Sorsogon City

ENHANCED COMPREHENSIVE LAND AND WATER USE PLAN

2019-2029

Volume 1
COMPREHENSIVE LAND & WATER USE PLAN

Republic of the Philippines
Province of Sorsogon
CITY OF SORSOGON

Office of the Sangguniang Panlungsod

EXCERPTS FROM THE MINUTES OF THE REGULAR SESSION OF THE SEVENTH CITY COUNCIL HELD AT THE SANGGUNIANG PANLUNGSOD SESSION HALL, CABID AN, EAST DISTRICT, SORSOGON CITY ON DECEMBER 14, 2021.

PRESENT:

HON. MARK ERIC C. DIONEDA
City Vice Mayor/Presiding Officer

BACON DISTRICT

Hon. Jo Abegail C. Dioneda
Hon. Hilario D. Dioneda

EAST DISTRICT

Hon. Ralph Walter R. Lubiano
Hon. Franco Eric O. Ravanilla
Hon. Joven Francis J. Laura

WEST DISTRICT

Hon. Nestor J. Baldon
Hon. Erwin J. Duana
Hon. Fernando David H. Duran, III
Hon. Rebecca D. Aquino

EX-OFFICIO MEMBERS

Hon. Lorenz S. Abenion

ABSENT: *Hon. Melchor P. Atutubo – Sick Leave*
Hon. Danilo A. Deladia – on official business
Hon. Mary Ellen D. Jamisola – on official business
Hon. Ma. Teresa D. Perdigon – on official Business

Resolution No. 432, Series of 2021

(Author: Hon. Nestor J. Baldon)

RESOLUTION ADOPTING THE 2019 – 2029 COMPREHENSIVE LAND AND WATER USE PLAN OF SORSOGON CITY

WHEREAS, *in order to ensure a sustainable economic development and to institute programs that would address the basic needs of its people, the city government of Sorsogon is mandated by law to prepare a comprehensive water and land use plan that contains information regarding the fundamental profile of the city as a Local Government Unit;*

WHEREAS, *the 2019 – 2029 comprehensive water and land use plan is a document that identifies and translates city government's policies and development goals and objectives, indicating and specifying therein the manner by which city resources shall be put to use over the next ten (10) years;*

WHEREAS, *with the territorial jurisdiction of the Loval Government of Sorsogon City consisting of land areas and municipal waters, it is appropriate to integrate in the plan the bodies of water policies and laws for a comprehensive land and water use plan.*

WHEREAS, *Republic Act No. 7160, otherwise known as the Local Government Code of 1991, provides that each local government units shall, in conformity with the existing laws, continue to prepare their respective comprehensive land use plan (CLUPs) enacted through zoning ordinances which shall be the primary and dominant bases for the future use of land resources;*

WHEREAS, *Section 447 (a)(2)(ix) of the same code authorizes the enactment of integrated zoning ordinance in consonance with the approved land use plan;*

WHEREAS, *Executive Order No. 72, Series of 1993 issued by former President Fidel V. Ramos devolves the power of the Department of Human Settlement and Urban Development (DHSUD) to review and approve the Comprehensive Land Use Plans of components city and municipalities to the province through its Sangguniang Panlalawigan;*

WHEREAS, *EO 72 also mandates the establishment of Provincial Land Use Committee to assist the Sangguniang Panlalawigan in reviewing the comprehensive land use plans of components LGUs;*

WHEREAS, *Resolution No. 5, Series of 2021 of the Provincial Land Use – Technical Working Committee (Provincial Planning and Development Office), favorably endorsed to the city government of Sorsogon the 2019 – 2029 Comprehensive Water and Land Use Plan for its adoption and enactment of the corresponding zoning ordinance, subject to compliance of additional comments and recommendations of the Provincial Land Use – Technical Working Committee, to which the same were already incorporated herein;*

WHEREAS, *every local government unit shall exercise the powers expressly granted. Those necessarily implied therefrom; as well as powers necessary, appropriate or incidental for its efficient and effective governance and those which are essential to the promotion of the general welfare. Within their respective territorial jurisdiction, local government units shall ensure and support, among other things, the preservation and enrichment of culture, promote health and safety, improve public morals, enhance economic prosperity and social justice, maintain peace and order and preserve the comfort and convenience of their inhabitants (Sec. 16, RA 7160);*

NOW THEREFORE, *on motion of* **Hon. Nestor J. Baldon,** *duly seconded by* **Hon. Franco Eric O. Ravanilla,** *resolved as it is hereby resolve to adopt the 2019 – 2029 Comprehensive Land and Water Use Plan of Sorsogon City.*

DATE APPROVED: ***December 14, 2021***

I HEREBY CERTIFY *to the correctness of the foregoing resolution and ordinance.*

ROVAN E. DOMASIAN
Secretary to the Sangguniang Panlungsod

Attested:

MARK ERIC C. DIONEDA
City Vice Mayor/ Presiding Officer

FOREWORD

This Comprehensive Land Use Plan (CLUP) 2019-2029 of Sorsogon City is an enhancement and update of the existing CLUP. The data preparation initially started during the conduct of the city vulnerability assessment in 2008 when the city was a recipient of the technical assistance conducted for the Cities in Climate Change Programme of the UN Habitat. During the course of preparation, data from NSO (now PSA) were updated as they were released. Rapid Community Based Monitoring System (RCBMS) data were also used for geotagging and ground truthing locations of households.

As a result of the vulnerability assessment, it was recommended to revisit the city's development plans to see if the identified future programs and projects are resistant to the impacts of climate change and addresses disaster risk reduction objectives. The Climate Change Act was passed in 2009 and the Disaster Risk Reduction and Management Act in 2010, requiring the mainstreaming of climate change adaptation and disaster risk reduction in all local development plans.

This Comprehensive Land Use Plan (CLUP) determines the specific uses of land and other physical and natural resources, both private and public, within the territorial jurisdiction including areas for critical watersheds, river basins, and protected areas. The Sorsogon City CLUP also tried to delineate actual boundaries on the ground, embody the desired land use patterns of the barangays and the municipality as a whole. The spatial directions prescribed in this CLUP shall serve as the basis for the preparation and formulation of the Comprehensive Development Plan (CDP) and Local Development Investment Programs (LDIP) of the LGU in the future.

Legal Basis

In the preparation of this CLUP, the Core Planning Group consciously complied with the following legal promulgations, to wit;

Republic Act 7160 (Local Government Code of 1991)

The Republic Act 7160 (RA 7160) or the Local Government Code of 1991 provides the mandate of LGUs on local planning, legislation, implementation, including budgeting, and monitoring.

Section 16:

"Every LGU shall exercise the powers expressly granted, those necessarily implied there from, as well as powers necessary, appropriate or incidental for its efficient and effective governance, and those which are essential for the promotion of the general welfare. Within their respective territorial jurisdictions, local government units shall ensure and support, among other things, the preservation and enrichment of culture, promote health and safety, enhance the right of the people to a balanced ecology, encourage and support

the development of appropriate and self-reliant scientific and technological capabilities, improve public morals, enhance economic prosperity and social justice, promote full employment among their residents, maintain peace and order and preserve the comfort and convenience of their inhabitants. ”CLUP Guidebook 2013 Volume 1”

Section 20(c):

“The local government units shall, in conformity with existing law, continue to prepare their respective Comprehensive Land Use Plans enacted through zoning ordinances which shall be the primary and dominant bases for the future use of the land resources

Section 447(2)(vii)/Sec. 458(2)(vii):

“Adopt a Comprehensive Land Use Plan for the municipality/city: Provided that the formulation, adoption, or modification of said plan shall be in coordination with the approved Provincial Comprehensive Land Use Plan.”

Section 447(2)(ix) - Municipality/Section 458(2)(ix):

“Enact integrated zoning ordinances in consonance with the approved Comprehensive Land Use Plan, subject to existing laws, rules and regulations…”

Section 447(a)(2)(vi)/Sec. 458(a)(2)(vi):

Prescribe reasonable limits and restraints on the use of property within the jurisdiction of the municipality (Sec. 447(a)(2)(vi)/city (Sec. 458(a)(2)(vi).

Section 444(b)(3)(vii)/Sec. 455 (b)(3)(vii):

“Adopt measures to safeguard and conserve land, mineral, marine, forest, and other resources of the municipality” (Sec. 444(b)(3)(vii)/city (Sec. 455(b)(3)(vii).

Section 468, 2, Article III, Chapter 3, Book III:

“(vii) Review the Comprehensive Land Use Plans and zoning ordinances of component cities and municipalities and adopt a Comprehensive Provincial Land Use plan, subject to existing laws.”

Other related legal bases on CLUP formulation provided for under RA 7160 are found under sections 106(a); 109, a, 1-2 and 458(2)(ix); 476(7).

Executive Order No. 72

Executive Order 72 was issued providing for the preparation and implementation of the CLUP by the local government units and for the review and approval thereof by the HLURB and the Sangguniang Panlalawigan.

Sections 1(a, d):

"(a) Cities and municipalities shall continue to prepare or update their Comprehensive Land Use Plans, in conformity with the land use planning standards and guidelines prescribed by the HLURB and to national policies.

"(d) ... the powers of the HLURB to review and approve the Comprehensive Land Use Plans of component cities and municipalities are hereby devolved to the province".

Significant Insights

- Explain purpose, context and limitations of the proposed CLUP
- Legal and enabling ordinance or guidelines adopted or complied with in the preparation of the proposed CLUP
- Significant(new) insights and areas adopted or included in the new CLUP compared to previous/existing CLUP (i.e. inclusion of climate change/disaster risk/threats; adoption of integrated eco-systems approach (i.e. ridge-to-reef); Citizen Report Card, and other significant changes not seen from previous/existing CLUP)

INTRODUCTION

The enhancement of the Comprehensive Land Use Plan of Sorsogon City considered disaster risk reduction and the impacts of climate change. The review triggered after the findings of the vulnerability and adaptation assessment was conducted.

With the new guidelines in the formulation of the Comprehensive Land Use Plan, the team decided to include Forest Land Use and other new tools stated in the Housing and Land Use Regulatory Board guidelines.

The Comprehensive Land Use Plan is centered on the spatial dimension regarded within a time horizon, usually ten years. It translates into land allocation space requirements of the different sectors deemed vital by local conditions and aspirations. Allocation of land uses is reviewed every five years allowing the city to make corrections and enhancements, and measure its progress against the plan.

The methodology used in preparing this Plan is to gather technical data from agencies, both local and national, that usually maintain them. These data served as quantitative input. Where secondary data were insufficient, actual surveys were made. Surveys include foot, windshield, and interviews with key technical people. By and large it was based on the land use planning guidelines issued by the Housing and Land Use Regulatory Board including the 2013 and 2014 versions.

These data were processed and turned into the sectoral studies where data were range against planning standards to identify development needs.

To supplement the needs analysis, the strategic plan of Sorsogon prepared earlier was reviewed to confirm quantitative needs and fill-in qualitative ones. The strategic plan also contained the vision and mission of Sorsogon, its strengths and weaknesses, and development goals, objectives, and strategies.

Maps, as another view of existing situation, were prepared. Thematic maps were prepared which were later layered to outline the limits of possible land uses. One of the outputs from the vulnerability assessment resulted in the Policy Zone Map which delineates the four zones based on the risks and policies for development strategy for each zone. Output maps are the Proposed General Land Use Plan and the Proposed Urban Zoning Map.

In formulating the Plan, the Provincial Physical Framework Plan was made as reference to assure that the Plan is not only in conformity but that it further exploits opportunities explicitly stated in the framework plan. In the same way, the Regional Development Plan, Philippine Development Plan, Vision 2040, and Sustainable Development Goals were considered in the formulation of the plan.

This document contains the Sectoral Reports on Historical Development, Physical Features, Demography, Social sectors, Economic sectors, Infrastructure sectors, Local Administration, Forest Land Use, Environmental Management, and Land Use. They present the existing profile of the city. Projections were ranged against standards to provide summaries of development needs. Goals, objectives, and strategies were validated against these needs and were harmonized with the city's functional role and competitive advantage. Validation was made though workshops and consultations.

It also contains the Alternative Spatial Development Strategies exploring three possible courses and weighing each according to several predefined criteria to come up with the preferred development strategy.

ACKNOWLEDGEMENTS

The CLUP Technical Working Group, on behalf of the Task Force on Land Use Planning and the City Government of Sorsogon, wishes to extend its sincerest thanks to the following who have immensely contributed to the preparation of the 2017-2027 Comprehensive Land Use Plan of the City of Sorsogon.

- Heads and personnel of local offices of national government agencies;
- Heads and personnel of the various departments of the city government of Sorsogon;
- Barangay officials;
- Representatives of non-governmental organizations and private institutions;
- Private individuals.

They provided needed data, local knowledge, and insights as bases of the analysis; participated in the cross-sectoral formulation of goals, objectives, and strategies; and facilitated basic data gathering, land use windshield and foot surveys, and structural survey.

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I.A. **BRIEF HISTORY**

Sorsogon City was created by virtue of Republic Act 8806, which was signed into law on August 16, 2000 and ratified during a plebiscite on December 16, 2000. RA 8806, also known as the Cityhood Law, called for the merger of the municipalities of Sorsogon and Bacon into a component city of the province of Sorsogon.

The merged municipalities of Bacon and Sorsogon more or less shared the same establishment pattern with Bacon leading the way. The present-day settlements grew out of the Spanish missionary efforts in the 1600s. They both started as missions that were later made into parishes and eventually declared as civilian political units.

Both places were already settled when the Spanish missionaries came in the 1600s. Pre-historic artifacts found pointing to human habitation ranged from the 3,000-year old remains in a cave in Bacon and ancient burial sites dug upstream of rivers in Sorsogon.

Bacon was established as a mission in 1609 with Casiguran, the oldest town in Sorsogon Province and one of the oldest in Luzon, as the parochial center. It became a parish in 1617. Sorsogon in turn was a mission of the parish of Bacon. Sorsogon became an independent parish in 1628.

Bacon was established as a civilian political unit (pueblo civil) in 1754. Sorsogon, on the other hand, became a pueblo civil in 1864. Being under the province of Albay (then composed of what are now the provinces of Albay, Sorsogon and Masbate) trade and travel was by water transport through the Albay Gulf. Road building between the two towns was done in the 1840s when the original bridges along the road connecting them were constructed. At this time both towns had also enjoyed the prosperity brought by the abaca trade when world supply was dominated by the Philippines. In the 1850s Albay was the richest province in the country.

On October 17, 1894, the Spanish authorities organized Sorsogon province as an administrative unit independent from Albay, with the town of Sorsogon as its seat of government. The new province adopted the name of the town and has since been known as the Province of Sorsogon. With the secession, Bacon lost Rapu-rapu which became a town of Albay. By the turn of the century Bacon further lost some of its area when Prieto Diaz was created as a town from the areas of Bacon and the town of Gubat.

At the start of the American period Sorsogon being the administrative center of the province became host to the Sorsogon School of Arts and Trade (now Sorsogon State University) and Sorsogon High School (now Sorsogon National High School). Both of these institutions served Sorsogon and its neighboring towns.

During the first half of the 20th century corresponding infrastructure were constructed to support the now thriving urban center. The water system and the road network were put up at this time. The urban center was largely confined within the area defined by the church, public market, the old municipal hall, capitol compound, and the two high schools. At the very center, as it is now, were retail stores, shops, and eateries. In between these establishments and at the periphery were residential houses.

The rest of the built-up areas were barangay (then called barrio) centers. All other land uses were agriculture and forestry with the former largely monoculture of rice and coconut.

These fertile rice and coconut areas and the abundant Sorsogon Bay defined the other role of Sorsogon as an agricultural and fishery producing area.

The 1960's saw the introduction of the residential subdivision concept through the Encarnacion Village, Sts. Peter and Paul Ville Subdivision, and the Housing Project. These developments virtually redefined the boundaries of the urban center which were further extended with the establishment of the Our Lady's Village Subdivisions in Bibincahan and Pangpang during the 1970's. By the end of the decade road networks and power supply system were already in-place to support such extensive development.

Two cargo and passenger ships were by now serving the Sorsogon-Manila route aside from the services of the Philippine National Railways extended to the province via train connection buses. But the completion of the Manila South Road portion of the Pan-Philippine Highway provided a more direct and faster access to Manila-based suppliers and buyers by-passing regional dealers in Naga City and Legazpi City thereby turning Sorsogon into a sub-regional center.

For the rest of the 1980's and 1990's subdivision building and the enhanced central role of Sorsogon fueled the self-feeding character of urbanization and in-migration. The pressure of urbanization was felt in the conversion of agricultural lands into residential and commercial uses and forestlands into upland agricultural areas coupled with pollution and siltation threats to Sorsogon Bay.

Sorsogon continues to evolve into a major growth area and center of activities of the people of the province. It hosts offices of government agencies, hospitals, schools, banks, dealerships, and bus companies. The merger into a city in 2001 made a significant increase in the internal revenue allotment (national share) as a component city of the province of Sorsogon. Sorsogon City's population of 168,110 as counted by the 2015 census has been continuously growing providing in the process a sizable market base for goods and services produced by its agriculture, commerce, and industry. Development of Bacon District continued to expand on the beach front, in barangay centers, and along the main artery which is now a national road.

At present, Sorsogon is faced with the challenge of balancing its three and often conflicting roles. Being the administrative, commercial, and educational center of the province entails a high degree of urbanization. Continuing as an agricultural and fishery production area requires the conservation of land areas needed by these economic activities. As an eco-tourism destination, the state of natural and man-made sites is often threatened by the first two roles.

In addition the climate change impacts and disaster risk resiliency are added challenges in ensuring sustainable development and protecting environment.

Inter-LGU and Inter-governmental bodies existing

Sorsogon City is a component city of the Province of Sorsogon. With the fourteen municipalities of the Province of Sorsogon, Sorsogon City participates as member of the Provincial Development Council. The PDC formulates the long term, medium term, and annual socio-economic plans and policies, and public investment programs of the province of Sorsogon.

Sorsogon City likewise is a regular member of the Regional Development Council (RDC) together with the other six Bicol Cities, six provinces of the Bicol Region, different departments of NEDA Board represented by their regional directors, non-government organizations in the region, and private sector representatives. The RDC was provided for the purposes of administrative decentralization to strengthen the autonomy of units therein and to accelerate the economic and social development of the units in the region.

Other significant local institutional and governance platforms and programs adopted/innovations

The city is bounded by two large water bodies, Sorsogon Bay and Albay Gulf. For this, the City Fisheries and Aquatic Resources Council takes part in both activities of the management councils of Albay Gulf and Sorsogon Bay. The federation of FARMC's involves adjoining municipalities and cities fronting the water body.

Sorsogon City is a member of the Sorsogon Bay Management Council. This is composed of the municipalities and city surrounding the body of water. The Sorsogon Bay Management Council is an offshoot of the previous 2007 Administrative Order creating the council as a result of the red tide occurrence in Sorsogon Bay.

To enhance the Health delivery system, Sorsogon City is likewise involved in a zone cluster of municipalities/city. The Juban, Casiguran, SorsogonCity and Magallanes (JuCaSoM) cluster covers the city.

Recent recognition and awards obtained from international/national/regional or private award giving bodies

Sorsogon City is a recipient of the Seal of Good Local Governance (SGLG) for two consecutive years, administration years 2015-16. The Department of the Interior and Local Government awards this seal to LGU's who pass their criteria on good financial housekeeping, social protection, disaster preparedness, peace and order, business friendliness and competitiveness, and environmental management. Previously, a Seal of Good Housekeeping (SGH) was also received from the same agency.

The city is also an awardee in 2015 as climate adaptive and disaster resilient (CLAD) city from the Climate Change Commission and recognized as a committed city to resiliency and readiness, by the United Nations Office for Disaster Risk Reduction (UNISDR).

Several regional and provincial awards and recognitions were received by Sorsogon City recently (2010-present) on child friendliness (Seal of Most Child-Friendly city) , environment (Gawad Gobernador sa Kapaligiran), tourism (Gayon Bikol Tourism Award), competitiveness (40th Most competitive City), health (Salud bikolnon Best Achiever), and infrastructure (20th in Infrastructure) among others.

I.B. CLUP DEMOGRAPHIC PROFILE

Population Composition

Based on 2015 Census of Population conducted by the Philippine Statistical Authority, Sorsogon City has a population count of 168,110. Sorsogon City has highest population in the province and accounts for 21.20% of the total population of the Province of Sorsogon at 792,949. Compared to the region, Sorsogon City is only 2.91% of Bicol region's population. The growth rate was 1.54% for the period 2010 to 2015. Total households was 35,394 with an average household size of 4.74 members per household. The projected population was 178,707 and the projected number of households was 37,702 in the same year.

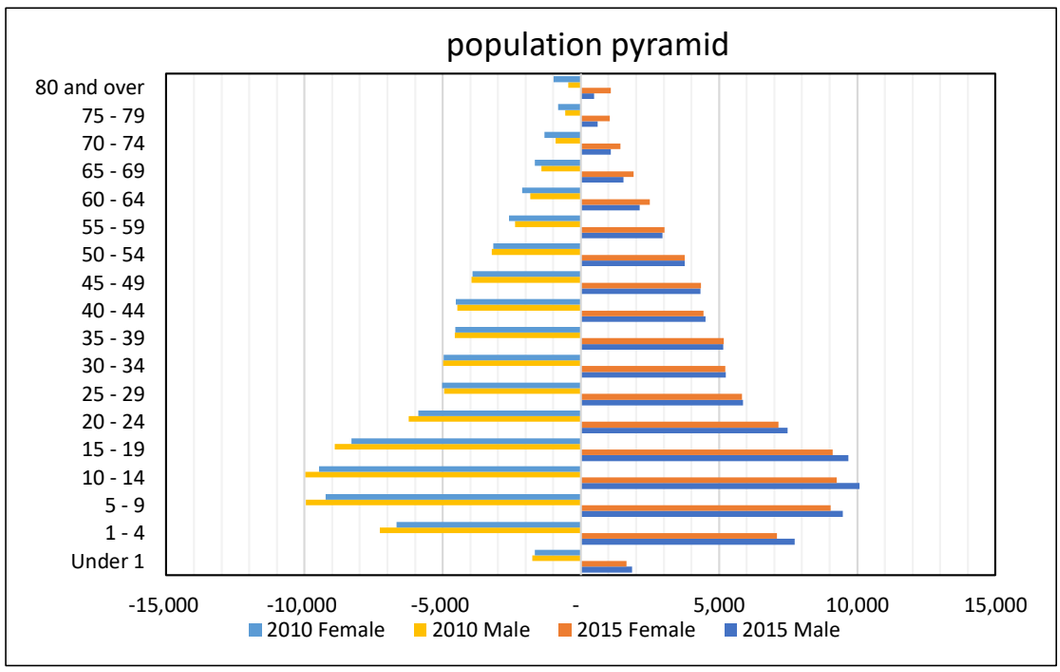


Figure 1. Population Pyramid

The population of Sorsogon City in 2015 is generally young with 54.8% belonging to the below 15 years old and 44% of the school going age population. The male population is slightly more than the female population with a sex ratio of 107 male for every 100 females. The total age dependency ratio is 38% or with 33 young dependents, ages 0-15, and 5 old dependents, ages 65 and over, for every 100 individuals of productive age or ages 15-65. Labor force is 66.35% of the total population. Of the 110,779-labor force population, only 61,989 is employed based on 2015 Status of Employment data.

