still evident but biodiversity in Bohol forest is little understood since very limited studies/surveys on this aspect have been conducted. Reforestation activities through active community participation needs to be pursued and expanded. Mangrove forests play a vital role in shaping the ecology and economy in the province. Bohol rank first in Central Visayas as having the biggest mangrove areas of about 14,502 hectares, which need vigilant protection and conservation.

About 27,027 hectares are identified for built-up areas and 536 hectares for commercial and industrial zone. It is expected that the built-up areas will increase as the province population grow and will exert more pressure on land conversion.

## 2.3 Food Supply and Demand Analysis

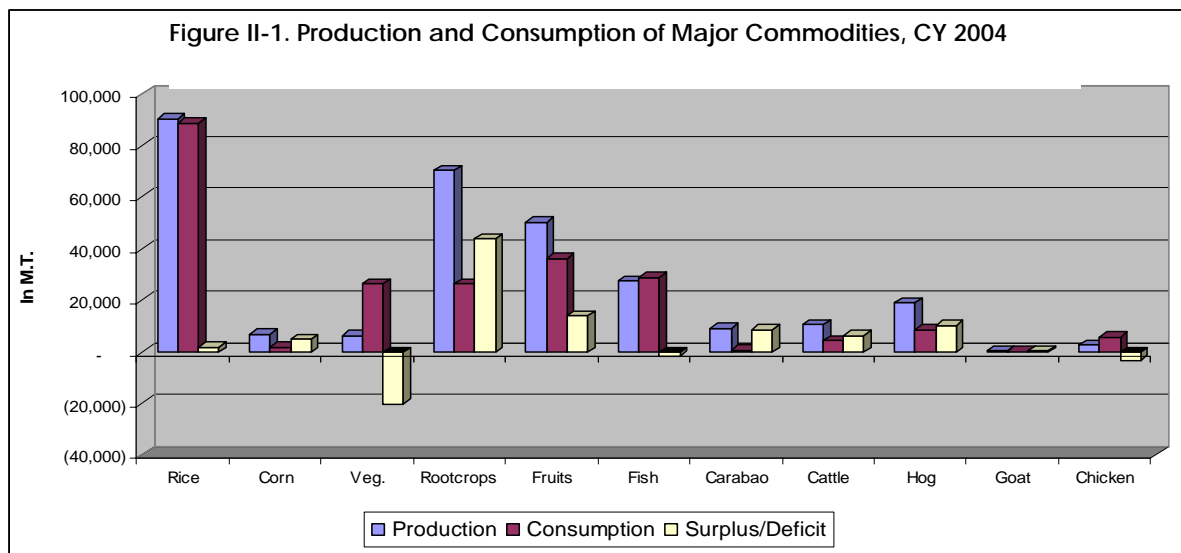
### 2.3.1 Growth Rate

Bohol's population annual growth rate at 2.92% in 1995-2000 population census is higher than the country's annual population growth rate of 2.36% and the regional growth rate of 2.79%. At this rate, the population is estimated to double in 24 years. The physical impact of population expansion upon the natural environment as well as the need for an increase in production for the expected increase in consumption is so critical an issue. Such rapid population growth, if not addressed immediately, will have alarming impact on Bohol's resources and environment and, in turn, on its sustainable development.



### 2.3.2 Demand and Supply Conditions

Based on current production figures as against the consumption survey of the BAS-FCS, Bohol has a deficit in the following food commodities: vegetables, fish, chicken and eggs (*Figure II-1*). It has a surplus in the production of rice, corn, rootcrops, fruits and livestock, i.e., beef/carabao, pork and chevon.



### 2.3.3 Food Requirements

*Table II-1* summarizes the demand-supply condition of major food items as measured against the per capita food requirement recommended by the Food and Nutrition Research Institute (FNRI).

**Table II-1. Food Balance Analysis (In Metric Tons); Province of Bohol**

Commodity	2000			2002			2004		
	Prod'n. 1/	Consumption	Surplus/Deficit	Prod'n.	Consumption	Surplus/Deficit	Prod'n.	Consumption	Surplus/Deficit
Cereals	92,929	124,190	(31,261)	94,926	129,455	(34,529)	97,177	134,981	(37,805)
Fruits	45,266	87,172	(41,906)	43,606	90,867	(47,261)	50,188	94,747	(44,559)
Rootcrops	71,994	68,907	3,087	68,093	71,828	(3,735)	70,376	74,895	(4,519)
Vegetables	4,168	62,265	(58,097)	4,449	64,905	(60,456)	6,333	67,676	(61,343)
Meat	37,407	37,678	(271)	37,934	39,275	(1,341)	42,050	40,952	1,098
Fish	28,530	34,869	(6,339)	27,973	36,347	(8,374)	27,363	37,899	(10,536)
Eggs	2,700	4,526	(1,826)	3,325	4,718	(1,393)	2,940	4,920	(1,980)

Source: 1/ Bureau of Agricultural Statistics (BAS)  
FNRI Per Capita Consumption

Based on current production as against the consumption survey of the BAS, Bohol has a deficit in the following food commodities: vegetables, fish, chicken and eggs. It has a surplus in the production of rice, corn, root crops, fruits and livestock. Basing on the Food Nutrition Research Institute (FNRI) per capita consumption for year 2004, only meat production had a surplus as against its consumption for a nutritionally adequate diet. If present production will continue,

Bohol will experience severe deficits to meet the per capita food requirement of the population.

#### **2.3.4 Projected Agricultural Production and Demand**

The projected agricultural production is presented in *Table II-2* based on the production targets for crops, poultry and livestock, fish and fishery products. These targets assumed the implementation of the proposed agricultural and natural resources interventions outlined in the succeeding sections.

#### **2.3.5 Water Supply and Demand Analysis**

Bohol is largely characterized by a Karst topography; basically made up of limestone from a former coral reef. Technically, the Karstic formation translates to high water infiltration rate and has direct bearing on both surface and sub-soil water resources of the province.

The NIA Provincial Irrigation Office for 2004 shows that the actual areas provided with dependable irrigation water are approximately 15,732 hectares. The present irrigated areas account for 38.55% of the total potential irrigated lands of 40,800 hectares.

### **2.4 Farming Systems Analysis**

#### **2.4.1 Farming Systems on Selected Crops**

The existing farming activities, both the irrigated and rainfed paddies and the upland to highland farmsteads, serve as the primary source of subsistence and cash income for the farm households. The findings indicate that the areas devoted to short-duration crops production vary by season and by year, generally influenced by rainfall and soil moisture availability, most especially for food and cash crops like rainfed and upland palay, corn, vegetables and root crops.

#### **2.4.2 Analysis of Yield Levels**

Analysis of the prevailing yields of selected crops indicate a highly subsistence level of farming. This is generally characterized as follows: poor or defective cropping pattern calendar, use of low yielding or inferior seed materials, low usage of farm inputs, poor or inadequate crop protection and maintenance. The yield determinants in most crops are the combination of good seeds and appropriate farm management.

#### **2.4.3 Analysis of Profitability Levels**

The profit margin derived from crops production is low because of low yield level.

#### **2.4.4 Farm Labor Employment Generation**

Rainfed palay production generated the highest farm labor employment, followed by irrigated palay production, coconut production system and the open

pollinated white corn farming system. The analysis shows that the intensification and expansion of crops production systems, as and were technically viable, could provide productive employment to the present and future available rural labor force.

Table II-3. Projected Production and Consumption (In Metric Tons), Province of Bohol; Years 2005, 2010, 2015, 2020 and 2025

Commodity	2005			2010			2015			2020			2025		
	Prod'n	Consumption 1/	Surplus/Deficit	Prod'n	Consumption	Surplus/Deficit	Prod'n	Consumption	Surplus/Deficit	Prod'n	Consumption	Surplus/Deficit	Prod'n	Consumption	Surplus/Deficit
Cereals 2/	172,575	137,847	34,728	186,381	153,277	33,104	205,019	170,731	34,288	227,571	190,499	37,072	254,880	212,913	41,967
Fruits 3/	52,698	96,758	(44,060)	60,603	107,589	(46,986)	75,753	119,840	(44,087)	106,055	133,715	(27,660)	159,082	149,449	9,633
Rootcrops 4/	115,355	76,485	38,870	121,123	85,046	36,077	130,813	94,731	36,082	143,894	105,699	38,195	161,161	118,136	43,025
Vegetables 5/	7,479	69,113	(61,634)	22,437	76,849	(54,412)	44,874	85,600	(40,726)	89,748	95,511	(5,763)	161,546	106,749	54,797
Fish 6/	29,005	38,703	(9,698)	43,377	43,036	341	76,444	47,936	28,508	147,185	53,486	93,699	309,140	59,779	249,361
Meat 7/	46,137	41,821	4,316	91,755	46,503	45,252	218,245	51,798	166,447	589,362	57,795	531,567	1,932,688	64,595	1,868,093
Eggs 8/	3,000	5,024	(2,024)	7,130	5,586	1,544	25,379	6,223	19,156	113,799	6,943	106,856	729,419	7,760	721,659

NOTE :

1/ Consumption based on FNRI Per Capita Consumption as follows:

Food Item Per Capita Consumption (kgs)

Cereals	109.2
Fruits	76.65
Rootcrops	60.59
Vegetables	54.75
Meat	33.13
Fish	30.66
Eggs	3.98

% Incremental Production

	2005	2010	2015	2020	2025
2/ Cereals	5%	8%	10%	11%	12%
3/ Fruits	5%	15%	25%	40%	50%
4/ Rootcrops	3%	5%	8%	10%	12%
5/ Vegetables	10%	200%	100%	100%	80%

6/ Finfish only except seaweeds production

% Yearly Incremental Production

2004 - 2007	6%
2008 - 2010	10%
2011 - 2015	12%
2016 - 2020	14%
2021 - 2025	16%

7/ Meat

Annual Growth Rate:

Carabao	Year 1-5	2.49%	Year 1-3	10%
	Year 6-10	3.49%	Year 4-8	15%
	Year 11-15	4.49%	Year 9-15	20%
	Year 16-20	5.49%	Year 16-20	25%
Cattle	Year 1-4	1.65%		
	Year 5-8	3.65%	8/ Eggs	
	Year 9-12	4.65%	Year 1-3	15%
	Year 13-15	5.65%	Year 4-8	25%
	Year 16-20	6.65%	Year 9-15	35%
			Year 16-20	45%
Hogs		21.78%		
Goat	Year 1-3	2.83%		
	Year 4-7	4.85%		
	Year 8-11	6.85%		
	Year 12-15	8.85%		
	Year 16-20	10.85%		
Chicken	Year 1-3	15.0%		
	Year 4-8	25.0%		
	Year 9-15	35.0%		
	Year 16-20	45%		

## **2.5 Livestock and Poultry Production System Analysis**

### **2.5.1 Ruminant Production System**

Ruminant raising complements with other farming systems, both upland and lowland. It provides a good source of organic fertilizer and energy through its manure. Carabaos and cattle, particularly bullocks, can also be used as draft animals. Generally raised at backyard level, these animals have been an important component of programs on food sufficiency and sustainability addressing malnutrition and providing additional income to farmers. Unlike crops, ruminants can be produced and marketed at anytime of the year.

Ruminant population has increased by 20% from 2000. The infusion of breeder animals in 2002-2003 for the different dispersal programs implemented by both the government and non-government organizations and the additional offspring production may have attributed the increase in 2004 production level.

### **2.5.2 Swine Production Systems**

Swine raising is a very popular enterprise in Bohol. Almost every farmer household particularly in the rural areas raises swine more as fallback for cash during emergency than anything else. Majority of the farmers raise 1-2 heads of swine in their backyard utilizing commercial or semi-commercial feeds. In the barangays, some are still using indigenous feeds. To the farmer, recommended nutrients are not much consideration as long as the animal is fed.

### **2.5.3 Poultry Production Systems**

The poultry industry forms part as an integral component of the agriculture sector that provides additional income to farmers and economic growth to the province. Native chickens are commonly found in most households. Farmers raise their chickens in a traditional way, which utilizes farm products and by-products. Ducks are being introduced by the Department of Agriculture as a biological control against golden snail or "kuhol". Duck eggs are best for balut and salted eggs, which command good price in the market. Because of its high feasibility, backyard poultry raising can be a good anti-poverty project in rural areas.

### **2.5.4 Fishing and Fishing Systems Analysis**

Coastal and marine fishing resources in the province are considered open access resources. These are now severely degraded due to years of poor management and neglect. The municipal waters, which is even larger than the total land area of the province, continued to be exploited by 1/3 of the Boholanos who depend primarily on fishing as their main livelihood and source of food.

Based on the documented studies of the total reefs covered by Danajon Bank area, about 74% are in poor condition, 14% in fair condition and 12% are in good condition.

Mangrove resources are also declining. The declining condition and state of corals, mangroves and sea grass resources coupled with the unsustainable fishing

practices in the fishing grounds collectively affected the continuing decline in the productivity of the fishing resources.

The fishing population of two major fishing ecosystems has influenced the trend of provincial fisheries production: the Bohol Sea and the Danajon Bank. Another important aspect that influenced fisheries production is the increasing population. Production from the ten sectors of marine, aquaculture and other fishery products made an increase to 104,886 metric tons in 2004. While production keeps on increasing, the demand for fish products is also increasing.

### 3.0 DEVELOPMENT FRAMEWORK

The province of Bohol, as envisioned in the Medium Term Development Program, is to become *an agri-industrial hub and eco-cultural tourism center* in the hierarchy of growth and development in Central Visayas. The functions of the province are link to Metro Cebu, the urban centers of Dumaguete and Bais, Negros Oriental, Leyte province such as Maasin and Ormoc City and the northern Mindanao provinces of Agusan del Sur and Misamis Oriental. Its major contribution to the development of the region will come from its population labor force structure, productive agricultural land and fishery resources, unique natural endowment, indigenous culture and other tourism assets.

