

## INTRODUCTION

### RATIONALE

The effective implementation of integrated coastal resource management program could be the appropriate respond to all environmental issues in the municipality. Its processes ensure equitable involvement and participation in the use and management of the coastal and marine resources. Well-coordinated strategies between and among local government units (LGU), coastal resource users, business and private sectors and other consumers is necessary to resolve the prevalent problems affecting the upland and marine resources.

A plan is an integral framework used in the familiarization of the people with the present status of the different ecosystems of the environment and its persisting challenges. It is much needed in rationalizing the objectives to a balanced ecological development found essential in the reconciliation and realignment of the socio-economic development and land uses to ensure environmental integrity of a specific locality.

The present leadership of the Local Government of Jagna is headed by a dynamic Mayor and Vice-Mayor. Both are environment conscious and are very responsive to environment and conservation measures. The *Sangguniang Bayan* (SB) is also composed of environment-friendly members who are responsive to upland and coastal resource management-related activities. The municipality had an approved CRM plan covering the period from 2002 – 2007 with the assistance of the then Bohol Environment Management office (BEMO). Majority of identified activities have already been implemented. Thus, with the strong and cohesive local leaders, the Municipality aims to update/revise the Coastal Resource Management Plan into an integrated approach which will guide them in ensuring the preservation and enhancement of its natural resources.

At present, our natural resources which have been kind to people are slowly being abused and destroyed through destructive methods. Thus, the same resource that the people hope to sustain the future generation, as it has sustained them for many years, is in imminent danger of being exhausted. There is a need for the present generation to initiate measures that will ensure the maintenance and preservation of these resources that will meet the needs of the present without compromising the needs of the future.

Moreover, sustainable utilization of marine and forest resources can be achieved through vigorous and dynamic leadership and strict enforcement of regulatory laws. In addition, the PCRA conducted in 2007 and 2011 was instrumental in providing baseline information on the state of the coastal resources in the municipality. These data were used as basis for the formulation of this ICRM plan.



## SCOPE OF THE PLAN

Each area of concern has been thoroughly discussed and deliberated. Strategies, activities and interventions were formulated in order to resolve the needs and issues identified, thereby attaining the goals and objectives of the plan. A coastal zoning plan that identifies the specific uses of zones in the coastal area of Jagna has been designed to adapt to each management area, avert and resolve conflicting use of specific zones.

This Integrated Coastal Resource Management Plan of Jagna adopts interdisciplinary and multi-sectoral approach. It is divided into 6 major chapters which cover eleven (11) management programs to respond the issues on upland and coastal resource depletion and to fully protect, conserve and rehabilitate the existing upland and marine resources. The management programs includes: Fisheries Management, Habitat Management, Shoreline/foreshore Management, Coastal Tourism Development, Waste Management, Enterprise and Livelihood, Watershed Management, Coastal Zoning, Gender and Development, Health and Sanitation Management and Legal and Institutional Arrangement.

Nevertheless, the plan covers a period of five years (5) for its implementation starting from year 2012 up to 2017. Its proposed programs, strategies and activities are necessary to maintain the biological resources of ecological and economic importance in the municipality of Jagna for a sustainable use and protection.

## HISTORY OF THE PLANNING PROCESS

The process of coming up with an Integrated Coastal Resource Management (ICRM) Plan was long and tedious. It involves a lot of people and institutions who spent time and effort to put every piece of the plan together. The CRM planning process and its implementation of the programs in the Municipality of Jagna was started in 2002 when the Local Government Unit of the town in partnership with Bohol Environment Management Office (BEMO) joined forces in replicating the CRM program in the town. A technical working group (TWG) was organized to facilitate the formulation of the said CRM Plan with the technical assistance from the Department of Environment and Natural Resources (DENR) and Bureau of Fisheries and Aquatic Resources (BFAR).



Figure1. Group 2 headed by MPDO with his members during their planning workshop.

The first Participatory Coastal Resource Assessment (PCRA) was conducted last 2005 by the Technical Working Group (TWG) prior to the CRM planning workshop throughout the 14 coastal barangays while the second PCRA was conducted last 2011. However, the conduct of Integrated Coastal Resource Management Planning workshop and writeshop was just conducted last July 23-27, 2012 at Jagna Training Center, Jagna, Bohol. It was participated by the different stakeholders of the society including Municipal Officials, DepEd, Municipal Health Officer, Municipal Planning and Development Officer, Department of Social Welfare and Development Officer, Philippine National Police, Municipal Engineering Officer, Municipal Budget Officer, SB committee on environment, tourism and agriculture, Barangay Captains of twenty one barangays (both upland and lowland), women, fisherfolk sector and including the Municipal Mayor.

Furthermore, this activity is in line with the executive order (EO) 533 issued by the President of the Philippines last 2006. The EO mandated the local government units (LGUs) to implement Integrated Coastal Management (ICM) approach. Thus, on July 23-27, 2012 ICRM planning workshop and writeshop was conducted with the help of Community Environment and Natural Resources Office (CENRO) Tagbilaran, Bohol Environment Management Office (BEMO) and Bohol Integrated Development Foundation (BIDEF) with the support from the national agencies like Coastal and Marine Management Division of DENR region 7.



## *Chapter II*

### COASTAL ENVIRONMENTAL PROFILE

#### **A. HISTORICAL BACKGROUND**

Jagna appears in documents as early as March 15, 1565 when Miguel Lopez de Legaspi was driven by unfavorable winds towards this coast and because his flagship *San Pedro* underwent repairs along Jagna bay.

The Society of Jesus (Jesuits) started their work in what was known as San Miguel de Hagna as early as 1596. The Recollect historian Licinio Ruiz wrote that the Jesuit priest P. Jose Sanchez founded the parish and town simultaneously on September 29, 1631 with St. Michael Archangel as its patron saint.

The name Jagna was, according to historical records, derived from legendary vernacular exclamation 'ni hagna na'. The tale started from the usual occurrence at the mouth of a small river which is already dried up now but whose actual traces of real existence are still visible beyond doubt. At the mouth of the river was a hole or cave-in of considerable depth and size. Such condition of the river led the early inhabitants to call it as 'Boho' river. The river used to abound with so much fish called 'tigue' in the local dialect. When the school of that particular fish played on the surface of the water, such part seemed to appear like coconut oil boiling in a frying pan. And whenever the people saw the sizzling surface of the water caused by the movement of the fish, they used to remark 'ni hagna na', meaning the oil being cooked is almost done. Therefore, from this common expression of the villagers evolved the present name of the town 'Jagna'.

The first settlers of Jagna descended from the natives of Loboc and Talibon. These settlers wanted to migrate to Mindanao riding on their sailboats called 'bilos'. Because of the inclement weather, they were forced to seek shelter in Jagna. However this brief refuge turned into a permanent stay as they found Jagna attractive and an ideal place for establishing a village.



## B. GEOGRAPHY AND PHYSICAL SETTING

### B. 1. Geographical Location

Jagna is nestled along the southeastern coast of Bohol facing the Mindanao Sea. Located 63.2 kilometers from the capital city of Tagbilaran, this bustling town is bounded on the north by municipality of Sierra Bullones, the blue waters of Jagna Bay on the south and the towns of Duero and Garcia Hernandez on the east and west respectively.

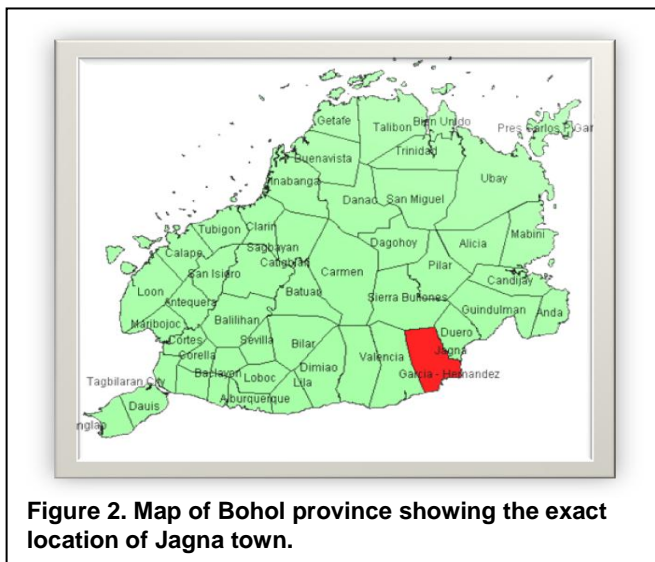


Figure 2. Map of Bohol province showing the exact location of Jagna town.

#### **b.1.1. Land Area**

The Municipality of Jagna has a total land area of 12,063 hectares which constitutes 2.93% of the total land area of Bohol province. It is composed of thirty-three (33) barangays of which fourteen (14) of these are coastal barangays and the other nineteen (19) are upland barangays.

As a result of the process undertaken through Barangay Development Planning and Participatory Rural Appraisal, the Municipality of Jagna is subdivided into three (3) major categories.

The urban area of Jagna, appropriately called the Metro Jagna Clusters is composed of the barangays of Bunga Mar, Can-upao, Looc, Pagina, Canjulao, Poblacion, Tejero and Pangdan. It covers a total of land area of 316.05 equivalents to 2.62 of the total land area of the municipality.

The Coastal Jagna Cluster is composed of barangays located along the coastal fronting the Jagna Bay, other than those already classified as part of the Metro Jagna. It covers the total land area of 747.04 hectares or 6.19 % and include Alejawan, Cantagay, Can-uba, Ipil, Larapan, Naatang, Nausok and Tubod Mar.

Ninety-one (91%) of the total land area of Jagna is considered to comprise the Upland Jagna Cluster. With a total land area of 10, 999.91 hectares and covers the barangays of Balili, Boctol, Bunga Ilaya, Cabungaan, Calabacita, Cambugason, Can-ipol, Cantuyoc, Faraon, Kinagbaan, Laca, Lonoy, Malbog, Mayana, Odiong and Tubod Monte.

### **b.1.2. Topography and Slope**

The municipality is predominantly comprised of steep hills and mountains. The coastal areas are normally flat, but less than a kilometer away from the shoreline, the slope changes from gently sloping to steep hills and mountains. 14.13% of the total land area is classified as level or nearly level. 28.62 % on the other hand, is gently sloping to moderately sloping. While the rest of the area comprising the remainder of 57.25% is classified as hills to steep mountains. Based on the slope classification, those areas identified as moderately sloping to mountains are classified as public or forestland areas. And for those level or gently sloping areas, they are classified as Alienable and Disposable lands. Forestlands using this classification will cover 59.42% of the total land area of the municipality.

**Table 1. Slope Categories**

<b>SLOPES (%)</b>	<b>DESCRIPTION</b>	<b>AREAS (Has.)</b>	<b>% Total</b>
0 – 3	Level to nearly level	1,704.664	17.25
3 – 8	Gently sloping to undulating		
8 – 18	Moderately sloping to rolling	3,452.04	28.62
18 – 30	Rolling to hills	2,076.256	17.18
30 – 50	Steep hills and mountains	2,821.956	23.39
50 – above	Very steep hills and mountains	2,011.884	16.68
<b>TOTAL</b>		<b>12,063.00</b>	<b>100.00</b>

Based on the slope classification, those areas having slopes of 18% and above area classified as public or forestland. Those areas with slope of below 18% are classified as Alienable and Disposable (A&D) lands. Forestlands using this classification will cover 59.42% of the total land area of the municipality. Areas with slope of 50% and above will be categorized as protection forest. Protection forest would then cover 17% of the total land area.

### **b.1.3. Geology**

The municipality of Jagna has five (5) classifications of bedrock formations namely Sierra Bullones (Usb), Maribojoc (Pm), Carmen (Mc), Bocol Serpentine (Ptb) and Jagna Andesites (Mj).





The Sierra Bullones formation occupies  $\frac{3}{4}$  of the planning area. It is capped by a massive limestone strongly correlating with the barili formation of south central cebu. It is overlain with white marl.

Maribojoc limestone is the youngest tertiary limestone in the province, it is non fossiliferous, porous limestone which exhibits poor bidding or none at all. In Jagna, it dips gently seaward and shows rubbly to conglomerate limestone beds suggesting shallow marine environment of disposition.

The Carmen formation is essentially composed of shale, sandstone, slabby to clasitic limestone beds conglomerate siltstone, mudstone and marl. East Ilihan hill, thin to medium beds of the fine to medium grained shales are noted to be highly inundated in places the beds are much overtuned, fractured and contracted. At Tubod Monte, the Carmen rests on andesite breccias and displays moderate to gentle dip shoreward.

The Boctol Serpentine is found in Brgy. Boctol. This type of geologic formation is highly crushed and brecciated. Strong and younger shears assume steep dips while older shears appear to be moderately dipping and obscured. Fractures have diverse orientation, but most of these crisscrossing structures are filled with magnesite veinlets varying from a few centimeters to six (6) inches in places.

The Jagna Andesite is best exposed in Palingkod hill, Caluyahan hill, Tubod Monte creeks, Ilihan hill and the portion of Jagna. The rock exhibits cellular or vesicular structure. Hornblends and plagioclase crystals are well developed with minor amounts of bictite crystals. The matrix is generally classy denoting its extrusive nature.

The Alejawan River Valley trends roughly North of Northwest (NNW) to South of Southeast (SSE) and is surrounded mostly by the Sierra Bullones Limestones. The northwestern and eastern boundaries of the valley for the most part are along structural line which follows the trace of major faults. These faults normally bring thick cliff-forming limestones of the Sierra Bullones to form typical gray limestone walls, which stand out prominently. The gently rolling valley floors are underlain by the deeply weathered volcanoclastic rocks of the Carmen Formation and the Cretaceous to Paleocene Boctol Serpentine south of Mayana.

The Alejawan River valleys erodes along belts of volvaniclastic sedimentary rocks and limestones and along fault zones. Rivers that cut through limestones generally have steep valleys.

**Table 2. Geologic Categories/Classification of Bed Rocks**

TYPE	AREA (Sq.M.)	% TOTAL
Sierra Bullones (Usb)	7,555.22	62.63
Maribojoc (Pm)	137.26	1.14
Carmen (Mc)	3,771.44	31.26
Boctol Serpentine (Ptb)	59.86	0.5

Jagna Andesites (Mj)	539.22	4.47
<b>Total</b>	12,063.00	100.00

#### **b.1.4. Hydrology**

There are six (6) existing surface water in the Municipality of Jagna namely: Alejawan River, Balili Spring, Kinahugan, Lonoy Spring, Odiong and Lonoy Creek. The municipality is into conserving and protecting the abundant water resources of the municipality.

**Table 3. Existing Surface Water in Jagna**

<b>Surface Water</b>	<b>Location</b>	<b>Classification</b>
Alejawan River	Boundary of Jagna and Duero	Public Water
Balili Spring	Balili	Public Water
Kinahugan	Cabungaan	Public Water
Lonoy Spring	Lonoy	Public Water
Odiong	Odiong	Public Water
Lonoy Creek	Lonoy	Public Water

#### **b.1.5. Climate**

The municipality belongs to Type II of climate classification which is characterized by having no pronounced dry season but with a very pronounced maximum rain period. Maximum rainfalls are observed to occur on the months of August, September and October, ever extending until December.

The most common currents in the locality are the Northeast Monsoon (amihan) during the month of October to May and the Southeast Monsoon (habagat) during the month of June to September.

#### **b.1.6. Soil**

There are two (2) types of soil found in the area. Calape clay and Annam Clay. Calape clay loam comprises 5.71 and occupies most of the urban area while Annam clay covers 94.29 % of the total land area.

**Table 4. Soil classification, Jagna, Bohol**

<b>Soil Type</b>	<b>Area Covered (sq.m)</b>	<b>% Total</b>
Calape Clay Loam	689.38	5.71
Annam Clay	11,373.52	94.29
<b>Total</b>	12,063.00	100.00





## **B.2. Land and Coastal Classification and Uses**

### **b.2.1. Alienable & Disposable Land**

The land classification of the area is classified into two (2): the alienable and disposable land and timberland. The Municipality of Jagna has an agricultural land of 10, 200 hectares or 85 % of the municipal area while timberland covers 1, 863 hectares or 15 % of the total land area. The protection forests in the municipality are the areas declared as National Integrated Protected Areas System (NIPAS Act 7586) under Presidential Proclamation No.881 otherwise known as Alejawan-Cansuhay-Anibongan Watershed Forest Reserve (ACARWFR). The areas are situated in barangays Odiong as National Park, Boctol as Natural Monument, Mayana as Wildlife Sanctuary and Lonoy as Strict Nature Reserve which comprises a total of 1, 863 hectares. All forestland areas are under the jurisdiction of DENR,CENRO Tagbilaran.