Almost half of the population lives in the urban barangays as considered by the city based on the ordinance. The ratio of urban to rural population is 43 is to 57. There is a slight increase in terms of percentage of the urban population since Sorsogon became a city in 2000. The urban population increased in percentage in 2007 but declined in 2010 and again increased in 2015. The gross population density is 609 persons per square kilometer or 6 persons per hectare. Urban barangays have a density of 22 persons per hectare while the rural barangays have 14 persons per hectare. Sirangan, Sampaloc is the densest.

Population Composition

The population of Sorsogon as per National Statistic Office census of 2015 the total population is recorded at 168,110. Previously recorded total population from the previous census year 2010 is at 155,144.

The population of the city increased 1.54 percent annually, on average, for the period 2010 – 2015. The male population is slightly higher having a gender ratio of 1.02.

The City has 66.35 percent of its population comprising the labor force. These are the population with age 15 and over. Ages 15 to 64, or the working age population comprises 61.05 percent of the total population. The total dependency ratio is 64.77% with young dependency ratio of 54.8 and old dependency ratio of 8.98%. This shows that for every 100 working age population, there are 65 dependents, 55 of which are young and 9 are old.

The school going-age population (5-24 years old) is 44% of the total population. 22% comprise the elementary school age population, 14% compose the secondary school age population, while the tertiary school age population is 8%.

In terms of sex ratio, there are more males in the school going age population in all levels. There are 107 males for every 100 females. Same is true with the working age population. However, for the labor force, there are almost the same number of males and females. The young male dependents are greater while the male old dependents exceed the females by almost three fourths.

Population Density

The gross density of Sorsogon City is 609 persons per square kilometer or 6 persons per hectare, considering the more than 6,000 hectares geothermal reservation area. With a built-up area of 748 hectares, this results to a density of 213 persons per hectare.

Among the urban barangays, Sulucan, Sirangan, Talisay, Burabod, Bitan-o, Almendras, Polvorista and Sampaloc are the most dense barangays with more than 100 persons per hectare. Barangays with the highest population such as Bibincahan, Pangpang, and Cabid-an have large gross areas ranking them second to the group of tens.

In terms of density built-up area, Bibincahan, Pangpang, and Cabid-an rank among the first three biggest barangays.

Table 1. Based from the 2010 and 2015 population count, Sorsogon City has a growth rate of 1.54.

BARANGAY	Y0*	Participation Rate	Population					
			2019	2020	2021	2022	2023	2028
Sorsogon City	168,110		178,707	181,459	184,254	187,091	89,973	205,058
Abuyog	4,359	0.0259	4,634	4,705	4,778	4,851	4,926	5,317
Almendras-Cogon	1,169	0.0070	1,243	1,262	1,281	1,301	1,321	1,426
Balogo	6,932	0.0412	7,369	7,482	7,598	7,715	7,834	8,456
Barayong	1,008	0.0060	1,072	1,088	1,105	1,122	1,139	1,230
Basud	2,811	0.0167	2,988	3,034	3,081	3,128	3,177	3,429
Bibincahan	15,738	0.0936	16,730	16,988	17,249	17,515	17,785	19,197
Bitan-o/Dalipay	3,240	0.0193	3,444	3,497	3,551	3,606	3,661	3,952
Bucalbucalan	2,533	0.0151	2,693	2,734	2,776	2,819	2,862	3,090
Buenavista	1,736	0.0103	1,845	1,874	1,903	1,932	1,962	2,118
Buhatan	3,395	0.0202	3,609	3,665	3,721	3,778	3,837	4,141
Bulabog	2,443	0.0145	2,597	2,637	2,678	2,719	2,761	2,980
Burabod	2,867	0.0171	3,048	3,095	3,142	3,191	3,240	3,497
Cabid-An	7,255	0.0432	7,712	7,831	7,952	8,074	8,199	8,850
Cambulaga	4,418	0.0263	4,696	4,769	4,842	4,917	4,993	5,389
Capuy	2,561	0.0152	2,722	2,764	2,807	2,850	2,894	3,124
Gimaloto	1,050	0.0062	1,116	1,133	1,151	1,169	1,187	1,281
Guinlajon	4,609	0.0274	4,900	4,975	5,052	5,129	5,208	5,622
Macabog	3,643	0.0217	3,873	3,932	3,993	4,054	4,117	4,444

Marinas	761	0.0045	809	821	834	847	860	928
Pamurayan	1,966	0.0117	2,090	2,122	2,155	2,188	2,222	2,398
Pangpang	9,230	0.0549	9,812	9,963	10,116	10,272	10,430	11,259
Panlayaan	1,524	0.0091	1,620	1,645	1,670	1,696	1,722	1,859
Peñafrancia	1,763	0.0105	1,874	1,903	1,932	1,962	1,992	2,150
Piot	2,647	0.0157	2,814	2,857	2,901	2,946	2,991	3,229
Polvorista	602	0.0036	640	650	660	670	680	734
Rizal	3,645	0.0217	3,875	3,934	3,995	4,057	4,119	4,446
Salog	2,920	0.0174	3,104	3,152	3,200	3,250	3,300	3,562
Salvacion	787	0.0047	837	849	863	876	889	960
Sampaloc	4,719	0.0281	5,016	5,094	5,172	5,252	5,333	5,756
San Isidro	1,563	0.0093	1,662	1,687	1,713	1,739	1,766	1,907
San Juan (Roro)	5,191	0.0309	5,518	5,603	5,690	5,777	5,866	6,332
Sirangan	2,595	0.0154	2,759	2,801	2,844	2,888	2,932	3,165
Sulucan	523	0.0031	556	565	573	582	591	638
Talisay	2,600	0.0155	2,764	2,806	2,850	2,894	2,938	3,171
Ticol	2,114	0.0126	2,247	2,282	2,317	2,353	2,389	2,579
Tugos	3,154	0.0188	3,353	3,404	3,457	3,510	3,564	3,847
Balete	2,684	0.0160	2,853	2,897	2,942	2,987	3,033	3,274
Balogo	511	0.0030	543	552	560	569	577	623
Bato	1,756	0.0104	1,867	1,895	1,925	1,954	1,984	2,142
Bon-Ot	623	0.0037	662	672	683	693	704	760
Bogña	1,413	0.0084	1,502	1,525	1,549	1,573	1,597	1,724
Buenavista B	1,469	0.0087	1,562	1,586	1,610	1,635	1,660	1,792
Cabarbuhan	858	0.0051	912	926	940	955	970	1,047
Caricaran	2,371	0.0141	2,520	2,559	2,599	2,639	2,679	2,892
Del Rosario	950	0.0057	1,010	1,025	1,041	1,057	1,074	1,159
Gatbo	2,494	0.0148	2,651	2,692	2,734	2,776	2,818	3,042
Jamislagan	565	0.0034	601	610	619	629	638	689
Maricrum	1,365	0.0081	1,451	1,473	1,496	1,519	1,543	1,665
Osiao	3,174	0.0189	3,374	3,426	3,479	3,532	3,587	3,872
Poblacion	4,187	0.0249	4,451	4,519	4,589	4,660	4,732	5,107
Rawis	1,354	0.0081	1,439	1,462	1,484	1,507	1,530	1,652
Salvacion B	1,308	0.0078	1,390	1,412	1,434	1,456	1,478	1,595
San Isidro B	2,640	0.0157	2,806	2,850	2,894	2,938	2,983	3,220
San Juan	2,040	0.0121	2,169	2,202	2,236	2,270	2,305	2,488
San Pascual	1,579	0.0094	1,679	1,704	1,731	1,757	1,784	1,926
San Ramon	1,075	0.0064	1,143	1,160	1,178	1,196	1,215	1,311
San Roque	3,059	0.0182	3,252	3,302	3,353	3,404	3,457	3,731
San Vicente	1,490	0.0089	1,584	1,608	1,633	1,658	1,684	1,817
Santa Cruz	1,157	0.0069	1,230	1,249	1,268	1,288	1,307	1,411
Santa Lucia	481	0.0029	511	519	527	535	544	587
Santo Domingo	1,300	0.0077	1,382	1,403	1,425	1,447	1,469	1,586
Santo Niño	2,455	0.0146	2,610	2,650	2,691	2,732	2,774	2,995
Sawanga	1,533	0.0091	1,630	1,655	1,680	1,706	1,732	1,870
Sugod	2,148	0.0128	2,283	2,319	2,354	2,391	2,427	2,620

Table 2. Projected Households

Year	Population	Household*
2015	168,110	35,394
2019	178,707	37,702
2020	181,459	38,283
2021	184,254	38,872
2022	187,091	39,471
2023	189,973	40,079

Urbanization Level

Sorsogon City started as two separate municipalities before becoming a city in year 2000. The former Municipality of Bacon has only Barangay Poblacion as its urban barangay classified by NSO (now PSA). While the former Municipality of Sorsogon has 10 barangays classified as urban. This has expanded through a legislation of the Sangguniang Bayan in 1981, expanding the area to the Poblacion (urban area) adding 7 barangays to the urban center. Sorsogon City since the merger, has now a total of 18 barangays comprising the urban areas. Considering population and proximity to the urban center, and presence of facilities, three barangays can be considered urbanizing. These are barangays Cambulaga in West District, Balete and San Roque in Bacon District.

The level of urbanization of the combined municipalities of Bacon and Sorsogon declined from 1990 until 2000. It escalated in 2007, declined in 2010 and again intensified up to 2015. Sorsogon City has almost half of its population living in the urban areas. Of the 64 barangays, 18 are considered urban barangays and 47 percent of the population lives here. The increase in urban population maybe associated with job opportunities, education, and migration from other municipalities.

Projected Population by Barangay

The population projection by barangay used the participation rate process to come up with the projected population 2019 to 2028. The 2015 population of the barangay is computed in terms of its contribution to the Sorsogon City. The same computation follows for the projected population of the city as its basis.

Bibincahan is projected to be almost 20,000 and Pangpang to be more than 11,000 by 2028. Cabid-an and Balogo East District follows with more than 8,000. For the urban barangays, the least projected population is Polvorista and Sulucan while for the rural barangays, Sta Lucia, Bato, Jamislagan, Bon-ot and Balogo, all of Bacon District, will have more than 500 to less than 800 population.

Table 3. School going age projected

Grouping	Y0 (Base year)	Participation Rate (PR)	Projected Population					
			2019	2020	2021	2022	2023	2028
Population	168,110	n/a	178,707	181,459	184,254	187,091	189,973	205,058
School going population	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pre-school	14,822	0.0882	15,756	15,999	16,245	16,496	16,750	18,080
Elementary	22,717	0.1351	24,149	24,521	24,899	25,282	25,672	27,710
Secondary	22,776	0.1355	24,212	24,585	24,964	25,348	25,738	27,782
Tertiary	12,531	0.0745	13,321	13,526	13,734	13,946	14,160	15,285
Labor Force	110,779	0.6590	117,762	119,576	121,417	123,287	125,186	135,126
Dependent								
Young (0-14)	56,188	0.3342	59,730	60,650	61,584	62,532	63,495	68,537
Old (65 and over)	9,167	0.0545	9,745	9,895	10,047	10,202	10,359	11,182

The age group with the highest population are ages 5 to 19. These are the school going age population and the three age groups account for more than 33 percent of the total population in 2015. The same age groups account for 36 percent of the 2010 total population. In terms of gender the age group of male 54-59 registered the highest increase in 2015 compared with the same age group in the 2010 population. The age group of 20-24 however has the highest increase in percentage for the female population.

Young old dependents is to increase to 63,495 by 2013 and 68,537 by the end of the planning period 2028. For old dependents, this is expected to increase to 10,359 by 2023 and 11,182 by 2028. All are assumed to have a constant growth rate.

The labor force will have a significant increase of more or less 25,000 by the end of 2028. The number of persons within this age is expected to be 135, 126 by 2028.

I.C. GEOGRAPHIC LOCATION

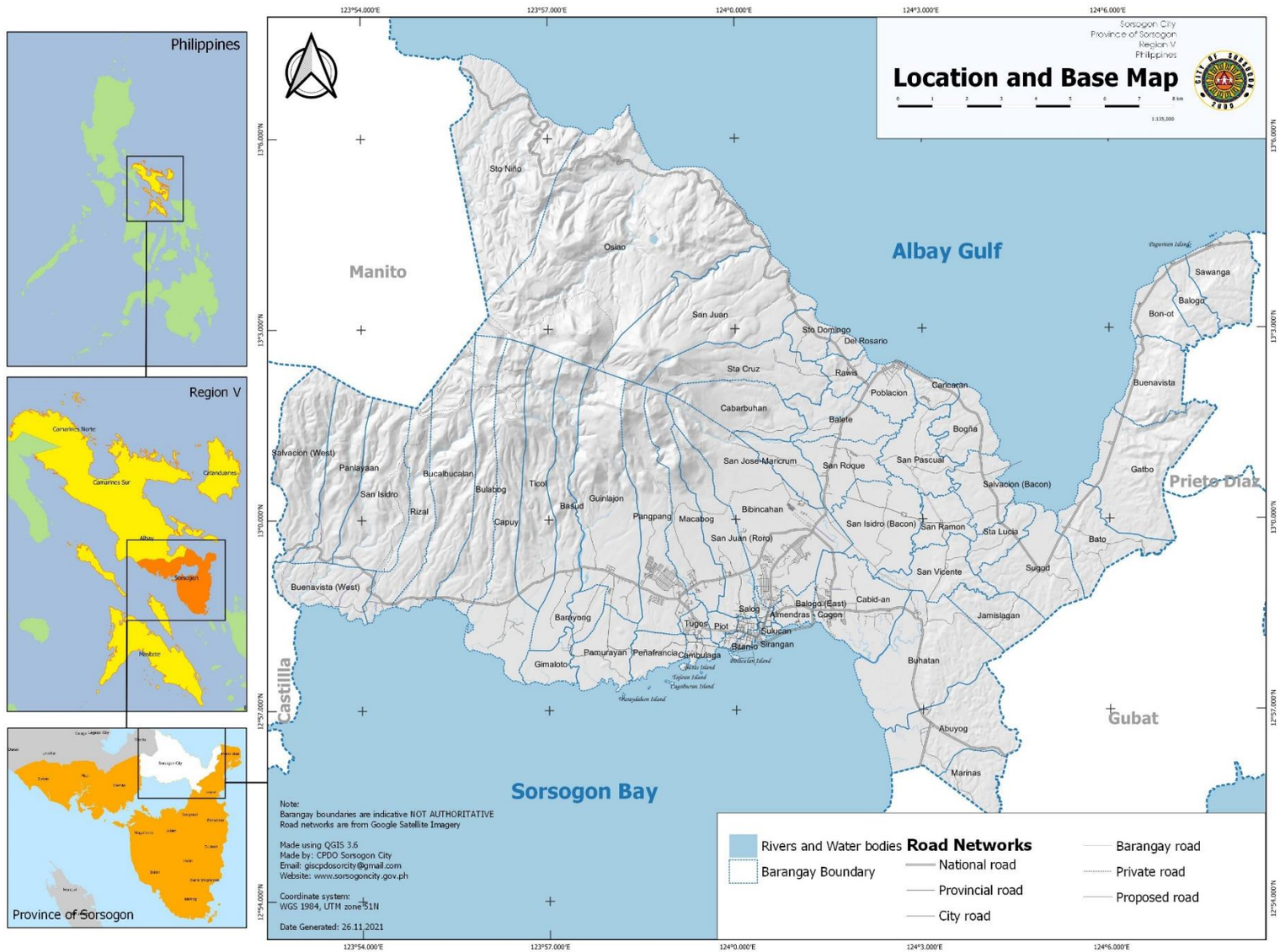
Sorsogon City lies from 123° 53’ to 124° 09’ east longitude and from 12° 55’ to 13° 08’ north latitude. It is 600 kilometers southeast of Manila and is located at the southernmost tip of Luzon. As part of the geographical chain linking Luzon to the rest of the Philippines, it is a transshipment corridor and serves as the gateway city to the Visayas and Mindanao Islands. Its geographical location is such that it opens into both the Pacific Ocean (through Albay Gulf) and the China Sea (through Sorsogon Bay and Ticao Pass). The city is bounded on the east by the municipalities of Pto. Diaz and Gubat, on the south by the municipality of Casiguran and Sorsogon Bay, on the west by the municipality of Castilla, on the northeast by the municipality of Manito in Albay, and on the north by Albay Gulf.

Sorsogon City has an area of 27,600 hectares or 27.6 square kilometers. The shared boundary with Pto. Diaz on the east is 10.64 kilometers and with Gubat municipality is 15.27 kilometers. On the south, adjoining boundary with Casiguran is 3.37 kilometers. The adjacent Municipality of Manito, Albay Province has 15.56 kilometers boundary and with Castilla on the west is 8.38 kilometers.

Sorsogon City has a coastline of 39.3 kilometers along Albay Gulf and approximately 33 nautical miles bordering the municipal waters with the municipalities of Manito, Rapu-rapu, and Pto. Diaz. Along the Sorsogon Bay, the coastline stretches to 29.4 kilometers and 22 nautical miles bordering the municipal waters of Casiguran, Juban, Magallanes, and Castilla. The total area of the municipal waters of Sorsogon City is approximately 266 square kilometers for the two bodies of water, 20,041 hectares at Albay Gulf and 6,609 hectares at Sorsogon Bay.

Sorsogon City is divided into three districts, East, West, and Bacon districts. East district has 14 barangays, West district has 22 barangays, and 28 barangays for Bacon District. Of the total 64 barangays of the city, 18 are urban barangays while 46 are considered rural barangays. The urban barangays land area totals 3,977.95 hectares or 14.78% of the city’s area. The rural barangays total land area is 23,521.37 or 85.22% of the total area. Barangay Bibincahan ranks first in terms of area among the urban barangays while Barangay Osiao is the biggest rural bararangay. The smallest urban barangay is Polvorista and Cambulaga as the smallest rural barangay.

Figure 2. Location Map



II.A. PHYSICAL AND ENVIRONMENTAL CONDITION

Topography

Sorsogon may be divided into four physical areas—the northeastern range, the sloping uplands, the plain area, and marshlands.

The northeastern range is part of the Bacon-Castilla range, bordering Sorsogon's north and serves as its watershed covered mainly by secondary forest growth and thicket. It starts from 200 m above sea level to Mt. Rangas, the highest point at 1,000 meters. The sloping uplands are the shoulders of the range and the series of hills in the southeast. Coconut, abaca, and fruit trees cover this area. The plain is generally low and level. Settlements and other built-up areas and ricefields occupy the plain area. Marshlands are the mouth of rivers vegetated mainly by nipa and are developed into fishponds.

Elevation

Elevation starts from 0-100 meters above sea level (masl) to Mt. Rangas, the highest point at 1,000 meters. The sloping uplands are the shoulders of the range and the series of hills in the southeast. Coconut, abaca, and fruit trees cover this area. The plain is generally low and level. Settlements and other built-up areas and ricefields occupy the plain area. Marshlands are the mouth of rivers vegetated mainly by nipa and are developed into fishponds .

Slope

Sorsogon City has a large area suitable for urban use in terms of slope. These are areas with equal to or less than 30 percent grade. This accounts to more than half of the city's area. Steep slopes suitable for forest use are situated within the geothermal site reservation area.

Table 4. Slope

Slope category	Area covered (ha)	Suitability
0 - 3 %	4,296	Urban use
3 - 8 %	6,905	Urban use
8 - 18 %	3,309	Urban use
18 - 30 %	1,379	Urban use
30 - 50 %	5,976	Forest Use
> 50 %	5,588	Forest Use

Suitability of Land for Urban Use

Of the total area of the city, a total of 15, 800 hectares or 58 percent is below 30% grade in slope which are suitable for development in urban use. The remaining areas have slopes above 30% grade and are suited only for forest use. Table 4 refers to suitability areas for urban use.

Drainage Pattern, bodies of water Surface Drainage

A system of rivers and creeks and several small waterways drain the area. The northern half of the city is drained by rivers and creeks that empty to Sugod Bay and Albay Gulf. The southern half is drained towards Sorsogon Bay.

Fresh water rivers, when reaching the lowlands have been tapped for irrigation and domestic uses. Brackish ones are source of shrimps and shellfish.

Watershed, Rivers and Creeks

A system of rivers and creeks and several small waterways drain the general area of the city: Salog River is an urban river originating from Mt. Alinao and traversing eight barangays before discharging into the Sorsogon Bay. San Isidro, Rizal, and Cawayan Rivers originate from springs and tributaries of secondary forest areas within EDC Geothermal Reservation including the Bacon District or northwestern rivers of the city. Rivers in Bacon District, at the northwestern to northeastern portion of the city, drain to the Albay Gulf. These include Luluwasan Osiao, Gatbo, and Rangas Rivers. Rivers in the southwest & south namely San Isidro, Cawayan, Salog, and Abuyog Rivers at the East & West District drain into the Sorsogon Bay.

Fresh Water Rivers, upon reaching the lowlands, are often tapped for irrigation and domestic uses. Brackish ones are source of shrimps and shellfish. Water resources in the City are generally classified into surface and groundwater. Springs (Table 4) and networks of creeks and tributaries at the upland converges at the down streams to form major river systems.

Vegetation/vegetative cover

Table 5. Land cover

Land cover	Total area covered (ha)	% to Total
Mangrove forest	789.49	2.85%
Open forest, broadleaved	1,819.64	6.57%
Other land, built-up area	262.95	0.95%
Other land, cultivated, annual crop	2,636.39	9.53%
Other land, cultivated, perennial crop	10,713.83	38.71%
Other land, fishpond	75.45	0.27%
Other land, natural, grassland	266.14	0.96%
Other wooded land, shrubs	11,112.15	40.15%

Soil

Type/Classification

Dominant soil types are Annam clay loam. Annam clay loam has a relief of slightly undulating, roughly rolling to undulating. It covers about half of the area. It is suited to lowland rice, root crops, vegetables, and permanent planting. Sorsogon clay loam, is the soil on the plains and valleys. It is suited to lowland rice, abaca, and corn. The rest of the soils are Bascaran clay loam, Castilla clay loam and Casiguran clay loam

Soil Suitability

Sorsogon City is endowed with soil type or 96% of its area suited for agriculture. While elevation and slope are also a factor, agricultural area is limited to lower areas. The loamy soil type makes it suitable for agriculture.