Its socio-economic function will include the production, handling, processing and transport of high value products such as beef, carabeef and pork, fisheries products, grains, fruits and other high value commercial crops both for domestic and foreign markets; investment/employment in agro-industrial, rest and recreation services; social services and facilities such as education, health, welfare and local governance such as community organization, financial services, political participation, administration/ taxation, etc.

Local Poverty Reduction Action Program database in 2004 indicates that 47.3% of the households are below the poverty threshold level and the “poorest of the poor” are mostly the small farmers, fishers with no assets and upland settlers. Thus agricultural development basically addresses the welfare of the rural population who are residing in the coastal, lowland, upland/hillyland and highland communities. It is also through agricultural development through the packaged production component for selected crops, livestock, poultry and fisheries sub-sectors coupled with the improvement of the natural resources of the province that poverty situation would be mitigated over time.

The longer-term scenario envisions the production of crops, livestock and poultry, fisheries and forestry resources shall have been developed and managed on a sustainable manner to support agri-industrial and eco-cultural tourism development, with dependable transport and related infrastructure support facilities, for improved productivity and employment opportunities of an empowered populace. This development scenario embraces the twin concerns on **poverty reduction** and **sustainable development** as outlined in the Provincial Medium Term Development Plan for CY 2004-2009, which would result to the following:

- (1) Food security and institutional sufficiency attainment particularly of the identified poverty groups through their P.O's and access to technologies and resources for their engagement to second generation rural enterprises;
- (2) Improved productivity and employment opportunities in the rural production zones would control influx of the population to the urban centers;
- (3) Effective and dependable implementation of forward linkages of crops, fisheries, livestock, poultry and forest products;
- (4) Established effective coastal and watershed resources management policies supported with zoning ordinances and adherence to firm implementation and management system;
- (5) Increased capability of the LGU's as provider and/or enabler of proactive strategies in planning, coordinating and managing local resource-based, integrated and participatory development programs and projects; and
- (6) Effective participation of the national government agencies, NGO's and local resource institutions and mainstreaming of their agencies' resources and services to support the agriculture and natural resources projects and activities.

## **4.0 PROGRAMS AND PROJECTS**

### **4.1 Sustainable Integrated Agribusiness Program (SIAP)**

The traditional approach of focusing on crop performance rather than on farming systems improvement accounts for the neglect of an environmental framework in both lowland and dryland agriculture. The same orientation has created a mind set among upland farmers that make them reluctant, if not apathetic, to adopt technologies based on soil and water conservation such as the SALT agroforestry schemes, organic farming through composting of farm wastes and crop-livestock integration, among others.

In this context, the strategies for developing appropriate farming systems using environment-friendly and innovative technologies that would lead to agri-based enterprises over the long-term consider topographic variations and limitations, climatic factors, institutional limitations and the socio-economic aspects affecting farmers and/or their POs decisions on technology and investments.

#### **Goals**

The SIAP shall be guided by the twin goals of poverty alleviation and agricultural resources enhancement. The conditions that will indicate the achievement of these goals are: (i) the sustained productivity and stability of the agricultural resource base; (ii) the positive changes in the socio-economic conditions of the farming households and their communities; and (iii) the productive engagement of POs and/or cooperatives/corporatives in viable agri-based enterprises.

## Targets

The target for farming systems improvement will focus on the following:

- 57,700 lowland irrigated and rainfed palay farmers with farmholdings of 0.60 – 2.0 hectares;
- 23,100 upland farmers with small farmlots utilized in the production of corn, vegetables, ube and other root crops who accounts for 95% of the total farmers under this category;
- The Escaya tribe farmers and adjacent highland farmholders within Duero, Jagna, Sierra Bullones and Guindulman engaged in highland vegetables production;
- 10,500 coconut-based small farmholders who are members of the SCFOs and constitutes 25% of the total coconut producers for a target area of 15,000 hectares or 38% of the existing coconut lands; and
- 2,735 hectares of existing mango plantations and potential of 3,500 hectares small farmholdings (part of the OPV-white corn areas marginally suitable or unsuitable for corn) for the expanded mango-based farming systems development.

For the initial years, however, the backyard/homelot gardening schemes shall encompass the entire program coverage, with particular emphasis to poverty households and their communities, to effect improvements in nutritional levels of their food intake.

## Operational Strategies

**Deliberate promotion of homelot vegetables gardening.** Backyard bio-intensive gardens (BIG) will primarily provide stable supply of high nutrient vegetables for the family. There is also potential contribution to ensuring periodic income source, thus improving the cash flow position of rural households. The promotion for backyard vegetables gardening shall form part of the CO/CD process.

**Priority focus on farmlots devoted to cash crops and for diversified cropping systems later.** For contiguous small/ uneconomic farmholdings, the compact farming or farm clustering will be promoted to establish cooperative type farming systems and enterprises.

**Microwatershed-based development in dryland zones for economies of scale and ecologically meaningful farming systems.** To address the issue on fragmented farms in the dryland resource zone (i.e., devoted to corn, ube, coconut, mango and other crops), the appropriate approach would be farm clustering or community farming to achieve economic production unit or volume for key crops which could be tied up to marketing and/or agri-based processing enterprise. This will utilize the microwatershed approach for ecological sustainability.



**Focused development of agri-based enterprises by POs and/or cooperatives/corporatives.** The promotion of rural agri-based enterprises will likewise ease too much pressure on the land resources due to intensive cultivation, and available labor can be channeled to non-farm activities. The cluster POs, through their cooperatives/corporatives will be encouraged to invest in viable second-generation enterprises which would assure farmer-members the market for their produce, thus eliminating their worries about subsistence requirements of the household.

**Table III-1. Matrix of the Sustainable Integrated Agribusiness Program (SIAP) Strategies and Project Packages for Bohol**

LEVEL	SHORT TERM (Years 1 to 5)	MEDIUM TO LONGER TERM (Years 6 to 20)
Program Development Agenda	<ul style="list-style-type: none"> <li>● Food security and better nutrition for the farming households</li> <li>● Network demonstration/Promotion of farming systems and technologies that are environment friendly and high income-generating ventures</li> <li>● Strengthening/Expansion of support services and facilities</li> </ul>	<ul style="list-style-type: none"> <li>● Increased farm labor employment and income</li> <li>● Development/Expansion of sustainable agribusiness enterprises (lowland, upland &amp; highland)</li> <li>● Nurturing the participatory management of the agricultural development support systems</li> <li>● Engagement of POs/ Cooperatives/Corporatives in agribusiness ventures</li> </ul>
Project Packages	<p><b>1. Enhanced Grain Crops Production</b></p> <ul style="list-style-type: none"> <li>▪ Irrigated Palay Farming <ul style="list-style-type: none"> <li>- Hybrid Palay – Inbred Palay</li> <li>- Inbred Palay – Inbred Palay</li> </ul> </li> <li>▪ Rainfed Palay-based Farming System <ul style="list-style-type: none"> <li>- Inbred Palay – Vegetables</li> <li>- Inbred Palay – Corn</li> <li>- Demo on Year-round Organic Farming</li> <li>- HVCs and Mushroom Production</li> </ul> </li> <li>▪ Corn-based Farming System <ul style="list-style-type: none"> <li>- Corn – Veg./ Rootcrops</li> <li>- Corn – Green Corn</li> <li>- Promotion of Upland Palay (Exotic variety) Production</li> </ul> </li> </ul>	<p><b>1. Intensive Grain Crops Farming System</b></p> <ul style="list-style-type: none"> <li>▪ Intensive Palay-based Farming System <ul style="list-style-type: none"> <li>- Inbred Palay – Inbred Palay</li> <li>- Semi-Organic Hybrid Palay – Hybrid Palay</li> <li>- Inbred Palay – Fish FS</li> <li>- ARC/IAs Palay Milling Enterprise</li> </ul> </li> <li>▪ Rainfed Palay – based Diversification <ul style="list-style-type: none"> <li>- Inbred Palay – Vegetable/ Watermelon/Mushroom Enterprise</li> <li>- Inbred Palay – Corn (Hybrid Yellow/OPV White)</li> <li>- Sheltered Organic HVCs Enterprises</li> </ul> </li> <li>▪ Corn-based (semi-organic) Farming System</li> <li>▪ Development of Upland Palay (Exotic variety) – Legumes Farming Systems</li> </ul>

LEVEL	SHORT TERM (Years 1 to 5)	MEDIUM TO LONGER TERM (Years 6 to 20)
	<p><b>2. Highland Vegetables Farming System (Integration of Project into CADC Management Plan)</b></p> <ul style="list-style-type: none"> <li>▪ Open Field Organic Vegetables               <ul style="list-style-type: none"> <li>- Baguio bean – Cabbage/ I. potato</li> <li>- Tomato – Lettuce/Carrot</li> <li>- Melon/Strawberry</li> </ul> </li> </ul>	<p><b>2. Diversified Highland HVCs Enterprise of Tribal Coops/ Corporatives</b></p> <ul style="list-style-type: none"> <li>▪ Open Field Organic HVCs FS               <ul style="list-style-type: none"> <li>- Vegetable (Cabbage/ Carrot/ Irish Potato/ Baguio Bean/ Sitsaro/ White Bean)</li> <li>- Tomato/ Melon/ Strawberry</li> <li>- Contour Strip Trees (A. coffee/Mandarins)</li> </ul> </li> <li>▪ Sheltered and Organic HVCs Enterprise               <ul style="list-style-type: none"> <li>- Tomato/ Lettuce/ Cauliflower</li> <li>- Melon/ Strawberry</li> <li>- Cutflowers and condiments</li> </ul> </li> <li>▪ Integration of Ruminant livestock</li> </ul>
	<p><b>3. Coconut-based Farming Systems</b></p> <ul style="list-style-type: none"> <li>▪ Coconut Replanting and Intercropping</li> <li>▪ Demonstration/Promotion of Multi-storey Cropping and Coco-Livestock Farming Systems</li> <li>▪ Piloting Coconut Products/By-Products Processing and Utilization</li> </ul>	<p><b>3. SCFOs Cluster Farms Coconut-based Enterprises</b></p> <ul style="list-style-type: none"> <li>▪ Multistorey Farming Systems (banana/ pineapple/ legumes)</li> <li>▪ Coco-Livestock &amp; Forage Pastures</li> <li>▪ Tuba-Bahalina/ Vinegar</li> <li>▪ Coco coir/charcoal processing</li> <li>▪ Coco-based handicrafts</li> </ul>
	<p><b>4. Expanded Mango-based Farming Systems</b></p> <ul style="list-style-type: none"> <li>▪ Expansion of ‘Carabao’ Mango Plantations</li> <li>▪ Demo/ Promotion of Mango – Livestock and Forage Pastures FS</li> <li>▪ Pilot/ Demo on Mango Processing</li> </ul>	<p><b>4. Mango-based (Cluster Farms) Enterprise Development</b></p> <ul style="list-style-type: none"> <li>▪ Mango – Livestock/ Forage Pasture Cluster Farms Enterprise</li> <li>▪ Cluster (Smallholders) Mango-based Processing Ventures               <ul style="list-style-type: none"> <li>- Mango puree/ juice/ confections</li> </ul> </li> </ul>
	<p><b>5. Hillyland Resource Development</b></p> <ul style="list-style-type: none"> <li>▪ Expanded SALT Agroforestry Development for Settlers</li> <li>▪ Demo/ Trials on Selected Crops and Cropping Systems               <ul style="list-style-type: none"> <li>- Fiber Crops (Salago/ Maguey/Pineapple)</li> <li>- Mulberry for Silkworm Culture</li> <li>- Other indigenous/ introduced/potential crops and cropping systems</li> </ul> </li> </ul>	<p><b>5. Sustainable Hillyland Farming Systems</b></p> <ul style="list-style-type: none"> <li>▪ Contour Strip Perennials/ Fruit Trees + Alley Cropping System               <ul style="list-style-type: none"> <li>- Upland Palay – Legumes</li> <li>- Ube</li> </ul> </li> <li>▪ Agro-Livestock Farming Systems</li> <li>▪ Development of Cluster Farms/ POs Enterprises (based on the result of trials)</li> </ul>

## Component Projects

### 1) Enhanced Grain Crops Farming Systems

The grain crops production zone in Bohol is estimated at 61,882 hectares, or approximately 33% of the total agricultural lands and 15% of the province' land area. Grain crops area comprise of the lowland irrigated palay with 15,732 hectares, rainfed palay-based in 30,855 hectares, upland palay in 925 hectares

and 15,295 hectares corn-based areas. About 80,943 farming households are involved in grain crops farming.

### Objectives

- (1) Increase land productivity in terms of crop production and intensity of use;
- (2) Enhance the food supply capacity of highly suitable lands;
- (3) Improve grain crops farming systems;
- (4) Increase the income of farmers; and
- (5) Promote grain crop-based agribusiness ventures of cluster POs and/or cooperatives.

### Target Areas and Project Participants

- 21,682 palay farmers and their POs/Irrigators Associations in 15,732 hectares fully irrigated ricelands and 5,300 hectares potential irrigable areas of BIP Stage II;
- 36,098 rainfed palay farmers and their cluster POs in 30,855 hectares rainfed palay-based areas;
- 23,163 corn farmers in 15,295 hectares corn areas (1,319 hectares Hybrid corn and 13,974 hectares of OPV-white corn varieties);
- The upland palay farmers with about 925 hectares of upland farmlots.