### **b.2.2. Coastal Area**

Jagna has a coastline of approximately fourteen (14) kilometers. Fourteen (14) out of thirty-three (33) barangays are located along the coast, namely: Can-uba, Ipil, Cantagay, Bunga Mar, Can-upao, Pangdan, Nausok, Laparan, Tubud Mar, Looc, Pagina, Alejawan, Poblacion and Naatang.

There were three (3) declared marine sanctuary located in Tubod Mar, Pangdan and Naatang through an ordinance no.\_\_\_\_\_ series of 2001.

### **b.2.3. Marine Protected Area**

The municipality has three (3) legally established marine protected area namely Tubod Mar, Pangdan and Naatang Marine Sanctuaries. These marine sanctuaries covering a total of 11.88 hectares, 15.2 hectares and 8.56 hectares respectively are managed by the different members of management council which involves M/BLGU, private sectors, NGO and NGAs. Tubod Mar marine sanctuary was established in 2001 through municipal ordinance no \_\_\_\_\_.

Approved ordinances states that the local government unit of Jagna and the local government units of the respective MPA are mandated to manage the marine sanctuary with the active participation and support from the different sectors involved in the management and development of these MPAs.

Results of the survey revealed that the live hard coral cover (LHC) in the deep zone (6-8m) in Pangdan and Naatang marine sanctuaries was found to be in fair condition while Tubod Mar marine sanctuary revealed to have poor condition (PCRA 2000). Live hard cover of Pangdan marine sanctuary was 48.50 %, 36 % for Naatang marine sanctuary while 7.8 % for Tubod Mar marine sanctuary. Results also revealed that majority of the area in the two sanctuaries were composed of algae wherein Pangdan MS recorded to have 33.50% while Naatang

MS recorded to have 29.5% and lastly Tubod Mar MS mostly dominated by soft corals having 66%.

Fish individuals counted to a total of 1, 021 for the inside and outside of Tubod Mar MS. Pangdan MS recorded to have a total of 938 individuals while Naatang MS recorded to have 818 fish individuals. Family Pomacentridae dominated the three (3) sanctuaries, followed by Family Apogonidae and Labridae.

MPAs are not only significant for their coral reefs. As breeding grounds for commercially and environmentally valuable fishes and other marine organisms, local fishers claimed that their establishment has contributed to a great extent to the rehabilitation of the marine areas and in the gradual improvement on the volume of the municipal fish catch outside the sanctuaries.

## **C. ENVIRONMENTAL RESOURCES AND USES**

### **C.1. Mineral Resources**

The municipality had rich potential sources in limestone deposit, a very important component for cement production, all of these areas are outside the timberland/forest area. The most part of the municipality is covered by Sierra Bullones bedrock formation, which is capped by massive limestone strongly correlating with the barili formation of South Central Cebu. In fact in previous years, Barangay Malbog was used to engage in quarrying of limestone for hollow block component production but due to the existing provincial law that prohibits any form of quarrying, the said practice has been stopped. Nickel, a hard malleable silvery metallic element that is resistant to corrosion and used in alloys is also found in the municipality.

### **C.2. Coastal and Marine Resources**

#### **C.2.1 Introduction**

The coastal and marine resources of the town are significant not only to the fisherfolk residing within its proximity but even to those from its neighboring areas. Approximately 1, 000 fulltime and part-time fishers rely on the coast and its natural resources hence, it is absolutely economically significant, ecologically influential, and aesthetically valuable to the inhabitants and the local government units.

The municipality has blessed with estuaries, corals and seagrass habitats. These habitats were assessed during the Participatory Coastal Resource Assessment (PCRA) conducted by PENRO/CENRO Tagbilaran and BEMO last \_\_\_\_, 2011.

#### **c.2.1. Estuaries**



The municipality has five (5) major estuaries. These are located in Barangays Alejawan, Pangdan, in barangay-boundaries of Pagina-Looc and Pagina-Poblacion and in barangay Can-upao. Secondary small estuaries also exist in Barangays Poblacion, Larapan, Looc, Can-uba, Can-upao and Naatang.

#### **c.2.2. Coral Reefs (insert pix of corals)**

PCRA results revealed that percent coral cover of the reef in all coastal barangays of the town was rated in fair condition (BFAR, 2002) comprising 43.80% in average. Out of fourteen (14) coastal barangays only ten (10) barangays were surveyed. Majority of the barangays have fair conditions while Barangays Can-upao and Tubod Mar have excellent conditions.

#### **c.2.3. Seagrass (insert pix of seagrass)**

Results of the Participatory Coastal Resource Assessment revealed that there were six (6) species of seagrass identified and have substantial covers in Barangays Ipil, Can-upao, Can-uba, Naatang and Pangdan.

#### **c.2.3. Mangrove (insert pix of mangrove)**

Naturally grown mangroves of four hundred (400) stands of *Rhizophora sp.* (Bakhaw) and thirty (30) trunks of *Sonneratia alba* (Pagatpat) exist only along the coastline of Can-upao. Results of the assessment revealed that 70% of *Rhizophora* species were classified as matured while *Sonneratia* species has less equal percentage of young and mature trees.

#### **c.2.4. Fishes and Invertebrates**

A total of 146 species from 27 families of coral reef fishes were observed within the reefs Jagna. Majority of the fish species noted in the coral reef ecosystem were non-target species. Non-target species such as damsels and wrasse were varied and diversified compared to other species. Conversely, target species such as parrot fish and surgeon fish were also common in the area. Jagna reef obtained a mean of 9.52 diversity rating. Flying fish (bangsi) is considered a highly commercial species of which great volume of annual fish catch has been noted especially during the months of April to May.

Common invertebrates observed were mostly sea urchins and sea stars. Other important marine species in the locality are the manta rays which are considered as the main source of income of fisherfolks in Bunga Mar. The fishing of manta ray is totally banned after the said species was declared to be endangered by the DA-Bureau of Fisheries and Aquatic Resources (BFAR).



## D. Demographic Profile

### d.1. Population

Based on National Statistic Office record, Municipality of Jagna has a total population of 32,034 as of 2007. This is about 0.61% increase in population since 2000 with only 30, 643 consisting of 5,975 households. With an assumed growth rate of 0.61%, the population of Jagna is projected to 34, 043 in the year 2017 with 6,141 households. (Table \_)

**Table\_ Projected Population of Jagna 2012-2017**

Barangays	Population NSO		Projected Population					Projected No. of
	2007	2012	2013	2014	2015	2016	2017	2017
<b>Urban</b>	<b>11,560</b>							<b>2,131</b>
Bunga Mar	1,274	1,313	1,321	1,329	1,338	1,346	1,354	222
Canjulao	2,634	2,715	2,732	2,749	2,765	2,782	2,799	475
Can-upao	2,022	2,084	2,097	2,110	2,123	2,136	2,149	343
Looc	811	836	841	846	851	857	862	178
Pagina	1,330	1,371	1,379	1,388	1,396	1,405	1,413	240
Pangdan	1,110	1,144	1,151	1,158	1,165	1,172	1,180	220
Poblacion	950	979	985	991	997	1,003	1,010	201
Tejero	1,429	1,473	1,482	1,491	1,500	1,509	1,519	252
<b>Rural</b>	<b>20,474</b>							<b>4,010</b>
Alejawan	790	814	819	824	829	834	840	160
Balili	1,223	1,261	1,268	1,276	1,284	1,292	1,300	254
Boctol	1,073	1,106	1,113	1,120	1,126	1,133	1,140	226
Bunga Ilya	833	859	864	869	875	880	885	153
Buyog	325	335	337	339	341	343	345	65
Cabungaan	1,178	1,214	1,222	1,229	1,237	1,244	1,252	199
Calabacita	1,506	1,552	1,562	1,571	1,581	1,591	1,600	275
Canbugason	899	927	932	938	944	950	955	166
Can-ipol	420	433	436	438	441	444	446	74
Cantagay	866	893	898	904	909	915	920	164
Cantuyoc	826	852	857	862	867	872	878	169
Can-uba	362	373	375	378	380	382	385	74
Faraon	525	541	545	548	551	555	558	107
Ipil	275	283	285	287	289	290	292	68
Kinagbaan	414	427	429	432	435	437	440	79
Laca	248	256	257	259	260	262	264	61
Larapan	791	815	820	825	830	836	841	131
Lonoy	1,225	1,263	1,271	1,278	1,286	1,294	1,302	243
Malbog	1,018	1,049	1,056	1,062	1,069	1,075	1,082	192
Mayana	1,861	1,918	1,930	1,942	1,954	1,966	1,978	386
Naatang	543	560	563	567	570	574	577	109
Nausok	329	339	341	343	345	348	350	65
Odiong	1,057	1,090	1,096	1,103	1,110	1,116	1,123	223
Tubod Mar	505	521	524	527	530	533	537	121
Tubod Monte	1,382	1,425	1,433	1,442	1,451	1,460	1,469	247
<b>Total</b>	<b>32,034</b>	<b>33,023</b>	<b>33,224</b>	<b>33,427</b>	<b>33,631</b>	<b>33,836</b>	<b>34,043</b>	<b>6,141</b>

Source: 2000 Population Census, National Statistics Office

Based on the 2007 census data, Barangay Canjulao was the most populated urban barangay while Barangay Mayana among rural barangays. Sixty-four (64%) percent of the population came from rural areas, covering twenty-five (25) barangays while only 36% came from urban areas covering 8 barangays.

The increasing population in urban barangays is a result of the presence of new and established businesses and educational institutions and the completion of new public market.

### ***Population by Geographic Classification***

Municipality of Jagna has eight (8) coastal barangays, seventeen (17) upland barangays and eight (8) Metro Jagna barangays. About 35 percent of the population of Jagna is living along the coastal areas while 51 percent came from upland barangays.

**Table\_ Total Population and Percentage by Geographic Distribution**

<b>Geographic Classification</b>	<b>Population 2007</b>	<b>Population %</b>
<b>Coastal</b>	<b>4,461</b>	<b>13.93</b>
Alejawan	790	
Cantagay	866	
Can-uba	362	
Ipil	275	
Naatang	543	
Nausok	329	
Larapan	791	
Tubod Mar	505	
<b>Metro Jagna</b>	<b>11,560</b>	<b>36.09</b>
Can-upao	2,022	
Bunga Mar	1,274	
Canjulao	2,634	
Tejero	1,429	
Pagina	1,330	
Pangdan	1,110	
Poblacion	950	
Looc	811	
<b>Upland</b>	<b>16,013</b>	<b>49.99</b>
Balili	1,223	
Boctol	1,073	
Buyog	325	
Cabungaan	1,178	
Calabacita	1,506	
Cambugason	899	
Can-ipol	420	
Cantuyoc	826	
Bunga Ilya	833	
Tubod Monte	1,382	
Faraon	525	
Odiong	1,057	
Kinabaaan	414	
Laca	248	
Lonoy	1,225	
Malbog	1,018	
Mayana	1,861	
<b>Total</b>	<b>32,034</b>	<b>100</b>

Source: National Statistics Office (NSO)



## **d.2. Sex Ratio**

Based on NSO data for Jagna on 2000, there were 15,605 males and 15,038 females. The males dominate women by about 1.9%. However, on age groupings, the women dominated men in the age group of 59 and above. (Table\_)

**Table\_ Age Distribution of Population By Sex, 2000**

Age Group	Age Distribution (%)	Male	Female	Both Sexes
Under 1	2.26	375	317	692
1-4	8.79	1,427	1,265	2,692
5-9	11.24	1,799	1,645	3,444
10-14	11.11	1,703	1,702	3,405
15-19	9.95	1,642	1,408	3,050
20-24	8.72	1,391	1,281	2,672
25-29	7.65	1,193	1,152	2,345
30-34	6.96	1,067	1,067	2,134
35-39	5.87	908	890	1,798
40-44	5.20	846	746	1,592
45-49	4.24	665	633	1,298
50-54	3.97	612	608	1,220
55-59	3.78	565	593	1,158
60-64	3.30	478	534	1,012
65-69	2.52	359	413	772
70-74	1.95	260	338	598
75-79	1.23	167	209	376
80 and above	1.26	148	237	385
<b>Total</b>	<b>100</b>	<b>15,605</b>	<b>15,038</b>	<b>30,643</b>

Source: 2000 Census of Population and Housing, NSO

## **d.3. Women Population of Reproductive Ages**

Population of women of child-bearing ages dominated all age group. This may implies that the population in the next few years will continue increasing.

## **d.4. Child-Woman Ratio**

In 2000 census, there were 47 children under age 5 per 100 women of reproductive age. In the total population, the ratio of male and female is almost 1:1.

## **d.5. Percentage of Household by Sex of Household Head**

In the census of 2000, majority of Jagna's households were headed by males with only 16 percent of its households headed by females. Most of these household heads belonged to the group 30-59 males and 40-79 of females.





## E. Socio-Economic Profile

### e.1. Agriculture

Agriculture is one of the primary economic drivers of the municipality of Jagna with farming, fishing and livestock raising as its main economic activities. The present agricultural land area of the municipality represents 69.24% of its total area. Out of the total 8,353.39 hectare of agricultural land area, only 4,183.63 hectare or 49.92 % are presently used or devoted to crop production. The remaining 4,169.76 hectares of agricultural land is potential for other agricultural production or usage.

**Table\_ Agricultural Land Categories**

Category	Area (has.)	% to Total
Crop Production Area	4,183.63	50.08
Potential Agricultural Production Area	4,169.76	49.92
<b>Total</b>	<b>8,353.39</b>	<b>100.00</b>

Source: MAO, 2008

Currently about 8,353.39 hectares or 69.25% of the total land area of Jagna is for agricultural production from the previous 8,325.58%. This was the result of the reclassification of the land use as mandated by the Municipal Comprehensive Land Use Plan (CLUP 1997-2006) wherein the other 2,068 hectares has been reclassified to protected and forest reserves.

Farming is not only main occupation of the seventeen (17) upland barangays but also to four (4) other coastal and one (1) urbanizing barangays. However, farming activities in the upland barangays are more intensive compared to that in the coastal and urbanizing barangays where farming is not the only source of livelihood but is resorted to when fishing and paid labor are scarce.

Jagna's farming activities are not of plantation types but small, scattered and of the backyard scale. Land ownership in Jagna is basically characterized by small and scattered parcels of landholdings mostly owned by owner-cultivators who live in the locality; absentee landlords of the new type-mostly residents of Metro Jagna who are either professionals or business people whose farms are tilled either through tenancy, leasehold or administrator ship arrangements; and part owner-administrators in the case of family landholdings which have not yet been legally partitioned. While the extent of land ownership needs to be accurately determined, most of the farmers are a combination of tenants, leaseholders and/or administrators.



**Table ----. Agricultural Land ownership based on the cultivated major crops.**

Type of Crops	Ownership Type	No. of Households	% of Total Household
Coconut	Owner	5,683	90.25
	Administrator	175	2.78
	Tenant	329	5.22
	Rental	14	0.22
	Other	96	1.52
Rice	Owner	5,123	81.36
	Administrator	131	2.08
	Tenant	894	14.20
	Rental	32	0.51
	Other	117	1.86
Corn	Owner	6,103	96.92
	Administrator	18	0.29
	Tenant	166	2.64
	Rental	4	0.06
	Other	6	0.10
Banana	Owner	5,916	93.95
	Administrator	91	1.45
	Tenant	262	4.16
	Rental	3	0.05
	Other	25	0.40
Mango	Owner	6,281	99.75
	Administrator	5	0.08
	Tenant	11	0.17
Oil Palm	Owner	6,297	100.00
Ubi	Owner	6,288	99.86
	Administrator	3	0.05
	Tenant	6	0.10
Cassava	Owner	6,255	99.33
	Administrator	5	0.08
	Tenant	34	0.54
	Rental	1	0.02
	Other	1	0.02
Other Crops	Owner	6,271	99.59
	Administrator	6	0.10
	Tenant	19	0.30
	Rental	1	0.20

**Source: PDMS Survey 2009**



Results of the PDMS survey in 2009 showed that 2,835 households or 45.02% of the total number of households of Jagna are basically engaged in farming. This economic activity is considered family's business whereby the father is the farm owner, mother and children are farm workers. In some cases women are hired as paid labor for specific lighter farm operations receiving equal daily wage as that of men. However, women spend most of their time doing household chores and yet they still manage to go in the farm and help their spouses.