Table 6. Suitability for Agriculture

Barangay	Soil type	Suitability for Agriculture	Total Area Covered (ha)	% to Total
Forestland (EDC)	Clay Loam	Suitable	6,549.229	24.27%
Abuyog	Clay	Suitable	98.427	0.36%
	Clay Loam	Suitable	262.534	0.97%
	Hydrosol	Unsuitable	55.457	0.21%
Almendras-Cogon	Silty clay loam	Suitable	10.781	0.04%
Balogo (East)	Clay	Suitable	1.371	0.01%
	Silty Clay Loam	Suitable	105.345	0.39%
	Hydrosol	Unsuitable	5.194	0.02%
Barayong	Silty clay loam	Suitable	123.254	0.46%
Basud	Clay Loam	Suitable	215.217	0.80%
	Silty clay loam	Suitable	255.817	0.95%
Bibincahan	Clay	Suitable	3.681	0.01%
	Clay Loam	Suitable	287.044	1.06%
	Silty Clay Loam	Suitable	729.175	2.70%
Bitan-o Dalipay	Silty clay loam	Suitable	23.529	0.09%
Bucalbucalan	Clay Loam	Suitable	368.644	1.37%
	Hydrosol	Unsuitable	22.762	0.08%
Buenavista	Clay Loam	Suitable	278.140	1.03%
	Hydrosol	Unsuitable	13.641	0.05%
	Hydrosol	Unsuitable	33.748	0.13%
Buhatan	Clay	Suitable	263.522	0.98%
	Clay Loam	Unsuitable	405.589	1.50%
	Hydrosol	Unsuitable	241.689	0.90%
Bulabog	Clay Loam	Suitable	0.012	0.00%
	Clay Loam	Suitable	346.489	1.28%
	Hydrosol	Unsuitable	30.676	0.11%
Burabod	Silty clay loam	Suitable	23.109	0.09%
Cabid-an	Clay	Suitable	245.526	0.91%
	Clay Loam	Suitable	0.084	0.00%
	Silty clay loam	Suitable	195.063	0.72%
	Hydrosol	Unsuitable	130.482	0.48%
Cambulaga	Silty clay loam	Suitable	54.281	0.20%
Capuy	Clay Loam	Suitable	334.781	1.24%
	Clay Loam	Suitable	0.012	0.00%
	Silty Clay Loam	Suitable	218.427	0.81%
	Silty Clay Loam	Suitable	0.010	0.00%
	Hydrosol	Unsuitable	86.126	0.32%
	Hydrosol	Unsuitable	0.080	0.00%
	Hydrosol	Unsuitable	0.010	0.00%
Gimaloto	Silty Clay Loam	Suitable	150.705	0.56%
	Hydrosol	Unsuitable	0.026	0.00%
	Hydrosol	Unsuitable	6.474	0.02%
	Hydrosol	Unsuitable	2.035	0.01%
Guinlajon	Clay Loam	Suitable	495.689	1.84%
	Silty clay loam	Suitable	318.132	1.18%
Macabog	Clay Loam	Suitable	271.371	1.01%
	Silty clay loam	Suitable	118.972	0.44%
Marinas	Clay	Suitable	7.294	0.03%
	Clay loam	Suitable	157.164	0.58%
Pamurayan	Silty Clay Loam	Suitable	260.450	0.97%
	Hydrosol	Unsuitable	44.878	0.17%
Pangpang	Clay Loam	Suitable	354.731	1.31%
	Silty clay loam	Suitable	236.228	0.88%
Panlayaan	Clay Loam	Suitable	234.276	0.87%
Peñafrancia	Silty Clay Loam	Suitable	163.255	0.60%
Piot (Pob.)	Silty Clay Loam	Suitable	56.699	0.21%
Polvorista (Pob.)	Silty Clay Loam	Suitable	5.418	0.02%
Rizal	Clay Loam	Suitable	324.590	1.20%

Barangay	Soil type	Suitability for Agriculture	Total Area Covered (ha)	% to Total
	Hydrosol	Unsuitable	25.617	0.09%
	Hydrosol	Unsuitable	8.837	0.03%
Salog (Pob.)	Silty Clay Loam	Suitable	23.706	0.09%
Salvacion	Clay Loam	Suitable	262.605	0.97%
Sampaloc (Pob.)	Silty Clay Loam	Suitable	15.295	0.06%
San Isidro	Clay Loam	Suitable	532.245	1.97%
San Juan Roro	Clay Loam	Suitable	132.509	0.49%
	Silty clay loam	Suitable	301.373	1.12%
Sirangan (Pob.)	Silty Clay Loam	Suitable	5.453	0.02%
Sulucan (Pob.)	Silty Clay Loam	Suitable	3.166	0.01%
Talisay (Pob.)	Silty Clay Loam	Suitable	17.831	0.07%
Ticol	Clay Loam	Suitable	382.162	1.42%
	Silty clay loam	Suitable	110.624	0.41%
Tugos	Silty Clay Loam	Suitable	65.374	0.24%
Balete	Clay Loam	Suitable	95.665	0.35%
	Silty clay loam	Suitable	222.705	0.83%
Balogo (B)	Clay	Suitable	166.282	0.62%
	Clay Loam	Suitable	2.845	0.01%
Bato	Clay	Suitable	275.429	1.02%
	Clay Loam	Suitable	117.982	0.44%
Bon-ot	Clay	Suitable	257.230	0.95%
	Clay Loam	Suitable	10.219	0.04%
Bogña	Clay Loam	Suitable	263.389	0.98%
Buenavista	Clay	Suitable	344.171	1.28%
	Clay Loam	Suitable	53.654	0.20%
Cabarbuhan	Clay Loam	Suitable	379.108	1.40%
	Silty clay loam	Suitable	8.101	0.03%
Caricaran	Clay Loam	Suitable	104.616	0.39%
Del Rosario	Clay Loam	Suitable	60.695	0.22%
Gatbo	Clay	Suitable	645.918	2.39%
	Clay Loam	Suitable	165.330	0.61%
Jamislagan	Clay	Suitable	4.522	0.02%
	Clay Loam	Suitable	250.936	0.93%
Maricrum	Clay Loam	Suitable	159.950	0.59%
	Silty clay loam	Suitable	53.010	0.20%
Osiao	Clay Loam	Suitable	1,373.710	5.09%
	Clay Loam	Suitable	0.001	0.00%
Poblacion	Clay Loam	Suitable	203.496	0.75%
	Silty clay loam	Suitable	6.030	0.02%
Rawis	Clay Loam	Suitable	133.980	0.50%
Salvacion	Clay	Suitable	6.648	0.02%
	Clay Loam	Suitable	272.374	1.01%
San Isidro (B)	Clay	Suitable	89.842	0.33%
	Clay Loam	Suitable	218.425	0.81%
	Silty clay loam	Suitable	224.684	0.83%
San Juan	Clay Loam	Suitable	709.003	2.63%
	Clay Loam	Suitable	0.001	0.00%
San Pascual	Clay Loam	Suitable	0.001	0.00%
	Silty clay loam	Suitable	159.241	0.59%
San Ramon	Clay	Suitable	18.351	0.07%
	Clay Loam	Suitable	181.375	0.67%
San Roque	Clay Loam	Suitable	121.757	0.45%
	Silty clay loam	Suitable	209.407	0.78%
San Vicente	Clay	Suitable	21.077	0.08%
	Clay	Suitable	76.044	0.28%
	Clay Loam	Suitable	225.362	0.84%
Sta. Cruz	Clay Loam	Suitable	415.401	1.54%
	Silty clay loam	Suitable	0.640	0.00%
Sta. Lucia	Clay	Suitable	153.148	0.57%
	Clay Loam	Suitable	39.895	0.15%
Santo Domingo	Clay Loam	Suitable	150.380	0.56%
Santo Niño	Clay Loam	Suitable	408.448	1.51%
Sawanga	Clay	Suitable	268.042	0.99%
	Clay Loam	Suitable	40.313	0.15%
Sugod	Clay	Suitable	398.564	1.48%
	Clay Loam	Suitable	103.237	0.38%

Suitability of Land for Urban Use

Of the total area of the city, a total of 15, 800 hectares or 58 percent is below 30% grade in slope which are suitable for development in urban use. The remaining areas have slopes above 30% grade and are suited only for forest use. Table 6 refers to suitability areas for urban use.

Hydrogeology

Geology

The northern part of Sorsogon is made up of andesitic lava flows and other volcanic rocks. Rocks in the northeast are coralline limestone which are now being quarried for marble produced by different episodes of volcanic intrusions. Mt. Rangas and Mt. Poctol maybe dormant or extinct volcanoes with the present lakes as their mouths. The rest of the flatlands are recent alluvial deposits composed of clays, silt, sand, gravel and corral. Geothermal energy has been successfully exploited in the northern part of the city, including areas Manito. From wells drilled and developed by the Philippine National Oil Corporation, the National Power Corporation is operating three plants with a capacity of 130 MW connected to the Luzon grid. As to non-metallic minerals, the Bureau of Mines and Geosciences has determined a sulfur deposit of 755 metric tons in Rizal. Its grade ranges from 10% to 40%. Gravel and sand can be quarried at the Cawayan River.

Ground Water Resources

Ground water is the primary source of drinking water in the city dispensed by the Sorsogon City Water District (SCWD). Sources includes: Baribag, Peñafrancia Seminary, Sea Breeze Homes, Imperial Subdivision, Villa Alegre Subdivision, Abuyog 1 and 2, Cabid-an, Guinlajon and San Pascual. It is also the main source of BAWASA.

Climatological conditions

Generally, the climate of Sorsogon is under Type II of the Coronas classification system. Under Type II, there is no pronounced dry season but with a very pronounced maximum rain period from November to January. Sorsogon City's annual rainfall range from 2,800 mm to 3,500 mm. Rain is expected 200 days in a year and even in the driest months unexpected downpour occurs.

Atmospheric temperature and relative humidity in the Sorsogon City range from 21°C to 32 °C. Relative humidity is 82%. Prevailing air stream systems are the monsoons and Pacific Trade Winds

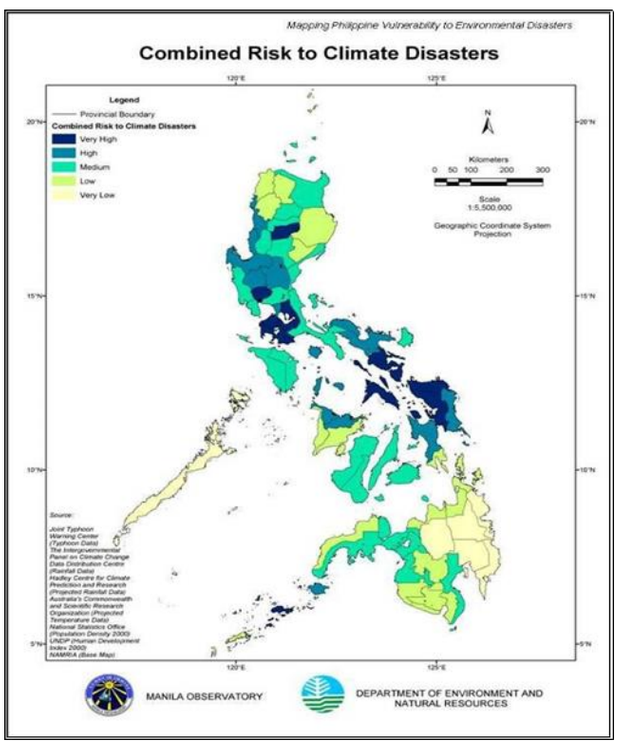


Figure 3. Combined Risk to Climate Disaster Map

which pas over Sorsogon City and cause variations to climate. The Northeast Monsoon (Amihan) occurs/ dominates from October to March and brings significant amounts of rains. While the Southwest Monsoon (Habagat), occurs from June to September and during these months, the area is warm and very humid thus, increasing rainfall rates The Pacific Trade Winds (Gurang na Habagat) occurs during April and May significantly raise temperatures (City Ecological Profile, 2015).

The climate is tropical in Sorsogon City. The same has a significant rainfall throughout the year. The city experiences a lot of rainfall even during the driest months. The climate here is classified as Af by the Köppen-Geiger system. The average annual temperature is 27.1 °C in Sorsogon City. The average annual rainfall is 3089 mm.

The driest month is May. There is 139 mm of precipitation in May. Most precipitation falls in December, with an average of 487 mm.

Climograph of Sorsogon City

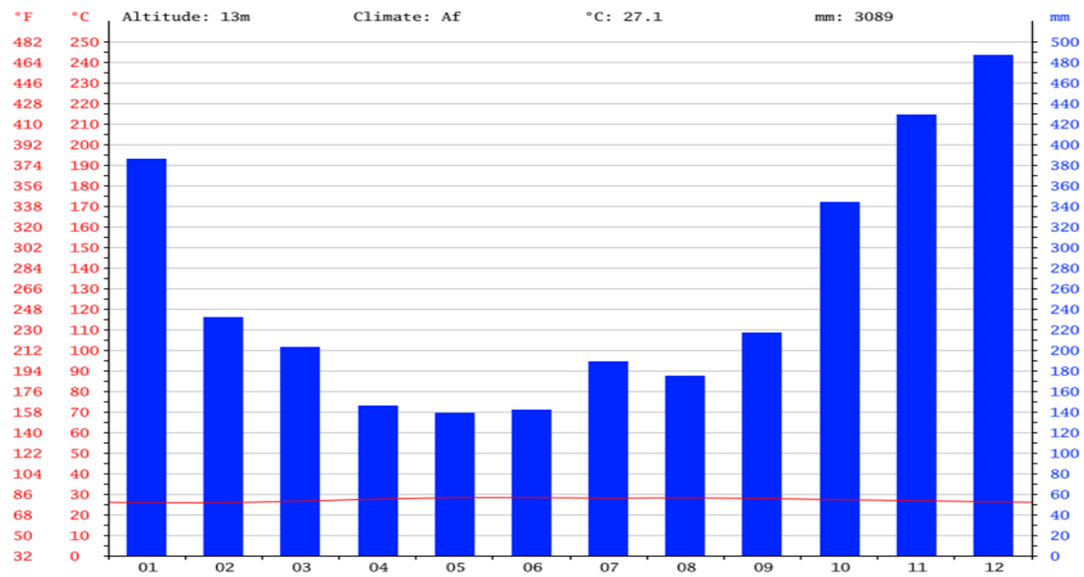


Figure 4. Climotography of Sorsogon

A. Temperature Graph of Sorsogon City

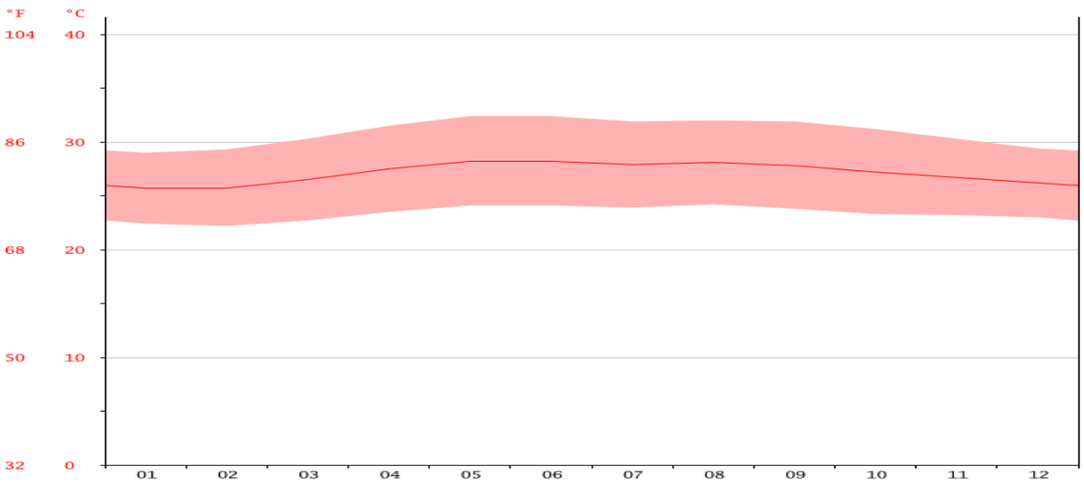


Figure 5. Temperature Graph of Sorsogon City

With an average of 28.2 °C, May is the warmest month. In January, the average temperature is 25.7 °C. It is the lowest average temperature of the whole year.

Surface Waters

A system of rivers and creeks and several small waterways drain the general area of the city: Salog River is an urban river originating from Mt. Alinao and traversing eight barangays before discharging into the Sorsogon Bay. San Isidro, Rizal, and Cawayan Rivers originate from springs and tributaries of secondary forest areas within EDC Geothermal Reservation including the Bacon District or northwestern rivers of the city. Rivers in Bacon District, at the northwestern to northeastern portion of the city, drain to the Albay Gulf. These include Luluwasan Osiao, Gatbo, and Rangas Rivers. Rivers in the southwest & south namely San Isidro, Cawayan, Salog, and Abuyog Rivers at the East & West District drain into the Sorsogon Bay.

Fresh water rivers, upon reaching the lowlands, are often tapped for irrigation and domestic uses. Brackish ones are source of shrimps and shellfish. Water resources in the City are generally classified into surface and groundwater. Springs (Table 4) and networks of creeks and tributaries at the upland converges at the down streams to form major river systems. The Major river systems of Sorsogon City is shown in Table 5.

II.B. EXISTING LAND USE AND LAND USE TRENDS

Existing Land Use

The commercial district of Sorsogon remained physically the same in area for the past 20 years. Existing settlement pattern tends to expand along the three strips defined by the roads going to Legaspi City to the west, to Bacon district northward, and to Gubat eastward. This development is partly due to the absence of circumferential and radial roads. Satellite communities are present in Pangpang, Bibincahan, and Cabid-an.

Of the total area of 27,600 hectares, Sorsogon City has a total built up area of only 1,878 hectares or 7 percent of the city's area. Agricultural use dominates the area with 19,772 hectares or 72 percent of the total area. The forest area which is included in the reservation area where the geothermal plant is located, has an area of 5,981 hectares or 22 percent of the total area.

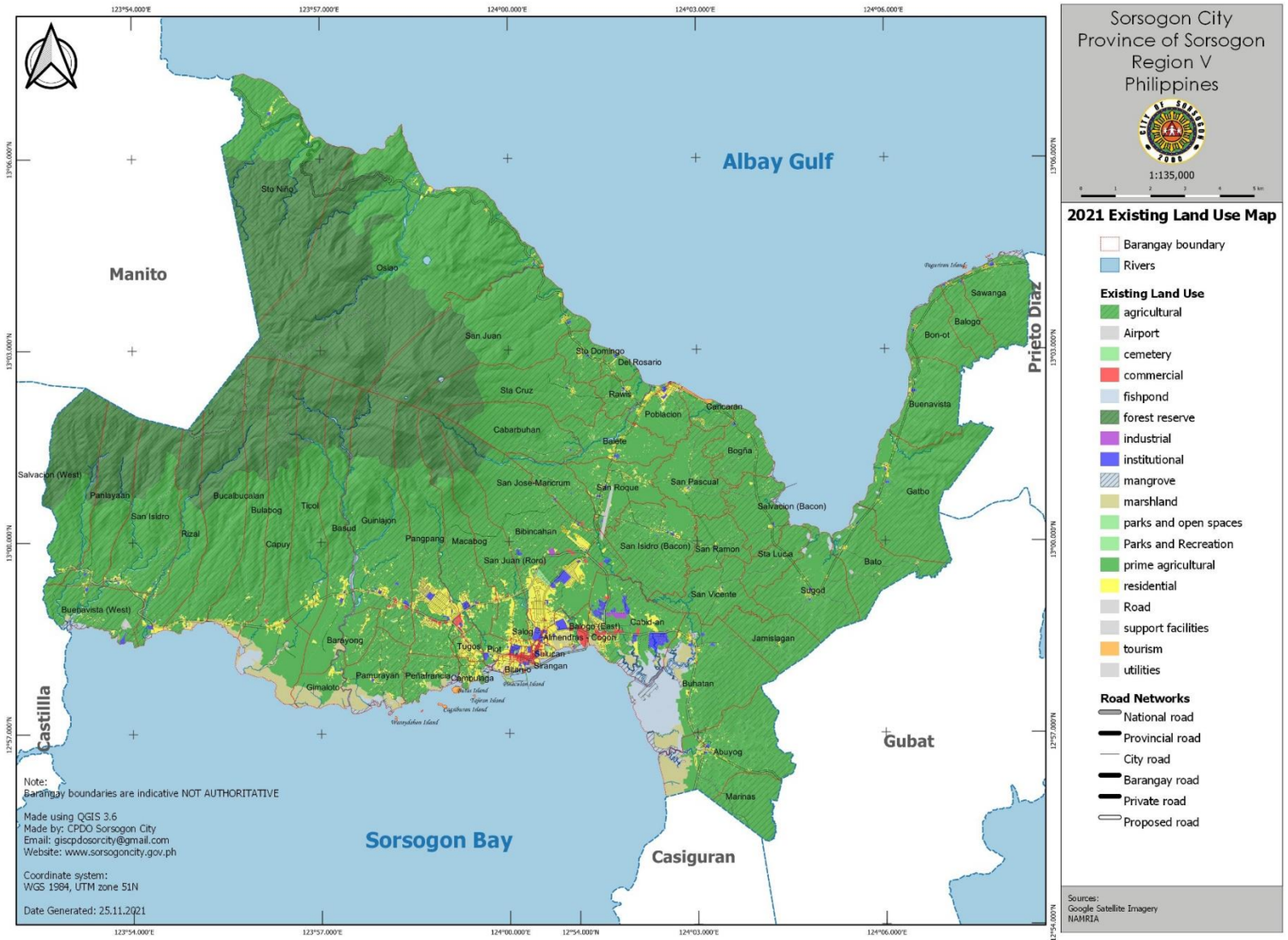
The city's municipal waters cover both portions of Sorsogon Bay and Albay Gulf. The Sorsogon Bay portion shared with other 7 municipalities cover 25.545 hectares. This is used as fishing ground of the small fishermen, green mussel farm, and fish culture.

Land Use Trends

Sorsogon City started with two urban centers from the former municipalities of Sorsogon and Bacon. Sorsogon municipality started with 11 urban barangays and grew to 17 during the 1970's while Bacon municipality remained with one urban center. The former expanded along the main highway in three directions covering now Pangpang, Bibincahan, and Cabid-an. Barangay Poblacion remained as the urban center although expansions are reaching Caricaran, Balete and Rawis. Residential subdivisions have changed the agricultural areas to residential and commercial uses particularly in the perimeter part of the urban areas.

After the merger into a city, more land use changes occurred. The construction of the diversion road opened development along the highway covering the barangays of Cabid-an, Bibincahan, San Juan, Macabog and Pangpang. The inauguration of the City Hall in 2007 marked the opening of the satellite city, a planned unit development composed of institutional, commercial and residential uses along the diversion road. Residential, commercial, institutional, and industrial uses are now present in these areas. The same land use changes occurred in portions of Guinlajon, Cambulaga, San Roque, and Balete with the pressure of development.