### Farming Systems Improvement

- (1) **Intensive Palay Farming Systems** will be promoted in ricelands with dependable irrigation systems. These areas are the prime palay production zone and accounts for 92% of the total irrigated palay areas of Bohol.

Through the ARBAs and IAs, the project shall promote innovative and tested strategies to improve their members' subsistence palay production into viable farming systems. For contiguous small-size and uneconomic farmlots, the strategy will involve development of compact or cluster farm schemes and adoption of cropping system technologies both for inbred and hybrid palay production.

Palay farmers, through their ARBAs and IAs, will be encouraged to grow a single rice variety per cropping in their cluster farm so that they can engage in palay milling and marketing ventures. This scheme will enable their POs/cooperatives to produce quality whole grain rice that can compete with imported rice and/or reduce quality rice imports.

- (2) **Rainfed Palay-based Diversification.** For the rainfed palay areas, crops diversification will be the key strategy involving the highly suitable compact/cluster farms of farmer groups and/or their POs. The recommended alternate crops include fruit vegetables such as squash, upo, eggplant, okra and tomato. Watermelon and green corn + pole/bush sitao are also viable alternate crops.

The net rainfed palay-based area of 21,000 hectares are proposed for the following production systems:

- (a) Inbred palay – Hybrid corn cropping system in 12,000 hectares;
- (b) Inbred palay – HVCs in 6,500 hectares suitable areas (i.e., 3,900 hectares mungo/legumes, 1,200 hectares each for squash and eggplant, and 400 hectares watermelon after the regular palay crop); and
- (c) Inbred palay – Fallow period allocation of 2,500 hectares yearly. This appreciates farm-level situation when farmers, for one reason or another, are unable to cultivate and plant their farmlots.

**(3) Corn-based Farming Systems.** This production scheme provides three (3) key strategies in increasing the production levels, namely: (i) limiting corn production to the most suitable sites considering land elevation, slope gradient and soil attributes; (ii) increasing the cropping intensity and (iii) adoption of the rainfed palay – corn production system. The corn-based production models are as follows:

- (a) Hybrid corn – Hybrid corn cropping system in 6,500 hectares;
- (b) OPV white – OPV white corn cropping system in 3,400 hectares; and
- (c) OPV white corn – alternate crops, i.e., mung bean, peanut, sweet potato and squash cropping systems in 3,100 hectares.

## 2) Diversified Highland High Value Crops (HVC) Enterprise

The rapid expansion and increasing population in Bohol particularly Tagbilaran City, and the nearby Metro Cebu and urban growth centers in the Visayas, would definitely cause significant and sustained increases in the demand for organically produced, good quality and fresh vegetables. This increasing demand provides the opportunity for both lowland and highland vegetable growers to improve their on-farm production system.

**(1) Diversified Organic HVCs Farming Systems.** For the high suitability areas within the CADC of Escaya tribe, the proposed farming system models are as follows:

- (a) HVCs – legumes cropping system in 250 hectares; and
- (b) HVCs – HVCs cropping system in 200 hectares including the present 4.0 hectares provided with rockwalls.

**(2) The Highland Agroforestry Farming System.** Because of the sloping terrain in the Escaya CADC area, the tribal folks had established soil and water conservation (SWC) structure in the form of rockwall in approximately 4.0 hectares utilized for vegetables growing. Given this SWC structure carried out with minimal government support, the tribal folks could easily adopt a modified and farmer-friendly SALT agroforestry scheme in the expansion highland farms.

**The Contour Strip Fruit Trees.** The proposed on-farm modification will involve the use of highland fruit trees ideally with upright growth habit for planting

in the contour strips. The buffer strip, measuring 3.0 meters or more in width and from 10 meters to 20 meters apart, depending on the slope conditions, will be maintained free from tillage except for the fruit trees establishment/planting, periodic brushing, ring weeding and cultivation applied to the fruit tree crops. With good mother stocks, rapid propagation could be done by trained members of their POs to supply the expansion phase over the medium to longer-term period.

**The Alley Crops.** The interspaces of buffer strips (or the stabilized contour alleys) will be devoted to high value crops and legumes, and even for cutflowers production in areas with good water supply. The recommended alley crops include tomato, bell pepper, carrot, Irish potato, baguio bean, white bean, cabbage, lettuce, melon and strawberry. As climatic conditions allow, the off-season planting of HVCs will be encouraged to promote a steady vegetable supply and better cash returns.

- (3) **Highland Cut-flowers Enterprise.** Cut-flower enterprise is considered as one of the important sources of potential revenues in the highland over the medium-term. It is also one of the agricultural enterprises which can be promoted in marginal lands even with steep slopes provided water is available and the climate is favorable (i.e., stable and cool temperatures, sufficient sunlight). In the Escaya CADC highlands, about 5.0 hectares is a reasonable target for cutflowers production with minimal problems on soil moisture availability and high temperature that cause serious moisture stress.
- (4) **Sheltered and Organic HVCs Enterprise.** There are now technological advances that allow year-round production of HVCs. One involves the construction of green-houses and/or shelter tunnels where the growing environment of crops can be manipulated and/or controlled. This sheltered culturing of crops, along with the advances in hydroponics and organic farming, will be promoted over the medium-term. Decidedly, the target investors will be the cluster communities through their POs and/or cooperatives.

### 3) Mango Farming System

For mango, few plantations are found in the northeastern, northwestern and interior municipalities. Initially, the "Carabao" mango expansion will be given priority as major export crop and for local processing ventures.

#### (1) Farming Systems Improvement In Existing Mango Farms

- (a) Replanting and farming systems improvement in existing "Carabao" mango farms.
- (b) Integration of ruminant in mango farms.

- (2) **Expansion of "Carabao" Mango Plantations.** Initial expansion of "Carabao" mango will be planted in the northeastern to the northwestern coastal municipalities of Ubay, Getafe, Buenavista, Trinidad, Talibon and Bien Unido.

Neighboring farms will be clustered to establish compact areas of mango farms.

Aside from open areas, the existing corn areas with marginal suitability are also recommended for mango planting. Ruminants can be integrated to newly established mango plantations if individual tree guards are provided.

#### 4) Coconut – based Farming Systems

Coconut is one of the major crops raised in the province of Bohol and occupies an area of about 38,951 hectares which is about 21% of the total agricultural lands.

The coconut plantations were established either as follow-on permanent crop after clearing the original forest cover or as a complimentary crop planted to main staple food such as upland palay, corn and rootcrops. With the combined effects of declining soil fertility and poor management practices aggravating the state of the province’s coconut industry, low productivity comes as no surprise. Farmers generally recognize the need to improve farming technology such as diversification through intercropping to increase productivity, farm labor employment and income.

- (1) **Multi storey Farming System: Coconut + Banana.** This on-farm improvement model will cover approximately 5,000 hectares of coconut areas in the province. The proposed on-farm improvements will include establishing and intercropping of banana to improve the vegetation cover and diversify the income sources of the upland farming families.
- (2) **Coconut – Livestock Farming System.** Ruminant livestock such as cattle and goats are feasible for integration under coconut. Providing a balance source of protein and forage pasture will improve the productivity of both coconuts and livestock.

A one-hectare demonstration farm will be conducted for coconut-livestock integration for the first five years. It shall compose a number of neighboring farmers to constitute a compact area.

#### 5) Hillyland Pilot Projects

The sloping areas ranging from sloping to hilly, constitute about 48% of the total land area of Bohol. These areas have generally porous and well drained soils where many crops abound with minimal care. Some of these are fiber crops like buri, salago, pandan, and maguey, among others.

Aside from the fiber crops, a variety of indigenous rootcrops, dubbed as “crisis” crops grow in the wild. These have saved lives of people during long droughts and occurrence of the El Niño phenomenon. These rootcrops are usually found in the hillylands under partial shade particularly in the second growth forests.

There is a rich potential for the fiber industry and the alternative food crops that thrive well under the existing physical and climatic conditions of the province. It is therefore necessary to conduct applied studies and piloting of the appropriate farming systems for the development and commercialization in the future.

- (1) **Fiber Crops (Salago/Pineapple/Maguey).** A demonstration area will be conducted in the hillside of Batuan, Bohol where it can be integrated with jackfruit or other fruit trees with similar requirements of the crop. To promote its development, which could consequently led to commercial processing in the future, a demonstration project will be conducted in Dimiao, an adjacent municipality of Lila where the existing crops are popularly grown. This is to entice adopters for possible expansion and consolidation of raw materials in the future. The project will be implemented by an organization or cooperative where management and maintenance will be convenient.
- (2) **Mulberry for Pulp Fiber and Silkworm Culture.** Another source of fiber with great potential is the mulberry tree for silkworm culture. A demonstration project will be established to showcase its proper culture and management. It will be anchored at the CVSCAFT. Logistic support will be shouldered by the provincial government while management of the project will be the responsibility of the state college.
- (3) **Indigenous (“Crisis”) Rootcrops.** Indigenous rootcrops which are tolerant to shading and drought abound in the hillyland areas particularly in second growth forests. Since there is yet no available source of data on how widespread and where the different species are particularly found, inventory of the estimated population and identification of the specific species endemic in the province will be conducted.

After the initial database will be established, a demonstration cum applied research project will be conducted to determine the most appropriate farming system of the crops.

**6) Support Facilities.** This will involve the following:

- (a) Improvement of Plant Nurseries;
- (b) Improvement of Laboratory (Soils, Tissue Culture) Facilities;
- (c) Development and Operation of Seedbank at CVSCAFT;
- (d) Development of SWIP/SFR; and
- (e) Post Production and Marketing Support.

### Implementation Arrangement

The SIAP component will be lodged at the Office of the Provincial Agriculturist (OPA), as the lead implementing unit, in line with the premise of utilizing the existing structure of the provincial government for the implementation management and coordination of the development program.

### **(1) The Productivity Division cum SIAP Management Unit**

The Productivity Division of OPA will be the executing unit and shall be formally mandated by the Provincial Governor, upon the recommendation of the Provincial Agriculturist, as the lead implementing unit (LIU) for the SIAP component.

The SIAP Management Unit shall primarily perform coordination and monitoring functions.

### **(2) The Municipal Agriculture Offices of Participating MLGUs**

For the MLGU's programs under the SIAP component, the Municipal Agriculture Office (MAO) shall be mandated as executing unit with the Municipal Agriculturist designated as Project Coordinator (MA/PC) on concurrent capacity.

### **(3) The Partner POs and Farmer – Participants**

The farming communities through their POs, which shall be managing the implementation of the component activities, will be led by the POs Federation organized in the cluster community level. Each PO shall be registered with the CDA, DOLE, SEC or with any registering/accrediting agency. It is proposed that the POs be federated at cluster community level initially, and at the municipal or Cluster Production Zone level on the later stage as they become more cohesive and mature, and registered accordingly.

The Partner POs shall regularly consult and coordinate with the BC/BDC officials, the Field Team and Barangay Agriculture and Fisheries Council (BAFC). The POs management plans and subprojects for the communities' resource zones should form part of the Barangay Development Plan (BDP), and appropriate policies support should be enacted/provided by the Barangay Council.

## **4.2 Livestock Integration for Food and Enterprise (LIFE) Program**

### **Rationale**

Livestock and poultry integration into the existing farming systems are viable options to small farmholders. Integration of which in crop production will mutually complement both production systems. Animals can serve as high protein food, source of draft power for farm operations and as a good source of organic fertilizer. On the other hand, crops and its by-products can provide the animal its feed requirement. Aside from such advantage, livestock raising generates income regardless of season unlike crops which can only be harvested at certain times of the year. It can also maximize space utilization as areas not suited for crops can be used for pasture or range areas.

The extent to which livestock integration can benefit the farm families is unlimited. It does not only provide immediate source of nutritive food for the family and the community but is a source of cash especially in times of emergencies as it is easily saleable. When properly managed, livestock and poultry can also provide capital for future family-based or POs enterprises with which to employ other



members of the family and the community. The system can serve as the springboard for rural families and their POs to graduate into higher level of entrepreneurial endeavors.

## Goal

Achieve food sufficiency at the household level and a strong complimentary growth in agri-livestock based economic enterprises.

## Objectives

- (a) Provision of livelihood opportunities to farming families;
- (b) Provision of sustainable cash flow to farm households;
- (c) Maximize utilization of farm resources, i.e., area, manpower, farm products and by products;
- (d) Production of competitive livestock and poultry products and by products for the domestic and export requirements; and
- (e) Increase opportunities for family and their POs entrepreneurship.

## Components

### 1) Ruminant Development

Development approaches for fast-track growth of the animal sector in the next years will be focused on improving reproductivity. Efforts to motivate farmers to raise ruminants or expand their present herd will be pursued. Farmers and raisers will be oriented to appreciate the potentials of ruminants as an enterprise and encourage them to engage in breeding, fattening and products and by-products processing.

**(1) Livestock Loan.** A modified livestock loan scheme involving 10-female module to be distributed through PO within the cluster production zones primarily to increase ruminant breeder base for cattle, carabao and goat.

**(2) "Save the Herd" Scheme.** A buy-back and chattel mortgage strategies to minimize, if not stop indiscriminate disposal of local stocks with excellent prolificacy, adaptability and disease tolerance characteristics. The Provincial Livestock and Poultry Raisers Association, Inc. or Federation of POs shall handle project operation.

**(3) PO-based Livestock Mortuary Assistance System.** Entails the livestock owners' to voluntary membership and payment of nominal amount to cover losses of animals and allowing stock replacements under appropriate policy guidelines. The implementation of LiMAS shall be focused to the members of registered Peoples' Organizations or Raisers Associations, which are proposed to be organized/federated into an umbrella organization and who shall handle the operation.