Table\_ shows the land ownership of households based on the major crops grown in Jagna. Except for rice with slightly lower percentage of farming households who owned the lot of 81.36%, all other crops are mostly owned and cultivated by farming households with an average land ownership of 97.46%. Consistently, rice showed greater percentage of farming households who are just tenant to the lot they tilled. However, average land tenancy to other crops of the farming households in Jagna is 1.88%. Least percentage of land ownership is classified 0.86% administrator and 0.21% leaseholder. Tenurial status of land ownership is not really a big issue for it doesn't affect agricultural development in Jagna.

## **Crops**

The main agricultural crops grown in the municipality are coconut, rice, corn, root crops, vegetables, and spices, bananas and fruit trees which are for cash and/or consumption. Cut flowers and ornamentals have also become sources of income. Presently, Jagna is among the suppliers of some varieties of vegetables and spices as well as cutflowers in the province.

## **Production**

In terms of production area, coconut occupies a large percentage of the agricultural land. The total land area planted to coconut is 1,440.43 hectares, which represents 42% of the total crop production area. Rice as a staple crop is second with 682.50 hectares planted for both irrigated and rainfed areas with a large portion, which is about 358.50 hectares irrigated and the remaining 324 hectares as non-irrigated lands. Land holdings of small rice farmers are generally limited, ranging from 0.2 to 0.6 hectares. Rice farming served as the primary source of subsistence of most farming household. Corn production area occupies 205.8 hectares compared to fruit crops with a combined production area of 764.6 hectares with a larger portion, which is about 679.8 hectares planted to banana. Vegetables occupy 85.9 hectares of the total crop production area and rootcrops with 42.4 hectares.

Based on the Municipal Agricultural Office (MAO) data, the following table shows the crops, area planted and production of major crops grown in the municipality:



**Table\_ Area, Production and Volume of Production of Major Crops**

Major Crops	Area	% to Total Agricultural Land Devoted to Crop Production	Production (Metric Ton)
Coconut	1440.43	41.15	1728.51
Rice	682.50	19.50	2047.50
Banana	679.84	19.42	1699.60
Corn	205.81	5.88	314.88
Vegetables	85.97	2.46	212.24
Mango	84.77	2.42	2345.56
Oil Palm	112.00	3.20	
Rootcrops	42.39	1.21	55.65
Other Crops	166.68	4.76	28.40
<b>Total</b>	<b>3500.39</b>	<b>100.00</b>	

Source: MAO, 2008

The average yield per hectare for rice is 3.0 metric tons per hectare, which is above the province's average yield of 2.32 mt/ha. For the irrigated area, average yield is 3.5 mt/ha. While for the rainfed, its 2.5 mt/ha. For corn, the average yield is 1.53 mt/ha, a little but above the province average yield of 1.05 mt/ha. The production of mango in the municipality is promising, with its average yield of 3.75 mt/ha. It is lesser compared to the province average yield of 4.66 mt/ha. However, for coconut, rootcrops and banana, the average production is below the province average yield for each of the mentioned crops.

## e.2. Livestock and Poultry

Livestock and poultry production are one of the livelihoods in the municipality. It provides alternative source of income to farmers. However, it continues to be a backyard activity basically for home consumption. The municipality has no full-scale commercial livestock production although there are areas that can be tapped and suitable to pasture area.

Table\_ shows the livestock population of the municipality with chicken numbering 27,912 heads, about 76% of the total livestock population. Almost all households in Jagna raise chicken primarily for consumption. The carabaos are raised to help in the farm with about 3.4% of the total livestock population, while cattle, hog and goat are raised for commercial purposes.

**Table\_ Livestock and Poultry Production**

Livestock	No. of Heads	Dressed Meat (Kls)	Equivalent Meat Production Dressed Meat (Metric tons)
Carabao	1,262	100	126,200
Cattle	849	100	84.9

Hog	5,755	40	230.2
Goat	784	12	9.4
Chicken	27,912	1	27.91
Others	710		
<b>Total</b>	<b>37,272</b>		

**Source: Municipal Agricultural Office, 2008**

Generally, there is no full-scale commercial production of livestock and poultry in Jagna. Production of livestock and poultry products is basically backyard farming for home consumption resulting in a deficit, basing on the required consumption for the whole populace of the municipality.

Local production of beef, carabeef and pork are not enough to meet the demands of the local market so these are sourced out from the neighboring towns of Ubay, Alicia, Candijay, Mabini, Guindulman and Anda.

In the case of poultry products these are purchased from outside the province as frozen commodities.

### **e.3. Fishing**

While Jagna is considered a coastal town, there are only few small-scale commercial fishing in the area and the rest are mostly subsistence fishing. Presently, there are three (3) barangays which depend upon fishing as the main source of livelihood.

Fish used to abound even near the shorelines of Jagna where small fisherfolk can catch fish for everyday consumption. But over the years due to illegal fishing practices fishery resources have been dwindling. Many small and some middle fisherfolk have then made farming their principal source of income and fishing as their seasonal occupation.

Most of the marine products that are sold in the market come from other areas because local products cannot suffice for the needs of the populace as evident in the supply and demand table that there is a deficit in the need for fish. Because of scarcity, fish products are very expensive although there is also the need to study the extent of the role of middlemen in fish trading. The sources and variety of fish sold at the Jagna market is found in Table \_\_\_\_.

**Table \_\_\_\_ Sources, Frequency and Varieties of Fish Sold at Jagna Market CY 2007**

Source	Frequency of Supply	Variety
Jagna		Mangko, Nokos, Bangsi, Tongnos, Mangsi
Loay	Seasonal	Mangko, Tabodlos, Baksawan
Ubay		Nokos, Lambay, Bangus

Mabini	Daily	Caraballas, Parotpot, Kinhason, Uwang
Valencia	Every other day	Bolinao, Tognos
Talibon		Lambay, Bangus
Duero	Daily	Mangko, Nokos, Tabudlos, Baksawan, Anduhaw, Tambantoy
Limasawa	June-Dec	Bangsi, Nokos
Camiguin	June-Dec	Bangsi
Libertad	June-Dec	Bangsi

Tilapia is the only variety for inland fishing with a cultivated area of only about 1,259.2 sq. meters and located in eight (8) barangays which is mainly for home consumption. Bangus and other marine products cannot be developed in Jagna because of the lack of enough area with brackish water.

The establishment of marine sanctuaries under the Coastal Resource Management Plan of 2003 was the urgent response to the alarming reality of marine degradation and depletion. The sanctuaries aim to rehabilitate and preserve the habitat of marine life thus, providing for the sustainable marine needs of the people in the municipality. However, there are oppositions to the marine sanctuaries. Fisherfolk from within and outside of Jagna which includes commercial fishermen continue to disregard fishery ordinances. Besides the need for sustained information and education campaigns (IEC) there is the need for the full enforcement of the law.

### ***Fish Catch***

The municipal waters of Jagna offers few type of fish. On the average fish catch estimate for fishing activities Drift Gill Net will reach to about 386 tons, for hook/long line is about 1.8 tons from fishpond operation it is expected to reach about 1..3 tons.

***Table \_ Fishery Data***

No. of Fishermen	2,131
No. of Motorized Bancas	200
Average Fish Catch per Day	5 kilos/day

**Source: Municipal Agriculture Office, 2007**

### ***Health***

Municipality of Jagna was never late when it comes to health development and improvement. There are enough doctors to accommodate a population of 32,000 based on the standards set by the Department of Health.

There are two hospitals in the municipality that serve not only the people of Jagna but also the neighbouring towns. The Teodoro B. Galagar District Hospital (TBGDH), being





a tertiary hospital also serves as a training ground for nursing students of the two universities in Tagbilaran.

The Lim Hospital, a private hospital is equipped with modern facilities comparable with prominent hospital in the cities. There are also private clinics that operate in Jagna which includes optal clinics and dental clinics.

The municipality of Jagna has two (2) rural health centers located at Brgy. Poblacion and Brgy. Mayana. A total of 78 health providers served in Jagna.

**Table\_ Health Providers and Facilities**

Health Providers	Hospital		Rural Health Centers		Private	Total
	TBGDH	LIM hospital	RHU 1	RHU 2	Cinics	
Doctorc	6	5	1	1	3	16
Nurses	12	13	1	1		27
Dentists					2	2
Nursing Aides	5	1	3			10
Midwives	1	1	7	6		15
Medical Technologies	3	1	1			5
Sanitary Inspectors			1			
Optometrists					2	2
<b>Total</b>	<b>27</b>	<b>25</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>78</b>

Source: MPDC, Municipality of Jagna (2009)

Private hospitals and clinics provide better medical services, however it does not accommodate the majority of the population because of high rates in medical treatments, consultations and medicines. Hence, the establishment of Rural Health Centers in Jagna is a good investment and development for the Municipality. RHU1 served twenty-two (22) barangays while RHU2 served 11 barangays with a population of 12,842 or 40 percent of the total population.

**Table\_ Barangay Health Providers and Facilities**

Personnel	Barangay Health Centers		Barangay	Total	
	RHU 1 22 brgys	RHU 2 11 brgys		Male	Female
Midwives	7	6			13
Barangay Health Workers (BHW)	123	84			207
Barangay Nutrition Scholar (BNS)			33		33
Trained Hilot				3	12
<b>Total</b>					<b>265</b>

Source: RHU 1& RHU 2, Municipality of Jagna (2009)

Meanwhile, the 13 midwives assigned in the 33 barangays cover at least 2 health centers each. Complementing the rural health units are the barangay health centers, one for each of the barangays under the care of barangay health workers whose number is commensurate to the size of the barangay's populace. Other health-related providers are the nutrition scholars who take charge of the nutritional concerns of the barangays. There are also 20 traditional midwives or "hilot", of which 15 had been trained and had assisted the midwives in child delivery at the barangay cum lying-in center.

Among the basic services accede especially by the marginalized sectors is the maternal and child health program resulting to improved the health condition of children and women. Immunization had been administered to more children under 5 as a means of preventing the occurrence of illnesses and a safeguard to their health as they grow.

**Table\_ Inventory of Immunized Children**

Table \_ shows the variance in the number of children especially for ailments which need several doses is due to a number of factors. Some are unable to complete the doses because the children are not in a good state of health when the next dosage is to be administered; transfer of residence to other towns and in the case of hepatitis immunization, children who are born in the hospital are administered the first dose and the subsequent doses are administered elsewhere like in the RHU's.

Immunization	RHU 1		RHU 2	
	2008	2009	2008	2009
BCG	330	351	230	344
DPT1	380	396	268	324
DPT2	382	356	243	357
DPT3	370	353	249	356
OPV1	387	372	268	298
OPV2	385	340	243	349
OPV3	381	348	249	343
HEPA 1	336	293	242	296
HEPA 2	360	350	249	309

**Source: RHU 1& RHU 2, Municipality of Jagna (2009)**

In the case of child malnutrition, there is not only a variance in the two survey periods but also with the records of the Municipal Nutrition Action Officer. The results have reflected an increase of 61.8% in the number of malnourished children in the current survey.

To further understand the nutritional status of pre-schoolers in the municipality in the last five years, a comparative report of its Operation Timbang as shown in the table below.



**Table\_ Comparative Report of Operation Timbang of Pre-Schoolers**

Year	# of Pre-Schoolers	Total Weighted	Below Normal VL*	%	Below Normal L*	%	Normal	%	Above Normal	%
2005	3,896	3,896	8	0.2	452	11	3,376	87	60	1.5
2006	3,641	3,641	6	0.16	426	11	3,158	87	51	1.4
2007	3,718	3,718	5	0.13	398	10.7	3,269	88	46	1.2
2008	3,815	3,815	3	0.07	301	7.8	3,483	91	28	0.73
2009	4,064	4,064	2	0.04	198	4.87	3,842	95	22	0.54

Source: MNAO, Municipality of Jagna, July 2009 (\*Very Low \*\*Low)

The data reveals a decrease in the number of malnourished children over the span of five years. The sustained nutrition program of the LGU has improved the nutritional status of the children of pre-school age.

Child mortality is less than 1% in the two survey periods but there is an increase from 0.11% in 2005 to 0.24% in 2009.

Family planning is promoted through IEC campaigns in the barangays and is among the topics in the pre-marital counselling sessions. The table below will show the acceptance and usage of the different family planning methods.

**Table\_ Family Planning Methods and Users**

Family Planning Method	RHU 1				RHU 2			
	2008		2009		2008		2009	
	NA	CU	NA	CU	NA	CU	NA	CU
DAPA/Injection	3	28	12	36	18	3	0	18
IUD	4	74	2	64	98	3	2	97
Pills	68	124	39	123	108	13	16	103
Vasectomy	0	6	0	6	0	0	3	3
Condom	23	32	8	23	34	19	4	30
Natural FP	0	0	0	0	0	0	0	0
Rhythm/Calendar	0	0	0	0	0	0	0	0
<b>Total</b>	<b>98</b>	<b>264</b>	<b>61</b>	<b>252</b>	<b>258</b>	<b>38</b>	<b>25</b>	<b>251</b>

Source: RHU 1&2, Municipality of Jagna

Among the different family planning methods, the widely used are pills, IUD, condom and Injection.

Pre and post natal care has been availed by pregnant women and lactating mothers resulting among others to minimal incidence of maternal mortality. However, women of reproductive ages have to avail/continue to access regular examinations for the prevention of gynaecological diseases.

The rural health centers also implement other health programs for different types of illnesses. While preventive measures are promoted and curative treatments are

administered, cases still occur. Below is a list of the ten leading causes of morbidity and mortality.

**Table\_ Ten Leading Causes of Morbidity (All Ages)**

RHU 1				RHU 2			
2008		2009		2008		2009	
Causes	No.	Causes	No.	Causes	No.	Causes	No.
Acute Bronchitis	1,088	Acute Bronchitis	1,068	Hypertension	902	Hypertension	500
Hypertension	280	Hypertension	303	Upper Respiratory Tract Infection	701	Upper Respiratory Tract Infection	497
Diarrhea	260	Diarrhea	172	Acute Respiratory Infection	648	Urinary Tract Infection	400
Diabetes Mellitus	200	Tonsilitis	84	Rheumatoid Arthritis	323	Diabetes Mellitus	103
Skin Diseases	117	Skin Diseases	70	Gastritis	153	Rheumatoid Arthritis	101
Urinary Tract Infection	52	Pulmonary Tuberculosis	59	Diabetes Mellitus	144	Abscess	26
Rheumatoid Arthritis	50	Rheumatoid Arthritis	55	Pneumonia	100	Skin Diseases	21
Pulmonary Tuberculosis	49	Urinary Tract Infection	45	Chronic Bronchitis	97	Lower Respiratory Tract Infection	18
Abscess	33	Peptic Ulcer Disease	38	Dermatitis	87	Acute Gastro Enteritis	16
Peptic Ulcer Disease	31	Abscess	35	Urinary Tract Infection	58	Impacted Cerumen	10
Total	2,160		1,929		3,213		1,692

**Source: RHU1& RHU2, Municipality of Jagna, Bohol**

The above data shows that the leading causes of morbidity are lifestyles related. Hypertension is not only common in both health centers but also prominently ranks among the top three leading causes.

While there is a decrease in morbidity rates in the two survey periods, there are causes such as hypertension in RHU 1 and urinary tract infection in RHU 2 which register a significant increase. These lifestyle diseases can be prevented through a more intensive health program. However, a sustained maintenance treatment is required for those who have already been afflicted with the diseases.