Figure 6. Existing General Land Use Plan



Cambulaga **Balete**

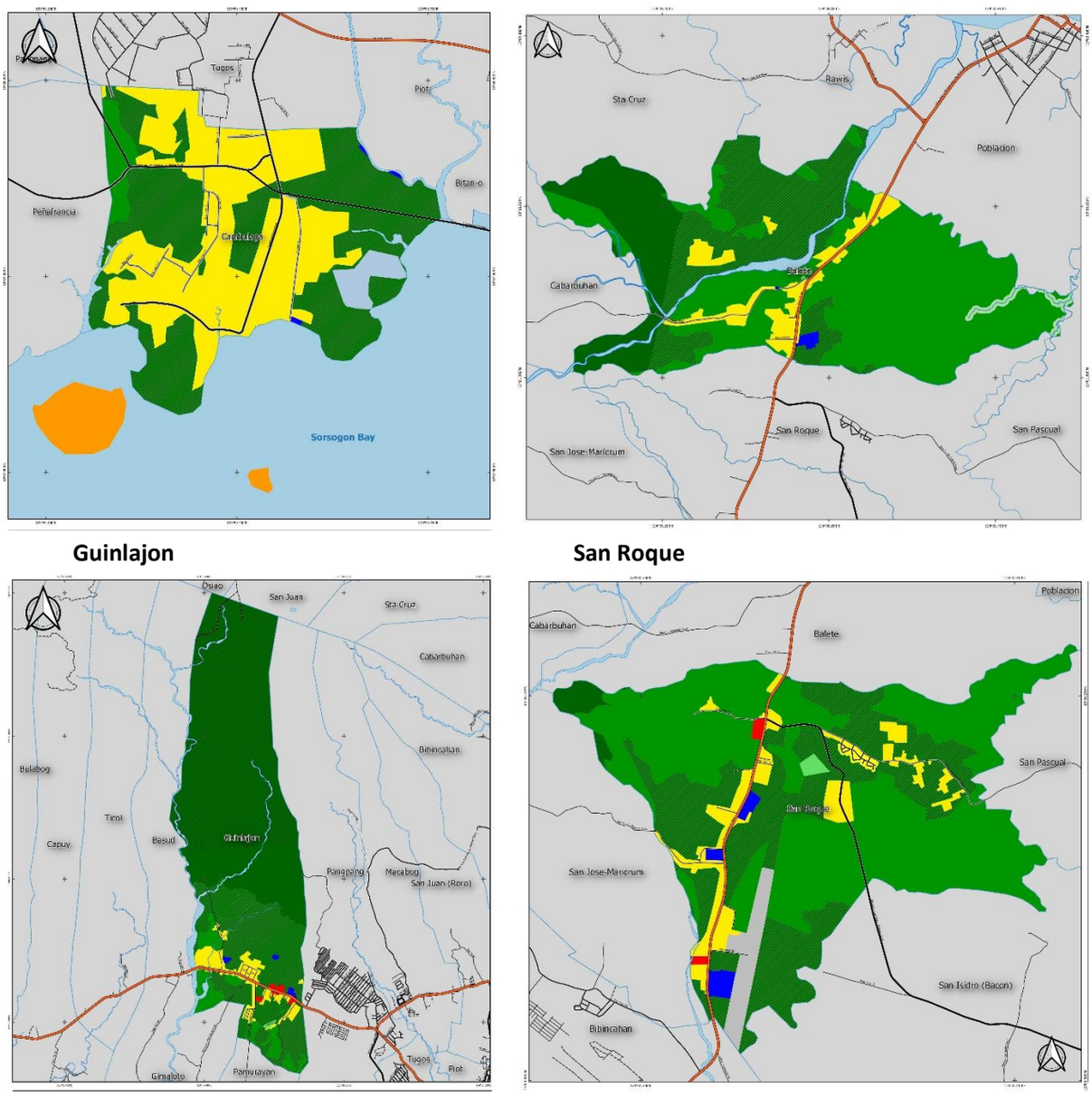


Figure 7. Cambulaga, Balete , Guinlajon & San Roque

Agriculture lands including prime agricultural land has been affected by the pressure of these developments. The expansion of the urban center with the formerly conceived “satellite city” now a city government center leads in areas with most new infrastructures. An industrial coconut processing facility and hospital now occupies former agricultural lands in the diversion road. Permanent commercial establishments likewise have developed in Cabid-an along the diversion road and national roads.

On the southern part of the city, the coastal portion of Sirangan and Talisay has turned into an amenity and leisure center. A bypass road is on-going, which will link Cabid-an and Pangpang without getting into the urban center through a coastal road.

The development in the East and West districts continued not only in-filling but with vertical multi-storey structure development in some areas.

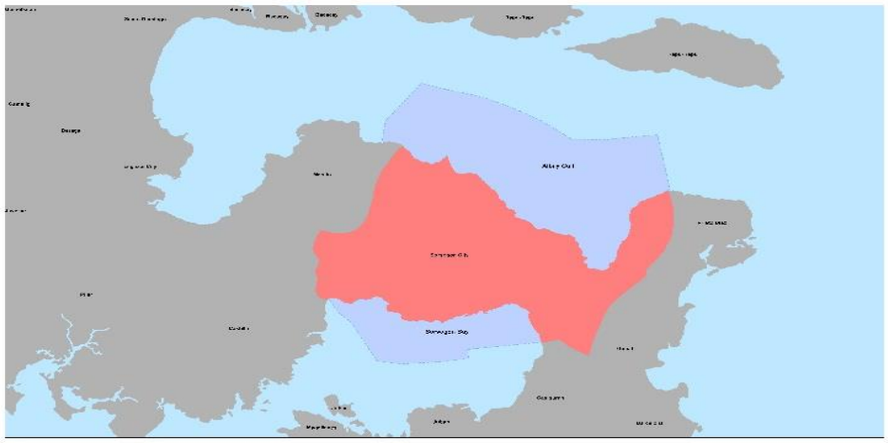


Figure 8 Policy Zones and Development Strategies

Parallel with the objectives of disaster risk reduction, policy zones were identified to guide the development and used as screening criteria before implementing identified projects. Development is deemed to be useless if it will just be damaged by climatic and geologic hazards. Recognizing the importance of disaster risk reduction in development, the following objectives are aimed in formulating these:

Minimize impact of disaster to people. As much as possible to people no casualty during disasters or zero casualty. In terms of recovery, the objective is for the victims to recover fast from the impacts of disaster.

Minimize damage to physical development. Developments and infrastructures shall at least protect the existing development in high-risk areas. These maybe part of long-term plans for relocation of development in high-risk areas. Future development shall be located in identified safe or low risk areas to hazards.

Encourage mitigation and adaptation measures for those in high-risk areas. Disaster risk mitigation involves infrastructure and non-infrastructure measures to lessen impact of disaster. Climate change adaptation will be using measures to lessen impact of disaster living with the hazards. Climate change mitigation is using measures which will reduce carbon footprints thereby helping the effects of climate change.

Protect prime agricultural lands and environmental assets. Protecting prime agricultural lands will at least help rice self-sufficiency of the city. This is also saving and making use of the irrigation systems built for such areas. Sustainable development also means protecting environmental assets such as forests, rivers and other natural bio physical environment for current and future use.

Each policy zone is defined be based on the type and level of risk in the area, its topography, and its dominant land use. Each policy zone will also have its own development strategy to guide the land use and to harmonize programs, projects, and legislation/policies specific to that area.

II.C. INFRASTRUCTURE, FACILITIES AND UTILITIES

- Includes major physical infrastructure projects (i.e. major dams/energy facilities, regional/sub-national transport/road network and facilities, etc.)
- Infrastructure and road network maps at 1:50,000 (provincial-municipal); municipal/city-level local road network at 1:20,000 or suitable scale

Infrastructure (2016 Resource generation and utilization – construction materials and land use)

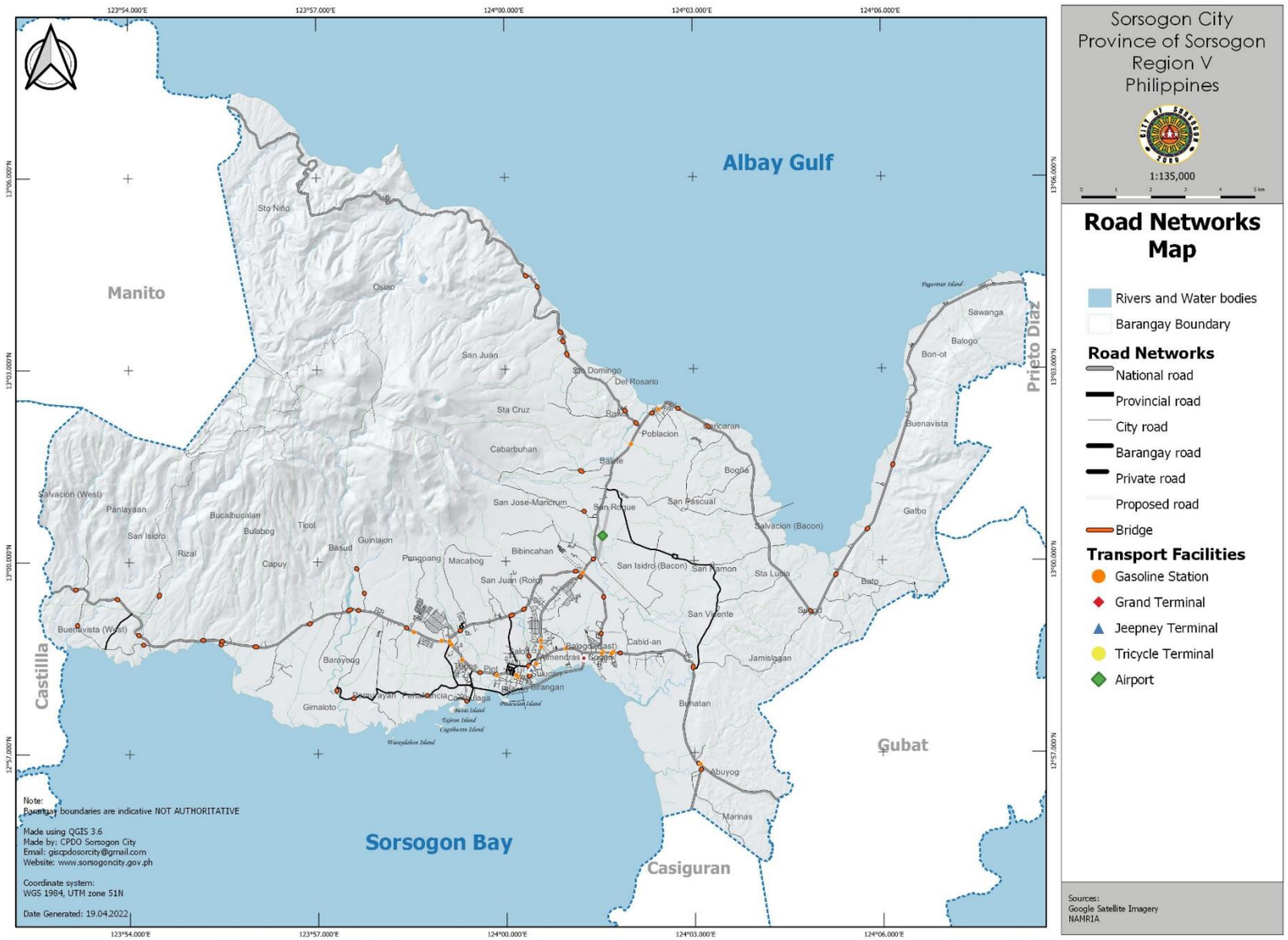
- The city imported in 2016 the following construction materials:
    - Steel 2.55 kilo tons
    - Sand – 21 kilotons
    - Cement 9 kilotons
    - Hollow blocks 18 kilotons
- Coconut lumber is the sole construction material produced in the city
- The dwelling density of Sorsogon City was computed at 539 persons per square kilometer
- Population 168,110, rural – 88,898, urban – 79,212

II.D. TRANSPORTATION

- Local public transportation route plan (for completion)
- Road network
- 5.6 Transportation Network (Internal and External Linkages)
- For air transport, it is also available via 45-minute flights, which land in Legazpi City. Plane trips are served daily by the Philippine Airlines and Cebu Pacific that have regular early morning flights to and from Manila. From there, travel time to Sorsogon is from one to 1 ½ hours' time to Sorsogon City by land via PUV's, Fx vans or buses. The Sorsogon Airport, a secondary airport, except for chartered flight in 2002, it has no commercial flights at present although Air Manila flies twice a week in early 1960's. A small building serves as facility for the airfield. It needs rehabilitation for it to be serviceable.
- For land transport, Sorsogon City can be reached via land transport from Manila by bus or private vehicle. Travel time is around 12 hours, depending on traffic conditions. The city accounts for a high passenger volume as bus lines of other southern provinces and municipalities have designated Sorsogon as their pick-up point. A total of twenty-seven (27) registered (with mayor's permit) buses from two (2) bus companies have destinations from Sorsogon City to Legaspi City and Bulan or plying Bulan – Legaspi City just unloading passengers bound for Sorsogon City as shown in Table 5.7.
- A total of five hundred forty-four (544) jeepneys that is the primary mode of transportation within the city particularly in Bacon bound, south bound, and west bound. Jeepneys are the mode of transportation when going to Bacon District, second district municipalities outside Sorsogon's perimeter can also be reached by public utility jeepneys while three thousand and two hundred sixty (3,260) tricycles is the mode of transportation from barangay to barangay, barangay to city, and within the city. Aside from public utility jeepneys and buses, one hundred and thirty-six (136) UV Express vans also serve the Sorsogon City-Legaspi City route.

- Ongoing
    - Coastal road Talisay to Cabid-an
    - Pangpang to Talisay bypass road
- Urban roads
    - Costal road-Rizal Street connection
    - Coastal road – Mons Barlin Street
    - Coastal road – Barangay Road (Mahingan)
    - San Juan roro – SPPVS Bibincahan
    - Widening/Clearing of urban roads
    - Installation of traffic lights
    - Installation of street lights
- Rural roads
    - Opening/concreting of FMRs
    - Completion/Widening of Bacon Pto. Diaz Road
    - Completion of Bacon Manito Road
    - Concreting of barangay roads
- Includes major physical infrastructure projects (i.e. major dams/energy facilities, regional/sub-national transport/road network and facilities, etc.)
- Infrastructure and road network maps at 1:50,000 (provincial-municipal); municipal/city-level local road network at 1:20,000 or suitable scale

Figure 9. Road Network



II.F. AGRICULTURE AND AGRI INDUSTRY FACILITIES

- Includes major physical infrastructure projects (i.e. major dams/energy facilities, regional/sub-national transport/road network and facilities, etc.)
- Infrastructure and road network maps at 1:50,000 (provincial-municipal); municipal/city-level local road network at 1:20,000 or suitable scale

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Agriculture

Rice (Resource generation and utilization of Sorsogon City)

- Only 70% of the population can be supplied by local producers
- The city's food sufficiency can be in a dire position in the future if the increasing population trend continues, while no additional farms are made available
- Annual production of palay is 19,818.71 metric tons
- Yields to 12,882.16 metric tons annual rice production
- A part of which is 62.92 metric tons equivalent rice used as seeds
- 73% of the total land area is agriculture
- 10.5% of the agricultural lands in the city is devoted to rice production
- Each Sorsoganon consumes about 109 kilos of rice per year
- The city imports 1,335.85 tons of chemical fertilizer per year
- The whole city generates a total of 18,194.8 metric tons of biodegradable waste per year
- Organic fertilizer locally produced could easily supply the fertilizer requirement of the whole rice producing sector.

Food (Resource generation and Utilization – Food)

- Each Sorsoganon consumes an average of 0.24 tons of food annually while generating 0.066 tons of food waste at the same time
- The city imports 49.2% of its total food consumption requirement, despite the fact that it relies on agriculture as the primary economic driver.
- Each Sorsoganon wastes food at a rate of about 0.18 kilos per day which translates to 66 kilos per year
- Sorsoganons waste 27.5% of the food they consume, or equivalent to 11,292.13 ton for 2015
- Annual biodegradable waste generated by the whole city is 18,194.8 tons, an immense source of potential organic fertilizer.
- Rural food consumption is 20,493 tons of food in 2015.
- Urban food consumption is 20,604 tons of food in 2015

II.F.a. FISHERIES AND LIVESTOCK

Table 7. Agri-Fishery Area, Problems and Challenges & Priority Interventions

AGRI-FISHERY AREA	PROBLEMS AND CHALLENGES	PRIORITY INTERVENTIONS
Sorsogon Bay	Laxity Enforcement of Fishery Laws, rules and regulation Resource use Conflict Illegal Fishing	Capacity Building Mgt. Training and Data Collection System
	Over Fishing	Computer Programming of Fisheries
		Program Data at LGU level
		Logistic Program in Team Monitoring and Evaluation of Programs and projects
Sugod Bay/Albay Gulf	Illegal Fishing	Rehabilitation of Fish Sanctuary
	Laxity in the enforcement of Fishery laws, rules and regulation	Strict Enforcement of Fishery Law
	Management of fishery reserve and mariculture	Management Plan

Table 8. Agri-Fishery Area & Prospects/ Opportunities

AGRI-FISHERY AREA	PROSPECTS/ OPPORTUNITIES
San Juan Bacon/Sorsogon Bay	Rehabilitation of Fish Sanctuary
Banao Salvacion	Mariculture
Bucalbucalan	Community Fish Loading Center
Cambulaga	Shellfish Processing Facility
Buhatan River Estuary/Tidal Flats	12 has.-Oyster, Brown Mussel
Cabid-an Sip –ac Creek	5.0has.-Oyster
Ibigaan Creek-Panlayaan, Sitio Suhi	5.0has. Oyster
Bagacay, Bulabog Tidal Flat Talisay, Sirangan, Sampaloc, Balogo Abuyog, Buhatan Tidal Flat Pamurayan, Gimaloto, Capuy Bucalbucalan Tidal Flat Sorsogon City near Shore/ Coastal Waters-Barangays Gimaloto, Penafrancia, Buenavista, Pamurayan, Bitan-o, Talisay, Cambulaga, Abuyog, Cabid an, Sirangan, Balogo, Bucalbucalan, Capuy, Sampaloc, Bulabog, Rizal and Panlayaan	10has. Manila Clam 15has. Manila Clam, Oyster 20has. Sand Clam, Oyster 60has. Oyster, Manila clam 5has. Oyster, Razor Clam, Manila Clam --50has.-Gracilaria/Eucheuma Farming with the improvement of Farm to Market Roads, Multi-Purpose Drying Facilities, Marketing Assistance and Product development. --20-50has. Green mussel Culture using New Technology (Hanging Rope and Floating Raft) with the provision of Post-Harvest Facility ,Processing, Marketing ,Depuration Technology -- Enhancement of Eco – Agritourism Areas (6km Buhatan River Cruise) -- Ecotourism Mgt. And Development program to generate further Employment Opportunity to Fisherfolk Sectors Firefly Watching in Mangrove Areas. --Restoration/Reforestation of Mangrove Areas (about 400has.)

II.F.b. TOURISM

Strategic Tourism Development Framework (STDF) of Sorsogon City

The tourism development framework of the plan outlines the vision, goal and strategic objectives with the corresponding programs, projects and activities (PPAs) under the marketing and development programs integrated in the investment and implementation plan with monitoring and evaluation mechanism.

The STDF as shown in Fig. 5.1 examines the comparative and competitive advantages of Sorsogon City by asking the question: "*Where are we and how do we compare with others?*" This is to determine the status of the local tourism industry through situational analysis by examining both its external and internal ecosystems from macro to micro perspective such as, assessment and evaluation of its tourism resources classified into inherited or natural assets; created or built and complementary. The global, national and sub-national tourism markets, demands and patterns were also reviewed to understand development trends and performance of the competitors in comparison to the city tourism industry. The development potentials and challenges by the tourism value chain (TVC) segments was further analysed together with its relationship to support industries and its structure to better understand how to improve or enhance each segment that will strengthen the whole value chain in response to the volatile, unpredictable, complex and ambiguous (VUCA) environment particularly in the age of the growing threat and crisis such as the COVID-19 pandemic.

The visioning, goal setting and strategizing processes answers the question: "*Where would we like to be in the next five years*?". But, most importantly to answer: "*How to get there*?" or how to realize it, points significantly to the marketing and branding strategies and the understanding of the key success factors and capabilities such as the policy setting, project management and implementation including activities integrated into the strategic development and marketing programs with institutional management and monitoring not only to merely attain those aspirations but also to answer the question: "How to stay ahead?" or maintain global competitiveness.

The Vision & Goal

The Sorsogon City Tourism Development Plan (SCTDP) adapted the city government's vision of "***A model city in climate change and disaster risk resiliency with a contented, empowered and values oriented society that pursues socio-economic development within the limit of nature thru genuine commitment to good governance***" as stated in the Comprehensive Land Use Plan (CLUP). The SCTDP is not a separate rather an integral component of the holistic CLUP of the city which focuses on enhancing the local tourism industry. Thus, it imbibes the sustainable tourism principles as its core foundation in attaining its goal to become ***"A globally competitive Sorsogon City's tourism promoting inclusive socio-economic growth for the well-being of constituents and sustainable environment for the enrichment of culture and natural heritage while addressing visitors' needs and satisfaction."*** The SCTDP also anchors on competitiveness aligned and as part of sustainable tourism to monitor and evaluate its performance and efficiency for its enhanced growth.

The Development Outcomes

The development outcomes are: (a) Increased tourism arrivals in Sorsogon City from 86,658 in CY 2019 to 658,059 in CY 2025; (b) Increased in tourism receipts from PhP 119,948,400 in CY 2019 to PhP 910,858,163 in CY 2025; (c) Jobs created from 7,878 in CY 2019 to 51,946 in CY 2025, and; (d) Improved safety, peace & order.