**(4) Strengthening the Livestock Breeding Services.** Adoption of a 2-pronged breeding approaches through AI and breeder loan of carabao, cattle and goat.

**(5) Dairy Development.** Enhancing the existing dairying activities, establish dairy clusters around the existing dairy collection centers, developing other dairy products thus providing livelihood and income generation particularly women's group. The Provincial Associations for Small Ruminants, Carabao and Cattle Raisers will be the conduit in developing the dairy enterprise in the province. Advocacy shall be conducted in coordination with the academe, the business groups and barangay councils.

**6) Livestock Fattening.** For cattle and carabaos provides the farmer with extra income and allow the use of cheap, plentiful farm by-products, which are otherwise burned or wasted. Modeling and joint venture system shall be adopted under a loan scheme or the cooperator can avail from any financing programs offered by banks and other financing institutions.

## 2) Poultry Development

Strengthening and stabilizing the poultry production for chicken and ducks in order to meet the increasing demand for meat, eggs and balut. Development programs and projects will be geared towards making available sufficient poultry products not only for the local market but also for rural families where malnutrition is a common problem. The program also intends to develop native chickens.

**(1) Strengthen the Improvement of Native Chicken.** Improving the chicken breeder base through dispersal schemes and cockerel loans, which shall be coursed through registered POs.

**(2) Village Level Native Chicken Enterprise.** Promotion of contract growing for native chicken to respond to the growing demand in the local market.

**(3) Duck Production Cum Demonstration.** Establishment of duck development projects cum demonstration for egg/balut production.

## 3) Swine Development

The private sector takes the lead in the development; the government has to take the share of responsibilities toward helping the farmers for a more profitable farming enterprise. With swine gaining a competitive edge over other commodities, there is a dire need for the industry to be sustained in the years to come.

**(1) Establishment and Rehabilitation of Swine Breeding Centers.** Strengthening breeding programs through proper selection of breeder stocks coupled with good breeding management and system.

**(2) Access to Post-Harvest Facilities.** To ensure fair market price of swine and give opportunity to maximize profit out of the farming enterprise, raisers should be encouraged to participate in the post-harvest activities of the existing facilities like VILFC and LOMs in marketing live animals.

**(3) Swine Breeder Loan.** Improvement of breeding system of boar for hire operators through boar loans under certain agreement.

**(4) Meat Processing at the Backyard level.** A way of value adding to the product and at the same time, utilizing family labor particularly the housewives.

#### 4) Exotic Farming

An alternative livelihood at the same time complementing agri-tourism and also for educational and research purposes. The proposed schemes include:

- 1) Crocodile Farming
- 2) Ostrich Farming
- 3) Bee Farming
- 4) Butterfly Ranching
- 5) Quail farming
- 6) Rabbit Farming

#### Implementation Plan

To institutionalize the adoption of LIFE as the development framework of the livestock sector in the next 20 years, a new functional structure for the Provincial Veterinary Services Office (PVS/O) shall be in placed. The set-up shall be composed of the following divisions and their corresponding responsibilities:

##### 1) Production Division

- Breeding services
- Feed development services
- Operation of the Provincial Livestock and Poultry Farm
- Animal products and by-products and waste management and utilization
- Animal dispersal

##### 2) Animal and Public Health Services Division

- Animal disease prevention and control
- Monitoring of livestock establishments
- Meat inspection
- Laboratory services

##### 3) Agri-business Division

- Price monitoring
- Accreditation of livestock handlers and operators
- Proposal preparation, i.e., FS, MS
- Monitoring of existing marketing facilities and systems
- Research
- Market linkage

#### 4) Planning, Monitoring and Evaluation Services Division

- Database establishment and updating
- Monitoring and evaluation of programs and projects
- Proposal preparation and packaging for funding
- Industry situationer and analysis

#### 5) Support Services Division

- Administrative support services
- Trainings and capability building
- Institutional development services
- Special projects unit
- Program marketing
- Partnership building and linkaging

All projects to be implemented at the municipalities shall be coordinated with the Municipal Mayors being the Local Chief Executives and who has direct supervision over the Municipal Agricultural Offices (MAO) as well as the barangays. Donors, funding institutions as well as other government agencies shall be coordinated and tapped for financial and technical support in program implementation.

### 4.3 Fishery Resources Development and Management (FRDM) Program

#### FISHERY RESOURCES DEVELOPMENT AND MANAGEMENT (FRDM) PROGRAM

##### Rationale

Over the last seven years, coastal local government units (LGUs) throughout the Philippines have increasingly recognized the vital role that coastal resources play in economic development, food security and overall well-being of coastal communities. Substantial progress has been observed in the establishment of the management system needed to attain sustainable use of these resources. An example is the recognition of the LGUs for the need to draft a Coastal Resource Management Plan (CRM Plan), which serves as guide, and provide a concrete direction in the management of their coastal resources.

Bohol's improvements in the management of coastal areas include the establishment of 120 MPA's and the adoption of a monitoring tool, a Marine Protected Area Rating System, for the purpose of improving the management of marine sanctuaries provincewide. Inter-LGU collaboration on law enforcement proved successful through the organization of the Coastal Law Enforcement Council in every Congressional District.

To clarify the area of jurisdiction, the municipal waters of nine municipalities have been delineated and affirmed by NAMRIA and reinforced through the passage of an SB ordinance. While the delineation of other municipalities is in progress,

these have been set aside with the revocation of DAO 17, which provides the guidelines for the delineation of municipal waters.

However, the issues on illegal and destructive fishing practices continue to recur in some municipal waters. Enforcement of fishery regulations at the municipal level has been apparently not effectively implemented. This is widely evident and is perceived to be brought about by the still uncompleted but long-required fisherfolks registration and establishment of an updated profiling that is commonly observed in most coastal municipalities. These are basic requirements and reference for achieving effective fishery regulation. Closely related to this is the issue on the permitting system. Many LGUs have low or even zero revenue generation despite increasing coastal and fishery resource users.

The FRDM Program, therefore, is envisioned to address these prevailing issues. Covering an estimated area of 6,245 km<sup>2</sup>, the LGUs have the legal mandate to manage the municipal waters. Each LGU is also responsible of providing for the welfare of its constituents by ensuring their food security. In certain areas which have been declared by the national government as protected seascape, the LGUs and the duly constituted Protected Area Management Board (PAMB) shall continue to coordinate and monitor natural resources development and management in pursuance to RA 8550 and the Bohol Environment Code.

### **Goals/Objectives and Targets**

To set the framework for the provincial government and the coastal municipalities in the implementation of fishery initiatives of the Provincial Agriculture Master Plan in an effective and sustainable manner.

Strategic Objectives:

- (1) To develop programmatic detailed implementation plan to restore/rehabilitate the ecosystems in areas with declining coastal resources and habitat condition including its biodiversity (e.g., mangrove forest, seagrass beds and coral reef) through the participation of coastal communities and involvement of other stakeholders;
- (2) To develop a separate programmatic detailed implementation plan to address declining trend in the production of economically known fish species;
- (3) To promote strategic directions aimed at enhancing aquaculture/marine production in inland bodies/marine waters.

### **Target Beneficiaries/Project Participants**

- 85 fishpond operators/fishpond areas with approved fishpond lease agreement from the government covering an approximate area of 2,115 hectares;
- Seven (7) People's Organizations involved in productive fishery enterprise with approximately 1,875 member-fishers;

- 20 backyard fishpond operators with an approximate area of 10 hectares to undertake culturing of tilapia and other freshwater species;
- 5,000 seaweed farmers to plan an approximate area of 3,531;
- 400 oyster farmers, with an approximate area of 10.0 has. planted with oysters hangings;
- 10 fish cage operators to be involved in the culture of grouper and rabbit fishes, with 10-module fish cages;
- 10 pond operators culturing mudcrab with an approximate area of 15 hectares.

**Fishery/Coastal Resource Management.** Fishery Resource Management or Coastal Resource Management is the process of planning, implementing and monitoring the beneficial and sustainable uses of coastal resource through participation, collective action and sound decision making. It is an intervention that provides specific direction to the coastal LGUs on how coastal resources shall be managed and developed through the formulation of a CRM Plan.

#### (1) Establishment of Marine Sanctuaries and Strengthening of Existing MPAs

Marine Fish Sanctuary is aimed at setting aside an area by the government for special protection where fish are able to spawn, grow and reproduce undisturbed and where fishing and other activities are absolutely prohibited. The need for the establishment of more MPAs and strengthening the existing ones is interconnected to resource depletion propelled by the increasing fishing pressure and other unwise economic activities.

**Resource and Ecological Assessment.** Primarily generates relevant information on the existing resource and ecological status of the coral reefs, seagrass, seaweeds beds, fish biomass and other parameters. Data generated will be used as basis for determining the impact and subsequent development planning activities

**Socio-economic Resource Assessment.** Basically gather socio-economic information to determine the extent of awareness, perception of the people on CRM interventions, income status, existing livelihood and other related information. This will likewise provide information as baseline data including the stakeholders' perception about the establishment of marine sanctuaries.

**Legal and Institutional Aspect.** Takes charge of the necessary consultation and discussion concerning preparation of resolutions and ordinances relative to the establishment of MPAs.

**Development of Management Plans and Creation of a Management Committee.** Involves planning activities of all stakeholders with the technical staff facilitating the formulation of the Plan. This will also determine who will be responsible for the management aspect and the proposed fund allocations to sustain the project.

***Economic Valuation of MPAs.*** Valuation of an MPA refers to the allocation of cost and value to resources present in the MPA and the corresponding activities. The bigger the resources of an MPA, the greater the benefits it will give and the greater the commitment it will get from the communities.

***Organization of a Pool of Scuba Divers and Assessment Team.*** The project shall organize a pool of scuba divers that will help in the provincewide monitoring of MPAs.

***Monitoring and Evaluation.*** A standard monitoring tool for database updating shall be used by the monitoring and evaluation team. Periodic reports shall be generated and submitted to the decision-makers to form part of the references for subsequent planning exercises and for determining measures that should be adopted to address problems and issues that may arise in the course of implementing the Plan.

**(2) Fisheries Management. This involves the following:**

***Formulation of Fisheries Management Plan.*** A plan must be formulated through a participatory process, to guide decision makers on the appropriate fisheries management activity. Such plan must be validated at the barangay level to ensure that it is understood by the local communities and the interventions are appropriate.

***Registration of Municipal Fishers.*** To come up with an inventory of users of municipal waters, LGUs shall require the registration of fishers including information on the name of operator, address, type of fishing gears used, fishing ground and estimate volume of production.

***Designation of Closed Areas for Identified Migration Route of Commercially and Ecologically Important Fishes.*** The areas where important fish species settle must be given protection for them to regenerate. Local fisherfolks have traditional knowledge and could assist in identifying these species and areas.

***Licensing and Permitting.*** Registered fishers who are residents of the locality must be given priority in granting of license or permit by the municipality. While fishers will benefit from the resource, they also have the accountability to pay back what is due to the government in the form of a license fee.

***Designation of Closed Season in Harvesting Commercially- and Ecologically-Important Fish and Invertebrates during the Spawning Season and/or their Juvenile Stage.*** Resource assessment and technical studies validated through the information gathered from the fishers could be the best information when protecting these fish species during spawning season when catching them is prohibited.

***Color Coding of Boats.*** Municipal bancas are color- and letter-coded corresponding to the letter of the municipality and alphabetical order of

the barangay where they reside for easy identification of resident from non-residents fishers.

**Policy Support.** To give sanctions for non-compliance as well as regulation on the use of gears policy is needed. For contiguous areas with similar resources, a unified policy is important to ensure collaborative management among the concerned LGUs.

- (3) **Shoreline and Foreshore Management.** Coastal setbacks lines should be established to prevent construction of buildings close to the shorelines. Setbacks are a cost-effective approach to erosion protection. Mangrove reforestation is recommended to protect shoreline areas and the strict regulation on sand extraction. Barangay LGUs must be very vigilant in monitoring foreshore areas.
- (4) **Coastal Zoning.** For purposes of administratively identifying the jurisdiction over the management of municipal waters, boundaries are delineated and reckoned with the coastal terminal points, with the affirmation of NAMRIA. It will then be adopted by the LGU through ordinances issued by the SB. Meanwhile, municipalities having islands and islets have to set a mechanism to delineate and agree with the adjacent municipality.

This component shall take charge also of the delineation of zones into the following:

1. Strict Protection Zone
2. Rehabilitation Zone
3. Sustainable Use Zone
4. Tourism Zone
5. Trade and Navigational Zone

- (5) **Enterprise and Livelihood Management.** The livelihood must graduate into an enterprise that is environment friendly. The spirit of cooperativism as a strategy is also encouraged. Criteria for selecting specific enterprise development must be formulated to have a greater chance of success. Proper selection of beneficiaries coupled with the technical skills training is of utmost important,
- (6) **Coastal Tourism Development.** Marine eco-tourism is seen as a better alternative and can be utilized in promoting the concept of resource management as well as alternative livelihood for the dislocated sectors. The reserve can be developed as educational tour destination for students and nature lovers and regular tourists to promote the concern for the environment to the youth and the community.
- (7) **Mangrove Management.** Legally, mangroves are under the jurisdiction of the state, thus giving the management responsibility to the DENR. In order to sustain mangrove management, some successful initiatives have to be expanded, namely:
- (a) **Reforestation projects** through DENR and DepEd coupled with monitoring of survival rate after the planting;
  - (b) **Moratorium** on the cutting of mangroves for fishpond development;



- (c) **Replanting of old abandoned fishpond.** Establishment of multi-species mangrove or mangrove gardens as source of supply of propagules and mini-learning centers for students;
  - (d) **Integration of environment-friendly enterprise to CBFMA areas;** and
  - (e) **Implementation of Joint DA-BFAR and DENR Memorandum Order No. 3 Series of 1991** and turnover of idle, unproductive and abandoned fishponds to the communities to manage and rehabilitate.
- (8) **Integration Of Population Management In Coastal Resource Management.**

Managing population increases can be achieved in the following:

- (a) Conduct public awareness campaign linking family planning and improved health and welfare.
- (b) Coordinate with appropriate agency in the strengthening of family planning program.
- (c) Improve agricultural practices and land tenure agreement for upland and lowland farmers to lessen migration to coastal areas.
- (d) Regulate settlement of squatters in the shoreline areas.