**Table\_ Ten Leading Causes of Mortality (All Ages)**

RHU 1				RHU 2			
2008		2009		2008		2009	
Causes	No.	Causes	No.	Causes	No.	Causes	No.
CVA, Hypertension	25	CVA, Hypertension	35	Pneumonia (old age)	16	CVA, Hypertension	20
Pneumonia (old age)	22	Pneumonia (old age)	18	CVA, Hypertension	8	Pneumonia (old age)	14
CA (all forms)	17	CA (all forms)	17	Renal failure	6	Renal failure	6
Diabetes Mellitus	9	Diabetes Mellitus	9	CA (all forms)	6	Severe Malnutrition	5
Renal failure	8	Renal failure	8	Severe Malnutrition	5	CA (all forms)	3
PTB	7	PTB	8	Multi-organ Failure	5	Cardio-Respiratory Arrest	3
Multi-organ Failure	6	Peptic Ulcer Disease	7	Respiratory Distress	3	PTB	2
Myocardial Infraction	6	Sepsis	7	Epilepsy	3	Fetal Death	2
Chronic Obstructive	4	Myocardial Infraction	6	Sepsis	3	Myocardial Infraction	1
Pulmonary Disease		Asthma	5	Chronic Obstructive	2	Congestive Heart	
Asthma	4			Pulmonary Disease		Failure	1
Total	108		120		57		57

**Source: RHU1& RHU2, Municipality of Jagna, Bohol**

There is an increase in mortality rates in the survey period in both centers. From the data, there are common causes of mortality in the two centers but topping the first four leading causes of mortality are hypertension, pneumonia, cancer in all forms and renal failure. The same data will show that the causes are lifestyle related same as in the morbidity cases. Since these can be prevented, early detection through regular consultation and lifestyle check could reduce their occurrence.

## Education

The Municipality of Jagna has a total of 33 learning institutions, both public and private. Basic education is being provided by 3 primary schools, 21 elementary schools and 7 high schools strategically located in the municipality. Tertiary

education is offered by 1 college (Bohol Institute of technology-International College) and 1 technical/vocational school managed by the Technical Education and Skills Development Authority (TESDA). Public schools provide majority of the education services in the municipality while private schools served mostly Jagna's secondary and tertiary education levels.

**Table\_ Summary of Schools by Category and Type in Jagna, 2009**

Category	Public	Private	Total
Primary	3		3
Elementary	19	2	21
Secondary	3	4	7
Tertiary		1	1
Vocational	1		1
<b>Total</b>	<b>26</b>	<b>7</b>	<b>33</b>

Source: DepEd/TESDA

There are also preparatory schools in the municipality. There are 34 public Daycare Centers in the barangays and also those run and managed privately. One private elementary school also has a daycare. All public elementary schools have opened their preparatory schools as mandated by the Department of Education.

The comparative report on performance revealed a significant improvement in most of the indicators in the three (3) school year period. However, the DepEd considers the repetition and failure rates quite high. While the overall performance is impressive, these vary considerably in the different

**Table\_ Comparative Report on Performance Indicator**

Indicators	2006-2007	2007-2008	2008-2009
Enrollment	4,503	4,619	4,443
Male	2,396		2,381
Female	2,107		2,062
Retention Rate	84.49%	90.86%	94.32%
Survival Rate	69.65%	73.10%	87.52%
Transition Rate	90.23%	88.13%	
Participation Rate	88.94%	90.98%	93.31%
Repetition Rate	6.18%	6.82%	5.85%
Completion Rate	60.56%	78.94%	84.09%
Drop-out Rate	0.96%	1.03%	0.69%
Graduation Rate	89.29%	93.77%	96.53%
Failure Rate	5.60%	6.10%	7.10%
<b>Source: DepEd, Jagna</b>			
Ratio	1:31		1:30

schools.

Among the poverty indicators in the PDMS is the school drop-out rate. While the school performance indicator is limited to the public elementary schools, the PDMS survey is on a per barangay basis.

In the 2008-2009 school year Grade VI and grade III National Achievement Test (NAT) the following were the results.

**Table\_ National Achievement Test Results**

<b>Rank &amp; Rate</b>	<b>Grade VI</b>	<b>Rank &amp; Rate</b>	<b>Grade III</b>
No.1-71.31%	Balili Elementary School	No. 1-61.43%	Kinagbaab Primary School
No.2-71.16%	Naatang Elementary School	No.2	Can-uba Elementary School
No.3-67.05%	Jagna Central Elementary School	No.3	Cantagay Primary School

**Source: DepEd**

The Mean Percentage Score (MPS) of the National Achievement Test is 75%. From the data, none of the public elementary schools were able to achieve the standard score. The lowest got 43.4%. While the performance indicators show significant results, the achievement test is still way below the standard MPS.

School facilities, equipments, and supplies as well as financial support for additional teachers and classrooms are perennial concerns.

In the 2009 PDMS survey, Jagna's literacy rate was 99.1% of the 26,252 household population, only 238 persons or 0.9% were illiterate. They were found mostly in the upland cluster. There is a 1:1 ratio of female and male illiterates.

Vocational courses are primarily offered by the Technical Education Skills Development Authority (TESDA) although the Bohol Institute of Technology also has technical courses. The TESDA center caters to students not only from Jagna but also from neighboring towns. It also gets financial assistance from the local government.

### ***Sports and Recreation***

Basketball is considered as one of Jagna's major sports. It is a favourite pastime and hobby of men of all age groups. All barangays in the municipality have basketball courts and during the summer particularly in the month of May when fiestas are celebrated almost daily, basketball leagues are held led by the Sangguiang Kabataan.





Lawn tennis is also the favourite pastime of some professionals especially in Metro Jagna. There are two tennis courts located in the town center. Invitational and commercial games are also held in the municipality.

Boxing is another favourite sport in Jagna. Boxers are being trained and they compete in boxing bouts in and out of the province. Soccer football is also gaining popularity among the out-of-school youth. Inter-town competitions have been participated by Jagna whose players have shown good potential.

Women, especially in the upland barangays are much involved in volleyball and badminton in terms of sports.

The athletic competitions participated in by the public schools have developed players who were part of the contingent for the Palarong Pambansa.

The LGU has a Sports Coordinator whose function has been focused on boxing. The function of the unit and its performance can be evaluated and enhanced based on current conditions.

The people of Jagna also love the beaches as part of the family's recreation and relaxation. Some of the well-known beaches are the Can-uba Beach, Pagatpat or Talisay at brgy. Can-upao, Paseo del Mar at brgy. Pangdan, Delailah Rock Resort and Batong Buhay located at Brgy. Larapan and the Alejawan beach. Jagna is also blessed with spring water sources which have been developed into swimming pools such as the Bocol, Balili and Lonoy springs.

Mountain resort have also been developed by the private sector which are being used for retreats and recreation.

### ***Finance and Insurance Services***

Several establishments in Jagna offer services like financing, insurance and services. Jagna have banks that offer saving account, debt, payment for SSS and one bank has an ATM service. Other financing services are from micro financing cooperatives and firms where businesses and other sector can borrow capital for business and other means.

Insurance are also present in the town that mostly accommodates services for vehicles owner before registering their unit in the Land Transportation Office (LTO). This adds more people to come to Jagna to insured their vehicle.

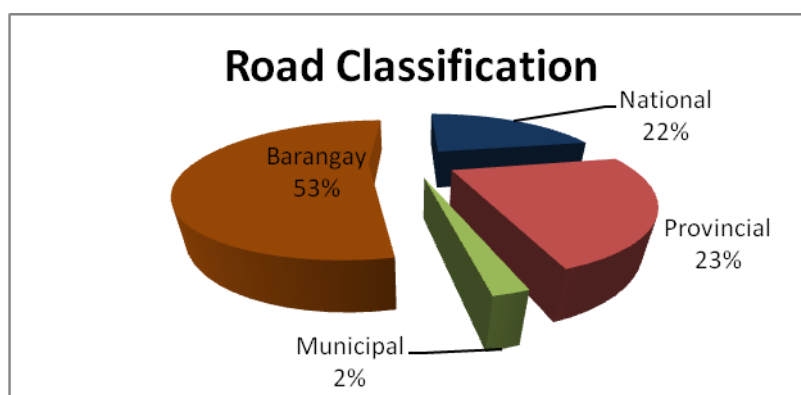
### **Infrastructure**

#### ***Roads***

The municipality is served with a total road network of 146.22 kilometers which is 2.5 percent of the total road network in the Province of Bohol. They are classified into four



categories: the national which is 22%, provincial is 23%, municipal is 2% and barangay is 53% of the total road length as shown in Figure\_. The stretch of these roads is predominantly paved with gravel with gravel that comprises a total of 71.753 kilometers.



Figure\_ Road Classification of Jagna

As to the road type, only 31.41 kilometers or 21% of the total roads are concreted, 71.753 kilometers or 49% is gravelled, 42.343 kilometers or 29% is earhfill and asphalted 0.71 kilometers or only 1%.

Based on the planning standard using road density of one kilometre-road for every 100 hectares, Jagna should have at least a total of 121 kilometers of road length. By computation: the total land area of Jagna is 12, 063 hectares (12,063 divided by 100 hectares is equal to 121), but in comparison, the actual total road length of the municipality at present is 146.22 kilometers. This therefore signifies that the road network is deemed sufficient and adequate enough to serve over the planning period of 10 years.

A significant increase in length of the concreted portion of Jagna for the Provincial, Municipal, and Barangay Roads was funded by the Department of Agriculture, through the Farm to Market Roads improvement projects. The barangay roads increased to 20.19% equivalent to in these 2,010 meters. There are barangays that don't have barangay roads yet. Residents in these areas are passing through Provincial roads leading to their respective barangays just like part of Bunga Mar. The Provincial government has counterparted equivalent to the length being realized for the said barangay. Meanwhile, the junction Jagna-Sierra Bullones National Road was still on-going with its concreting works.

### **Bridges**

The municipality has twenty-six (26) existing bridges, sixteen (16) of which are being maintained by the national government through the DPWH. Four (4) were constructed and maintained by the provincial government thru the Provincial Engineer's Office (PEO). Six (6) are maintained by the municipal and barangays. The total length of the municipal bridge is 429.64 linear meter which represents 4.63 percent of the total length of the Bohol bridges. It is basically classified into national, provincial, municipal and

barangay bridges with corresponding lengths of 289.64, 69, 36 and 35 linear meters respectively. Table\_ shows the inventory of bridges in the municipality as to the type of construction. It is further illustrated that majority of the bridges are concreted and it is followed by wooden and steel types with length distribution of 336.40 l.m. or 78%, 78 l.m. or 18% and 15.24 l.m. or 4% respectively from the total length of bridges in the municipality. It is imperative that the wooden type bridges be upgraded to more permanent types of bridge like the concrete or steel types.

**Table\_ Existing Bridges, Location and type of Construction Materials Used CY 2007**

Bridge Name	Location	Type of Construction Materials									Remarks
		Concrete			Steel			Wood			
		L	W	LC	L	W	LC	L	W	LC	
National Bridges											
Alejawan Bridge	Alejawan	48	7.3	20							RCDG-Good
Naatang Bridge	Naatang	5	7.3	20							RC Deck Slab- Good
Tubod Mar Bridge	Tubod Mar	5	6.7	20							RCDG-Good
Nausok Bridge	Nausok	5	7.3	20							RCDG-Good
Pangdan Bridge II	Pangdan	5	7.3	20							RCDG-Good
Pangdan Bridge I	Pangdan	10	7.3	20							RCDG-Good
Pagina Bridge II	Pagina	23.4	7.3	20							RCDG-Good
Pagina Bridge I	Pagina	12	7.6	20							RCDG-Good
Bunga Mar Bridge II	Bunga Mar	21	6.7	20							RCDG-Good
Canjulao Bridge	Canjulao	18	7.3	20							SPG-Good
Carmoli Bridge	Tubod Monte	15	7.3	20							RCDG-Good
Lubcanan Bridge	Tubod Monte				15.2	4.2	3T				SS Bailey-Temp
Pangas Bridge	Tubod Monte	8	6.7	20							RCDG-Good
Tubod Mar Bridge	Tubod Monte	7	6.7	20							RCDG-Good
Carapagan Bridge	Can-ipol	50	7.3	20							SPG-Good
Mayana Bridge	Mayana	42	7.3	20							RCDG-Good
Provincial Bridges											
Cabungan Bridge	Cabungan	25	7.3	20							Steel Modular-Good
Odiong Bridge	Odiong							7	4	3T	Timber-Good
Can-okso Bridge	Cambugason	7	6.7	20							Box Culvert-Good
Lonoy-Cansuhay Bridge	Lonoy-Cansuhay	30	7.3	20							Steel Modular-Good
Barangay Bridges											
Capahan Bridge	Calabacita							10	3.6	1T	Timber-Passable
Larapan-Tubod Mar	Larapan-Tubod Mar							7	3.6	1T	Timber-Good
Kaparian Bridge	Alejawan-Cambugason							6	3.6	1T	Concrete Box Culvert
Municipal Bridges											
Quezon Bridge	Pagina-Looc							15	4.2	1T	Bailey/Timber-Passable
Acha Bridge	Pagina-Canjulao							15	3.6	1T	Bailey/Timber-Passable
Calmayon Bridge	Poblacion-Pagina							18	4.2	1T	Bailey/Timber-Passable

Source: DPWH, PEO, MEO

Legend: L=Length(meters)    W=Width (meters)    LC= Load Capacity (metric tons)

**Table\_\_ Bridges by Type of Administration CY 2007**

Type of Administration	Number	Length by Type	Total Length	Percent
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		Concrete	Steel	Wood	(l.m.)	to Total
National	16	274.4	15.2		289.64	67.40%
Provincial	4	62		7	69	16%
Municipal	3			36	36	8.40%
Banrangay	3			35	35	8.20%
<b>Total</b>	<b>26</b>	<b>336.4</b>	<b>15.2</b>	<b>78</b>	<b>429.64</b>	<b>100%</b>

Source: DPWH, PEO, MEO

### ***Land Transport Vehicles***

The municipality is highly accessible either by means of land or sea transportation. In the year 2007, there were 15,243 transport vehicles regularly carrying on their routes in the different national, provincial, municipal and barangay roads within the municipality. Fourteen thousand two hundred forty six (14,246) of these were privately owned, nine hundred eleven (911) were public utility vehicles and eighty six (86) were government-owned. The number is expected to rise annually, considering the distance from Tagbilaran City to Jagna with a concreted paved road.

One can easily reached this town after approximately 1 1/2-hours of travel from Tagbilaran by bus, van-for-hire (V-hire) or jeepney. There are thirty nine (39) bus lines like Dory Jagna Transit, Duero Transit, and Saint Jude Transit as well as transient buses plying the Jagna route at regular intervals. Transportation from the town proper to the hinderland barangays are available by means of hired motorcabs, single motorcycles popularly known as “habal-habal” and small buses or jeepneys. However there are still sitio’s in the barangays that are not accessible during rainy days like siitio balikbayan in Mayana which still only has earth roads.

**Table\_ Inventory of Land transport Vehicles 2007**

Type of Vehicle	Private	Public Utility	Government	Total
Light Vehicles	1,929	220	40	2,189
Truck	486	3	14	503
Motorcycle	11,208		32	11,240
Bus	553	39		592
Tricycle	55	649		704
Trailer	15			15
<b>Total</b>	<b>14,246</b>	<b>911</b>	<b>86</b>	<b>15,243</b>

Source: Land Transportation Office (LTO)

### ***Bus Terminal***

There is an existing terminal for bus and jeepney in Jagna located at Looc Public Market. It has no facilities other than the concreted pavement for the parking area.



## **Sea Transportation**

Municipality of Jagna has an existing port which is equipped with state-of-the-art passenger terminal, cargo terminal, roll-on-roll-off port and a back-up area constructed for container vans. The port of Jagna is the only one in the Southeastern part of Bohol that serves as the gateway to Northern Mindanao.

Shipping lines that serves the people in Jagna are Sulpicio Shipping Lines, Cebu Ferries, South Gothong Shipping Lines, Para Seacat and Shuttle Ferries. Commercial cargo and barges also has regular docking schedules at Jagna Port in transporting rice, feed and fertilizers, copra, cement and other cargoes.