5.4 The Development Programs

The attainment of the desired outcomes will rely in the tourism development programs with its respective strategic plan of actions which shall be implemented. These are the following:

Table 9. Tourism Development Program

Table	Tourism Development Programs of Sorsogon City		
1	**Infrastructure and Business**		
	1.1	**Improve access, transport infrastructure and support facilities**	
		1.1.1	Develop roads with softscape leading to tourist destinations
		1.1.2	Provide tourism support facilities
		1.1.3	Improve ICT & telecommunication facilities
		1.1.4	Extend access to financial services
	1.2	**Attract tourism investments and Improve business environment**	
		1.2.1	Develop and implement local tourism investment programs
		1.2.2	Support eco- livelihood & MSME development
		1.2.3	Strengthen the development of MSMEs' quality products & services, promote & market adapting e-commerce practices
2	**Tourism Quality Products**		
	2.1	**Expand tourism product development, promotion & marketing**	
		2.1.1	Develop diverse quality & competitive tourism products and tour packages
		2.1.2	Establish tour circuit packages
		2.1.3	Design and implement expanded marketing program with a competitive tourism brand
3	**Governance, Human & Institutional Resource**		
	3.1	**Enhance tourism governance and human& institutional resource capacities**	
		3.1.1	Institutionalize tourism and cultural affairs office
		3.1.2	Formulate & Enact Tourism Code
		3.1.3	Strengthen Tourism Councils (City & Barangay/Community levels) & Regional TVC (Public-Private) Cooperation
		3.1.4	Develop Community-based Tourism
		3.1.5	Provide capacity building activities & equipment
	3.2	**Implement risk and crisis management programs**	
		3.2.1	Implement an integrated tourism and risk and crisis management programs
4	**Culture and Natural Resource**		
	4.1	**Enrich cultural and natural resources**	
		4.1.1	Develop and implement cultural development programs
		4.1.2	Promote sustainable tourism and climate change adaptation & resiliency

Table 5.2 Market Insights & Strategies		
	Market Insights	**Market Strategies**
1	Domestic leisure travel will lead Philippine Tourism recovery	Target market: Domestic (Resident & Non-resident) Design and develop tourism products under the leisure, nature-based, sun & beach and cultural portfolio with emphasis on culinary/food tourism
2	Majority of travelers expect a reduction in income and travel budget	Price-based strategy, focus on value for money products and services which complies with health & safety protocols.
3	Health and safety is the primary concern of the travelers	Ensure all tourism value chain (TVC) segments adhere to health and safety protocols.
4	Travelers preferred reduced-contact activities once leisure travel restrictions are lifted	Design and develop tourism products and services that reduces physical contacts with strict compliance to physical distancing and sanitations.
5	Travelers prefer online and digital channels for convenience	Encourage TVC to adapt ICT & e-commerce in tourism transactions
6	Contact-reduction and travelers plan to travel close to home	Facilitate contact-reduction and tap potential travel markets: residents and non-residents domestic travelers.

II.G. POWER, WATER, COMMUNICATION NETWORK

Resource generation and utilization (energy 2015)

- Sorsogon Electric Cooperative II supplies 7.54 megawatts of power to Sorsogon City everyday
- 31,840 households (92%) in Sorsogon city have access to electricity
- Gasoline 3.4 million liters is sold in Sorsogon city everyday
- Diesel 2.6 million liters sold everyday
- Approximately 3.8 million kg of LPG are sold annually
- Yearly consumption of a typical sorsoganon
    - 15 liters diesel
    - 20 liters gasoline
    - 23 kg of LPG
- 4.24% of Sorsogon City's total energy consumption is derived from renewable sources

Power

- Advocacy on the use of renewable energy (solar, hydro,
- Study on possible sites of wind power, E-cars/tricy
- Start government facilities with the use of renewable energy
- Initiate/Request of direct line from the geothermal plant (BACMAN)
- Identify areas for solar panel fields
- Increase the use of renewable energy by at least 30 percent

Water

Resource generation and utilization 2015 study

- 50% of the city's barangays are serviced the water district
- 82% of the city's population have access to potable water
- Every person in Sorsogon City consumes about 100 liters of water per day
- Water district currently draws water from the Cawayan River, 13 deep wells and four springs.
- 17 million liters of water is consumed by the city population per day
- 80% of water provided to households becomes wastewater
- 86% of the households have sanitary toilets

Domestic Water Supply

- The waterworks system run by Sorsogon City Water District (SCWD) supplies water to the city. It is a Government-owned and controlled corporation created under the Presidential Decree No. 198 (Provincial Water Utilities Act of 1979). The Sorsogon City Water District
- water system has 7,944 active connections in 2007 Its main sources of water comes from springs located in Macabog,
- West District and ground water located in various pumping stations as shown in
- The City or LGU-managed water system supplies the water requirement of the Bacon Poblacion. CABANSAN Water System supplies

- Barangays Cabarbuhan, San Roque, Balete, and San Isidro.

Table 10. Connection by Type of Users and Average Consumption

Table 5.5a Connections by Type of Users and Average Consumption

TYPE OF CONNECTION	NUMBER OF CONNECTIONS	AVERAGE CONSUMPTION (in m^3 / month)
DOMESTIC / RESIDENTIAL	7,212	19
INDUSTRIAL	12	97
COMMERCIAL A	227	30
COMMERCIAL B	346	16
PUBLIC BUILDINGS	128	57
PUBLIC FAUCETS	7	8
OTHERS	12	18
TOTAL	7,944	

Source: Sorsogon City Water District, Sorsogon City, 2007

Table 5.5b Sorsogon City Water Supply Source

SOURCE	LOCATION	RATED CAPACITY	REMARKS / CONDITION OF WATER SOURCE
Springs	Macabog, West District	82, 925 cu.m./ month	Declining Supply
Ground Water	Various Pumping Stations	180, 575 cu.m./ month	Operational

Source: Sorsogon City Water District, Sorsogon City, 2007

Table 11. Sorsogon City Water Supply Source

Communication Network

Radio Stations and Cable Television

There are 6 FM Radio stations providing local, national and international news in the city of Sorsogon and 2 cable providers (DCTV and Cignal)

Internet Service Provider

- DCTV
- Globe
- Smart PLDT
- DITO
- Converge

II.H. WASTE MANAGEMENT PLAN

Waste management

Garbage Disposal

The city is being served by two dumpsites at Brgy. Buenavista and Brgy. Bacon, located at West District and Bacon District, respectively. The dumpsite in Brgy. Buenavista has an area of 3.4 hectares and has a volume capacity of 204, 000 cubic meters. On the other hand, the dumpsite in Brgy. Bato covers an area of 2.0 hectares with a 120, 000 cubic meter capacity. Solid waste disposal is beings served by nine operational garbage trucks.

8.0 IMPLEMENTATION STRATEGY

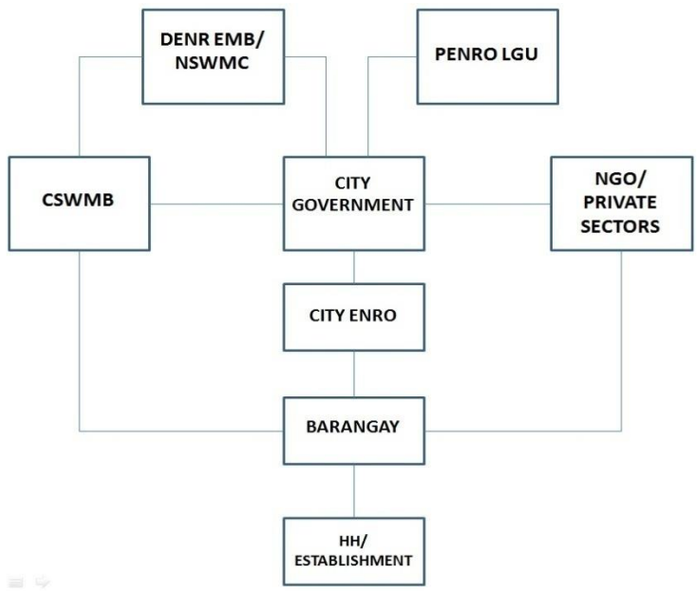

Figure 10. Framework

The Sorsogon City Solid Waste Management Framework follows the template provided by the Act in which the barangays and the City Government shares the responsibility in the handling and management of solid wastes: the former, in ensuring the implementation of waste segregation, initial waste collection and recovery via MRFs within their respective areas of jurisdiction, while the latter in providing efficient waste collection system for non-recyclable and special wastes as well as its safe disposal in the City. This sharing of responsibility between LGUs necessarily includes increasing the capacity of barangays to conduct initial waste collection and recovery through provision of assistance by the City Government. Furthermore, it also includes proper coordination between the City LGU and barangays in carrying out waste collection services particularly in terms of mapping out collection routes and separate collection schedules for different types of wastes, and designation of collection points to ensure the efficient collection of wastes in the community. In order to ensure a sustainable and responsive SWM program in the City, the City Solid Waste Management Board (CSWMB) is convened to prepare a 10 Year SWM Plan which the City Government will enforce. The Board will conduct periodic review of the Plan to ensure that waste reduction targets are achieved and proposed programs are duly implemented.

The Framework also recognizes the important role of waste generators (i.e., households, institutions, & establishments) in the effective implementation of SWM program. Under the framework, waste generators are designated as initial managers of their wastes. They are required to practice source reduction, waste segregation, and proper waste storage within their

premises. To ensure compliance, the LGU will utilize available tools and instruments as provided by law: imposition of waste collection fees, awarding of incentives, imposition of fines and penalties, permitting systems, etc.

Concerned government agencies such as DENR EMB, NSWMC and PENRO LGU will be supporting the City LGU primarily by providing technical assistance such as trainings and workshops aimed to improve the capacity of City LGU to address SWM concerns and comply with mandatory provisions of the Act. These agencies will also exercise supervision over the City SWM implementation through the conduct of regular monitoring and assessment. Private sectors and NGOs will have auxiliary roles, coordinating the LGU programs with the barangays and providing logistical assistance as needed.

Shown below is the schematic diagram of the City SWM program:

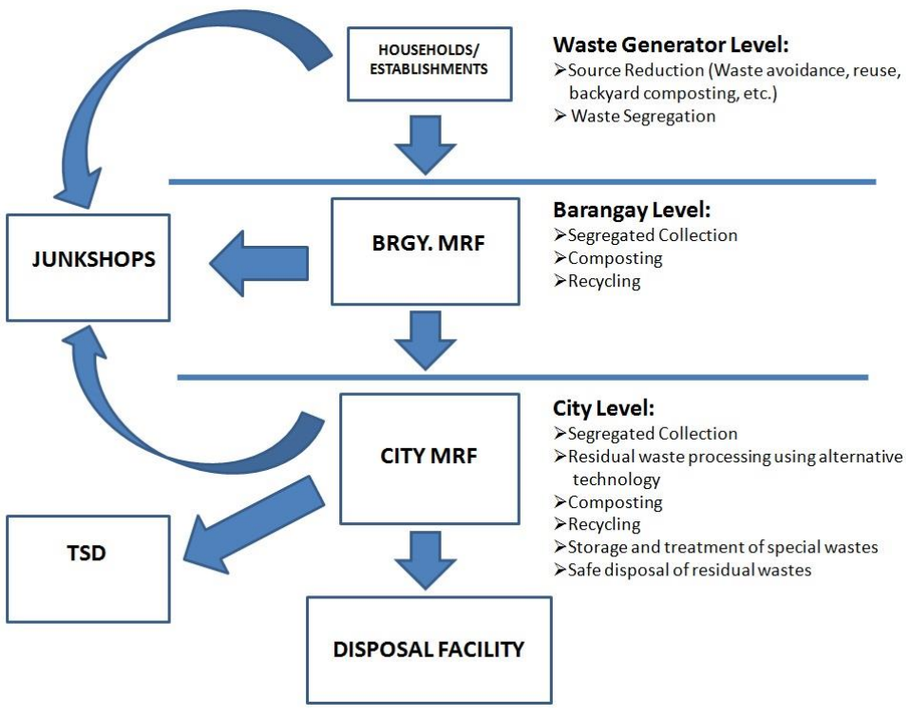

Figure 11. Diagram of the City SWM Program

The City SWM program has three levels corresponding to the three key players in solid waste management: the waste generators, barangays, and the City Government. The primary goal of the program is to reduce wastes as the level increases through the conduct of source reduction and waste recovery activities. The program starts at the very moment wastes are created from the various socio-economic activities at the waste generator level. The waste generator is expected to exert efforts to control and limit as much as possible the generation of wastes. This will be accomplished by practicing source reduction activities such as responsible utilization of resources, reuse, and backyard composting. For the generated wastes, the generator has the duty to segregate wastes and store them properly inside the premises as it awaits collection. Wastes must be segregated according to the following classification: biodegradable, recyclable, non-recyclable (residual), and special wastes and must be brought out only during the scheduled time of collection.

The next level is the barangay level in which the concerned barangay is expected to conduct initial waste collection within its area of jurisdiction. To ensure that wastes are segregated, the barangay will implement separate waste collection schedules for different types of wastes. Mixed wastes will not be collected by the barangay in order to compel waste generators to practice waste segregation while at the same time imposing penalties to those who practice improper waste disposal.

Collected wastes will be brought in the barangay MRF to undergo further segregation and processing. Biodegradable wastes will be composted while recyclable wastes will be stored temporarily in the MRF to be sold later to junkshops. Residual wastes and special wastes will be set aside for collection by the City.

The third and last level is the City level in which the City LGU collects residual and special wastes from barangays. For barangays with no MRFs, particularly in the central business district, the City Government will implement a separate schedule of collecting biodegradable wastes. Collected wastes from the barangay will be brought in the City MRF to undergo another round of segregation to sift all still-useful materials from the waste stream. Recyclable materials will be stored in the MRF while biodegradable wastes will be processed and composted. Residual wastes will be brought to the dumpsite for final disposal. Special wastes will be temporarily stored in the MRF to be disposed by bulk by tapping the services of DENR-accredited Treatment, Storage, and Disposal (TSD) Facility.

8.2 Diversion Projections

Shown in Table 8-1 the diversion projection of the City for the next ten years:

Table 12. Sorsogon City Diversion Projections (2018-2027)

Year	Projected Annual Waste Generation (MT/yr)	Diversion Percentage	Diverted Wastes (MT/yr)	Annual Waste Disposed (MT/yr)
2018	24513.56	35%	8579.75	15933.81
2019	24910.69	35%	8718.74	16191.95
2020	25314.22	40%	10125.69	15188.53
2021	25724.41	40%	10289.76	15434.65
2022	26141.14	40%	10456.46	15684.68
2023	26564.54	45%	11954.04	14610.50
2024	26994.88	45%	12147.70	14847.18
2025	27432.18	45%	12344.48	15087.70
2026	27876.70	50%	13938.35	13938.35
2027	28328.30	50%	14164.15	14164.15

Diversion percentage adheres to waste reduction targets set by the NSWMC starting with 35% diversion in 2018. A 5% increment every 3 years is targeted to culminate at 50% by year 2026. Since based on 2013 WACS, total recoverable wastes is 63.19%, the City LGU and barangays will work together to recover as much biodegradable wastes and recyclables as possible. This will entail the implementation of mandatory backyard composting provision of City SWM Ordinance, “No Segregation, No Collection Policy,” full implementation of Anti-Plastic Ordinance, Earth Savers Program, Search for Model Barangays and Schools, construction and operation of additional barangay and District MRFs.

8.3 Monitoring Program

Table 13. Sorsogon City SWM Monitoring Plan (2018-2027)

Output	Performance Indicator	Target deadlines	Responsible party	Monitoring by
Source Reduction				
1. Lectures focusing on Source Reduction for waste generators: schools, farmers, business establishments, & institutions.	No. of lectures/seminars conducted	2018-2027	City ENRO, CSWMO	City SWM Board

Output	Performance Indicator	Target deadlines	Responsible party	Monitoring by
2. Trainings on Composting and Recycling for Waste Generators	No. of trainings conducted	2018-2027	-do-	-do-
3. Waste Recovery Incentive Program for Schools (Earth Savers Program)	No. of schools covered	2019-2027	-do-	-do-
4. Incentive program to accredited distributor of environmentally-acceptable packaging	Executive Order	2018	SP	-do-
5. Implementation of SCAPO	% of complying establishments	2018-2027	City ENRO, CSWMO	-do-
6. Conduct of survey of existing and viable planting sites of buri, karagumoy, and other similar native fibers within the City	Survey Report submitted	2018	CASO	-do-
7. Declare existing and viable planting sites of native fibers as "Protected Zones"	Approved Ordinance	2018-2019	CASO, CZAO, SP	-do-
8. Implementation of "Plastic sa Bote" Program	No. of plastic bottles collected per quarter	2019-2027	City ENRO, CSWMO	-do-
9. Conduct Trainings on: – Propagation of karagumoy, buri, and similar native fibers; – Basic/advance weaving skills; – Product value-adding.	No. of trainings conducted	2019-2020	DTI, CASO	-do-
10. Provide capital to selected DTI accredited cooperatives or groups engaged in bayong production	No. of cooperatives provided with capital	2019-2020	City Mayor's Office, City ENRO, CSWMO	-do-
Collection				
1. Hire and train SWM personnel	No. of personnel hired and trained	2018-2027	City ENRO, CSWMO	City SWM Board
2. Provision of Personal Protective Equipment (PPE) and cleaning implements to SWM personnel	No. of personnel provided with PPEs and cleaning implements	2018-2027	City ENRO, CSWMO	-do-
3. Operationalization of Waste Collection Monitoring and Feedback System	Monitoring and Feedback Forms developed	2018-2027	-do-	-do-
4. Provision of Pedicabs/Pushcarts to selected barangays	No. of Pedicabs and Push Carts provided	2019-2027	-do-	-do-
5. Provision of Eco Aides to selected barangays to assist in initial waste collection	No. of Eco-Aides assigned	2018-2027	-do-	-do-

Output	Performance Indicator	Target deadlines	Responsible party	Monitoring by
6. Implementation of Separate Waste Collection for biodegradable and non-biodegradable wastes	No. of barangays covered (25 brgys. by 2018, additional 10 brgys. in succeeding yr.)	2018-2027	City ENRO, CSWMO, Barangays	-do-
7. Acquisition of additional Garbage Trucks	No. of units acquired	2018-19 & 2025	City ENRO, CSWMO, BAC	-do-
8. Establishment of Waste Collection Points	No. of collection points established	2019-2027	City ENRO, CSWMO, Brgys.	-do-
9. Installation of billboards showing the collection schedules in barangays	No. of billboards installed per year	2019-2027	City ENRO, CSWMO	-do-
MRFs				
1. Assist barangays in establishing/reactivating their SWM Committees	No. of brgys. assisted	2018-2020	City ENRO, CSWMO, Barangays	City SWM Board, DILG
2. Assist barangays in the formulation of localized SWM Ordinance	No. of barangays assisted	2018-2020	-do-	City SWM Board
3. Maintenance and Improvement of City Level MRF	No. of MRF maintained and improved	2018-2027	City ENRO, CSWMO	-do-
4. Conduct of Trainings in Composting and Recycling in Barangays	No. of Trainings conducted	2018-2027	-do-	-do-
5. Launch Search Contests for Model Barangays in Waste Segregation and Waste Processing	No. of participating barangays	2018-2027	-do-	-do-
6. Launch Search Contests for Model Schools in Waste Segregation and Waste Processing	No. of participating and schools	2019-2027	-do-	-do-
7. Provision of separate bins for LGU offices in the City Hall	No. of bins provided	2019-2027	-do-	-do-
8. Acquisition of roller bins for City Hall and Public Market	No. of roller bins acquired	2019-2027	-do-	-do-
9. Construction of City Hall MRF	No. of MRF constructed	2019	-do-	-do-
10. Construct waste segregation cells in public markets located in CBD and Bacon District.	Waste cells constructed	2019, 2022, 2025	-do-	-do-
11. Maintenance and operation of City Hall MRF	No. of MRF maintained and operated	2019-2027	-do-	-do-

Output	Performance Indicator	Target deadlines	Responsible party	Monitoring by
12. Construction of District MRF in Bacon and West District	No. of MRF constructed	2019-2021	-do-	-do-
13. Acquisition of multi-shredder machines for District MRFs in West and Bacon Districts	No. of multi-shredder machine acquired	2019-2021	-do-	-do-
14. Maintenance and operation of District MRFs in Bacon and West District	No. of MRFs maintained and operated	2019-2027	-do-	-do-
15. Provision of MRF tools and equipment to barangays	No. of barangay provided with assistance	2019-2027	-do-	-do-
DISPOSAL				
1. Maintenance of Bato Controlled Dumpsite (Soil cover)	No. of controlled dumpsite maintained	2018-2019	City ENRO, CSWMO	City SWM Board
2. Establishment of Categorized SLF	SLF established	2018-2020	City ENRO, CSWMO, CEO	-do-
3. Acquisition of Bulldozer and Backhoe heavy equipment	No. of heavy equipment acquired	2019, 2021	City ENRO, CSWMO, BAC	-do-
4. Implementation of Safe Closure and Rehabilitation of Bato Controlled Dumpsite	No. of dumpsite closed and rehabilitated	2020-2021	City ENRO, CSWMO, CEO	City SWM Board, DENR
5. Maintenance and Operation of Categorized SLF	No. of SLF maintained and operated	2020-2027	City ENRO, CSWMO, CEO	City SWM Board, DENR
6. Implementation of Safe Closure and Rehabilitation of Buenavista Controlled Dumpsite	No. of dumpsite closed and rehabilitated	2021-2022	City ENRO, City Engineering Office	-do-
IEC				
1. Preparation of IEC Modules	IEC Modules prepared	2018-2019	DepEd, City ENRO, CSWMO, DENR, DTI, SORCASS	City SWM Board
2. Field testing of developed IEC modules and materials	No. of field testing conducted	2019	-do-	-do-
3. Development and distribution of IEC materials (leaflets, posters, pamphlets, etc.)	No. of flyers and printed and distributed; No. of tarpaulin billboards printed and installed	2018-2027	-do-	-do-
4. Development and broadcasting of Infomercials for Radio and TV	No. of infomercials developed; No. of hours broadcasting the informercial	2018-2027	-do-	-do-

Output	Performance Indicator	Target deadlines	Responsible party	Monitoring by
5. Revision/Updating of IEC modules and field testing	IEC modules revised	2022, 2025	-do-	-do-
ENFORCEMENT				
1. Preparatory meetings	Meetings conducted	2019	City ENRO, CSWMO	City SWM Board
2. Printing of SWM Citation Tickets	Citation tickets printed	2020-2027	-do-	-do-
3. Training of SWM Officers	Trainings conducted per semester	2020-2027	-do-	-do-
4. Deputization of SWM Officers	SWM Officers deputized	2020-2027	-do-	-do-
5. Issuance of citation tickets to violators	Issued citation tickets	2020-2027	-do-	-do-

8.4 Incentive Programs

In order to encourage wider participation of different sectors in the City SWM program, various incentive schemes will be implemented by the City Government:

- Deduction in permit fees for accredited distributor of environmentally-acceptable packaging;
- Granting of financial capital to legitimate bayong cooperatives;
- Conduct of search contests for model schools and barangays in waste segregation and processing;
- Award of recognition to people, groups, or institutions with outstanding achievements in solid waste management;
- Provision of financial and logistical assistance by the City Government to barangays that meet basic requirements such as having an approved barangay SWM Ordinance, an active SWM committee, functional MRF, and willingness to put up counterpart for waste management projects;
- SWM enforcers to be entitled for a percentage from collected fines from violators of City &barangay solid waste ordinances.

9.0 INSTITUTIONAL ASPECTS

9.1 Roles

Roles of key players in solid waste management were discussed in Chapter 8. As the City makes headway in the implementation of its SWM program, increasing role of barangay in terms of waste collection and the conduct waste recovery activities such as composting and recycling will be expected. The City SWM Plan is designed with this in mind. The main objective is to make waste collection and recovery a joint responsibility of the barangay and the City by year 2027. This will be achieved by providing assistance to barangays. But as a rule, the City Government will only provide assistance to barangays that meet the basic requirements of the Act such as having an approved barangay SWM Ordinance, an active SWM committee, functional MRF, and lastly, willingness to put up counterpart for waste management projects.