### Aquaculture Development

Aquaculture is referred to as fishery operation involving all forms of raising and culturing fish and other fishery species in freshwater, brackish water and marine water areas.

(1) **Brackishwater Aquaculture.** Aquaculture Development intends to provide technical assistance to resource farmers in the priority areas like the adoption of "Polyculture system" to address the issues on low fish production in fishponds. This entails maximizing the effective production areas by culturing different fish species with different feeding habits.

**Environmental Scanning.** This will provide baseline information on the status and condition of aquaculture production and the industry as a whole. This information will be used as inputs for planning and assist fish farmers and operators in improving their fishing techniques and increasing production.

**Technical Training and Skills Development.** Based on the environmental scanning, training needs and skills required will be addressed by the component. Cross visits to successful areas will also be given attention in particular relative to technology adoption.

**Provision of support services and facilities.** The needs for farm inputs, market and credit facilities will be the main concern of this component. Coordination and facilitation to have access to various government and private enterprise will be given emphasis in the process.

**Monitoring and Evaluation.** This component will provide the overall status of performance of the project's implementation, hence, it is an integral part of the project.

(2) **Freshwater Aquaculture will include:**

**Project Component**

- Stocking and dispersal of existing dams, rivers, and irrigation canal of giant tilapia and native catfish;
- Promotion of other high value commodity such as giant catfish, native catfish, white clams, white shrimps, freshwater eel and other cultivable specie;
- Promotion of fish cages in dams; and
- Development of backyard fishpond in rice paddles or from diversion canal.

(3) **Fish Pens and Cage Farming.** Fish pens and cages are artificial enclosures installed in bays or coves that are sheltered from open sea or adverse weather condition for culturing fish and fishery aquatic resources. Available and commercially important species like grouper, lobster, siganid, bangus and tilapia shall be promoted. There are success stories in Bohol on fish cage farming but the technology has to be refined for it to be more environment-friendly.

(4) **Seaweed Farming.**

**Establishment and promotion of seaweeds farming in areas with high potentials.** Test planting of seaweeds in other areas that are untapped. Farming technologies must be developed in areas exposed to open waves.

**Support post-harvest facilities for development of new products aside from the traditional practices of drying.** Tapping a research institution that has patented this technology is proposed for dissemination of the technology and to encourage academe to develop the same as avenue for learning. Private investors must also take the opportunity to participate in the development of new products out of seaweeds where the supply of raw materials is assured.

**Establishment of Seaweed Nursery.** To sustain the production of *Kappaphycus alvarezzi*, and other allied varieties. This can be spearheaded by the LGU or private cooperator.

(5) **Strengthening and Promotion of Mariculture/Aquaculture Projects**

**Oyster Farming.** "Talabang tsinelas" or the "slipper oyster" is the most common species and has an attractive market. The farming operations of breeders in several municipalities of Bohol (i.e., in Inabanga, Buenavista, Talibon, and Candijay) who have been producing oysters in commercial scale have to be strengthened to sustain the production.

**Mudcrab Culture in a Pond or Pen.** People's organizations tend to fail in this venture probably due to inadequate capital and inappropriate technology. Therefore, skills and technology training would improve management of the project. This component also involves the

establishment of the support facility that will complement production and ensure its sustainability.

**Lobster Culture in Pens.** Lobster is another promising livelihood project that has been tested and proven to be successful. More research and further studies have to be undertaken to improve the culture.

**Green Mussel Culture.** Brown mussels are present everywhere but the green one, "Perna Virides", is not. There were plots previously tested but were not sustained. Seeding and more test plants are required as a start up activity.

**Caulerpa Culture.** Caulerpa is another commodity with market potential particularly in the northern part of the province. Prawn ponds that has been unproductive for so long a time due to pest and diseases in prawn could be utilized.

**(6) Setting Up of Aquaculture/ Marine Investment Fund.** One of the many problems in the aquaculture industry is the inadequate financing to start up the project particularly to small-scale farmers. An amount will be set aside by the government for an investment fund both for small-scale farmers and fisherfolk who would like to invest in aquaculture projects.

### Capture Fisheries

This component will comprise the promotion of such strategies as "policing their own ranks" on the part of commercial fishers coupled with the granting of incentives and rewards. It will also include the formulation of zoning mechanisms and guidelines in the different zones to avoid resource use conflict as a gradual step towards responsible fisheries.

**Marketing/Trading.** Generally, good quality marine products are sold outside the province to get a higher price and only the products of lesser quality remain in the area and are affordable to the local communities. The hotels, restaurants and resorts in the capital city of Tagbilaran share a minimal volume of these commercial value species

In order to have control over all the fisheries and aquatic products shipped out of the province, an auxiliary invoice must be issued by the municipality with port facilities. For records purposes, the volume and price of the products should be summarized on a monthly basis.

### Support Services

**(1) Local Institutional Capability Strengthening** for a pool of trainers to be trained at the provincial level who will replicate the same at the municipal level.

**(2) Community Organizing/ Development and Entrepreneurship for Fisherfolks.** Entrepreneurship training will be prioritized to the functional PO's, which have shown a greater degree of success. Non-government organizations can be

tapped in organizing and strengthening these communities to prepare them for entrepreneurship and cooperativism.

**(3) Fishery Extension, Training and IEC.** The lack of competent and qualified fishery extension officers is also a problem ever since the devolution of personnel to the local government units. This component will also look into the appropriate fisheries technology training to equip devolved fisheries personnel with sufficient knowledge and be real extension workers.

This component will also look into the customized module and methods of delivery and conduct of formalized training courses based on identified training needs assessment and approaches to IEC preparation, implementation and monitoring and evaluation of delivery of services.

**(4) Research and Development.** A strong research and development will provide avenues and better opportunities for the application of technologies developed in other areas. The focus is to verify and refine technologies on farm, which then can lead to the development of appropriate technology in the province. This will likewise address the issues and problems on marketing and post-harvest product development, value adding and packaging.

**(5) Enforcement of Fishery Laws and Regulations.** Building the capabilities of the team and continuous capability building of law enforcers and fish wardens is seen as an important strategy in strengthening law enforcement. Another strategy in sustaining law enforcement and to boost the morale of law enforcers is to institutionalize a reward and incentive system. The province shall look into a mechanism for rewarding the good performance of the CLEC and its Coastal Law Enforcement Team.

Monitoring and Evaluation will not only focus on the in-house performance of the team involved but will likewise give importance to the council as a law enforcement body. Cases filed in court will also be monitored to determine the progress and input the status to the database.

**(6) Licensing and Permitting.** Under this concept, bonafide and resident fisherfolks shall have priority on the use of municipal waters. Fisherfolks are being encouraged to register so that the number of users from among the residents of the municipality will be identified first before allowing other non-resident fishers. Permits and licenses are issued only to registered fisherfolks.

### Support Facilities Development

**(1) Multi- Specie Hatchery.** To augment the gap in production, some operators have shifted to fish farming or fish culture. To sustain the production, hatcheries establishment will include freshwater hatchery, multi-species mollusks hatchery, forging agreements with private-owned commercial hatcheries, and the establishment of a holding cage for "berried" blue crab.

**(2) Post Harvest Storage and Processing Plants.** The increasing number of ice plants is a manifestation of the demand as a result of the expanding volume of production from capture and aquaculture fisheries. This component shall likewise

look into the needed support for post-harvest storage and requirement for processing plants of the FRMD program.

**(3) Laboratory Facilities.** The need for the establishment of a laboratory in the province is of vital importance. The present laboratory facilities will be enhanced and upgraded to cater to other types of analysis and thus to become a “ One-Stop-Shop” laboratory.

**(4) Fish Landing.** The landing area could also serve as a venue for controlling and monitoring the movement of fishery products. For effective implementation of this component, the barangay where the fisherfolks come from could be encouraged to cooperate by giving them a share of the municipal landing fees. Local policy support would complement this initiative.

### Implementation Plan

FRMDP component will be lodged both at the Bohol Environment Management Office (BEMO) and at the Office of the Provincial Agriculturist (OPA). The following are the proposed implementation arrangements for the FRMDP component.

**(1) The Natural Resource Management Division with the Coastal Resource Management Unit.** The Natural Resource Management Division of the BEMO will be the executing unit and shall be mandated by the Provincial Governor, upon the recommendation of the Deputy Head, as the co-implementing unit for the FRMDP component.

The Agriculturist II of the CRM unit shall be designated as Project Officer on concurrent capacity. The project officer shall be assisted by three regular staff designated as coordinators for each congressional district. Technical support and specialists shall be hired on a contractual basis to augment the deficiency in the staffing of the BEMO.

**(2) The Productivity Division with the Fishery Sector Management.** Upon the recommendation of the Provincial Agriculturist, the Governor shall officially designate the Productivity Division of the OPA as the co-implementing unit with the Coastal Resource Management unit of the BEMO.

The Fisheries Sector Unit of the Productivity Division shall be designated as Project Officer on concurrent capacity. Both the BEMO and OPA, through the Coastal Resource Management Unit and the Fisheries Management Unit shall primarily perform coordination and monitoring functions.

**(3) The Municipal Agriculture Offices of Participating MLGU's.** For the MLGU's programs under the FRMD component, the Municipal Agriculture Office (MAO) shall be mandated as the executing unit with the Municipal Agriculturist designated as Project Coordinator on a concurrent capacity. The existing staff of OPA and BEMO shall be trained on community organizing/community development in partnership with the CO of BPRMO. They shall team up with the technologists of the LGU to cover the priority cluster communities within the cluster production zone. The team shall work

with the barangay officials and PO officers, fisherfolks and fish farmer participants and other sectors of the cluster community.

#### **4.4 Natural Resources Development and Management (NRDM) Program**

##### **Rationale**

Existing natural resource database shows that of the total provincial area of 411,278 hectares, only 25% is classified as timberland. This comprise of the upland and mangrove forests. In reality, these areas are not totally vegetated; existing natural vegetation continue to diminish due to timber poaching, forest fire, kaingin practices, uncontrolled illegal quarrying, infrastructure development and other forms of land conversion. Heavy rains cause dams siltation and flashfloods in lowland areas since most watersheds are highly eroded and deficient of vegetation cover.

Of the ten (10) watersheds in Bohol, only three (3) have been assessed and rehabilitation programs have been identified. The area covered by a Certificate of Ancestral Domain Claim (CADC) of the Eskayas, an indigenous people in the province is another concern. Suitable areas within the CADC are presently utilized to subsistence vegetable production, and proposed for the expansion under the highland HVCs farming systems. Protection forests component shall form part of the priority targets under this project.

##### **Goals**

- (a) Poverty alleviation; and
- (b) Environmental rehabilitation and protection.

##### **Specific objectives:**

- (1) To implement wider information campaign to increase the level of environmental awareness of local communities;
- (2) To establish database on the watersheds; its biodiversity, environment initiatives, existing vegetation cover and related data as reference for planning and decision-making;
- (3) To establish endemic nurseries and gene banks in support to reforestation programs and biodiversity conservation;
- (4) To enhance and sustain water supply for domestic and agricultural use;
- (5) To develop production forests and idle lands within alienable and disposable areas into agro-forestry and/or commercial tree farms to provide the timber requirements of the province;
- (6) To assist in the creation of functional watershed management councils and in the crafting of their management plans;
- (7) To promote forest products development leading to the establishment of viable enterprises; and
- (8) To assist in the identification, planning and packaging of ecotourism development projects within the watersheds and forest resource areas.

##### **Components**

## 1) Watershed Rehabilitation and Management Project (WRMP)

Based on the assessment of the present natural capital stock, Bohol has already reached a critical level of natural forest depletion. Population pressure further intensify the use of these resources. The remaining forest reserves are declining due to kaingin, forest fires, illegal timber poaching and conversion of forest areas to agriculture use.

The present policy of the Provincial Government is to ensure the sustainable management of watershed for the benefit and enjoyment of all Boholanos. It appreciates a local government driven, inter-agency and multi-sectoral watershed management approach.

- 9 For the initial to medium term implementation of the project, the priority areas will be the Inabanga-Wahig Watershed (IWW), the Duero-Cansuhay Watershed (DCW), and the Caroud Watershed. Seven (7) watersheds (i.e., Lumbay, Panampan, Manaba, Ipil, Abatan and Banban watersheds) shall be the focus of detailed assessment and management plan preparation studies.

**(1) Reforestation of Degraded Areas.** This activity shall be concentrated on the severely eroded open areas inside the watershed with  $\geq 50$  percent slopes such as grassland/grazing land, cultivated/settlement areas, abandoned roadbanks and others. Measures are aimed to restore the areas into their original or even improved condition. This component will involve the identification of degraded sites within the watershed areas and establishment of endemic satellite nurseries.