## **Water Supply**

### **Level III Water System**

The waterworks system in the municipality is classified as level III, meaning a point source with individual household connections. The source is the natural Tinubdan Spring located in Barangay Lonoy and Malbog spring with capacities of 4,147 cubic meters/day and 3,012 cubic meters/day respectively. The existing municipal waterworks system provides water service to the upland barangay of Cambugason and the Metro Jagna residents which exclude the barangays of Bunga Mar and a portion of Pangdan.

Majority of the existing water distribution lines having a total length of 9.4 kilometers are made of GI pipes and are still in very good condition. Records show that still 30 percent of the household population of Jagna has no access to safe and potable water. The municipal waterworks system upgraded the old and small pipes into bigger ones with a diameter of 6" which are blue pipes (PVC) with a length of 4 kilometers. A bigger reservoir will be constructed in order to better provide for the effective and efficient delivery of water services to the whole populace including the coastal barangays and Metro Jagna from barangay Ipil to Pangdan.

**Table\_ Inventory of Waterworks System**

Water Sources	Location	Capacity (cu.m./day)	Barangay Served
Tinubdan Spring	Lonoy	4,147	Cabungaan, Cabugason, Canjulao, Can-upao, Looc, Pagina, Pangdan Tejero Poblacion, Tubod Mar
Malbog Spring	Malbog	3,012	Canjulao, Looc, Malbog
Anislag Spring	Cantuyoc	2,143	Canjulao, Looc
Odiong Cave	Odiong	4,752	Odiong
Can-upao	Can-upao	997	Can-upao, Looc



Underground			
Poblacion Underground	Poblacion	618	Poblacion, Tejero
Canjulao Underground	Canjulao	313	Canjulao

Source: Jagna Waterworks System

### **Water Consumption by Type of Consumer**

The number of domestic water connections in the municipality has been accounted to be 1,738 consumers, with an average monthly water consumption of 273 cubic meters. Domestic consumers occupy the larger number of connections but the average monthly consumption is lower compared to the commercial consumers.

**Table\_ Number of Connections and Average Water Consumption by Type of Consumer**

Type of Consumer	No. of Connections	Ave. Monthly Water Consumption
Domestic	1,705	18 cu.m.
Commercial	12	255 cu.m.
Industrial		
Others	21	
<b>Total</b>	<b>1,738</b>	<b>273 cu.m.</b>

Source: Jagna Waterworks System

### **Level II Water System**

The municipality of Jagna has fourteen (14) Level II water systems serving 1,890 households within the 14 barangays. However there are still 487 households which are not being served by the water system.

**Table\_ Sources of Water in Jagna**

Location of Water Sources	Barangay Served	HH Population Served		HH Population Unserved	
		Number	%	Number	%
Balili	Balili	100	47	112	53
Boctol	Boctol	200	80	20	10
Calabacita	Calabacita	200	76	62	24
Cantagay	Cantagay	131	97	4	3
Cantuyoc	Cantuyoc	130	80	26	20
Kinagbaan	Kinagbaan	70	90	7	10
Laca	Laca	50	84	16	16
Larapan	Larapan	100	86	15	14
Lonoy	Lonoy	150	72	57	28
Malbog	Malbog	150	90	16	10





Mayana	Mayana	300	86	85	14
Nausok	Nausok	54	100		
Tubod Mar	Tubod Mar	105	100		
Tubod Monte	Tubod Monte	150	69	67	67
<b>Total</b>		<b>1890</b>		<b>487</b>	

Source: Jagna Waterworks System

Table\_ Inventory of Level I Water System

Barangay	Shallow Well	Deep Well	Improved Spring
Alejawan	39		
Balili	1		
Boctol	1		
Bunga Ilya	32		
Bunga Mar	39		
Buyog	2		4
Cabungaan	5		4
Calabacita	1		6
Cabugason	12		1
Can-ipol	1		5
Canjulao	14		
Cantagay	3		1
Cantuyoc	1		6
Can-uba	9	5	1
Can-upao	23		
Faraon	3	9	2
Ipil	2	1	1
Kinagbaan	1		7
Laca			5
Larapan	5	6	
Lonoy	1		5
Looc	35		
Malbog	1		7
Mayana	1		9
Naatang	56		
Nausok		8	
Odiong	14	1	8
Pagina	48		
Pangdan	42	3	2
Poblacion	39		
Tejero	28		
Tubod Mar	9	6	
Tubod Monte	5	1	6
<b>Total</b>	<b>473</b>	<b>47</b>	<b>105</b>

Source: Jagna Waterworks System

### Level I Water System

Based on the data from the Municipal Water, Sewerage and Sanitation Master Plan (MWSSMP), Jagna has a total of 625 Level I water systems located in the thirty-two (32) barangays and it is broken down as follows: 473 shallow wells, 47 deep wells and 105 improved springs. This indicates that shallow aquifers are dominant in the municipality, while deeper aquifers occur in elevated areas. The free flowing wells indicate artesian aquifers. The deepest well in the Level I system is located in Barangay Tubod Mar in the Sierra Bullones Limestone at an elevation of 20-m amsl, which penetrates to 200-m below ground or about 180-m below main sea level.

Although The town is served with Level III, II and I water systems, the municipality is still facing problems of inadequacy of potable and safe water supplies in some barangays.

The potable water demand including domestic, industrial, institutional and commercial both in the urban and rural populations was estimated to be 3,615 cubic meters/day in 1998 and it is



projected to increase by 8,887 cubic meters/day by 2030. In 1998, the part of water demand for urban population was 51% and it is projected to increase to 65% by 2030.

### **Electricity**

The Bohol Electric Cooperative II (BOHECO II) through power generated by the National Power Corporation (NAPOCOR) serves the electrification needs of the municipality.

### **Households Served and Not Served with Electricity**

Based on the 2007 NSO census population, the total number of households in Jagna is 5,957. About 95% or 5,636 of the total households had already been served with electricity while the remaining 5 percent or 321 households are still to be tapped with electricity. The cost of recovery is difficult for the utility operators to provide the services in addition to the scattered houses in the remote and highly elevated barangays pose a big problem too power services.

**Table\_ Households Served and Not Served in Jagna**

	Number and Percentage of Households			
	Rural	%	Urban	%
Potential	5,957		8266	
Served	5,636	95	6,637	80
Unserved	321	5	1,629	20

Source: Census of Population and Housing, BOHECO

### **Connections and Average Consumption by Types of Users**

Among the consumers of electricity in the municipality of Jagna, residential area are the most numbered although their level of power consumption is significantly lower compared to the industrial, commercial and institutional consumers. The total average consumption goes to the industrial users with 1,824.28 kilowatt-hour per month. However, the possibility of an increase in households served by the cooperative is very admissible because of the

**Table\_ Number of Connection by Type of Users**

Type of Users	No. of Connections	Average Consumption (kwh/month)
Domestic	4,216	53.87
Industrial	22	1,824.28
Commercial	433	194.7
Public Building	193	227.688
Streetlight	355	12.09
Others		
BAPA	1,303	37.15
ECA	25	10.76

Source: BOHECO 2008

continuing extension of power distribution lines to the different puroks in every barangay. The organization off Barangay Power Association (BAPA) and Electric Consumers Association (ECA) are instrumental in increasing household connections.

### ***Projected Power Requirements***

The projected power requirements in relation to an expected higher level of consumption as a result of intensified economic activities during the plan horizon is expected to increase from 408,904.2 kwh in the year 2008 to 1,060,592.1kwh by the year 2018. It has been a continued thrust of the local government as well as the electric cooperative to energize 100 percent of the total households in all barangays.

### ***Communication***

The major types of communication systems in the municipality are now available at the urban center. Radio facilities include Bohol Law Enforcemnt Communication System (BLECS), Jagna Community Radio of LGU-Jagna in partnership with U.S. based health partner Philos health and the Radio Natin FM station in Jagna owned by the Manila Broadcasting Company (MBC). Telecommunications and courier services are served by Luzon Brokerage Corporation (LBC), DHL, COMMEL Relay Station in Mayana, the Government-owned Telecom, the Cruz telephone Company (CRUZTELCO), the San Miguel Cable TV, Smart, Sun Cellular Companies and Globelines Companies. Access to basic communication facilities such as telephone services, cellular phones including postal services is vital towards development of a municipality.

**Table\_ Inventory of Existing Communication Facilities**

<b>Existing Communication Facilities</b>	<b>Location</b>	<b>Number of Facilities</b>
Public Calling Office (Cruztelco)	Pagina	1
Handheld radio	All barangays	33
Post Office	Poblacion	1
LBC	Looc	1
DHL	Pagina	1
Smart Cell Site	Laka, Mayana, Poblacion	3
Globe Cell Site	Larapan, Laca, Tejero, Alejawan	4
Sun Cellular	Mayana	1
Internet Café	Tejero, Pagina	2
Radio Communication		
BLECS	Mayana	1
Jagna Community Radio (DYJP)	Poblacion	1



FM Station (Radyo Natin	Poblacion	1
Cable TV (San Miguel)	Poblacion	1

### ***Telephone Services and Franchises***

GLOBE Telecommunications incorporated and Cruztelco have installed household telephone services in Jagna. All connections are served in the Poblacion area. Aside from the household connections, the same company has installed telephone units in the office of the Municipal Mayor and the Sangguiang Bayan with trunkline connections to the different offices and fax machines within the municipal hall building. There is one (1) Public Calling Office of Cruztelco located in Barangay Pagina. The Cruztelco provider has extended its telephone line services up to 13 barangays namely: Ipil, Cantagay, Bunga Mar, Bunga Ilya, Can-upao, looc, Canjulao, Pagina, Poblacion, Tejero, Pangdan, Larapan and nausok.

### ***Mobile Phones***

Smart and Globe Communications Incorporated have operated their cell sites in Jagna. With these mobile phone equipment, SMART connection users can already avail of the efficient and convenient cellular telephone facilities like in urban centers. With the GSM system installed by SMART in the municipality, the people can make use of the regular services of the system such as domestic and international calls, text messaging, voice messaging, internet connections and other features of the GSM and WAP system.

### ***Postal Services***

There are now three existing postal service facilities in jagna; the LBC, DHL, also together with one postal circuit. It is operated by the Philippine Postal Corporation (PhilPost). The PhilPost is undermanned or there is lack of personnel to cater to the total population of 32,034. The municipality is in need of additional letter carriers and mobile services due to the increasing population and volume of transactions. At present, there are only 3 personnel, one (1) Postmaster and five (5) Letter Carriers who are servicing the volume of transactions everyday with an average posted mails of 3,000 letters/month and package arrival of 2,800 pieces/month.



## INSTITUTIONAL DEVELOPMENT

### *NGO's and People's Organization*

There were seventeen (17) Non-government Organization (NGOs)/People's Organizations (POs) accredited by the Sangguniang Bayan. Majority of these organizations were presented by women. The process of accreditation by the Sangguniang Bayan was guided by the provisions of RA 7160. An existing inventory of existing Pos/NGO's in the barangays revealed a total of ninety (90) organizations in the municipality excluding organizations in four (4) barangays who have not submitted their list through the Barangay Secretary. Of the ninety (90) organizations, not all are functional.

**Table\_ List of NGO's and PO's Accredited by the Sangguniang Bayan**

Organization	President/Chairman
People's MPC	Roosevelita Macarayan
Jagna LCW	Nimfa Lloren
Bohol Initiatives on Migration and Community Dev't. Inc	Jocelyn Ampag
Jagna Parish Pastoral Council	Jesus Acedillo
Jagna Porters MPC	Rowel Ortiz
Canjulao League of Women	Brigida Acheron
Jagna Officials and Employees MPC	Gloria Tapangan
Northeast Luzon Foundation	Arturo Bulias
Small Coconut Farmers organization	Anacleto Bayron
Tejeroo Women's Organization	Alfreda Pangilinan
Jagna PTA	Lorenzo Acheron
FCB Foundation	Panfilo Asares
Jagna MPC	Bonifacio Virtudes

Some of these organizations were also chosen to be members of the Municipal Peace and Order Council, Municipal Health Board and Municipal School Board.



## Chapter III

### SITUATIONAL ANALYSIS

#### A. Introduction

A problem tree analysis on integrated coastal resource management within the municipality provided a clear and explicit assessment of issues which have to be resolved in order to make all efforts successful. In the formulation of the plan, the coastal and upland concerns hereunder discussed were considered during the planning of the integrated coastal resource management plan and in the implementation of associated programs.

The root cause of the problem is poverty which leaves communities no other choice but resort to activities that will save their families from hunger. Poverty forces poor communities to overfish, kaingin, use illegal gears, explosives and other obnoxious substances in order to get enough resources for sale or for their family's daily sustenance. Zone classifications were disregarded – either because people have no idea of the existing rules or they violate simply because the implementation is lax. Improper waste disposal and burning are still in practiced.

All problems on integrated coastal resource management may be resolved through the adoption of a clear, participatory and integrated coastal management approach. Unharmonized ordinances and regulations of the town result to weak coastal law enforcement. Local government units have less of interest or little knowledge on integrated coastal management approach thus refuse to provide the necessary support and ICRM were not given priority. The issues were discussed into per management component for better assessment and problem management.

Most of the effective and appropriate fishery laws and related rules and regulations are still to be formulated. Weak enforcement and lack of an effective system on the registration and licensing of fishers and their paraphernalias result to uncontrolled utilization of the marine environment and harvest of its resources and entry of illegal commercial fishers.

The absence of municipal coastal zoning leads to illegal construction of dikes and other structures established within the salvage zone; little knowledge or lack of awareness of LGUs to manage their coastal and marine resources, lack of delineation for specific use zones. Lack of delineation on zoning result to unregulated activities in zones that may restrict them.

The laxity in the implementation of the Solid Waste Management Act of 2000 may eventually endanger the coastal ecosystem and the health of the communities that

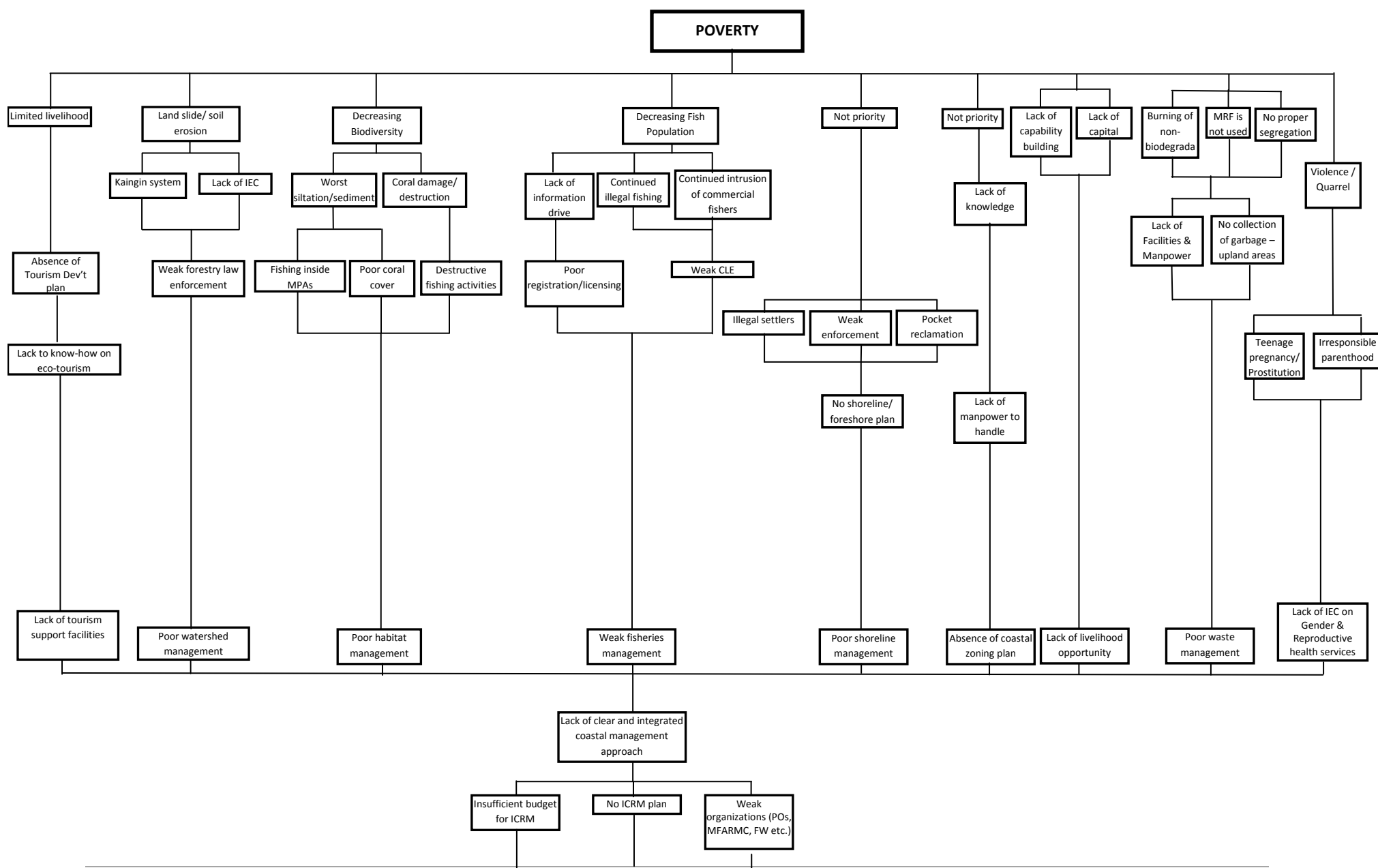
rely on it. Collection, segregation and proper disposal of both solid and liquid wastes have to be strictly implemented. A sanitary landfill site should be established to minimize and prevent both land and water pollution.