The City SWM Board will continue to monitor the implementation of the Plan, giving special emphasis in determining whether waste reduction targets are being met or not. The Board will also make the necessary adjustments and revisions of the Plan to accommodate changes in the City brought by socio-economic development. As climate change and environmental issues continue to permeate the consciousness of the people, Civil Society Organizations (CSOs) and People's Organizations (PO's) from urban and agricultural sectors will become more active in

environmental protection and will be working closely with the LGU. Thus, the Board is expected to increase in membership with the addition of CSOs and POs.

National government agencies such as the DENR and NSWMC will continue to support the LGU in the implementation of its SWM program through the provision of technical assistance in the form of trainings, workshops, and technical advises. Said agencies will also continue to monitor the progress of implementation of the Plan making the necessary recommendations in order for the LGU to meet waste reduction targets. Private sectors and NGOs will continuously assist the LGU in SWM implementation in an auxiliary capacity. The LGU will work closely with these agencies tapping their expertise and resources in order to provide better waste management services to the people. Junkshop operators in the City will be organized in order to regulate the industry and coordinate effectively the recycling efforts of the LGUs. To ensure cooperation among the key players, the LGU will make it as a rule that proper consultation be conducted prior to implementation of any major projects or policies. Quarterly meeting of the City SWM Board will be strictly observed in order to provide stakeholders with proper venue to discuss SWM concerns and issues.

9.2 Legal

To ensure wider participation, the LGU will embark on strict enforcement of the City Ordinance, imposing fines and penalties to violators. As part of the preparation, the LGU will train and deputize enforcers who will apprehend violators of SWM Ordinance. As an incentive to enforcers to be steadfast in their duty, a percentage from the collected fines will be awarded to the apprehending enforcer. In the case of commercial and industrial establishments, the City Government through its City ENRO will continue to exercise regulatory powers to monitor compliance of establishments with the City SWM Ordinance. Non-compliance will result to non-issuance of Certification or revocation of business permit. Repeated and grave offenders will be endorsed to the City Legal Office for filing of case against them.

10.0 SOCIAL ANDENVIRONMENTAL ASPECTS

10.1 Social Aspects

The protection and promotion of the health and the right to a clean environment of its constituency is the primary concern of the city and in order to achieve sustainable development, environmental protection and social concerns shall constitute an integral part of the development process and cannot be considered in isolation from it.

Implementation of community-based SWM Program has significant social impacts which could make or break the program. It is important that the program will be acceptable to the stakeholders. Thus, this would mean that the program will not cause adverse impacts to the health and livelihood of the people but on the contrary will provide benefits. It is therefore important that the major SWM projects of the City LGU must undergo public consultation with stakeholders where the positive impacts of the project will be highlighted. If there are negative impacts, these must be presented truthfully alongside with the LGU commitment to address the identified impacts and its corresponding actions/measures to address the same.

Major SWM projects of the City include the operationalization of City Level MRF in Brgy. Buhatan, City Level MRF in Sitio Sta. Teresita in Brgy. Bato, the closure and rehabilitation of Buenavista and Bato Dumpsites, and establishment of Categorized Sanitary Landfill (Category II). Although these projects are primarily aimed to upgrade the City SWM implementation since these are large-scale needed infrastructure projects, it cannot be avoided that these projects will have negative impacts to adjacent residents. To make these projects acceptable, public consultation must be first conducted with host communities to determine their side. The City LGU in

coordination with the host communities shall conducted a massive continuing information and education campaign on environmental protection that will develop public awareness of the ill-effects and the community-based solutions in relation to these environmental projects of the city.

The City LGU must be open and transparent with regards to the extent and operation of the project in order to gain the trust of the people. The challenge for the LGU is to convince the host community that the projects positive impacts outweigh the negative. Furthermore, the City LGU shall undertake continuing studies and researches on environmental management on these projects with the end adopting modern and applicable systems and concepts and technologies that may be adopted by the City purposely in the abatement of negative impacts of these projects. Likewise, the LGU shall guarantee to its stakeholders that these projects are within the standards set forth by national regulatory agencies and complied with the required pollution standards. Hiring of personnel from host communities as part of the labor force during the project construction and operation will also help make the project acceptable to the people. Prospects of business opportunities from the City and Barangay MRF operation are other positive impacts that must be highlighted and promoted. To minimize the odor from collected wastes garbage trucks will be provided with appropriate covers and nets. In addition, the LGU shall establish and maintain a monitoring system that will ensure the proper implementation and disposal in the City. With the closure and rehabilitation of the two dumpsites, scavengers or waste pickers relying their subsistence from recovered scraps in these dumpsites, will be displaced. During the pre-closure stage of the dumpsites activities that the LGU to the displaced waste pickers as part of its social responsibility will conducting census among them and necessary livelihood assistance in the form of providing capital for waste pickers to buy scraps and recyclable materials in the community and other possible livelihood program that may be given to them. Another strategy is to hire them as waste sorters in the City Level MRFs. These are parts of the DENR-EMB approved Safe Closure and Rehabilitation Plans (SCRPs) for the City Dumpsites which is the provision of livelihood program for the affected families.

10.2 Environmental Aspects

The City SWM program aims to address effectively the present City's problem on solid waste such as from generation, storage, collection and its disposal. As such the City SWM program has become part of the City LGU's flagship program. Solid Waste Management is anchored in the city's slogan "Mauswag na Ciudad, Malinig na Lugar" in which the LGU already started the implementation of "No Segregation, No Collection Policy" in April 2016 covering ten (10) urban barangays which make up the Central Business District (CBD). Alongside with this, it has already operated the City Level Material Recovery Facility (MRF) in Barangay Buhatan to recover and process waste collected from the CBD. To compliment this initiative the LGU partnered with the Energy Development Corporation and provided logistical assistance to the barangay such as pedicabs and pushcarts to capacitate them to become effective partners in the program. And as part of our source reduction campaign the first and second phase implementation of the Sorsogon City Anti-Plastic Ordinance (SCAPO) covering large and medium business establishment had already started and will be pursued to cover all other establishments.

Furthermore, the City LGU implements and supervises garbage collection, transport and disposal in the City. Likewise, it also control, supervise and develop garbage collection, transport and disposal operations including its personnel, maintains equipment for collection and facilities for disposal. It also establishes and maintains a monitoring system that will ensure the proper implementation of the garbage collection and disposal in the city. In addition thereto, the continuing conduct of special cleaning operations to complement the regular garbage collection such as street sweeping and river ways clean-up. As such, regular conduct of IEC campaign on proper solid waste management to all stakeholders in the city.

However, there are large scale infrastructure projects under the City SWM Program that may have impacts to the environment. These projects include the operationalization of City Level MRF in Brgy. Bato, the closure and rehabilitation of Buenavista and Bato Dumpsite and the establishment of Categorized Sanitary Landfill (Category II) at Barangay Buenavista in this city. To ensure the mitigation of the potential impacts to the environment, appropriate permits and

documents must be secured prior embarking on full scale implementation of these projects. In this case of the City MRF, said project was issued a Certificate of Non-Coverage (CNC-R05-0910-0023) on October 08, 2008 and once the project starts its operation, Wastewater Discharge Permit (WDP) will be secured from the EMB. For the closure of the Buenavista and Bato Dumpsites, a Safe Closure and Rehabilitation Plans (SCRPs) for the two (2) dumpsites were already approved by the DENR and the corresponding Authority to Close (ATC) was issued on December 08, 2008. For the proposed establishment of Categorized Sanitary Landfill (Category II) at Barangay Buenavista, West District, Environmental Compliance Certificate will be secured from the DENR-EMB and other regulatory permits.

11.0 COST ESTIMATES/ FINANCIAL ASPECTS

11.1 Investment Cost

Implementation of SWM program requires considerable financial resources on the part of the LGU. This is because most of the interventions to address deficiencies in waste management are both labor and resource intensive. Aside from large number of personnel, support facilities and equipment are needed to be able to carry out basic services such as waste collection, recovery, and disposal. Below is the investment cost of the LGU in the next ten years, divided into physical development and equipment.

Table 14.Capital Outlay (Physical Development and Structures)

Item and Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Collection and Transport											
Establishment of Waste Collection Points	-	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	**4,500,000**
Waste Recovery											
Improvement of City-level MRF (Buhatan)	-	1,000,000	2,500,000	2,500,000	-	-	-	-	-	-	**6,000,000**
Construction of City Hall MRF	-	800,000	-	-	-	-	-	-	-	-	**800,000**
Construction of Bacon District MRF (Bato)	-	1,500,000	-	-	-	-	-	-	-	-	**1,500,000**
Construction of West District MRF (Buenavista)	-	2,500,000	1,000,000	-	-	-	-	-	-	-	**3,500,000**
Disposal Management											
Establishment of Categorized Sanitary Landfill	12,000,000	15,000,000	15,000,000	-	-	-	-	-	-	-	**42,000,000**
Safe Closure and Rehabilitation of Bato Controlled Dumpsite	-	-	10,000,000	5,000,000	-	-	-	-	-	-	**15,000,000**
Safe Closure and Rehabilitation of Buenavista Controlled Dumpsite	-	-	-	6,000,000	6,000,000	-	-	-	-		**12,000,000**
TOTAL	**12,000,000**	**21,300,000**	**29,000,000**	**14,000,000**	**6,500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**500,000**	**85,300,000**

As shown, projected cost in terms of physical development and structures amounts to **Eighty Five Million Three Hundred Thousand Pesos (Php 85,300,000.00).** The period between 2018-2022 is marked by high costs since it is at this time that the City Government will be undertaking the implementation of its major physical development projects such as the Categorized Sanitary Landfill, District MRFs in Bacon and West Districts, and the Closure and Rehabilitation of Buenavista and Bato Controlled Dumpsites. After 2022, cost will significantly go down as there will be no more major infrastructure to be established. The remaining physical development cost after 2022 will be mainly on waste collection points in barangays as part of the effort to promote segregated collection of biodegradable and non-biodegradable wastes at the barangay level.

Table 15. Capital Outlay (Equipment and Vehicles)

Item and Description	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Collection and Transport											
Acquisition of Garbage Trucks	8,200,000	3,000,000	-	-	-	-	-	8,200,000	-	-	**19,400,000**
Provision of Pedicabs to barangays	-	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	**6,750,000**
Provision of Push Carts to barangays	-	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	900,000	**8,100,000**
Waste Recovery											
Acquisition of Multi-Shredder Machines	-	2,000,000	1,000,000	-	-	-	-	2,000,000	-	-	**5,000,000**
Fabrication of Paper Briquette-Press	-	100,000	100,000	-	-	-	-	-	-	-	**200,000**
Acquisition of Mixers	-	100,000	-	-	-	-	-	100,000	-		**200,000**
Disposal Management											
Acquisition of Bulldozer H.E.	-	8,000,000	-	-	-	-	-	-	-	-	**8,000,000**
Acquisition of Backhoe H.E.	-	-	-	6,000,000	-	-	-	-	-	-	**6,000,000**
Program Management											
Desktop Computer	-	30,000	-	-	-	-	-	30,000	-	-	**60,000**
Printer	-	5,000	-	-	-	-	-	5,000	-	-	**10,000**
TOTAL	**8,200,000**	**14,885,000**	**2,750,000**	**7,650,000**	**1,650,000**	**1,650,000**	**1,650,000**	**11,985,000**	**1,650,000**	**1,650,000**	**53,720,000**

Table 11-2:

Projected cost on equipment and vehicles for the next ten years is **Fifty Three Million Seven Hundred Twenty Thousand Pesos (Php 53,720,000.00).** Majority of the cost will be spent on new garbage trucks and acquisition of heavy equipment such as back hoe and bulldozer. Most of these vehicles and equipment will be procured in 2018-2019 period during which the City LGU is expected to be in the process of establishing its Categorized Sanitary Landfill. Additional procurement of vehicles will be made in 2025 to replace old units which at this time are expected to be unserviceable. Considerable investments will be made on brand new garbage trucks to ensure efficient and reliable garbage collection program well beyond the 10-year scope of this Plan. Moreover, provisions for office equipment such as computer and printer are also made to ensure that staff will have the means to record, store, and process information regarding the SWM program of the City Government.

On the other hand, provision of pedicabs and push carts to barangays will be sustained throughout the ten-year period as part of the effort to increase the capabilities of barangays in conducting segregated collection within their respective areas. Adequate waste processing machineries such as shredders, briquette presses, and mixers will also be procured to bolster the waste recovery operations in the City-level MRF and District MRFs.

11.2 Annual Cost

Annual cost involves expenses incurred in the implementation of solid waste management. It covers expenses in the maintenance and operation of waste management facilities such as the City MRF and Dumpsites, fuel and repair of vehicles, and salary of personnel. Total projected cost for Maintenance, Operating, and Other Expenses (MOOE) for the next ten years is **Eighty Three Million Nine Hundred Thirty Thousand Pesos (Php 83,930,000.00**) as shown in Table 11-3:

Table 16. Maintenance and Other Operating Expenses

Expenses	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Waste Recovery											
1. Assist barangays in establishing/ reactivating their SWM Committees	5,000	5,000	5,000	-	-	-	-	-	-	-	**15,000**
2. Assist barangays in the formulation of localized SWM Ordinance	5,000	5,000	5,000	-	-	-	-	-	-	-	**15,000**
3. Conduct Trainings in Composting and Recycling in Barangays	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	**400,000**
4. Launch Search Contest for Model Barangays	500,000	500,000	500,000	1,000,000	1,000,000	1,000,000	1,200,000	1,200,000	1,200,000	1,200,000	**9,300,000**
5. Launch Search Contest for Model Schools	-	100,000	100,000	100,000	200,000	200,000	200,000	200,000	200,000	200,000	**1,500,000**
6. Provision of separate bins in City Hall	-	20,000	30,000	30,000	30,000	30,000	50,000	50,000	50,000	50,000	**340,000**
7. Acquisition of roller bins for City Hall and Public Market	-	10,000	10,000	10,000	15,000	15,000	15,000	15,000	15,000	15,000	**120,000**
8. Provision of waste segregation cells in Public Market	-	30,000	-	-	30,000	-	-	50,000	-	-	**110,000**
9. Maintenance and Operation of City-level MRF	100,000	250,000	250,000	250,000	300,000	300,000	300,000	300,000	400,000	400,000	**2,850,000**
10. Maintenance and Operation of City Hall MRF	-	50,000	50,000	50,000	100,000	100,000	100,000	120,000	120,000	120,000	**810,000**
11. Maintenance and Operation of Bacon District MRF	-	100,000	100,000	100,000	150,000	150,000	150,000	200,000	200,000	200,000	**1,350,000**
12. Maintenance and Operation of West District MRF	-	-	100,000	100,000	150,000	150,000	150,000	200,000	200,000	200,000	**1,250,000**
13. Provision of MRF tools & equipment to barangays	-	200,000	200,000	200,000	250,000	250,000	250,000	250,000	250,000	250,000	**2,100,000**
SUB-TOTAL	650,000	1,310,000	1,390,000	1,880,000	2,265,000	2,235,000	2,455,000	2,625,000	2,675,000	2,675,000	**20,160,000**

Expenses	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Disposal Management											
1. Maintenance of Bato Controlled Dumpsite	200,000	200,000	-	-	-	-	-	-	-	-	**400,000**
2. Maintenance and Operation of Categorized SLF	-	-	3,000,000	5,000,000	5,000,000	6,000,000	6,000,000	7,000,000	7,000,000	8,000,000	**47,000,000**
SUB-TOTAL	**200,000**	**200,000**	**3,000,000**	**5,000,000**	**5,000,000**	**6,000,000**	**6,000,000**	**7,000,000**	**7,000,000**	**8,000,000**	**47,400,000**
IEC											
1. Preparation of IEC Modules	20,000	80,000	-	-	-	-	-	-	-	-	**100,000**
2. Field testing of developed IEC modules & mat'ls.	-	20,000	-	-	-	-	-	-	-	-	**20,000**
3. Development and distribution of IEC Materials	100,000	120,000	120,000	150,000	150,000	200,000	200,000	200,000	250,000	250,000	**1,740,000**
4. Development and broadcasting of infomercials in TV and Radio	20,000	30,000	50,000	50,000	50,000	80,000	80,000	80,000	100,000	100,000	**640,000**
5. Revision and updating of IEC modules and field testing	-	-	-	-	120,000	-	-	120,000	-	-	**240,000**
SUB-TOTAL	**140,000**	**250,000**	**170,000**	**200,000**	**320,000**	**280,000**	**280,000**	**400,000**	**350,000**	**350,000**	**2,740,000**

Table 17. Maintenance and Other Operating Expenses (cont.)

Expenses	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Enforcement											
1. Preparatory meetings		20,000		-			-		-		**20,000**
2. Printing of SWM Citation Tickets	-	-	50,000	50,000	20,000	20,000	20,000	20,000	20,000	20,000	**220,000**
3. Training of SWM Officers	-	-	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	**800,000**
4. Deputization of SWM Officers	-	-	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	**160,000**
5. Issuance of citation tickets to violators	-	-	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	**160,000**
SUB-TOTAL	**-**	**20,000**	**190,000**	**190,000**	**160,000**	**160,000**	**160,000**	**160,000**	**160,000**	**160,000**	**1,360,000**
TOTAL	**1,920,000**	**3,230,000**	**6,180,000**	**8,450,000**	**8,925,000**	**9,855,000**	**10,125,000**	**11,415,000**	**11,415,000**	**12,415,000**	**83,930,000**

For the projected cost of labor, Table 11-4 shows the breakdown of expenses for SWM personnel within the next ten years amounting to **Two Hundred Seventy-Seven Million Nine Hundred Thirty Six Thousand (Php 277,936,000.00)**. A steady increase in labor cost will be observed peaking in 2026 at Php 32,244,000.00 with the bulk of the cost to be devoted to Collection and Transport, particularly for Street Cleaners, Eco-Aides, and Garbage Collectors.

Table 18. Personnel Expenses

Itemized Personnel Position	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Collection and Transport											
1. Garbage Collectors	4,422,000	4,422,000	4,950,000	4,950,000	4,950,000	5,400,000	5,400,000	5,400,000	5,850,000	5,850,000	51,594,000
2. Garbage Truck Drivers	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	1,404,000	14,040,000
3. Street Cleaners	5,760,000	5,760,000	6,000,000	6,000,000	6,000,000	6,600,000	6,600,000	6,600,000	7,200,000	7,200,000	63,720,000
4. Eco-Aides	4,800,000	4,800,000	6,000,000	6,000,000	6,000,000	6,600,000	6,600,000	6,600,000	7,200,000	7,200,000	61,800,000
5. River Guards	240,000	240,000	900,000	900,000	900,000	990,000	990,000	990,000	1,080,000	1,080,000	8,310,000
Materials Recovery											
1. City-level MRF Personnel	1,200,000	1,200,000	1,500,000	1,500,000	1,500,000	1,650,000	1,650,000	1,650,000	1,800,000	1,800,000	15,450,000
2. Bacon District MRF Personnel	-	960,000	1,200,000	1,200,000	1,200,000	1,320,000	1,320,000	1,320,000	1,440,000	1,440,000	11,400,000
3. West District MRF Personnel	-	-	1,200,000	1,200,000	1,200,000	1,320,000	1,320,000	1,320,000	1,440,000	1,440,000	10,440,000
4. City Hall MRF Personnel	-	96,000	120,000	120,000	120,000	132,000	132,000	132,000	144,000	144,000	1,140,000
Disposal Management											
1. Controlled Dumpsite Maint. Men	990,000	990,000	-	-	-	-	-	-	-	-	1,980,000
2. SLF Maint. Men	-	-	1,200,000	1,200,000	1,200,000	1,650,000	1,650,000	1,650,000	1,800,000	1,800,000	12,150,000
3. SLF Admin Staff	-	-	396,000	396,000	396,000	438,000	438,000	438,000	480,000	480,000	3,462,000
4. Heavy Equipment Operator	78,000	78,000	156,000	156,000	156,000	168,000	168,000	168,000	168,000	168,000	1,464,000
Program Mgt.											

Itemized Personnel Position	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
1. Office Admin Staff	264,000	294,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	2,958,000
2. Technical Staff	100,000	120,000	120,000	360,000	360,000	360,000	360,000	360,000	360,000	360,000	2,860,000
3. Office Drivers	156,000	156,000	156,000	156,000	156,000	156,000	156,000	156,000	156,000	156,000	1,560,000
4. Monitoring/IEC Aides	1,116,000	1,320,000	1,320,000	1,320,000	1,422,000	1,422,000	1,422,000	1,422,000	1,422,000	1,422,000	13,608,000
TOTAL	**20,530,000**	**21,840,000**	**26,922,000**	**27,162,000**	**27,264,000**	**29,910,000**	**29,910,000**	**29,910,000**	**32,244,000**	**32,244,000**	**277,936,000**

Total cost of SWM activities and projects for the period 2018-2027 is **Five Hundred Million Eight Hundred Eighty-Six Thousand Pesos (Php 500,886,000.00).** More than half of which is to be devoted to Personnel Expenses (55.49%) while the other half is to be divided between Capital Outlay and MOOE. The first five years of the plan (2018-2022) will be marked by massive spending in terms of Physical Development and Structures as well as Equipment and Vehicles since it is at this period that major projects will be implemented such as establishment and operation of SLF, closure and rehabilitation of Bato and Buenavista Dumpsites, establishment and operation of Bacon and West Districts MRFs, and procurement of new garbage trucks and heavy equipment. In the case of MOOE and Personnel Expenses, steady increase in their annual allocation will be observed throughout the ten-year period culminating in 2027 at Php 12,415,000.00 and Php 32,244,000.00, respectively.

Below is the annual breakdown of expenses based on Cost Items:

Table 19. Total Projected SWM Cost of Sorsogon City, 2018-2027

Cost Items	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	TOTAL
Capital Outlay (Physical Dev. and Structures)	12,000,000	21,300,000	29,000,000	14,000,000	6,500,000	500,000	500,000	500,000	500,000	500,000	85,300,000
Capital Outlay (Equipment and Vehicles)	8,200,000	14,885,000	2,750,000	7,650,000	1,650,000	1,650,000	1,650,000	11,985,000	1,650,000	1,650,000	53,720,000
Maintenance, Operating, and Other Expenses (MOOE)	1,920,000	3,230,000	6,180,000	8,450,000	8,925,000	9,855,000	10,125,000	11,415,000	11,415,000	12,415,000	83,930,000
Personnel Expenses	20,530,000	21,840,000	26,922,000	27,162,000	27,264,000	29,910,000	29,910,000	29,910,000	32,244,000	32,244,000	277,936,000
TOTAL	42,650,000	61,255,000	64,852,000	57,262,000	44,339,000	41,915,000	42,185,000	53,810,000	45,809,000	46,809,000	500,886,000

11.3 Funding Options

In order to realize the programs and projects stated in the 10-year Solid Waste Management Plan, the City LGU needs to allocate more funds for waste management. For the past 9 years, allocation for SWM varies from 3-5% of the total annual budget of the City LGU (See Table 3-8).