**(2) Rehabilitation of Critical Slopes and Gullies.**

Some specific measures to address this problem are brush fills, earth plugs, brushwood check dams, loose stone check dams. On slopes, the soil that is exposed after grass fires is usually gullied during the first rainy season.

This zone will be rehabilitated to reduce the adverse environmental impacts of activities in the watershed such as management of the cultivated hillside ( $\geq 50\%$  slope), alley cropping, improved fallow system, border planting of fruit trees and other plants.

**(3) River Rehabilitation and Protection Management.** Vegetation on both sides of the rivers or streams will be established as streambank protection forest. This will be accomplished by planting bamboo, ipil-ipil, bananas, coconut, romblon, rattan, edible fruit bearing trees for wildlife and other suitable tree species. The occupants shall be encouraged to plant tree species to prevent destabilization of the streambanks.

River clean-ups is very vital activity to maintain the stability of the rivers with the concerted efforts of the community with POs, NGOs and existing institutions. Focused promotions shall be done to encourage local potential

groups. For heavily silted rivers, desiltation shall be conducted for rehabilitation purposes.

**(4) Adopt a River/Stream Project.**

Active civic organizations will be tapped and assigned and/or encouraged to select and adopt a river or streambank for them to take care or rehabilitate. Under the project, the BEMO and MLGU/BLGU will allocate funds for the provision of plantable seedlings such as bamboo, ipil-ipil or suitable fruit trees for this purpose. Barangay/municipal holidays will be celebrated by designing activities that are environment friendly. Donors' forum is also very vital for this project to obtain commitments from potential donors.

**(5) Biodiversity Protection and Management.**

Conservation and protection are deemed necessary through the following strategies: establishment of BMS, establishment of wildlife sanctuaries, establishment of botanical gardens, harmonizing research with conservation, and comprehensive IEC programs on the conservation and protection of biodiversity.

**(6) Water Source Protection and Enhancement.** Natural rainwater collector shall be established in the strategic areas of the watershed to properly conserve excess water.

**(7) Adopt a Watershed Project (AWP).**

Rehabilitation, protection and management of the watershed area shall be the focus of this strategy to be participated by interested colleges and universities and civic organizations who are environmentally motivated, who shall be given a designated area in the watershed for them to rehabilitate, develop and manage.

**2) Production Forest Development and Management (PFDM)**

This project will cover priority areas (uplands and mangrove) awarded by the government under the Forest Occupancy Management (FOM) program, which were later transformed into Integrated Social Forestry Program with issued Certificate of Stewardship Contract (CSC) as proof of access and management rights, the Community-Based Forest Management (CBFM) with CBFM agreements, reforestation/afforestation sites in open timberlands (former grazing lands), communal forest, community established forest and all tree planting sites in municipal and barangay watersheds.

Significant areas of the aforesaid lands have been developed into agro-forestry farms aimed at maintaining the stability of the forests by propagating forest trees side by side with food and cash crops. For Bohol, idle production forest should be developed to increase production of timber for local consumption. (1) Agro-forestation. The introduction of endemic tree species is one of the new strategies in enhancing agro-forestry as compared to the traditional technology. In this manner, indigenous trees are being saved from extinction especially those species that are considered endangered.



The following prerequisite activities will be conducted:

- (a) Inventory and assessment of ISF – CSCs, CBFMAs and other sites to assess tenurial status, land productivity and beneficiaries capabilities;
- (b) Re-orientation program for the stakeholders;
- (c) Bio-physical assessment and characterization;
- (d) Institutional strengthening activities; and
- (e) On-site technical assistance and training practicum sessions.

**(2) Community-based Forest Management.** This program is a national strategy designed to achieve sustainable forest management by making community people as partners of the government in the conservation, management and protection of land resources as embodied in DAO-2004 -29. Community-based forest management approach gives opportunity to community people to enjoy benefits from natural resources and sharing responsibilities to protect and manage it.

The interventions will include site assessment and inventory of resources, capacity building, policy advocacy, linkaging and partnership building and on-site improvement works, appropriate monitoring mechanism has to be instituted to sustain the program and ensure better success.

### **3) NIPAS and Other Natural Resources Reserve Protection and Management**

The classification and administration of all designated protected areas is aimed at maintaining essential ecological processes and life support systems, preserving genetic diversity, ensuring sustainable use of resources found therein and maintain the natural conditions to greatest extent possible. These areas fall under the category of protection land, which are identified as portion of land or water set aside by reason of their unique physical and biological diversity. They are to be protected against destructive human exploitation.

Areas not covered by the NIPAS Law but are still accorded equal protection fall under the non-NIPAS category. These areas include:

- (a) second growth forests above 1,000 meter elevation or in areas with more than 50% slope;
- (b) mangrove forests;
- (c) buffer strips along rivers and escarpment; and
- (d) freshwater swamps and marshes.

### **4) Ecotourism Development and Management**

The immediate objective of the province is to become as one of the country's tourists destinations. Promotions of ecotourism assets may be initially patronized by the local community. The potential ecotourism sites include the Camp Verde, the Eskaya Cultural Community in the municipality of Duero and Jagna; the wild duck sanctuary at Wahig-Pamacsalan Dam in the municipality of Pilar.

### **5) Support Services and Facilities**

**(1) Organization of Boholano Pool of Experts .** This activity aims to convene technically recognized Boholanos and solicit their technical assistance

specifically in the area of watershed rehabilitation and management, biodiversity conservation and mineral resources management. The Provincial Government through BEMO will launch a website campaign for this purpose under the provincial government website address. This group can serve as the advisory body of the Watershed Management Council. They can also bridge with financing donors for the funding requirement for the watersheds rehabilitation and management.

- (2) **Environmental Scholarship Scheme.** This project is intended for the son/daughter of forest occupants who cannot afford the cost of tertiary education due to economic reason. The watershed management council shall solicit financial assistance from international organizations such as Circulo Boholano sa Texas, Jaycess, Lions and others to sponsor deserving scholars. The Provincial Government through BEMO will also allocate funds for this purpose. Scholars shall take up technical courses that are needed for the development and management of the watersheds such as forestry, agriculture and related courses. Upon graduation, local agencies will assist the scholar/graduate to look for a job, preferably serving the project area.
- (3) **Community Organizing and Organization Development.** The people in the watershed communities need to be organized so that they can be effectively involved in community-based livelihood projects. It is necessary for the communities to form themselves into cooperatives before they embark into any community-based livelihood project. Community organizers shall be trained to carry out this task including facilitation of the desired technical trainings.
- (4) **Hydrologic Data and Water Quality Monitoring.** Enhancing the quantity/volume and quality of water yield and stream discharges will have to be determined through periodic monitoring of the existing hydrologic instruments in the watershed. Monitoring instruments will be maintained and monitored regularly by technical personnel. Data generated shall be used in future refinement and/or revisions of resources development and management plans and programs.
- (5) **Monitoring and Maintenance of the Forest Meteorological Station and Runoff Plots.** The monitoring of the forest meteorological station (comprised of one evaporation pan, one rain gauge and thermometer) and 10 run off plots shall be continued for the next 10 years. Two (2) gauge keepers shall be employed to do the monitoring.
  - (6) **Information, Communication and Education Campaign.** The series of ICE (information, communication and education) campaigns that were/are being conducted shall be continued to ensure the cooperation and participation of the local stakeholders, especially the local residents, in the protection and rehabilitation of the watershed at all times.
- (7) **Skills Development Training.** The project will implement a strong skills development-training program to maintain and/or improve the capability of its personnel and the local stakeholders to participate in the project activities. This training will encompass the following activities: (a) Conduct of Short-term technical training courses; and (b) Women Development

- (8) Infrastructure and Facilities Development.** Infrastructure and facilities support to the implementation of field projects are very necessary not only to facilitate completion but also to provide safety to the personnel of the project. Infrastructure needs like field office and quarters, access roads and trails; provision of equipment, supplies, and transport vehicle shall be given priority.
- (9) Establishment of Reward System.** Organizations or individuals with outstanding accomplishment or performance shall be given awards which may take the form of cash, plaque of appreciation, development exposure trips and/or their combination.

### Implementation Plan

The NRMDP component will be lodged at the Bohol Environment and Management Office (BEMO). The BEMO shall collaborate with different agencies concerned, the LGUs, the Non-Government Organizations (NGOs) and other concerned agencies.

- (a) The Forestry Sector cum NRMDP Unit.** The Forestry Sector of BEMO will be the implementing unit and shall be mandated by the Governor, upon the recommendation of the head of the office, as the lead unit for this program. The Forestry Sector/Project Unit shall primarily perform technical assistance, coordination and monitoring functions.
- (b) The Municipal Agriculture Offices of Participating MLGUs.** For the MLGU's program under the NRDM component, the Municipal Agriculture Office (MAO) shall be mandated as executing unit. Responsibilities will include, but not limited to, the following: (1) Provide technologies/extension services to farmers, PO's or cooperatives existing in the watershed areas; (2) Provide technical trainings to the project beneficiaries; (3) Facilitate in the planning of the project by the beneficiaries and/or groups; and (4) Coordinate with the line agencies in all project activities.
- (c) Farmer Beneficiaries, Their PO's or Cooperatives.** Farmer-settlers and beneficiaries shall group themselves into people's organization or cooperatives and shall be registered with the CDA, DOLE, SEC or to any other registering agency. It is proposed that the POs registered in a certain watershed be federated.

## 4.5 Local Social and Institutional Strengthening (LSIS)

### General Precepts

The success of the Bohol Agriculture Master Plan is predicated on its long-term sustainability. Experiences in various programs require the process of empowering the local communities to manage more effectively and efficiently the agriculture resource base and their environment, with sustained and committed support from the local government units (i.e., barangay, municipal/city and provincial). In

fact, communities and/or barangay cluster communities must take leading role in local development, which shall form the backbone of the Local Social and Institutional Strengthening component.

It is envisioned that within the three-phased (immediate to short term, medium and longer-term) implementation of the Bohol Agriculture Master Plan (BAMP), the following institutional development objectives shall have been achieved:

- i) Target poverty groups will attain food security and nutritional sufficiency for their families over the short to medium-term. With improved skills, they could enjoy better rural labor employment and higher incomes while their household members tend to backyard vegetable plots for year-round nutritious food supply and to home-based livelihood projects. Household heads could then participate to community improvement activities and to their POs enterprise projects.
- ii) The barangay communities and cluster farms operators will be empowered to participate more productively in development projects. Through their POs and/or cooperatives/corporatives, they will continue to expand and sustain productive initiatives with greater concern for the resource base and the chain of ecosystems. With sufficient maturity and assets, the POs shall be in a better position to access technologies, resources and services necessary to support second-generation rural enterprises and/or agri-industries.
- iii) The LGUs will have increased capability as provider and/or enabler for planning, coordinating and managing community-based projects that require multisectoral expertise and activities. The LGUs development coordinating bodies, the Planning and Development Offices, and the frontline units (i.e., Agriculture, Natural Resources, Economic Enterprise Management, Cooperatives/Corporatives Development, Human Resource Development and Management) will possess increased capacity to plan, manage and implement local projects through more effective, efficient and transparent mobilization of resources.
- iv) The involvement of participating national agencies such as DA, DENR-PENRO/CENROs, DAR, PCA, FIDA, BSWM and others will result in their realignment and/or reprogramming of resources and services to respond to the requirements of the sector plan, increased capability and commitment to work with LGUs in addressing problems of the agriculture and natural resources sectors. Specialized skills and talents will be further enriched to better manage similar programs.
- v) The NGOs and local resource institutions (LRI) will be mainstreamed in resource-based, integrated and participatory planning, implementation and monitoring/evaluating of projects. Their involvement will bolster the participation in similar LGU-led projects. The formulation of their own projects addressing agriculture and natural resources issues could draw lessons from the program's experiences.

## Components, Targets and Strategies

### 1) Local Social Preparation and Organization Development for Agricultural Enterprises Management

#### (1) Objectives

This component aims to build and/or strengthen the capacity of the barangay cluster communities (i.e., upland settlers, rainfed/lowland farmers, marginal fisherfolks, etc.) to affect their resource ecosystem, enabling them to work toward a progressive and better living environment. Within the Bohol AMP context, the expected net result is sustained improvement in the socio-economic conditions of the people and gradual rehabilitation to sustainable management of their community's resources.

The areas of concern under this component are: (i) promoting food security and nutritional sufficiency of household members; (ii) increasing household incomes; (iii) developing and strengthening peoples' organizations; and (iv) supporting POs engagement in viable agricultural enterprises. The community organizing and community development (CO/CD) process will be directed to rural enterprises development by matured POs and/or cooperatives/corporatives.

#### (2) Project Participants

Consistent with the resource-based and integrated strategies for the production components in addressing rural poverty reduction, CO/CD will not be confined to the "*poorest of the poor*" constituents; rather, it will cover the barangays in the cluster production zone. Particular attention, however, shall be given to the marginalized sectors in the resource zone, namely:

- i) Farmer settlers/occupants and claimants of upland farmsteads;
- ii) Small farmholders and tenant families;
- iii) Small fishermen and boatless/assetless fisherfolks;
- iv) Landless farm workers;
- v) Elderly and disabled; and
- vi) Women and out-of-school youths.

#### (3) The Key Players

The Bohol AMP proposes major innovation particularly on community social preparation aspect to ensure sustainability of community development efforts. For the Convergence Municipalities, at least two (2) CO/CD officers of BPRMO shall be deployed as a Field Team of development catalyst in priority barangay clusters. A critical role of the Field Team is to "*find its fit*" in working with the convergence strategy in the cluster area.