The civil society which is one of the major partners in the implementation of ICRM projects will be better utilized if capability-building and skills training activities, specifically on livelihood, will be provided fund support. Making other livelihood options available to the community will reduce pressure on the environment.





## B. PROBLEM TREE ANALYSIS



## **C. Analysis of the Situation**

**1. Fisheries and Coastal Law Enforcement issues.** The issue on the intrusion of commercial fishers into the municipal waters continues due to ineffective coastal law enforcement and lack of clear municipal water delineation. Illegal fishing activities are still visible in the area such as handok, cyanide, sagiwsiw, *koskos*, compressor and the use of fine mesh nets. Weak enforcement and lack of an effective system on the registration and licensing of fishers and their paraphernalias result to uncontrolled utilization of the marine resources and harvest of its resources and entry of neighboring fishers.

Absence of municipal coastal law enforcement team worsens the problem on the implementation of ordinances while the group of bantay dagat is no longer functional because of the meager allowance allocated by the local government unit of the town. Moreover, local ordinances and other fishery laws that are intended to protect the coastal habitats are not strictly implemented.

**c.2. Solid Waste Management Issues.** The laxity in the implementation of the Solid Waste Management Act of 2000 may eventually endanger the coastal and marine ecosystems and the health of the communities that rely on it. People in the community are continued dumping garbage along the river and creeks while others are burning it easily this is in result of the poor awareness on solid waste management program of the town. Collection, segregation and proper disposal of both solid and liquid wastes have to be strictly implemented in all barangays not only in metro Jagna but to the entire coastal and upland areas. A sanitary landfill site should be established to minimize and prevent both land and water pollution.

**c.3. Health Management Issues.** Households at the coastal areas live under poverty threshold and the increase in population provides fishers no other alternative but to increase their effort and find ways, either legal or illegal, to support their families' needs. Illegal fishing is being practiced due to the fishers desire to catch more fish and gain more profit. Pressure on the forest and marine ecosystem and its resources is even made greater by uncontrolled population growth who are hoping for a better and easier living condition. Increase in population means more mouths to feed thereby results to illegal activities.

Teenage pregnancy and prostitution are another problem experienced in the town considering its fast development because of the port. Another drawback is that cases on irresponsible parenthood are increasing thus results to violence and quarrel due to lack of awareness and poor implementation of the laws (RA 9262).

**c.4. Livelihood and Ecotourism Issues.** Generally, overfishing and decrease in income from fishery and farming are universal issues. Fishers can no longer catch and sell enough fish and marine resources, the same with the farmers to support their daily sustenance, much more other necessities. What is more depressing is that they cannot



afford to avail loans for the purchase of necessary farming, fishing gears and other paraphernalias, in some way or another, help them increase harvest/catch. A large number of farmers and fishers were not able to attain much in terms of education and skills training thus, were no longer interested in venturing into other livelihood options.

The LGU was not able to give importance on eco-tourism development in the town this is justified by the absence of tourism framework plan. Budget allocation for tourism development is very little and insufficient.

Economic development in the coastal areas is slow. Very few viable livelihood options were provided to the local farmers, fishers and their families. It is but appropriate for communities to be given assistance in livelihood to reduce both the farmers at agriculture and fishers' time at sea and the pressure on biodiversity and environment. The civil society which is one of the major partners in the implementation of ICRM projects will be better utilized if capability-building and skills training activities, specifically on livelihood, will be provided fund support. Making other livelihood options available to the community will reduce pressure on the environment.

**c.5. Legal instrument and institutional development issues.** The non functional MFARMC in the municipality implies the lack of ordinance approved in the town and a weak implementation of laws. CRM technical personnel is lack of knowledge on integrated approach thus they are not capable to focus on the implementation of ICRM plans and programs. The appropriation of CRM budget from the local government unit is very little and can't sustain the entire program implementation.

Furthermore, people's organizations that play vital roles in the implementation of ICRM program are inactive and non functional at all due to lack of moral and technical support coming from the LGU (capability building, meetings, information etc.) while other was politicized.

**c.6. Foreshore and Coastal zoning Issues.** The absence of coastal zoning ordinance and plan results to proliferation of illegal activities within the area such as the construction of dikes and other structures established within the salvage zone without approval from the LGU. Families who migrate in the municipal coast construct makeshift shelters and other structures along the area's periphery. Reclamations or pocket reclamations, squatting in the coastline areas and sand extraction will not be possible if the LGUs implement strong shoreline management approaches. Lack of information is also one of the problems on the proliferation of illegal structures in the coastal zones.

**c.7. Habitat Management Issues.** Eventually, the municipality has respective pitfalls that result to the detrimental utilization of the upland ecosystem, coastal ecosystem and its resources. Some local farmers and fishers, noticing that their land and sea waters have poor habitat management, put their LGUs to the test by indiscriminately conducting destructive fishing activities. Poor coral condition is the result of increasing sedimentation and siltation from upland areas done by illegal quarrying and kaingin system. Fishing inside Marine Protected Areas was tolerated because

management bodies that act as implementer and protector is no longer functional. Information and education of the importance of MPA is poor and lax.

**c.8. Watershed management Issues.** Wildlife resources are the natural heritage for the next generation however, these species are threatened to extinction due to continuous cutting of trees and destruction of its forest habitat. Poor soil fertility obliged the farmers to use fertilizer that somehow affect the coastal resources. Issues like these may raised because this is never been priority by the government while the community is lack of information and education to RA 7161 otherwise known as “FORESTRY CODE OF THE PHILIPPINES”. Kaingin is still visible in the town.



#### **A. VISION, MISSION AND GOALS**

##### **VISION**

A progressive municipality, abundant of natural resources that are managed by a law abiding and healthy community, with improved living condition while caring for environment.

##### **MISSION**

To effectively implement the Integrated Coastal Resource Management Plan through a collaborative efforts of the local government unit of Jagna as well as other stakeholders involved, efficiently formulating and enforcing coastal laws and regulations however considering the local culture, belief and tradition.

##### **GOALS**

1. Attain ecological balance and sustain biodiversity thru continuous implementation of FLUP.
2. To uplift the environmental condition thru sustainable development and implementation of ecological solid waste management.
3. Attain surplus of sustainable marine resources through intensive coastal law enforcement initiatives.
4. Harmonize policies on foreshore and capacitate inter-agency implementers.
5. Develop the local economy by improving the standard of living thru self-sufficiency in agricultural production, promoting commercial activities and tapping of tourism potentials.
6. Provide economic incentives for the municipality and the coastal and upland communities by optimizing the tourism potential of certain areas.
7. Enhance economic activities, infrastructure utilities support in place and ensure healthy community.
8. Delineate zones for specific uses or activities in the municipal waters.



## B. MANAGEMENT COMPONENTS, OBJECTIVES, STRATEGIES AND ACTIVITIES

For the successful implementation of Integrated Coastal Resource Management (ICRM) Plan, there should be appropriate program components, strategies and activities to be undertaken entailed with realistic budget and targets. Below are the different program components, strategies and activities:

### SOLID WASTE MANAGEMENT

STRATEGY	ACTIVITIES	TARGET	BUDGET	TIME FRAME	INCHARGE
Intensify IEC regarding solid waste management	Conduct IEC for every barangays, school, establishments	33 barangays	50,000.00	March to May 2013	MSWC, BLGU and MTWG
	Develop brochures, flyers, billboard, tarpaulin, etc. and regular radio programs	33 barangays	100,000.00	April to May 2013	MSWC, BLGU and MTWG
Strict implementations of RA 9003 and M.O	Conduct regular meeting	33 barangays	50,000.000	July to Sept. 2013	MSWC, BLGU and MTWG
	Designate a person to monitor in each barangays/Ordinances	33 barangays	40,000.00		
Procurement of equipment and facilities	Purchase of garbage compactor	5 garbage compactors	5,000,000.00	April to Sept. 2013	MLGU and Provincial Gov't, MLGU and
	Make a budget plan and ask financial assistance through resolutions to politicians or Established Inst.				
Implementation of existing ISWM plan	Hire and designate potential man power capable to handle the program	1 plan	Refer to the plan	2013-2017	MLGU, SB, SWMB
Product development (processing methods)	Conduct a workshops and seminars	33 barangays	100,000.00	August to Nov. 2013	Provincial Gov't
	Financial assistance for processing equipments/facilities	7 machines (pangdugmok or galing)	1.5 million	March to September 2014	MLGU and Provincial Gov't
Established landfill	Look for a proper area within the Municipality	1 site	3.8 million	May to August 2014	MSWMC, Engineering Dep't.
	Conduct an IEC	30 workforce	50,000.00	June to July	MLGU, BLGU &

				2014	Provincial Gov't
	Construction of necessary landfill structures	1 site	10 million	Sept. To March 2014	MSWMC/MLGU, Engineering Dep't



### COASTAL LAW ENFORCEMENT

<b>STRATEGY</b> (Pamaagi)	<b>ACTIVITIES</b> (unsay kalihukan nga buhatun)	<b>TARGET</b> (pila ug kinsay giplanuhan)	<b>BUDGET</b> (pila ang igahin nga pundo)	<b>TIME FRAME</b> (kanus-a buhatun)	<b>INCHARGE</b> (kinsay manguna sa pagbuhat niini)
Effective/Efficient Law Enforcement	- Regular patrolling at least thrice a week	14 coastal brangays	216 hrs/annum (13,000X5 yrs.= 65,000.00)	2012-2017	MCLET
	- Conduct special operation twice a month	Jagna Municipal waters			
	- Refresher course on law enforcement/para lead twice a year	MCLET members 10,000/annum	50,000.00	2012-2017	MCLET
	- Purchase of additional equips.	Camera Telescope Search light	50,000.00	2012-2017	LGU Jagna

## LIVELIHOOD MANAGEMENT

<b>STRATEGY</b> (Pamaagi)	<b>ACTIVITIES</b> (unsay kalihukan nga buhatun)	<b>TARGET</b> (pila ug kinsay giplanuhan)	<b>BUDGET</b> (pila ang igahin nga pundo)	<b>TIME FRAME</b> (kanus-a buhatun)	<b>INCHARGE</b> (kinsay manguna sa pagbuhat niini)
Introduce livelihood opportunity	- Conduct trainings and seminars	Jobless/ Out of school youth	10,000.00	Jan.2013	TESDA, WOMEN, DA
Empower manpower	- Conduct workshops, Trainings, seminars (ex. Food processing and marketing)	Jobless/ Out of school youth	15,000.00	June 2013	Facilitators from DA
Procure capital	- Organize group of people inclined to the skills needed with officers to look over				
	- Resolution, Solicitations	Skilled interested organizations	25,000.00	October 2013	Supervision from barangay capt. With elected committee on monitoring and auditing
Orientation on making crafts for souvenirs with logo of Jagna including food products	- Training on making souvenirs, fast foods like banana chips, improved packaging	Any interested barangay folks young and old	50,000.00	February 2013	TESDA
Organize Day Entertainers on assigned tourist spots (ex. Diving spots)	- Hire skilled dive guide	Tourist and visitors men and women/ local and international	20,000.00	October 2013	Mun. and Brgy, Bantay Dagat

### LEGAL ARRANGEMENT AND INSTITUTIONAL DEVELOPMENT

<b>STRATEGY</b> (Pamaagi)	<b>ACTIVITIES</b> (unsay kalihukan nga buhatun)	<b>TARGET</b> (pila ug kinsay giplanuhan)	<b>BUDGET</b> (pila ang igahin nga pundo)	<b>TIME FRAME</b> (kanus-a buhatun)	<b>INCHARGE</b> (kinsay manguna sa pagbuhat niini)
Strengthening Organization	- Reorganizing BFARMC and MFRAMC	9 POs /MPA's	18,000.00	Jan 2013	DA/BLGU, MLGU
	- Quarterly regular meeting	9 PO's /MPA's	18,000.00	March 2013 to 2017	PO's
	- Monitoring (quarterly)	9 PO's		March 2013 to 2017	DA/BLGU
Rehabilitation		9 PO's	50,000.00	Jan 2013	
Implementation of laws and regulations	- Conduct IEC	33 baragays		Jan. 2013 to 2017	DA, BLGU, MTWG
	- Conduct regular meeting				MLGU and BLGU
Strengthening PO's MFARMC		10 PO's	10,000.00	Oct. to Nov. 2013	
	- Conduct PO, FARMC strengthening	1 MFARMC	5,000.00	Oct. to Nov. 2013	MAO, BIDEF
CRM Plan formulation	- Conduct regular meeting	Reactivate	15,000.00		MAO, BIDEF
	- Conduct ICRM Planning workshop				
	- Barangay consultation ICRM plan				
	- Lobby to SB for adoption				

Maintenance of MPAs	<ul style="list-style-type: none"> <li>- Yearly assessment of the plan</li> <li>- Year action planning</li> <li>- Replacement buoys</li> <li>- Conduct MPA underwater M and E</li> <li>- Conduct MEAT</li> </ul>				
IEC	<ul style="list-style-type: none"> <li>- Conduct perception survey</li> <li>- Conduct pulong pulong to barangay assemblies</li> </ul>				

### WATERSHED MANAGEMENT

<b>STRATEGY</b> (Pamaagi)	<b>ACTIVITIES</b> (unsay kalihukan nga buhatun)	<b>TARGET</b> (pila ug kinsay giplanuhan)	<b>BUDGET</b> (pila ang igahin nga pundo)	<b>TIME FRAME</b> (kanus-a buhatun)	<b>INCHARGE</b> (kinsay manguna sa pagbuhat niini)
Seeds production	- Tree planting	1.5 hec./brgy.	45,000.00	January 2013 to 2017	DA, DENR
Reforestation	- Tree seedling production	1 hec/brgy.	10,000.00	June 2013 to 2017	DENR, PO's
Information and Education Campaign	- Conduct information drive and barangay assembly	1T/brgy.	18,000.00	Oct. 2013 to 2017	DEPED, DA, PO's
Inadequate personnel	- Authorized law enforcer	1T/brgy. (18 brgys.)	18,000.00	Nov. 2013 to 2017	Brgy. Officials and Tanods
Implementation of disaster plan					