The LGU must increase the SWM allocation for up to 6-8% of the annual LGU budget in the next five years (starting in 2019), in order to meet the intensive financial requirements of the SWM program. Point offices such as City ENRO and SWM Office must convince the administration as well as the *Sangguniang Panglunsod* on the need to allocate adequate funds to finance the different programs and projects stated in this Plan. Aside from this, the City LGU must exert efforts to maximize the collection of revenues from garbage collection fees on business establishments, certification fees, sale of recyclable materials and organic fertilizers in the City MRF, as well as fines and penalties imposed on violators of SWM Ordinance. The City LGU, with adequate public consultation must also consider the idea of charging residents and institutions with garbage fees in order to boost SWM revenues based on Sec. 47 of RA 9003 and "polluters must pay" principle. The latter would mean that the garbage fees that will be imposed on residents and institutions will be based on the volume of wastes that they brought outside their premises for collection. Thus, the more wastes that they throw, the higher the amount that they will have to pay to the government, and vice versa.

By introducing the concept of "price" in SWM program, it achieves two vital objectives: revenue generation and waste reduction. Fees collected shall accrue either to barangay or City LGU whichever that conducts the garbage collection service in a particular area. At the same time, the people will be compelled to adopt methods and practices that will reduce their daily wastes such as waste segregation, composting, reuse, recycling, etc.

In case that said fiscal measures still fall short, the City LGU could resort to alternative options such as borrowing funds from financial institutions or marketing this SWM Plan to government and private funding institutions for private-public partnership, joint venture, or similar undertakings particularly for large physical infrastructure projects such as the Sanitary Landfill, Closure and Rehabilitation of Controlled Dumpsites in Bato and Buenavista, and District MRFs. In the event that the City Government would opt to pursue these options, efforts will be made to ensure that all needed pre-requisites and documentary requirements will be prepared and that all steps that will be undertaken will be compliant to existing rules and regulations. Below is the projected SWM revenue of the LGU for the next 10 years:

Table 20. SWM Revenue Projections (2018-2027)

Sources of Revenue	YEAR										TOTAL
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Garbage Collection Fee	1,500,000	1,500,000	1,600,000	1,600,000	2,000,000	2,000,000	2,200,000	2,200,000	2,500,000	2,500,000	19,600,000
Certification Fee	200,000	200,000	220,000	220,000	250,000	250,000	280,000	280,000	300,000	300,000	2,500,000
Fines & Penalties	-	-	50,000	80,000	100,000	120,000	140,000	160,000	180,000	200,000	1,030,000
Income from recyclables	-	30,000	50,000	50,000	50,000	80,000	80,000	80,000	100,000	100,000	620,000
Income from compost	-	20,000	40,000	40,000	60,000	60,000	80,000	80,000	100,000	100,000	580,000
TOTAL	**1,700,000**	**1,750,000**	**1,960,000**	**1,990,000**	**2,460,000**	**2,510,000**	**2,780,000**	**2,800,000**	**3,180,000**	**3,200,000**	**24,330,000**

As can be seen in the above table, SWM Revenue Projections in the next 10 years will be marked by steady increase with majority of revenues coming from garbage collection fees from business establishments. Excluded in Table 11-6 are the projected revenues from garbage fees from residents and institutions as said measure still have issues that need to be ironed out like the schedule of fees, the sharing scheme between the City and barangays, arrangements in the collection of fees, etc. In addition, intensive public consultation and passage of appropriate ordinance must be done in order to implement this measure.

11.4 Cost Evaluation and Comparison

The stated Programs, Projects, and Activities (PPAs) in the SWM Plan require extensive financial resources. One way of looking at it is to see the cost in relation to the population of the City. This will show the per capita investments of the City Government on SWM Program and its different components. Shown in Table 11-7 the SWM Cost per Capita throughout the 10-year planning period:

Table 21. Annual SWM Cost per Capita (2018-2027)

Year	Population	SWM Annual Cost (Php)	Annual Cost per Capital (Php)
2018	176,413	42,650,000	241.76
2019	179,271	61,255,000	341.69
2020	182,175	64,852,000	355.99
2021	185,127	57,262,000	309.31
2022	188,126	44,339,000	235.69
2023	191,173	41,915,000	219.25
2024	194,270	42,185,000	217.15
2025	197,417	53,810,000	272.57
2026	200,616	45,809,000	228.34
2027	203,866	46,809,000	229.61

Annual Cost per Capita within the 10-year period ranges **from Php 217.15 to Php 355.99 per person per yea**r. This means that on the average, the City Government will be investing an amount **of Php 265.14 per person per year or Php 0.7264 per person per day for SWM program**. The variation in values of the Cost Per Capita reflects the developmental activities and projects to be implemented within the 10-year planning period. As can be seen in Table 11-7, the highest values could be observed during the first 5 years of the Plan (2018-22) which will be marked by intensive physical development projects and investments for equipment and vehicles. This will be followed by a 2-year decrease during the second half (2023-24) in which the City Government will be basically maintaining and operating the different SWM facilities established earlier. Annual Cost per Capita will eventually surge in the last 3 years (2025-27) which could be attributed to acquisition of new garbage vehicles and equipment to replace the remaining old units.

As for breakdown of SWM cost for the 10-year period, shown below is the Annual Cost per SWM Component:

Table 22. Annual Cost per SWM Component (2018-2027)

SWM Component	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
Segregation and Source Reduction	**200,000**	**720,000**	**700,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**400,000**	**4,420,000**
Collection and Transport	**25,556,000**	**22,506,000**	**22,134,000**	**22,184,000**	**22,184,000**	**23,924,000**	**23,974,000**	**32,174,000**	**25,714,000**	**25,714,000**	**246,064,000**
Materials Recovery	**1,850,000**	**11,566,000**	**10,010,000**	**8,400,000**	**6,285,000**	**6,657,000**	**6,877,000**	**9,147,000**	**7,499,000**	**7,499,000**	**75,790,000**
Disposal Management	**13,268,000**	**24,268,000**	**29,752,000**	**23,752,000**	**12,752,000**	**8,256,000**	**8,256,000**	**9,256,000**	**9,448,000**	**10,448,000**	**149,456,000**
Information, Education, and Communication	**140,000**	**250,000**	**170,000**	**200,000**	**320,000**	**280,000**	**280,000**	**400,000**	**350,000**	**350,000**	**2,740,000**
Enforcement	**-**	**20,000**	**190,000**	**190,000**	**160,000**	**160,000**	**160,000**	**160,000**	**160,000**	**160,000**	**1,360,000**
Program Management	**1,636,000**	**1,925,000**	**1,896,000**	**2,136,000**	**2,238,000**	**2,238,000**	**2,238,000**	**2,273,000**	**2,238,000**	**2,238,000**	**21,056,000**
Total	**42,650,000**	**61,255,000**	**64,852,000**	**57,262,000**	**44,339,000**	**41,915,000**	**42,185,000**	**53,810,000**	**45,809,000**	**46,809,000**	**500,886,000**

As can be seen in the Table above, almost half of the total cost for SWM Program is attributed to Collection and Transport (49.13%), followed by Disposal Management (29.84%), Materials Recovery (15.13%), Program Management (4.20%), Segregation and Source Reduction (0.88%), IEC (0.55%), and Enforcement (0.27%). Majority of the cost for Collection and Transport will be used to defray the wages of garbage collectors, garbage truck drivers, street cleaners, eco-aides, and river guards while the rest is assigned for procurement of collection vehicles such as garbage trucks, pedicabs, and push carts and PPEs for workers. This trend is not surprising since garbage collection is usually considered as the most resource intensive of all SWM components due to its large logistical requirements. As for Disposal Management, the bulk of the cost is due to the establishment of Sanitary Landfill and closure & rehabilitation of Bato and Buenavista Controlled Dumpsites. In the case of Materials Recovery, the establishment of District MRFs in Bacon and West Districts and hiring of personnel make up its total cost. For Program Management, cost is mainly due to the hiring of support personnel including office administrative staff, technical staff, and monitoring/IEC personnel as well as procurement of computers and printers. Lastly for Segregation and Source Reduction, IEC, and Enforcement, cost is due to training workshops, information materials, and other required logistics.

11. 5 Summary

Below is the summary of SWM cost and projected revenues for the period 2018-2027:

Table 23. Comparison of Projected Cost and Revenues

Year	Projected SWM Cost	Projected SWM Revenues	% of Revenue from Cost
2018	42,650,000	1,700,000	3.99
2019	61,255,000	1,750,000	2.86
2020	64,852,000	1,960,000	3.02
2021	57,262,000	1,990,000	3.77
2022	44,339,000	2,460,000	5.55
2023	41,915,000	2,510,000	5.99
2024	42,185,000	2,780,000	6.59
2025	53,810,000	2,800,000	5.20
2026	45,809,000	3,180,000	6.94
2027	46,809,000	3,200,000	6.84
TOTAL	**500,886,000**	**24,330,000**	

As can be observed, projected revenue constitutes a small fraction only of the SWM cost, ranging from 2.86 to 6.94% (average 5.08%). This means that the City LGU cannot entirely depend on projected SWM revenues to meet the financial requirements of the SWM program and must continuously subsidize these programs. The City LGU must look for alternative sources of funds aside from IRA and local revenues in the next couple of years in order to bridge the wide gap in financial resources. The LGU must lobby with National Government

Agencies and even the private sector to fund the activities in the Plan. Cash incentives from National Government Agencies through their programs could be tapped to finance SWM PPAs. One example of this is the Seal of Good Local Governance (SGLG) of the Department of Interior and Local Government in which the City Government has been a recipient in 2016 and 2017 enabling it to access Performance Challenge Fund (PCF). In addition, the City LGU may consider establishing partnership with local and international funding agencies or applying financial loans from banks. In this way, the LGU will be able to have sufficient funds to implement the programs and projects in the SWM plan.

12.0 PLAN IMPLEMENTATION

12.1 Phases and Responsibilities

The City 10-Year Solid Waste Management Plan (2018-2027) provides the general direction in addressing the city's manifold issues and concerns on waste management as well as achieving prescribed diversion targets. It is an updated version of an earlier plan adopted in 2013 that was given conditional approval by the NSWMC in April 2015. Specifically, this Plan contains needed Projects, Programs, and Activities (PPAs) that the City Government will implement within the next 10 years, the corresponding financial requirements, time frame, and the responsible agency/office. Having been prepared by multi-sectoral City Solid Waste Management Board and its Technical Working Group within a 6-month period, the Plan is intended to integrate the different concerns of various sectors in the community to ensure that it will be more responsive and holistic. The Plan recognizes the expertise of different agencies within and outside the City Government, and allows projects and programs falling within the expertise of a particular agency to be implemented by the same agency subject to review by the Board.

Thus, implementation of solid waste management-related projects will be headed by City ENRO/City SWMO in the city-level and by concerned barangay council at the barangay-level, physical infrastructures will be led by City Engineering Office, information dissemination particularly in the development of modules to be led by DepEd, provision of livelihood trainings and assistance by Department of Trade and Industry and City Social Welfare and Development Office (CSWDO), etc. In this way, PPAs stated in the Plan will be properly implemented by the most qualified/capable agency while ensuring wider participation of different sectors and sharing of accountability. The City SWM Board will be the main body to conduct periodic review and evaluation of the Plan. Table 5-2 enumerates the responsibilities of the Board as well as other agencies pertaining to SWM Plan implementation.

12.2 Milestones

By year 2027, it is expected that Sorsogon City will be able to institutionalize an effective, Barangay-based Solid Waste Management Program effectively addressing major issues in waste management particularly in waste segregation, collection, processing, and disposal with the following milestones:

- Full implementation of Sorsogon City Anti-Plastic Ordinance by 2018;
- Acquire 4 units Garbage Truck by 2019, additional 3 units by 2025;
- Acquire 1 unit Bulldozer by 2019, 1 unit Backhoe by 2021;
- IEC modules prepared by 2019;
- Construction of new City Hall MRF in 2019;
- Construction of Bacon District MRF in 2019, West District MRF in 2020;
- Sustainable economic program for makers of traditional packaging (i.e., bayong) by 2020;
- All barangays with SWM Committees and localized SWM ordinance/resolution by 2020;
- Acquire 3 units Multi-Shredder Machine by 2020, additional 2 units by 2025;
- Establishment of Category 2 Sanitary Landfill by 2020;
- Enforcement of SWM Ordinance by 2020;
- Safe Closure and Rehabilitation of Bato Controlled Dumpsite by 2021;
- Safe Closure and Rehabilitation of Buenavista Controlled Dumpsite by 2022;
- Full implementation of "No Segregation, No Collection" Policy by 2022;
- Achieve 40% waste diversion by 2020, 50% diversion by 2027.

12.3 Implementation Schedule

City ENRO and CSWMO are the two main offices in charge with the implementation of most of programs and projects in this Plan. Identified PPAs are mostly intended to capacitate barangays to be able to address their particular waste management concerns. Barangays, in turn, are expected to lead the implementation of SWM program in their respective areas of jurisdiction particularly in the conducting segregated collection of biodegradable and non-biodegradable wastes, establishment and maintenance of Waste Collection Points (WCPs) or Materials Recovery Facilities (MRFs), IEC, and maintenance of general cleanliness. For activities that require specialized and technical skills such as implementation of physical development/infrastructure projects or livelihood trainings, these are delegated to concerned agencies such as the City Engineering Office, DTI, etc.

Table 24. In summary, shown below are the city diversion targets and quantities within the period 2018-2027:

Year	Projected Population	Projected Annual Waste Generation (MT/yr)	Diversion Percentage	Diverted Wastes (MT/yr)
2018	176,413	24513.56	35%	8579.75
2019	179,271	24910.69	35%	8718.74
2020	182,175	25314.22	40%	10125.69
2021	185,127	25724.41	40%	10289.76
2022	188,126	26141.14	40%	10456.46
2023	191,173	26564.54	45%	11954.04
2024	194,270	26994.88	45%	12147.70
2025	197,417	27432.18	45%	12344.48
2026	200,616	27876.70	50%	13938.35
2027	203,866	28328.30	50%	14164.15

Table 25. City Waste Diversion Targets (2018-2027)

Sub-Sectors	Classification of Business	Growth Rate*
Agriculture, Hunting & Forestry	Abaca, Copra and Palay Dealer	0.00%
	Agricultural machineries	0.00%
	Coconut Grater	80.00%
	Farm	100.00%
	Feeds Supply/Agricultural Products	-37.50%
	Fruit Vendor	25.00%
	Meat Processing	300.00%
	Meat Vendor	146.15%
	Rice Mill	9.09%
	Vegetable Vendor	150.00%
Fishing	Fiberglass Boat Builders	-100.00%
	Fish Dealer	-50.00%
	Fish Vendor	1900.00%

II.I. ECONOMIC STRUCRTURE OF THE LOCAL ECONOMY

Structure of the Local Economy

The local economy of the City of Sorsogon may be described by tacking the three (3) statuses of the sectors: Primary, Secondary, and Tertiary. Relative to the number of businesses engaged in the three sectors, based on 2010 data, 73% of the business population belongs to the tertiary sector, followed by the primary sector at 25%, and secondary sector at 2%.

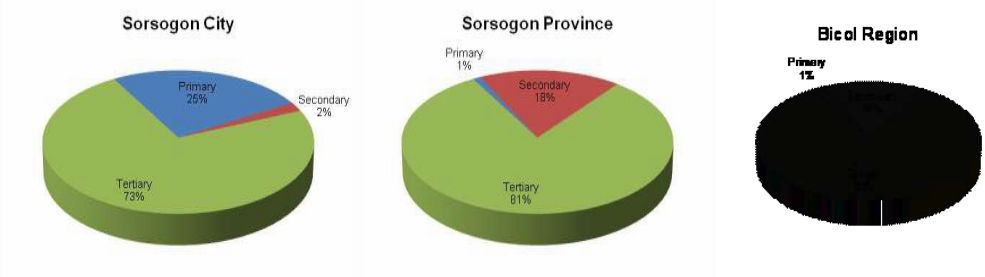

Figure 12. Structure of Local Economy

Source: Permits and Licenses Section, City of Sorsogon, 2010 and Philippine Statistical Agency 2012 for Bicol and Sorsogon Province.

II.J. DEVELOPMENT CONSTRAINTS, CHALLENGES, AND PRIORITY ISSUES

Development Constraints

The areas suitable for development is the total area of the city less the areas with development constraints. This results to 9,710.12 hectares suitable for urban development. This include the existing urban areas of more or less 3,000 hectares. The inland waters and buffer areas are part of the development constraints.

Protection Areas

- NIPAS protected areas and set aside for strict protection and conservation
- Geothermal Reservation Area
- Buffer zone of protected areas for production forest use
- Lands that are Forest and Forestlands in classification allocated as production and protection areas
- Riparian buffer zones in rivers, creeks, and lakes
- Salvage zones along coastal areas
- Prime agricultural lands planted to rice crop set aside for protection for food security and rice sufficiency
- Lands with slopes greater than 50%

Climate Change and Disaster Risk Areas

- High risk areas to flooding
- High risk areas to sea level rise
- High risk areas to tsunami
- High risk areas to ground settlement and subsidence
- High risk areas to storm surge

Development Challenges

- High cost of electricity
- Occurrence of typhoons, heavy (monsoon) rains
- Insurgency in selected areas
- Shift of livelihood of agricultural workers
- Low production and income
- Low income from tourism industry
- Not operational cold storage facility
- Lack of water for irrigation during dry season
- Low access to IT and lack of infrastructure
- Presence of informal settlements in vulnerable areas
- Lacks schools and health facilities in last mile/GIDA areas
- Inadequate evacuation centers
- Inadequate parks and open spaces
- Very poor presence of greenbelt areas and adoption of green technologies

Priority Issues and Concerns

- Physical Environment – improvement of space allocation for urban expansion and park system,
- Social sector

        - Education – identification of expansion areas for central schools and high schools at barangays which includes facilities
        - Health – land identification for new and expansion of health facilities.
        - Housing identification and acquisition of lands for social housing,
        - Social welfare services
        - Protective services
        - Sports and recreation
    - **Economic Sector**
        - Agriculture – identification of irrigation for irrigable rice lands, identification of irrigable site to compensate classified and developed Riceland in the urban areas and suitable development areas with parcels of Riceland.
        - Commerce and Trades
        - Industrial – identification of agro-industrial areas to cater to the needs of the city's role
        - Tourism – preservation of natural tourist attractions, identification of new sites for tourism
    - **Infrastructure**
        - Transportation – the improvement of roads and bridges, need for widening and identification of new routes, improvement of roads leading to residential areas, improvement of terminals including watercraft, improvement of ports, improvement of existing Bacon airport (economic viability)
        - Water – the improvement of existing water system in the urban areas and barangays, identification of new water sources, and identification of new technologies for cheaper processing to potable water
        - Power – improvement of existing power supply, identification of new technologies for cheaper power supply, coping up with demand for power brought by urbanization
        - Communication – improvement of communication system and internet facilities both in urban and rural barangays
    - **Climate Change and Disaster Risk Reduction Management –** identification and implementation of adaptation and mitigation measures to reduce effects of impacts of climate change and reduce disaster.
        - Increased in precipitation
        - Increase in temperature

II.K. COMPARATIVE ADVANTAGE AND COMPETITIVE EDGE

Comparative advantage

- Sub-regional center
- Center of commerce and trade of the province
- Educational center of the province
- Administrative center of the province
- Tourism hub of the province

Opportunities

- Presence of tourism facilities, hotels and restaurants, convention center
- Opens to both Sorsogon Bay and Albay Gulf
- Pili production
- BACMAN
- Presence of air strip
- Biggest IRA in Bicol cities?

Development opportunities

- Production of elemi oil from pili
- Cold storage in place for operation
- Urban and Rural Poor Office to implement social housing for the poor to address tenurial insecurity, income poverty, disempowerment and education poverty. With available financial resources from foreign financial institutions and an organized urban poor in the city, the implementation of this program is very timely.

II.L. FUNCTIONAL ROLE OF THE CITY

- Sub-regional center, with Legazpi and Naga as regional centers
- Center of commerce and trade of the province
- Educational center of the province
- Administrative center of the province
- Tourism hub of the province
- Geothermal energy producing LGU

Functional Role of the City

As defined in the Regional Development Plan, Sorsogon City is categorized as a sub-regional center with Naga and Legazpi as Bicol's regional centers.

Being the capital town/city of the Province of Sorsogon, Sorsogon City serves as the administrative, commercial, educational center of the province.

As a tourism hub, Sorsogon City serves as jump off point to the local attractions in the province.

Based on the comparative summary of hazards affecting the province, Sorsogon City has will not be affected by volcanic hazard (Bulusan Volcano) together with Matnog, Magallanes, Castilla, Pilar and Donsol and other municipalities. In case of extreme evacuation due to vulcanic eruption, Sorsogon City may act as Evacuation Center considering proximity, availability of facilities and utilities, and

Harmony with provincial and Regional Plans

On the Provincial Plan

Sorsogon province envisions to be a province where prosperous, where people are prosperous, resilient, healthy and living in a high-trust society. Sorsogon City likewise envisions to be a model city in climate change and disaster risk resiliency with a contented, empowered and values-oriented society that pursues socio-economic development within the limit of nature thru genuine commitment to good governance.

The same focuses on resiliency and good governance or a high trust society in its development policies. Other consistency of the city's plan with the provincial plan are stipulated and in accordance with the mission on protecting the environment through sustainable development. Social services are both on quality services and socio economic development pursued.

On the Regional Plan

The Bicol Regional Development Plan adopted the Ambisyon 2040 of the national government to shall aspire to contribute to the attainment of a “Matatag, Maginhawa, at Panatag na Buhay para sa Lahat” by laying down a solid foundation for more inclusive growth, a high-trust and resilient society, and a globally competitive knowledge economy. This will be done by focusing on three pillars of: “Malasakit” (enhancing the social fabric), “Pagbabago” (reducing inequality), and “Patuloy na Pag-unlad” (increasing potential growth of the economy). In connection with this, the city’s vision is also anchored on Ambisyon 2040 in terms of contented citizenry and socio-economic development.

III.A. DEVELOPMENT STRATEGIES AND POLICY ZONES

Most of the built-up areas and existing development are situated along the coastal areas. These are found to be at very high-risk areas to storm surge, flooding, and tsunami. For the Coastal/ Built-Up/ High-Risk policy zone, the development strategy is Disaster Risk Sensitive Redevelopment. Development of such areas will have to consider disaster risk reduction as its primary objective.

The development strategy for the Inland/ Agricultural/ Low-Risk policy zone is maximizing agriculture and expansion areas of the urban center.