The non-convergence poverty municipalities shall entail deployment of at least three (3) CO/CD officers to work with the MAO-agricultural technologists. Here, each Field Team (one CO/CD officer and two agricultural technologists) shall function as the spearhead in the social preparation of target cluster communities to ensure their productive participation in the convergence program.

#### (4) The Municipal/Barangay Cluster Communities (Cluster Production Zones)

Organizing and mobilization of the cluster organizations can complement and facilitate the implementation of the Bohol AMP component projects, provided, community organizing and development activities are focused in the right direction and perspective to achieve social preparation and community participation in the target cluster areas.

#### (5) The CO for CD Process

A brief outline of the CO/CD process is provided below.

**Step 1: Integration with the Community and Area Familiarization** are activities intended to truly feel the “pulse” of the area, establish rapport between the Field Team and various sectors of the cluster community, with deliberate bias to the poorest. It should be unstructured so as to assure spontaneity and sincerity in dealing with local people. Field Teams must bear in mind that “*CO/CD without sincerity will never succeed*”.

**Step 2: Program Orientation-Seminar for Barangay Official and Officers of Cluster POs/Sector Organizations.** This day-long event should produce a leveling of learnings about the Bohol AMP principles, strategies and component projects, emphasizing the rationale behind the need for active participation of the communities.

**Step 3: Establishment of a Barangay Management Information System (BMIS)** should build on the data gathered under the LPRAP. The entire process should be done in a participatory manner for local people to have ownership of the system for their own use and advantage. Once established, the BMIS will serve as the only database/data source about the barangay and avoid conflicting data information.

**Community Assessment** will involve gathering additional information required for both development and action planning, and for monitoring and evaluation purposes. This should be undertaken by a local BMIS Team trained and guided by the Field Team.

**Prioritization of Needs and Problems** will basically anchor on the survey results. It will be decided in consensus through an assembly meeting of the cluster community.

**Step 4: Barangay Development Plan (BDP) Preparation** will entail careful analysis of the prevailing conditions of the communities as reflected in the BMIS. The BDP should provide the framework for action planning to respond to the priority needs and problems. It will be the *basis for convergence of resources and services* of LGUs, NGAs, NGOs and other participating units in the cluster community.

## (6) Participation in Projects Implementation and Management

The BDPs may contain a number of interventions in the form of projects and activities. Several of these may already be included in the Bohol AMP component projects and therefore contained in the plan documents. For those not included, the Field Team should assist the cluster community in implementing such projects within the limits of their resources.

**Establishment and Operation of Homelot Biointensive Garden (BIG).** The establishment and continuing operation of bio-intensive gardens shall be a “must” in every coverage community cluster except for the highland vegetables growing barangays. The development of BIGs, either or both at individual backyard or purok/barangay communal garden, should be appreciated as the means to improve the daily food intake of household members, reduce malnutrition incidences and cut households’ expenses for vegetables which could be easily produced in their backyards.

**Detailed Project Implementation Planning (PIP) of the Program Components.** A detailed Project Implementation Plan (PIP) shall be prepared by each municipality comprising the priority cluster production zones, i.e., specific crop commodity, fishery, livestock and poultry. Based on their distinct resource endowments and potentials, each municipality may have their own priority project or a package of projects within the context of the Bohol Agriculture Master Plan.

The detailed project implementation planning activities by the municipal LGUs should draw substantial technical support from the Provincial Program Planning Team (PPPT). The municipal level PIP preparation should be participated by representatives of accredited POs particularly in the formation of barangay clusters and identification of priority project sites and identification of cooperators with the most strategic farm location for development as demonstration or model farm and applied research site.

**Development of Demonstration Farms and/or Enterprises.** Under the component projects of the BAMP, a number of farmers/fishers/ livestock and poultry raisers will be involved in the development of demonstration farms and/or enterprises. These model farming/fishing systems will be planned, established and maintained by the selected cooperator but fully supported under the program. Every cooperator shall be required to commit his/her resource asset (i.e., farmland, fish farm, livestock or poultry farm, etc.) for development into farmer/fisher/raiser managed showcase of specific farming/fishing systems and/or enterprise.

**Implementation of the Project Packages.** Depending on the outcome of the aforesaid activities, the project participants (recognized as the *in situ resource managers*) shall be the implementors of the proposed farming system improvements within their own resource asset or cluster of economic-size resource assets. Through their POs, they will undergo a purposive and sequential process of capability building and organizational strengthening with deliberate emphasis on entrepreneurship.

## **(7) Organizational Development**

The existing POs in the priority cluster production zones are in various stages of organizational development. The POs needs assessment in every cluster community will be undertaken by the Field Team, preferably with the assistance of the Municipal Cooperatives Development Officer.

## **(8) Participatory Monitoring and Evaluation**

The Bohol Agriculture Master Plan monitoring and evaluation will be done at various levels. Participatory monitoring is an instrument for measuring the progress of specific project designed, planned and implemented by the people themselves. The intent is to provide information regarding aspects which need immediate action or decision so as not to impair or disrupt project implementation. It is in effect a management tool for the local project participants, as well as for higher project management. Progress or accomplishment indicators are identified by the people/project participants themselves.

## **2) Local Institutional Strengthening**

### **(1) Institutional Support Strategies**

- i) A firm and definite commitment to CO/CD prior to any major program intervention or where there are on-going interventions in the coastal, lowland, upland or highland cluster communities. The lead role shall be played by the CO for CD officers in assisting the communities' access to the barangay and municipal units. Services at these units will be improved through the program and other projects interventions.
- ii) A Field Team will be constituted and deployed in the cluster communities to serve as extension unit of the MLGU, and the field unit for coordinating and supervising the implementation of component projects' activities by the communities and the POs. The Field Team (i.e., one CO for CD Officer and two Agricultural Technologists) shall spear-head the capability strengthening programme for both barangay government units (BGUs) and POs in order to assume greater responsibility of sustaining project operations.
- iii) The municipal LGUs within the cluster production zones shall lead in the detailed Project Implementation Plan (PIP) preparation and in managing and coordinating project activities. The ANR Program will thus provide its counterpart resources to the participating MLGUs, its frontline units and Field Teams with the view to strengthen the municipal governments' development stance vis-à-vis the technical and logistical requirements of the projects. Local projects management and administration shall evolve within the MLGUs structure in line with the institutional strengthening objective.



- iv) The role of NGOs and LRIs will be given importance in terms of participating in on-site research, technologies extension and training, income generating projects and rural enterprise management, and in the establishment of linkages for resources accessing.
- v) Relevant government agencies shall be tapped to provide technical and resources support, and to assist in responding to the issues within the highland, upland, lowland or coastal ecosystem on a multi-sector and integrated approach.
- vi) Relevant/Appropriate training programmes shall be designed and conducted to respond to the identified performance gaps vis-à-vis knowledge, skills and attitudes requirement.
- vii) Provision of appropriate equipment, materials and other logistics necessary in facilitating the delivery of services.

## (2) Elements in Local Institutional Strengthening

### (a) Training and Information, Communication and Education (ICE)

The indicative scope of the training and ICE component is as follows:

	<u>Scope</u>	<u>Client Group</u>
(i)	ANR program orientation/familiarization trainings for local officials and provincial units personnel	LGU Officials (province, city/municipal & barangay), Provincial Units Staff
(ii)	Program policies formulation, planning and management	LCEs, SP/SB Officials, PDC/CDC/MDC Officials
(iii)	General and specific trainings for provision of support services at the municipal, cluster barangays and barangay levels	LGUs and Field Teams, NGAs, LRIs, NGOs and POs
(iv)	General and specialized trainings for project participants	POs, Demo Cooperators, Farmers, Fishers, Livestock/Poultry Raisers, CSC/CBFMA Awardees, Women & Youth and other Sectors

	<u>Scope</u>	<u>Client Group</u>
(v)	Trainers' Training	HRDMUs, MAOs and Field Teams, POs and Demo Cooperators
(vi)	Development Exposure Trips/Cross-Visits	LGUs, Field Teams, Demo Cooperators, POs and Project Participants

### Brief Description of Training Courses

Based on the PRRA survey and information provided by the frontline units (i.e., MAOs, OPA, OPV, BEMO, BPRMO), various training areas/courses were identified. As proposed, each training course will be comprised of several modules systematically organized to convey a set or sets of learnings designed to improve the understanding, capability and orientation of participants. The identified training courses and learning modules include the following:

**General Training Course.** The general training course (GTC) shall be conducted at all levels to enhance common understanding and development orientation towards sustainable resource utilization and management. It is also designed to promote interpersonal and functional working partnership among the program participants, implementers and management.

**Specialized Training Courses.** The specialized training courses (STC) deal with technical subject matter areas and technologies. The learning modules respond to specific knowledge or skills gap of participants relative to their functions and responsibilities under the program/projects. To respond to the identified knowledge, skills and desirable work ethics within the context of the Agriculture Master Plan and component programs, the following STCs and learning modules are crucial for the first 5-years of the plan implementation.

### Training Participants

- (i) Provincial Government Officials and units personnel
  - Sangguniang Panlalawigan (SP) Officials;
  - Officials of the PDC and PDC-ExeCom, the PAFC and other concerned policy groups; and
  - Heads and key staff of the lead implementing units for component programs and senior personnel of supporting units.
- (ii) City/Municipal Government Officials and units personnel
  - Sangguniang Panglungsod/Bayan (SP/SB) Officials;
  - Key technical staff of the Office of the Mayor;
  - Officials of the C/MDC and C/MDC-ExeCom, the C/MAFC, C/MAENRC and other concerned policy groups;

- City/Municipal heads and staff of field implementing units for specific projects and the key personnel of support units.
- (iii) Officials of the BCs and BDCs, and POs and/or cooperatives
- (iv) Demonstration/Model farming systems cooperators and local leader
- (v) The resource managers (farmers, fishers, livestock/poultry raisers, holders/awardees of CSCs, CADC and CBFMA), women and youth groups and other stakeholders.

### **(b) Staff Complement**

The manpower complement of the program shall comprise of the technical and administrative services support personnel of the provincial government and the participating city/municipal government units. This is consistent with the key premise for local institutional strengthening through the utilization of existing LGUs structure and personnel to undertake detailed project implementation planning, implementation management and coordination. They will be complemented by a modest number of technical and support staff that will be hired as contractual project staff.

## **5.0 ORGANIZATION AND MANAGEMENT**

### **1) Precepts**

The management and implementation of tasks for agriculture and natural resource development shall be mainstreamed in the regular operational mandates of the line and staff offices of the local government units, i.e., province, city/municipal and barangay. This also includes for the local development council to form a functional committee or to reconstitute an existing functional committee, as a policy making and oversight body for an integrated agriculture and natural resources development and management.

### **2) Organization Structure, Composition and Functions**

The activation by the province of the 1991 LGC functional provisions for the respective local policy making body and key line offices shall be focused at the Provincial Development Council (PDC), the Human Resource Development and Management Office (HRDMO) and at the four (4) line offices of Agriculture (PAS), Veterinary (PVS), Environmental Management (BEMO) and Poverty Reduction Management (BPRMO). The internal offices' operational restructuring is critical since the aforementioned body and offices will take the lead in the operationalization of the various components of the Bohol AMP.

### (1) The PDC – Bohol Agriculture and Natural Resource (BANR) Program Committee

The BANR Program Committee shall be formed by the Provincial Development Council – Executive Committee (PDC – ExeCom) to assist them in the performance of their functions related to agriculture development and natural resources management. It shall serve as the policy making and oversight body for agriculture and natural resource development (refer [Figure V-1](#)).

### (2) The Local Implementing Units

**Provincial Agriculture Services Office (PASO).** The present Office of the Provincial Agriculturist (OPA) shall be restructured to integrate in its operation key functions for implementing two (2) major projects under the BANR Program. The PASO shall be the line implementing office for the Sustainable Integrated Agribusiness Project (SIAP). It will be lodged at the Crops Productivity Division (CPD), which will be appropriately mandated to spearhead and manage the implementation of the SIAP component activities.

The restructured PASO shall integrate in its operation the Fishery Resources Development and Management (FRDM) Project. Considering budgetary constraint, it would be wise to undertake this by creating a division for Fishery Resources Management (FSMD).

**Provincial Veterinary Services Office (PVSO).** PVSO shall be the line implementing office for the Livestock Integration for Food and Enterprise (LIFE) Project. The PVSO shall be responsible for the improvement of raising systems for ruminants, swine and poultry types, animal health and related support services. It will also spearhead the modified livestock and poultry dispersal schemes and the livestock – crops integration farming systems in coordination with the PASO and BEMO.

**Bohol Environment Management Office (BEMO).** This is a line office with the appropriate mandate to respond to the demand of the tasks involving natural resources conservation, watershed rehabilitation, forest trees enterprise development and ecotourism. The BEMO shall be the implementing office for the Natural Resources Development and Management (NRDM) Project.

### (3) The Role of Other Provincial Units

The tasks requirement in support to the BANR Program shall be mainstreamed with the regular functions of concerned provincial offices in terms of providing technical, administrative and financial management support. These are as follows:

The **Bohol Poverty Reduction Management Office (BPRMO)** shall be involved in community social preparation and organizations development of the project participants and their POs.

The **Human Resource Development and Management Office (HRDMO)** shall be responsible for coordinating and managing the Training and Information, Communication and Education support for all the BANR Program component projects. This arrangement appreciates the evolving functional scope of the HRDMO and, at the same time, providing the means to respond to the capability-building needs of project participants and stakeholders under the programs.

The **Provincial Planning and Development Office (PPDO)** shall be the monitoring and evaluation arm of the BANR Program. The PPDO shall also serve as the technical secretariat of the PDC – BANR Program Committee.