## FISHERIES MANAGEMENT

STRATEGY (Pamaagi)	ACTIVITIES (unsay kalihukan nga buhatun)	TARGET (pila ug kinsay giplanuhan)	BUDGET (pila ang igahin nga pundo)	TIME FRAME (kanus-a buhatun)	INCHARGE (kinsay manguna sa pagbuhat niini)
Implementation of Mun. on registration of fishing boat and fisherfolks	- Conduct site registration of fisherfolk and fishing boat	14 coastal brgys.	7,000.00	Oct. to Dec. 2012	MAO
	- Conduct number Coding to all reg. fishing boat	All reg. fishing boat	7,000.00	Oct. to Dec. 2012	MAO
	- Issuance of ID to all reg. fisherfolk	All re. Fisherfolk	10,000.00	2013	MAO
	- Reformulate/defined new sharing scheme of boat and gear registration fees	Sharing scheme formulated	5,000.00	2013	MAO, MPDC
	- Lobby to SB				
	- Fish catch monitoring				
Amendments'/Revisit on Fishery Ordinance					

## HABITAT MANAGEMENT

STRATEGY (Pamaagi)	ACTIVITIES (unsay kalihukan nga buhatun)	TARGET (pila ug kinsay giplanuhan)	BUDGET (pila ang igahin nga pundo)	TIME FRAME (kanus-a buhatun)	INCHARGE (kinsay manguna sa pagbuhat niini)
Strengthening of MPAs Mgt.	- Re-organize MPA Mgt. Bodies	8 MPAs	8,000.00	Oct.2012	DA
	- Conduct MPA planning workshop	8 MPAs	50,000.00	Jan.2013	DA,BLGU,TMWG
	- Conduct regular quarterly meeting	20 quarter meetings	-	Every 2 <sup>nd</sup> Wed. Of March, June, Sept. And Dec. 2013-2017	DA, BLGU, MTWG
	- Conduct MPA survey	One's a year	68,000.00	March/April/May	DA, BLGU, MTWG
	- Conduct Biophysical				
	- Conduct M&E				
	- Conduct IEC (radio, church, school, brgy.)	One's a year	30,000.00	Every Jan. 2013-2017 2013-2017	DA
Coastal and underwater clean up	- Solid Waste Mgt. IEC and Clean Up	One's a year each MPA	32,000.00	March and April	DA, SWMC Personnel DA and Per
	- Implementation of laws by way of Brgy. Ordinance or donation of	8 MPA's and other coastal brgy.	-	Jan.2013	



Repair and maintenance	Municipal National Law				Barangay
	- Maintenance of marker buoys	8 MPAs	200,000	2013	DA, BLGU
	- Lobby SB to enact ordinance for the expansion of Cantagay MPA	8 MPAs	16,000.00		DA, BLGU
	- Signage and Billboard				

## GENDER AND REPRODUCTIVE HEALTH

STRATEGY (Pamaagi)	ACTIVITIES (unsay kalihukan nga buhatun)	TARGET (pila ug kinsay giplanuhan)	BUDGET (pila ang igahin nga pundo)	TIME FRAME (kanus-a buhatun)	INCHARGE (kinsay manguna sa pagbuhat niini)
Information dissemination	<ul style="list-style-type: none"> <li>- Brgy. Assembly</li> <li>- Tap kagawad</li> <li>- Assigned on health and education</li> </ul>	Parents and parents to be/ Brgy. community	-  - -	Oct.21, 2012  March 17, 2013  August 7-11, 2012	RHU, MNAO, BHW, BNS, Kagawad and Teachers
Conduct detailed IEC on women's health	<ul style="list-style-type: none"> <li>- BHW, BNS, Hilot</li> <li>- Conduct counselling advises</li> </ul>	Teenagers with its problem health officers	1,000 a year/5,000.00	Aug.1, 2012	Health officers
Constant supervision and guidance	<ul style="list-style-type: none"> <li>- Conduct counselling (Parents, guardians and relatives)</li> </ul>	Teenage children		2012- 2017	Family circle
Conduct and strengthening marriage counselling	<ul style="list-style-type: none"> <li>- Refer to the health unit. Orient on family planning including parish priest</li> </ul>	Victim teenagers	1,000.00	2012	Family circle, Brgy Council, Teachers
Apply TRO in marriage	<ul style="list-style-type: none"> <li>- Lived separately</li> </ul>		5,000.00 and parents share	2012 to 2017	
Inform all the tanods, report to the police	<ul style="list-style-type: none"> <li>- Call peace officers and affected neighbours</li> </ul>	Battered	5,000 the whole plan	2012 to 2017	Tanods, Chief Tanods, PNP

		wives/husband/ Common/ law couples			
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## FORESHORE MANAGEMENT

Strategy	Action/Activities	Target	Budget	Timeframe	Incharge
<b>Formulate foreshore Management Plan</b>	*Data gathering and situational analysis based on consolidated output from PCRA and ICRM ( Inventory of illegal settler)	Current situation (foreshore)	-	3 <sup>rd</sup> wk of August 2012	MAO/MPDC
	*Conduct Participatory Planning Workshop	2-day Planning workshop conducted	P10,000.00	2 <sup>nd</sup> wk October 2012	
<b>IEC on Foreshore Management Plan</b>	*Regular radio program at DYJP	Weekly		Starting August 2012	MAO/MPDC
	*Info dissemination during Barangay Assemblies	Info. dissemination to 14 barangays conducted.		During synchronized Barangay Assemblies	
<b>Implementation of the Plan</b>	*Regulation of all illegal activities and And developments.		-	Year round	MAO/MPDC
	*Conduct regular coastal clean-up & Related foreshore management Activities		-	Year round	MAO/MPDC Coastal Pos
	*Regular PO Guarding and foot patrolling	14 Coastal Barangays	-	Year round	POs / BC
<b>Regular Monitoring and</b>	*Conduct regular monitoring of		-	Year round	MAO/MPDC

<b>updating</b>	activities and development within the Shoreline.  *Feedback and reporting.				MEO
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## **TOURISM MANAGEMENT**

<b>Strategy</b>	<b>Action/Activities</b>	<b>Target</b>	<b>Budget</b>	<b>Time Frame</b>	<b>In-charge</b>
1. Crafting of Municipal Tourism Development Plan	<ul style="list-style-type: none"> <li>- Convene the Municipal Tourism Council</li> <li>-sending communication</li> <li>- preparation of secondary data available</li> </ul>	-MTC members	500.00	August 3 <sup>rd</sup> wk 2012	TO
		-MTC members		August 2 <sup>nd</sup> wk	TO
				August 1 <sup>st</sup> wk	
	<ul style="list-style-type: none"> <li>-Conduct MTDP seminar-workshop planning</li> <li>--prepare seminar-workshop planning proposal</li> <li>--prepare communication letters</li> <li>--send out communication</li> <li>--follow through</li> </ul>	<ul style="list-style-type: none"> <li>75 Pax for 3-days</li> <li>-7 Accommodation establishments</li> <li>-5 transport operators (van, motorela, habal2x, port rep, porter)</li> <li>-4 tour agencies/operators</li> <li>-2 culture &amp; the arts council,</li> <li>-19 reps from brgys with tourists spots</li> <li>-5souvenir shops/pasalubong outlets</li> <li>-5 Restaurant owners</li> </ul>	100T	<ul style="list-style-type: none"> <li>1<sup>st</sup> wk of October 2012</li> <li>1<sup>st</sup> wk of September 2012</li> <li>1<sup>st</sup> wk to 2<sup>nd</sup> wk September</li> <li>2<sup>nd</sup> wk -3<sup>rd</sup> wk of September</li> </ul>	

		-2 Church/ Religious groups -4 POs - 8 Department heads & representatives (MPDC, MA,RHU, DSWD, PNP,MBud, MT, DepEd)			
	Consultation/ verification Meetings, visits	Stakeholders/ concern groups	3T	October – December 2012	
	Write-up of MTDP		_____	October – December 2012	
	Public Presentation of MTDP	Audience: Planning participants	1,5T	January 2013	
Adoption of MTDP	Lobby to the SB	Municipal Councilor to sponsor	_____	February 2013	
Conduct of IEC	Seminar /social prep to eco- tourism	Communities with tourists spots, transport groups	2T	2 <sup>nd</sup> wk of March	
	Print-out tourism info highlighting attractions, access, activities, accommodation, amenities,	500 pamphlets,	25T	Last wk of Feb	
	Radio plugging/ advertisements	DYJP, RN, SCTV-RJ	_____	Whole yr round	
	Installation of signage (road	Coordinate with	5T	1 <sup>st</sup> wk march	



	direction, tarps)	MPDC/Engrng.		2013	
Annual updating of records/data	Collection/ gathering of data, consolidation		_____	Whole yr round	
Monitoring & evaluation	Meetings/visits	MTC/Planning facilitators	1T	1 <sup>st</sup> wk of	

## *Chapter V*

### **COASTAL ZONING**

#### **Why Zone?**

The coastal ecosystems of the Philippines are very productive and represent a huge natural and economic resource for the country. Coastal resources provide food and livelihood for the Philippine and make a large contribution to the national economy. Clean coastal waters and healthy coastal habitats provide sustained economic benefits to the Philippines.

Due to archipelagic nature of the Philippines and the interconnectedness of the land and sea, most development activities have the potential to cause negative impacts on the coastal environment. Planning, environmental assessment and pollution management are the best strategies for minimizing adverse effects of development in the coastal zone.

Furthermore, development projects in the coastal zone and in upland areas of the municipality of Duero, province of Bohol can have widespread impacts on coastal habitats such as beaches, seagrass beds and coral reefs as well on fishery resources that feed the town. Some of the major impacts of development include habitat destruction, alteration of natural ecosystem processes and pollution. Therefore, Coastal zoning is necessary to mitigate and manage the destructive activities that may cause to the loss of resources. Planning development with a full evaluation of potential environmental impacts and full participation of the local communities minimizes adverse impacts.

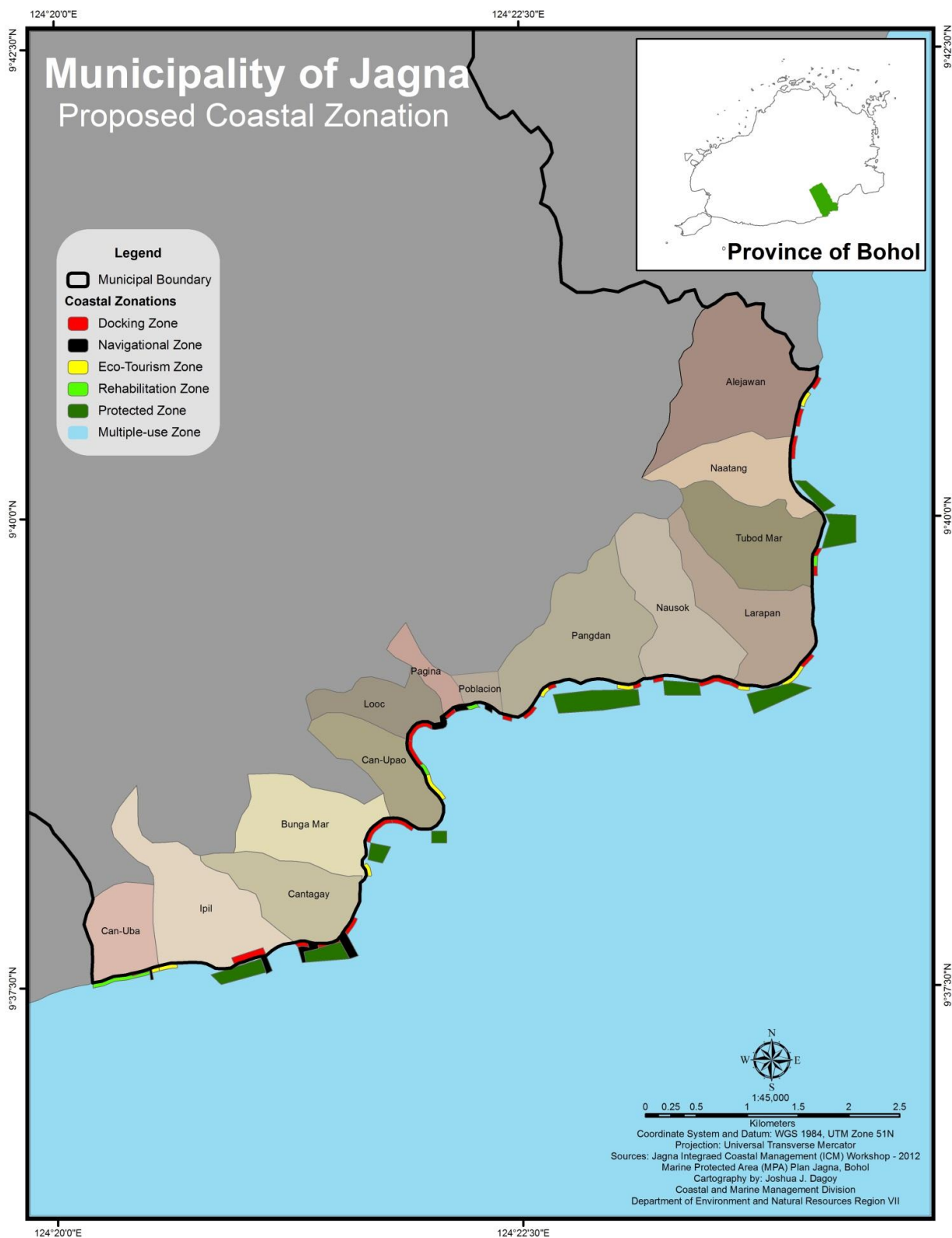
#### **A. Strategies and Activities**

The identification of the municipal water under different zones will help the LGU and their communities to determine the limitations on area and resource utilization. To make sure that the zoning classification is accurate, an actual area survey will be initially conducted. A blueprint or a municipal coastal zone map will support a clear demarcation in the areas. Thus, to ensure sustainable imposition of the zone classifications, a joint session will be conducted for all the SB members of the town to the adoption of the municipal coastal zoning.

For the recreational zones, regulations on the development of new beach resorts and other recreation sites will be formulated. For sustainable use zones, legislations that will protect or conserve the coastal environment without putting a stop to the communities' fishing activities within permissible areas will be formulated. Once the areas are already classified into zones and appropriate legislation are put into place, massive IEC drive at the concerned coastal barangays will be conducted.



## B. PROPOSED MUNICIPAL COASTAL ZONATION



### **C. Zone interpretations, policies and regulatory mechanism**

The coastal area as divided into five different zones: (1) protected area, (2) tourism zone, (3) docking zone, (4) trade and navigational zone, and (5) multi-purpose zone. The following are the policies and interpretation of each zone.