The **Finance and Administrative Office** of the province will have to integrate in their functions the financial management and administrative support services for the implementation of the BANR Program and component projects. These services are in terms of funds disbursements, equipment, materials and services procurements, financial reports, and other logistical support.

#### **(4) The Municipal Government Units**

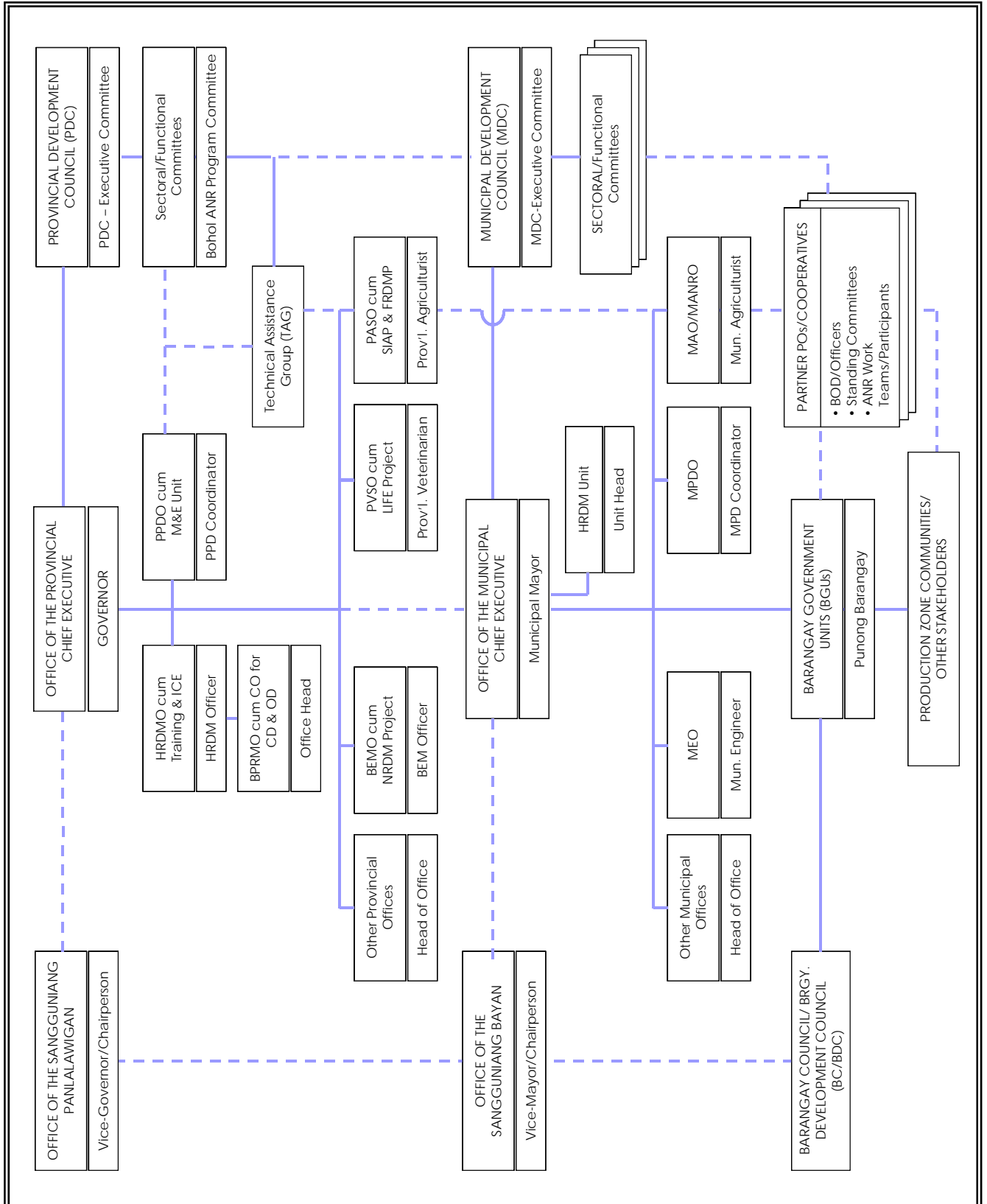
The implementation of specific project and/or package of projects within the context of the BANR Program shall be undertaken by the participating municipal government units. At this level, aside from the Office of the Municipal Chief Executive, the other most concerned units will be the Municipal Development Council thru its Executive Committee (MDC-ExeCom) and the line office of Agriculture (MAO).

The MAO/MANRO shall be the line implementing office for the municipal-wide agriculture and natural resources development. Depending on the priority project or package of projects of the participating municipality, the MAO/MANRO shall be responsible for supervising the implementation of the crop commodities farming systems improvement, livestock and poultry enterprises development, fishery resources management, and natural resources rehabilitation, protection and management.

#### **(5) The Partner People's Organizations (POs)**

The project participants in the target rural communities shall be implementing and managing their resource-based economic activities with the assistance of their POs and/or cooperatives. Their POs shall be the microcredit fund retailers of lending institutions or donor agencies for the economic enterprises of stakeholders. These credit services shall be available only to POs who are duly registered with the CDA, DOLE, SEC or with any registering/accrediting agency. The POs service coverage shall not be limited to the barangay where they are based. They can extend to other barangays or cluster of barangays when deemed necessary.

Figure V-1. Proposed Organizational Structure Integrating the Bohol Agriculture and Natural Resources Program into the LGUs Organization and Management System



### 3) Monitoring and Evaluation

The monitoring and evaluation functions shall be the responsibility of the Provincial Planning and Development Office (PPDO), in close collaboration with the lead implementing offices of Agriculture (PASO), Veterinary (PVSO), Environment Management (BEMO), Poverty Reduction Management (BPRMO) and Human Resource Development and Management (HRDMO). These offices shall constitute a team to develop an M&E system that will cover both development services progress and benefits through a participative process involving their municipal counterpart units, the key actors and stakeholders in the agricultural development and natural resources management.

## 6.0 PROGRAM FINANCING

### 1) Cost Summary

The total cost for the implementation of the Bohol Agriculture and Natural Resources (BANR) Program is estimated at PhP 880.65 million spread over a period of 10 years. The summary breakdown of the total cost by component project is presented below.

<u>Item/Component</u>	<u>Total Cost</u> <u>(P'000)</u>	<u>% to Total</u>
• Sustainable Integrated Agribusiness Project (SIAP)	49,632.00	6.0
• Livestock Integration for Food and Enterprise (LIFE) Project	349,211.00	40.0
• Fishery Resources Development and Management (FRDM) Project	423,432.00	48.0
• Natural Resources Development and Management (NRDM) Project	27,279.00	2.0
• Local Social and Institutional Strengthening (LSIS) Project	31,093.00	4.0
<b>PROGRAM TOTAL</b>	<b>P880,647.00</b>	<b>100.0</b>

Approximately Php 451.07 million, or 51% of the program investment cost, is estimated for the first five years, and Php 429.58 million for the succeeding Years 6 to 10. These investment costs are the program's direct costs comprising of the cost requirements for agricultural crops, livestock and poultry, fishery and natural resource development and management project, establishment of support infrastructure and facilities, training and equipment support, and hiring of incremental program staff.

The indirect investment costs shall be best determined during the detailed project implementation plan (PIP) preparation stage, ideally in collaboration with the Technical Working Group (TWG) of every participating municipality/city. Indirect costs will include the credit and/or grant financing component and the equity counterpart of project participants and their POs for resource-based farming systems and/or development modules and income generating enterprises.

## 2) Financing Sources

A combination of financing options is recommended to respond to the magnitude of investment requirements of the BANR Program. The existing limited local capacity of local government units to generate resources requires consideration to maximize local and external sources.

An analysis of the present and projected local fiscal situation reveals the viability for the LGU to access internal financing to initially/partially fund the program. Fiscal projection has revealed that most municipalities can comply with foreseeable contract obligation without necessarily sacrificing their efficiency to deliver other basic services.

Internal sources for LGU may include Internal Revenue Allotment (IRA) as well as capital outlay allocation by mainstreaming some project costs given the 5 year historical data where annual growth rates of revenue shows a positive trend.

Since the magnitude of financial investment for the program implementations are beyond the capability of the LGU's, external sources will be bulk source of financing. These will include Government Financial Institution (GFIs), like LBP, DBP that has loan portfolio or windows where LGUs are eligible to access and financial assistance can be fully tapped to suit the program component requirements given of course the interest of such funding or technical assistance. As a strategy, local government units shall be provided with appropriate intervention to easily access such portfolio of assistance.



**Table VI-1. Breakdown of the Direct Investment Cost (PHP '000) by Project Component/Key Activities, Year 1-5 and 6-10; Bohol Agriculture and Natural Resources (BANR) Program**

Component/ Key Activities		Estimated Cost		Total Cost (10 Years)	% to Total
		Years 1-5	Years 6-10		
<b>I.</b>	<b>Sustainable Integrated Agribusiness Project (SIAP)</b>	<b>22,853.00</b>	<b>26,779.00</b>	<b>49,632.00</b>	<b>6.0</b>
	1.1 Civil Works	5,385.00	9,560.00	4,945.00	
	1.2 Transport & Equipment	2,587.00	2,397.00	4,984.00	
	1.3 Adaptive Research, Demonstration/Model Farms & Component Projects Development	1,945.00	2,430.00	4,375.00	
	1.4 Project Promotions & IEC	620.00	850.00	1,470.00	
	1.5 Training Support	3,120.00	2,000.00	5,120.00	
	1.6 Incremental Administration	7,118.00	7,108.00	14,226.00	
	1.7 Unallocated Contingency (10% of Items 1.1 to 1.6)	2,078.00	2,434.00	4,512.00	
<b>II.</b>	<b>Fishery Resources Development and Management (FRDM) Project</b>	<b>283,705.00</b>	<b>139,727.00</b>	<b>423,432.00</b>	<b>48.0</b>
	2.1 Organizational Development	1,510.00	2,050.00	3,560.00	
	2.2 Coastal Resources Management (Habitat) Plan Implementation	35,620.00	29,620.00	65,240.00	
	2.3 Responsible Fisheries Planning, Development and Management	28,200.00	13,500.00	41,700.00	
	2.4 Entrepreneurial Livelihood Development Support	132,000.00	72,500.00	204,500.00	
	2.5 Infrastructure & Facilities Support	50,000.00	-	50,000.00	
	2.6 Foreshore and Shoreline Management	15,020.00	6,700.00	21,720.00	
	2.7 Local Policies Support Formulation & Implementation	2,725.00	2,725.00	5,450.00	
	2.8 Fish Handling, Transport & Marketing System	1,180.00	1,180.00	2,360.00	
	2.9 Support Services on Local Capability & Capacity Building	2,200.00	2,200.00	4,400.00	
	2.10 Applied Research & Special Studies	15,250.00	9,250.00	24,500.00	
<b>III.</b>	<b>Livestock Integration for Food &amp; Enterprise (LIFE) Project</b>	<b>108,608.00</b>	<b>240,603.00</b>	<b>349,211.00</b>	<b>40.0</b>
	3.1 Ruminant Development	51,185.00	24,505.00	75,690.00	
	3.2 Poultry Development	4,190.00	-	4,190.00	
	3.3 Swine Development	5,100.00	11,100.00	16,200.00	
	3.4 Exotic Animals Farming	210.00	-	210.00	
	3.5 Support Services	23,950.00	154,125.00	178,075.00	
	3.6 Detailed Planning, Monitoring and Evaluation	14,100.00	29,000.00	43,100.00	
	3.7 Unallocated Contingency	9,873.00	21,873.00	31,746.00	
<b>IV.</b>	<b>Natural Resources Development and Management (NRDM) Project</b>	<b>20,520.00</b>	<b>6,759.00</b>	<b>27,279.00</b>	<b>2.0</b>
	4.1 Watershed Development & Management	2,647.00	2,439.00	5,086.00	
	4.2 Production Forest Rehabilitation & Management	8,805.00	1,150.00	9,955.00	
	4.3 Detailed Watershed Studies (Resources Assessment & Management Planning)	2,570.00	-	2,570.00	
	4.4 Support Services and Facilities	6,498.00	3,170.00	9,668.00	
<b>V.</b>	<b>Local Social and Institutional Strengthening (LSIS) Support</b>	<b>466,450.00</b>	<b>445,290.00</b>	<b>911,740.00</b>	<b>4.0</b>
	5.1 Personal Services (CO or CD & Organizations Dev't)	6,572.00	6,903.00	13,475.00	
	5.2 Maintenance & Operating Cost	5,392.00	5,800.00	11,192.00	
	5.3 Equipment Support	2,020.00	1,580.00	3,600.00	
	5.4 Unallocated Contingency (10% of items 5.1 to 5.3)	1,398.00	1,428.00	2,826.00	
	<b>PROGRAM TOTAL</b>	<b>451,068.00</b>	<b>429,579.00</b>	<b>880,647.00</b>	<b>100.0</b>
	<b>% of TOTAL</b>	<b>51.0</b>	<b>49.0</b>	<b>100.00</b>	





---

*Cooperating Agencies:*

PROVINCIAL PLANNING & DEVELOPMENT OFFICE (PPDO)  
OFFICE OF THE PROVINCIAL AGRICULTURIST (OPA)  
OFFICE OF THE PROVINCIAL VETERINARIAN (OPV)  
BOHOL ENVIRONMENT & MANAGEMENT OFFICE (BEMO)  
BOHOL POVERTY REDUCTION MANAGEMENT OFFICE (BPRMO)

---