#### **Docking Zone**

##### **Allowed**

- Docking area for boats (motorized and non-motorized)
- Luggage area for fishing nets and other fishing paraphernalia
- Construction of temporary structures (guardhouse)

##### **Prohibited Activities**

- Commercial fishing vessels and ships
- Unregistered fishermen
- Sand, gravel and coral stone extraction
- Dumping of garbage and other wastes
- Use as comfort room
- Mangrove planting

#### **Navigational Area**

##### **Allowed**

- Anchorage and temporary docking of vessels

##### **Prohibited**

- Swimming
- Fishing
- Building of illegal structures
- Dumping of wastes (garbage, oil)

#### **Eco-Tourism Zone**

##### **Allowed**

- Swimming
- Boardwalk
- Snorkeling, diving and other watersports
- Mooring buoys
- Conduct of coastal clean-ups
- Building of infrastructures for tourism (beach cottages, conference hall, etc.)
- Tourism and recreational activities

##### **Prohibited Activities**

- Anchorage and docking of boats
- Fishing and gleaning
- Sand, gravel and coral extraction
- Dumping of garbage and other wastes

#### **Rehabilitation Zone**

##### **Allowed**

- Mangrove reforestation
- Coastal clean-up

##### **Prohibited**



- Fishing and gleaning
- Hunting
- Industrial and residential developments
- Dumping of wastes
- Cutting and gathering of wood

#### **Protected Area**

##### **Allowed**

- Monitoring, study and research
- Diving with fee and permit
- Coral Rehabilitation

##### **Prohibited Activities**

- Fishing and gleaning
- Swimming
- Passage and docking of all boats
- Anchorage
- Dumping of garbage and other wastes

#### **Multiple-use Zone**

##### **Allowed**

- Swimming
- Fishing
- Can also be used as navigational
- Fish and algae culture
- Institutional and residential development with clearance from authority
- Recreational Activities

##### **Prohibited**

- Factory and industrial development
- Farming (piggery and poultry)
- Illegal fishing activities
- Dumping of garbage and other wastes
- Building of illegal structures



## COASTAL ZONING AND MANAGEMENT

### Problem: Absence of Coastal Zoning Plan

Strategy	Action/Activities	Target	Budget	Timeframe	Incharge
<b>Formulate Coastal Zoning Team</b>	*Convene to constitute the Coastal Zoning Team  *Issuance of EO by LCE	Team formulated	P5,000.00	3 <sup>rd</sup> wk of August 2012	MAO/MPDC
<b>Formulate Coastal Zoning Plan.</b>	*Conduct 2-days Consolidation and validation of zoning Output.	Orientation & Planning conducted	P10,000.00	1 <sup>st</sup> wk September 2012	MAO/MPDC
	*Conduct actual technical zoning by the use of GPS per barangay.	14 coastal Barangays	P30,000.00	October to Nov. 2012	CZT
	*Consolidation and finalization of Coastal Zoning Map.	14 coastal Zoning Maps	P5,000.00	1 <sup>st</sup> wk December	MAO/MPDC
<b>Institutionalization of Coastal Zoning Plan</b>	*Presentation of the Coastal Zoning Plan to the SB.  *Lobby to the SB for the Approval Adoption and passing of the Coastal Zoning Ordinance.	Coastal Zoning Ordinance approved and adopted	-  -	January 2013	MAO/MPDC
<b>IEC on the Coastal Zoning Ordinance</b>	*Weekly Radio Program	Once a wk for 2 consecutive	-	February 2013 and onward	MAO/MPDC

	*IEC to the Barangay	Months after its approval			
<b>Implementation</b>	*conduct ocular inspection prior to the issuance of permits and licenses.  *Conduct PO strengthening and Cap Dev for effective coastal zone mgt.	All issuances of permit and licenses  As need arises	-	Year round	MPDC/MEO
<b>Regular Monitoring and updating.</b>	*actual ocular inspection & regulation  *feedbacking/reporting	Feedbacks/ reports		Year round	MPDC/MAO

## *Chapter VI*

### **ADMINISTRATION AND COORDINATION OF IMPLEMENTATION**

In the Philippines, ICRM is built on a legal framework and state policy mandated by the Philippine Constitution which provides that the State shall protect the nation's marine wealth in its archipelagic waters, territorial seas, and exclusive economic zone, and reserves its use and enjoyment exclusively to the Filipino citizens. The Executive Order 533 (EO 533) issued last 2006 by the president of the Philippines mandated all LGUs to promote and implement integrated approach on coastal management and tasked to formulate policies, implement programs and projects to manage and conserve the coastal and marine resources of the country.

The chapter presents the framework for ICRM, highlighting the roles of the key organizations at the nation, provincial, municipal, and barangay governments.

#### **The Integrated Coastal Management (ICM)**

- Shall be the national management policy framework to promote the sustainable development of the country's coastal and marine environment and resources in order to achieve food security, sustainable livelihood, poverty alleviation and reduction of vulnerability to natural hazards, while preserving ecological integrity.
- Shall be implemented in all coastal and marine areas, addressing the inter-linkages among associated watersheds, estuaries a, and wetlands, and coastal seas, by all relevant national and local agencies.
- National ICM Programme shall be developed by the DENR, in consultation with other concerned agencies, sectors and stakeholders, within one year from the affectivity of this Order to provide direction, support and guidance to the local government units (LGUs) and stakeholders in the development and implementation of their local ICM programmers. It should also include principles, strategies, and action plans identified after balancing national development priorities with local concerns, define national ICM targets and develop a national ICM coordinating mechanism.
- Implementation of ICM programmes shall take the following elements:
  - an inter-agency, multi-sectoral mechanism to coordinate the efforts of different agencies, sectors and administrative levels;
  - coastal strategies and action plants that provide a long-term vision and strategy for sustainable development of the coastal area, and a fixed-term programme of actions for addressing priority issues and concerns;





- public awareness programmes to increase the level of understanding of , and appreciation for, the coastal and marine resources of the area, and to promote a shared responsibility among stakeholders in the planning and implementation of the ICM programme;
  - mainstreaming ICM programmes into the national and local governments planning and socio-economic development programmes and allocating adequate financial and human resources for implementation;
  - capacity building programmes to enhance required human resource skills, scientific input to policy and planning processes, and allocating adequate financial and human resources for implementation;
  - integrated environmental monitoring for the purpose of measuring the status, progress and impacts of management programmes against sustainable development indicators, as may established, and for use in decision-making, public awareness, and performance evaluation; and
  - investment opportunities and sustainable financing mechanism for environmental protection and improvement and resource conservation.
- All concerned national agencies shall support the implementation of the ICM programme and promote best practices.
  - LGUs shall act as the frontline agencies in the formulation, planning and implementation of ICM programmes in their respective coastal and marine areas.
  - NGOs, civic organizations, academe, people's organizations, the private and corporate sectors and other concerned stakeholder group shall be engaged in activities such as planning, community organizing, research, technology transfer, information sharing, investment and training programs.
  - Supporting mechanisms and activities shall be undertaken in support of the implementation of ICM programmes this activities are as follows:
    - 
    - ICM Education
    - ICM Training Programme for LGUs
    - Environmental and Natural Resource Accounting and Valuation for ICM Planning
    - Coastal and Marine Environment Information Management System
  - DENR shall prepare and submit an annual progress report on the National ICM Programme to the President. LGUs shall submit annual progress reports on local ICM implementation to the DENR.
  - Shall allocate adequate funds for the development and implementation of ICM programmes from their existing budgets including continuing ICM training and education.
  - All relevant financial institutions shall formulate and identify loan and financing mechanisms that will be made available to support local ICM programmes, including alternative livelihood projects for small-scale fishers and cooperatives.



## A. National Level Policies and Agencies

Natural resource management programs in the Philippines fall under the auspices of the Philippine Strategy Sustainable Development (PSSD). All the national and regional policies related to ICM should conform to the general guidelines set forth in the strategy. Some of the relevant components of the strategy's agenda are as follows:

- Integration of environmental considerations in all decision-making processes;
- Proper valuation of resources used based on the cost of replenishment;
- Promotion of equitable access and tenurial security to resources;
- Rehabilitation of damaged ecosystems;
- Strengthening of pollution control in industry; and
- Promotion of environment education, as well as citizen's participation in the planning and implementation of government programs.

The Philippines adopted in 1994 a National Marine Policy in order to develop a comprehensive program to properly manage coastal and marine resources in compliance with the United Nation Convention on the Law of the Sea (UNCLOS). This policy calls for an integrated coastal zone management system that considers the archipelagic and coastal nature of the country.

In 1991, RA No. 7160 (Local Government Code of 1991) was enacted to enhance government and corporate powers to the LGUs, particularly on political autonomy and decentralization, and resource generation and mobilization. Its salient provisions with regard to CRM are the following:

- The expansion of the scope of municipal waters of 15 km from 3 nautical miles. This gave the municipal and city governments' greater jurisdiction over municipal waters.
- Devolution of some powers and functions of the DENR, Department of Agriculture (DA) and other concerned national agencies to the LGUs.
- Repeal of anti-conservation policies of the state, as mandated by Presidential Decree 704 (Fisheries Decree of 1976) such as optimum utilization of fisher resources and exportation of fishery products.
- Assigning to the municipalities and cities the right to issue licenses, leases, or permits for the use of municipal waters.
- Preferential treatment to municipal fishers in the grant fishery licenses.

Another major law enacted with regard to CRM is the RA No. 8550 (Philippine Fisheries Code of 1998). This law repealed Presidential Decree 704 (Fisheries Decree of 1976). This law is more consistent with the provisions of the Constitution. The overriding policies embodied this Code are the following:



- Food security as the primary goal and consideration in utilization, management, and conservation of the coastal and fisheries resources.
- Limiting access to the fisheries resources for the exclusive use and enjoyment of Filipino citizens.
- Rational and sustainable development, management, and conservation of coastal and fishery resources.
- Protection of the rights of fishers, especially the coastal communities, with priority given to municipal fishers in the preferential use of the municipal waters. To operate this policy, coastal municipalities and cities are mandated to organized Fisheries and Aquatic Resources and Management Councils (FARMCs).
- Management of coastal and fisheries resources in light of the concept and principle of integrated CRM.

Another important law on environmental protection and management is RA No. 7586, otherwise known as the National Integrated Protected Areas System (NIPAS). This law governs and classification and administration of all designated areas. In the profile area, there are 2 areas declared as protected areas – the Tanon Strait Protected Seascape (declared under Presidential Proclamation No. 856). As protected seascapes, these areas are managed to maintain essential ecological processes and life – support systems, preserve genetic diversity, ensure sustainable use of the resources found therein, and maintain their natural condition.

At the national level, the line agencies most involved with coastal management issues are the DA through the BFAR, the DENR, the Department of the Interior and Local Government (DILG), the Department of Transportation and Communications (DOTC), the Department of National Defense (DND), and the Department of Science and Technology (DOST).

Various stakeholders like the government agencies both local and national, non-government organizations and people's organizations are involved and given the task in the implementation of the Integrated Coastal Resource Management Plan.

## **B. Roles and Mandates of key agencies/ organizations/offices in relation to ICM**

### **Office of the Mayor**

1. Provide over-all advice, direction and support on the implementation of CRM.
2. Allocate internal funds to finance coastal resource management plan

### **Office of the Vice- Mayor**

1. Formulate ordinance related to fishery laws.
2. Allocate and approve budget for annual operations of the coastal resource management plan.
3. Call for public consultations/ hearing regarding policies/ ordinances on



fisheries

4. Conduct accreditation to all NGO'S and People's Organizations
5. Assist MAO/CRMO in monitoring and evaluation
6. Assist DENR in the implementation of easement/salvage zone
7. Adopt and approved coastal resource management plan

### **Municipal Agriculture Office (MAO) or Coastal Resource Management Office (CRMO)**

1. Leads in information, education and campaign on Coastal Resource Management.
2. Leads in monitoring, evaluation and reporting
3. Leads in organizing of fisherfolks
4. Leads in the preparation of feasibility study and project proposals
5. Leads in the establishment of fish sanctuaries and livelihood projects
6. Assists the MPDC in the implementation of CRM projects.
7. Assist in the registration of fisherfolks
8. Facilitate strengthening of FARMC and other organizations
9. Assist SB in the formulation of CRM related ordinance.
10. Leads in the conduct of annual biophysical monitoring of sanctuaries

### **Office of the Municipal Planning and Development Office (MPDO)**

1. Leads in barangay consultation on integrated Coastal Resource Management
2. Assist MAO/CRMO in the establishment of Fish sanctuaries and livelihoods projects
3. Assist MAO/CRMO in the conduct of monitoring and evaluation
4. Leads in the implementation of integrated CRM projects
5. Support all activities related ICRM
6. Assist in soliciting external funds
7. Formulate and develop proposals on fund sourcing.
8. Prepare, review and finalize the management plans/activities on coastal resource management.

### **Municipal Treasurer's Office (MTO)**

1. Leads in the conduct of licensing and registration of municipal fishers and their fishing gears and boats.
2. Takes charge of the custody and proper management of LGU funds.
3. Advises the LCE and SB regarding disposition of government funds.
4. Takes charge of the disbursement of all LGU funds and such other funds entrusted to the LGU.
5. Implementation of an efficient collection system of all taxes, fees, and charges



- allowed by the LGU under the provision of the Local Government Code.
6. Maintains and updates the LGU tax information system.

### **Municipal Budget Officer (MBO)**

1. Leads in budget preparation/allocation for ICRM plan implementation
2. Assists MPDC in barangay consultation on ICRM
3. Responsible for the review and approval of budget allocation in each program/project.

### **Municipal Engineering Office (MEO)**

1. Lead in the implementation of ICRM projects especially in infrastructure project
2. Provides engineering services to the LGU including investigation, ocular inspection, survey and design of feasibility studies and project management.
3. Assist in the installation of billboards for IEC purposes
4. Takes charge in the demolition of illegal structures after resettlements of coastal squatters.

### **Municipal Assessor Office**

1. Assist MAO / CRMO in the conduct of mapping and zoning of municipal waters
2. Takes charge of the proper implementation of all laws and policies relative to an efficient appraisal and assessment, record and accounting system.
3. Establishes a systematic method of real property assessment, record and accounting system.

### **Municipal Health Officer (MHO)**

1. Leads in the campaign on proper waste disposal
2. Leads in population management on coastal and upland barangays

### **Municipal Social Welfare and Development Officer (MDSWDO)**

1. Assist MAO / ICRMO in population management on coastal and upland barangays
2. Provides funding for livelihood projects.
3. Provides non-formal education to the fisherfolks and farmers
4. Be in the frontline of service delivery in time of disaster and calamities.
5. Provides programs and services for the disabled, elderly children, women and those abused and exploited.



### **Fishwarden / Bantay Dagat**

1. Conduct regular sea-borne patrol operation
2. Assist PNP in the enforcement of fishery ordinance
3. Assist MAO / CRMO in the implementation of CRM projects
4. Submit report to the MAO/CRMO
5. Formulate plan

### **Municipal Fisheries and Aquatic Resources Mgt. Council (MFARMC)**

1. Recommend fishery policies/ rules and regulations for endorsement to Sangguniang Bayan.
2. Endorse Integrated Coastal Resource Management Plan to the Sangguniang Bayan.
3. Conduct meetings regarding the management issues requiring attention.
4. Recommend programs and ICRM related projects for approval
5. Assist in the enforcement of fishery ordinances in the municipal waters
6. Assist MAO/CRMO in the conduct of consultation on ICRM related activities

### **Technical Working Group (TWG)**

1. Leads in public consultation on ICRM
2. Assist in the preparation of feasibility study and project proposal writing
3. Assist in the conduct of monitoring and evaluation
4. Assist in the implementation of ICRM projects and activities
5. Assist in the formulation and finalization of ICRM plan

### **Barangay Councils**

1. Leads in the implementation of coastal clean-up activities
2. Assist in the implementation of CRM related projects
3. Assist MAO / CRMO in project monitoring and evaluation
4. Pass resolution to the MFARMC
5. Provide support and assist in addressing issues/ solving problems on the coastal resources.
6. Support all activities related to resource management at the brgy. level.
7. Assist in educating the community.
8. Assist PO in their enforcement activities.

### **People's Organization (PO)**

1. Leads in the implementation of livelihood projects in their respective



- barangays
2. Assist MAO / CRMO in project monitoring and evaluation
  3. Assist MAO / CRMO in the formulation and implementation of management plan in their respective barangays
  4. Serve as frontliners in the implementation of the CRM plan.
  5. Recommend fishery policies the MFARMC.
  6. Attend all activities related to marine sanctuary.
  7. Implement policies and regulations.
  8. Coordinate Fishwarden, PNP and the LGU on coastal law enforcement.
  9. Participate in monitoring activities of the marine protected areas.

**Non-Government Organization (NGO)**

1. Assist in the conduct of planning and seminars in CRM
2. Assist in the conduct of PCRA
3. Assist in the organizing of fisherfolks
4. Assist MAO/CRMO in the identification of potential sites for marine sanctuary establishment
5. Assist PO in the installation of marker buoys and signage for marine sanctuaries
6. Assist MPDC in the preparation of CRM plan

**Department of Environment and Natural Resources (DENR)**

1. Leads in the conduct of CRM planning workshop
2. Leads in the identification of potential dumping sites
3. Conduct biophysical and socio-economic assessment of potential sites
4. Assist MAO / CRMO in the conduct of mapping and zoning

**Bureau of Fisheries and Aquatic Resources (BFAR)**

1. Assist the DENR in the conduct of biological and socio-economic assessment of potential sites for MPA
2. Leads in the deputation and strengthening of fishwarden

**Maritime Police (PNP-MARITIME GROUP)**

1. Assist the PNP and the fishwarden on the actual sea-borne patrol operation

**Municipal Development Council (MDC)**

1. Assists the CLE in the preparation of plans, programs and projects
2. Endorses the 20% IRA Development Fund for SP approval.
3. Conduct monitoring of CRM fund releases.



## C. ADMINISTRATION AND COORDINATION OF CRM PLAN IMPLEMENTATION

### Implementing Structures