Agri Optimization and Planned Urban Expansion

Upland/ Agri-Forest/ Medium Risk

Limited Agro-Forestry and Eco Tourism Development

Upland/ Protected Forest/ High Risk

Conservation/ No-Build Zone

Minimize disaster impact to people

Zero casualty

Fast recovery

Minimize damage to physical development

Protect existing development

Locate future development in safer areas

Encourage mitigation and adaptation measures for those in high risk areas

Protect prime agricultural lands

Protect and enhance environmental assets

Coastal

Disaster risk sensitive redevelopment

Minimizing damage

Protection of existing assets

Assistance to vulnerable communities

Preserving and protecting natural environment

Preventing further development in very high risk areas

Inland

Agri Optimization and Planned Urban Expansion

Preservation of prime agricultural areas

Identification of urban expansion sites

Development of infrastructure in urban expansion sites

Waterways protection and wastewater management to protect downstream areas from flooding and pollution

Explore possibility of floodwater retention areas

Upland

Limited Agro-Forestry and Eco Tourism Development

Agro-forestry (coconut, abaca, fruit trees)

Passive recreation (hiking, camping)

Watershed protection and management

Potential for leisure farms

Slope stabilization for existing critical government facilities (short-term)

Upland

Conservation/ No-Build Zone

Forest protection/ conservation

Slope protection

Reforestation

Limited tourism/ passive recreation

Springs/ headwater protection

Coordination with PNOC EDC in terms of management of resources and promotion of eco-tourism activities

- Policy Zones
    - High Risk/Coastal/Built-up Areas
        - No higher

Policy Zones

The policy zones were developed after the vulnerability assessment which identified policies to which development shall be based and common to the area. For existing developments which are situated in the high risk areas, relocations, disaster resiliency application, such as mitigating structures shall be considered.

Inland low risk areas are proposed as urban expansion. Urban/detailed site planning is recommended. Since these are mostly agricultural but non-irrigated, most favorable crops for the areas for agriculture are recommended.

Eco-tourism development is recommended for uplands in medium risk. These are the not so steep slopes for backpackers and nature enthusiasts. Agro forestry is recommended for these areas.

For high risk areas which are situated on the upland areas with steep slopes will remain as protected forest. No development is recommended. However, with the area reserved for geothermal exploration (currently with geothermal plants), the existing policy is still with the national government responsibility.

In summary, the development for these policy areas are:

- ☐ Coastal/ Built-Up/ High-Risk
  - ◘ Disaster Risk Sensitive Redevelopment
- ☐ Inland/ Agricultural/ Low-Risk
  - ◘ Agri Optimization and Planned Urban Expansion
- ☐ Upland/ Agri-Forest/ medium risk
  - ◘ Limited Agro-Forestry and Eco Tourism Development
- ☐ Upland/ Protected Forest/ High Risk
  - ◘ Conservation/ No-Build Zone

The objectives on disaster risk reduction will be adopted in the development objectives in this plan. The following policies shall prevail:

- **Minimize disaster impact** to people
  - Zero casualty
  - Fast recovery
- **Minimize damage** to physical development
  - Protect existing development
  - Locate future development in safer areas
  - Encourage mitigation and adaptation measures for those in high risk areas
- **Protect prime agricultural lands**
- **Protect and enhance environmental assets**

Figure 13. Policy Zone Map

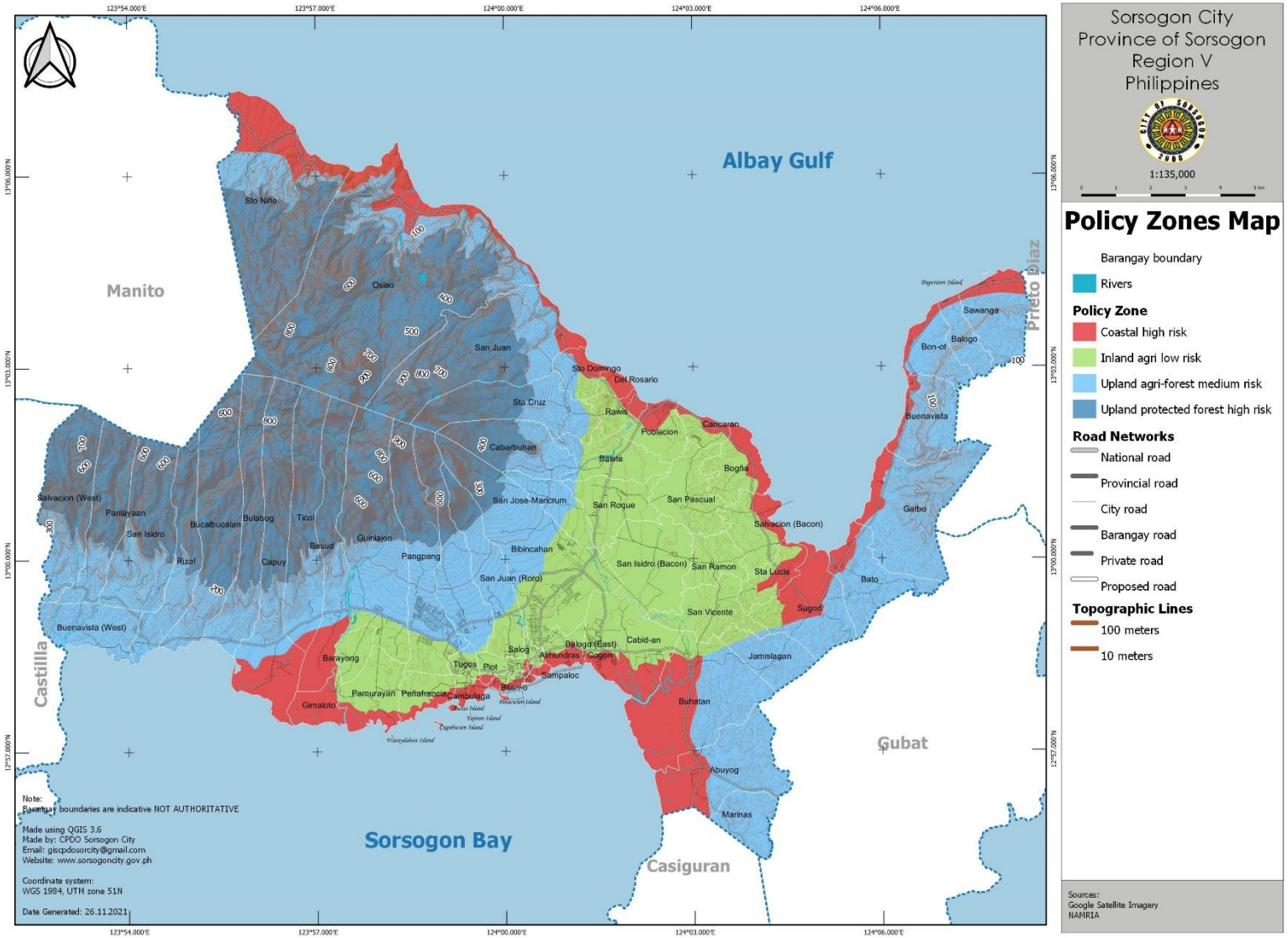

Table 26. Policy Zone

Policy Zone	Development Strategy	Allowed/Disallowed
Coastal/ Built-Up/ High-Risk	Disaster Risk Sensitive Redevelopment	Minimizing damage Protection of existing assets Assistance to vulnerable communities Preserving and protecting natural environment Preventing further development in very high risk areas
Inland/ Agricultural/ Low-Risk	Agri Optimization and Planned Urban Expansion	Preservation of prime agricultural areas Identification of urban expansion sites Development of infrastructure in urban expansion sites Waterways protection and wastewater management to protect downstream areas from flooding and pollution Explore possibility of floodwater retention areas
Upland/ Agri-Forest/ Medium Risk	Limited Agro-Forestry and Eco Tourism Development	Agro-forestry (coconut, abaca, fruit trees) Passive recreation (hiking, camping) Watershed protection and management Potential for leisure farms Slope stabilization for existing critical government facilities (short-term) Relocation of existing critical government facilities (long-term)
Upland/ Protected Forest/ High Risk	Conservation/ No-Build Zone	Forest protection/ conservation Slope protection Reforestation Limited tourism/ passive recreation Springs/ headwater protection Coordination with PNOC EDC in terms of management of resources and promotion of eco-tourism activities.

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III.B. DEVELOPMENT CONCEPT AND STRUCTURE

The available land for development is more than 9,000 hectares. Less than ten of the total land area of the city is existing built-up areas. The challenge for the city is to maximize the utilization of land based on its need for the planning period.

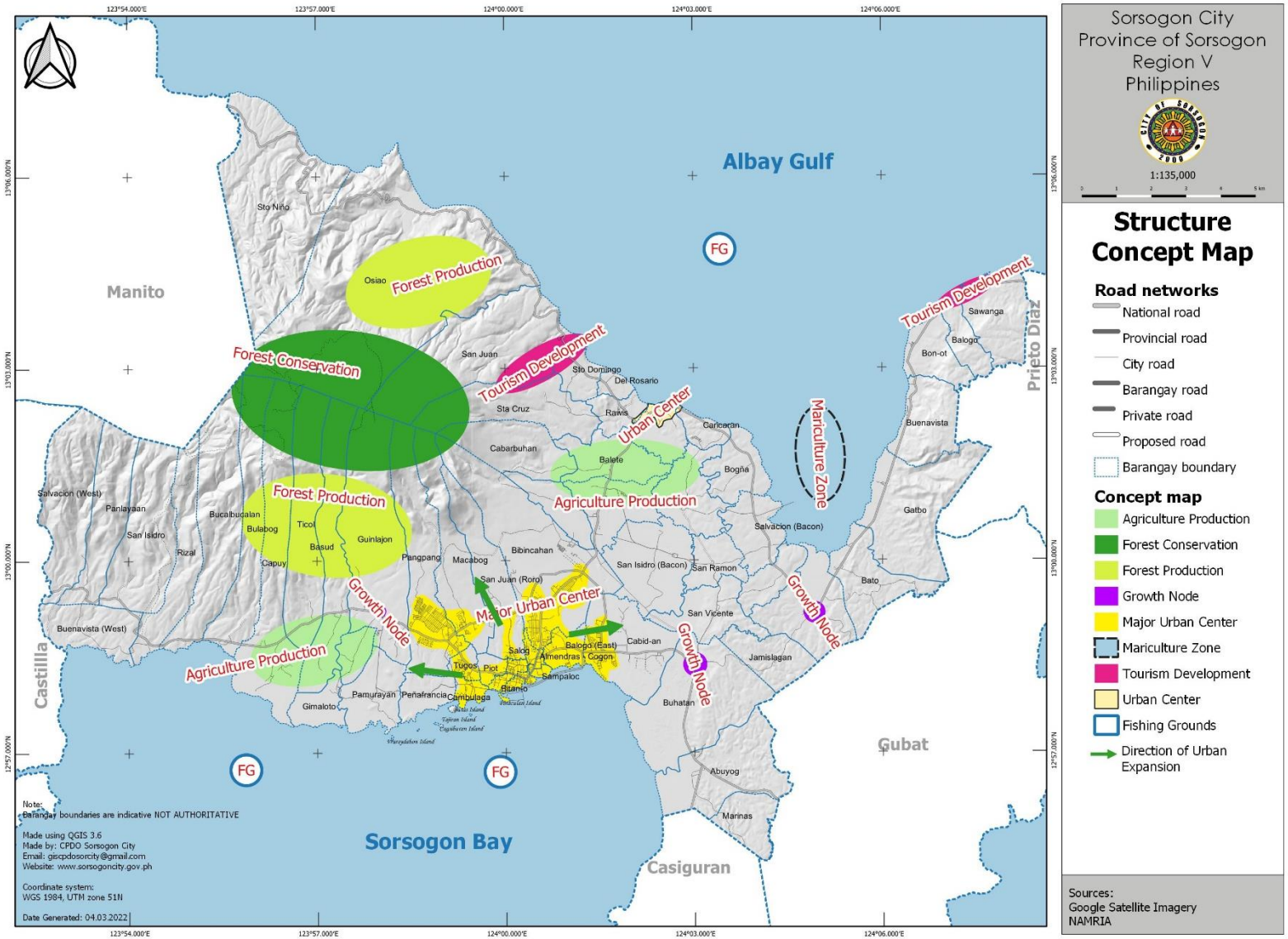
Agricultural areas within the urban barangays will be prioritized for the area needed as urban expansion. Where small /pockets of Riceland are affected, policies include the irrigation of identified irrigable areas to compensate the areas affected by the pressure of urbanization.

Compact development. The concept is recommended to reduce cost of infrastructure needed. This can be done through in-filling of vacancies or underutilized urban areas. Perimeters adjacent to existing development is also recommended with conforming use as the existing ones.

Planned Unit Development. Same as the satellite city (location of the city all and housing) when it was conceptualized, the planned unit is a mixture of land uses with commercial, residential, institutional areas in a unit development. Although revisions to the plan were made based on administrations priorities. The commercial portion (on the government lot) was scrapped. Commercial establishment grew on the adjacent lots.

Deferred development. Areas identified as urban expansion but to maximize its use, shall be deferred for the next half/third/quarter of the planning period.

Figure 14. Structure/Concept Map



Concepts and notes:

Based on the city's area and allowable areas for development the following were observed and findings include:

- Large area for development
- Conflicting uses—sporadic development
- With prime agriculture within developments
- Forest conservation by EDC
- Urban
    - Deferred development in some areas
    - In filling for compact development

The existing built-up area of the city consists of less than ten percent of the total area. Because of this, deferred development areas maybe designated for the following reasons:

- Minimize speculation from the landowners of land prices as it has been identified as development area and discourage unutilized or vacant lands;
- Maximize utilizatiion of land as agriciltural land while it has not been classifies as commercial, residential or non agricultural areas.
- Deferred development areas maybe classified as non agricultural areas after five years or earlier reviewed depending on the pace of urbanization

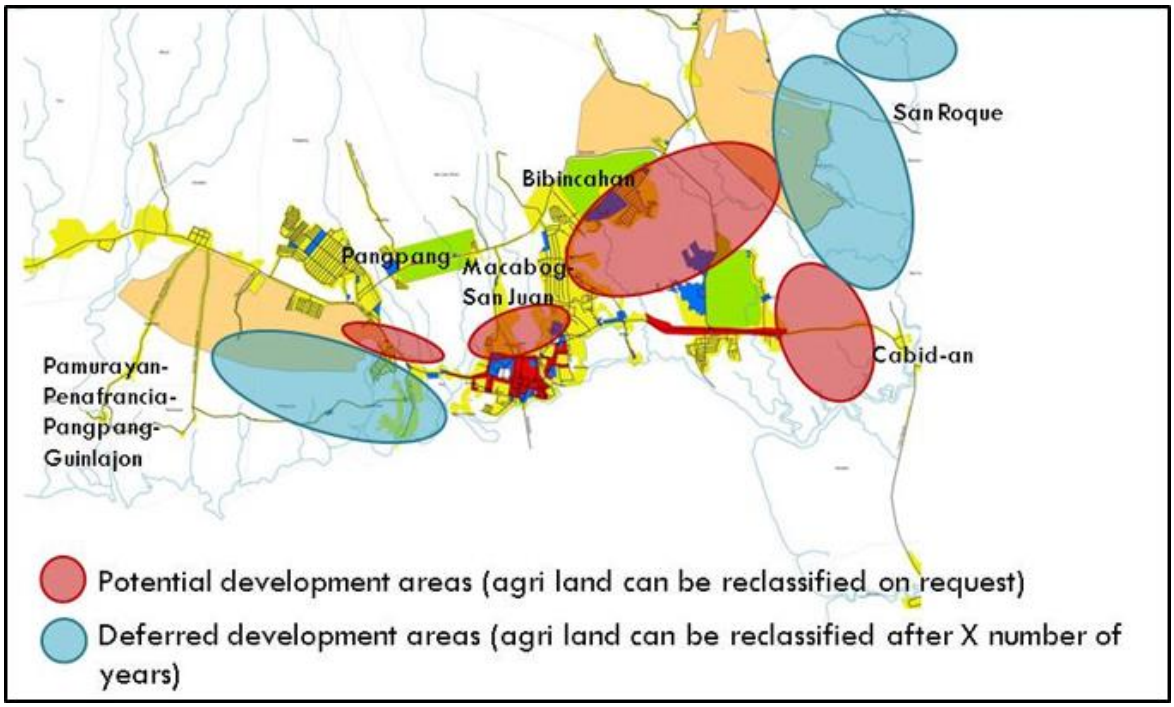


Figure 15. Concept Zone Map

III.C. THE LAND USE PLAN

The urban areas of the city will continue to expand through the three linear directions, going north of the city along Sorsogon-Bacon Road, going west along the Sorsogon-Legazpi Road, and going West along the Sorsogon Bulan Road. With this urbanization trend, policies on land and water use particularly on the areas for development will have to be followed and incorporated to the City Zoning ordinance.

Areas for development

All potential areas for development Considering

With the identified potential areas for development, Identification of potential areas (agricultural, identified as expansion areas

No rice irrigated zones (rice self-sufficiency), irrigations built by government-if pressure cannot be avoided – equivalent or more area for conversion

No reclassification of ricelands or prime agricultural areas to higher order

Agricultural lands shall be check

Parks and playground use is the network of parks and playground proposed to be established. The park system is composed of a city park, district parks, and children's playgrounds.

The agri-industrial park proposed to be developed is a 60-hectare in Bibincahan along the diversion road and inside the delineated economic zone, some areas in Barangay Balogo, Sampaloc and San Juan-roro in East District and the existing 10 hectares in Cabid-an . The site will accommodate light industrial locators. The site will not be purely agri-industrial but will also accommodate commercial uses that are needed by the city in supporting the transshipment corridor role of the province. The site will host a food terminal, various commercial warehouses, and other transport support businesses. The area is indicative and suggested addition to existing industrial uses (cement mix), slaughterhouse, cold storage owned by the city government (non-operational)

This will be subject to a feasibility study covering the viability of the area on several aspects of the study.

The tourism area is the proposed development of Pinaculan Island into a tourism site, the Bucalbucalan and Bulabog rest area and tourism market facility, and the low order commercial development near the EDC site.

Figure 16. Proposed General Land Use Plan

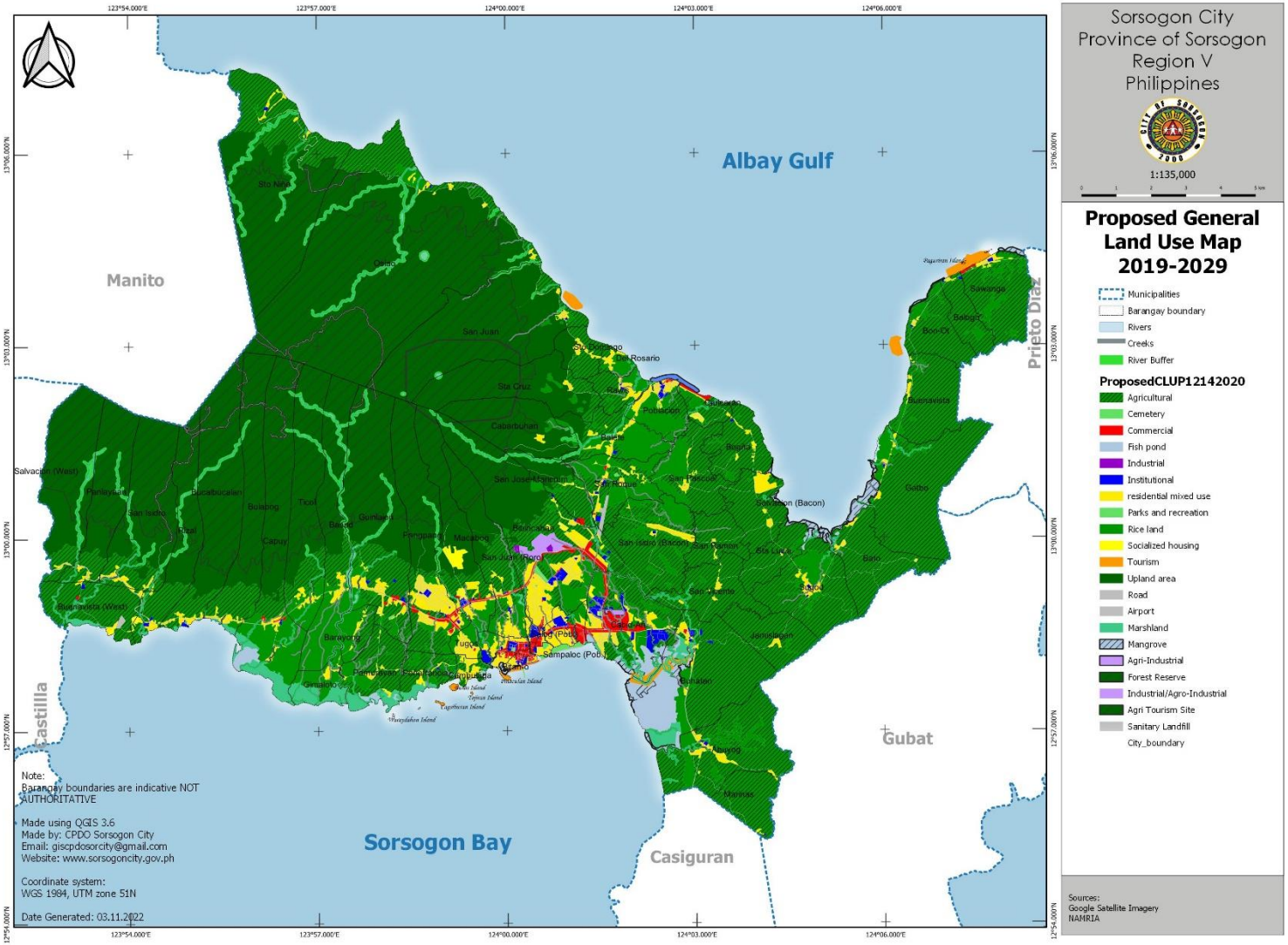


Table 27. Land Classification

Type	Area(sqm)	Area(has)	Percentage
Agricultural	97,982,636.74	9,798.26	31.20%
Agri-Industrial	74,945.49	7.49	0.02%
Airport	129,264.99	12.93	0.04%
Aquaculture	894,251.59	89.43	0.28%
Cemetery	123,492.07	12.35	0.04%
Commercial	1,673,414.06	167.34	0.53%
Dumpsite	52,416.14	5.24	0.02%
Fish pond	3,068,247.50	306.82	0.98%
Forest Reserve	94,648,561.19	9,464.86	30.14%
Industrial	36,476.46	3.65	0.01%
Industrial/Agro-Industrial	557,722.60	55.77	0.18%
Institutional	1,500,825.43	150.08	0.48%
Mangrove	1,841,453.03	184.15	0.59%
Marshland	3,977,242.30	397.72	1.27%
Parks and recreation	154,466.33	15.45	0.05%
Protected coastal area	25,315,567.52	2,531.56	8.06%
Recreational strip	196,822.48	19.68	0.06%
residential mixed use	11,146,344.55	1,114.63	3.55%
Rice land	26,198,244.32	2,619.82	8.34%
River easement	2,037,406.33	203.74	0.65%
Road	2,945,636.12	294.56	0.94%
Socialized housing	245,431.36	24.54	0.08%
Tourism	8,193,807.19	819.38	2.61%
Upland area	31,078,713.15	3,107.87	9.90%
Total	**314,073,388.93**	**31,407.34**	

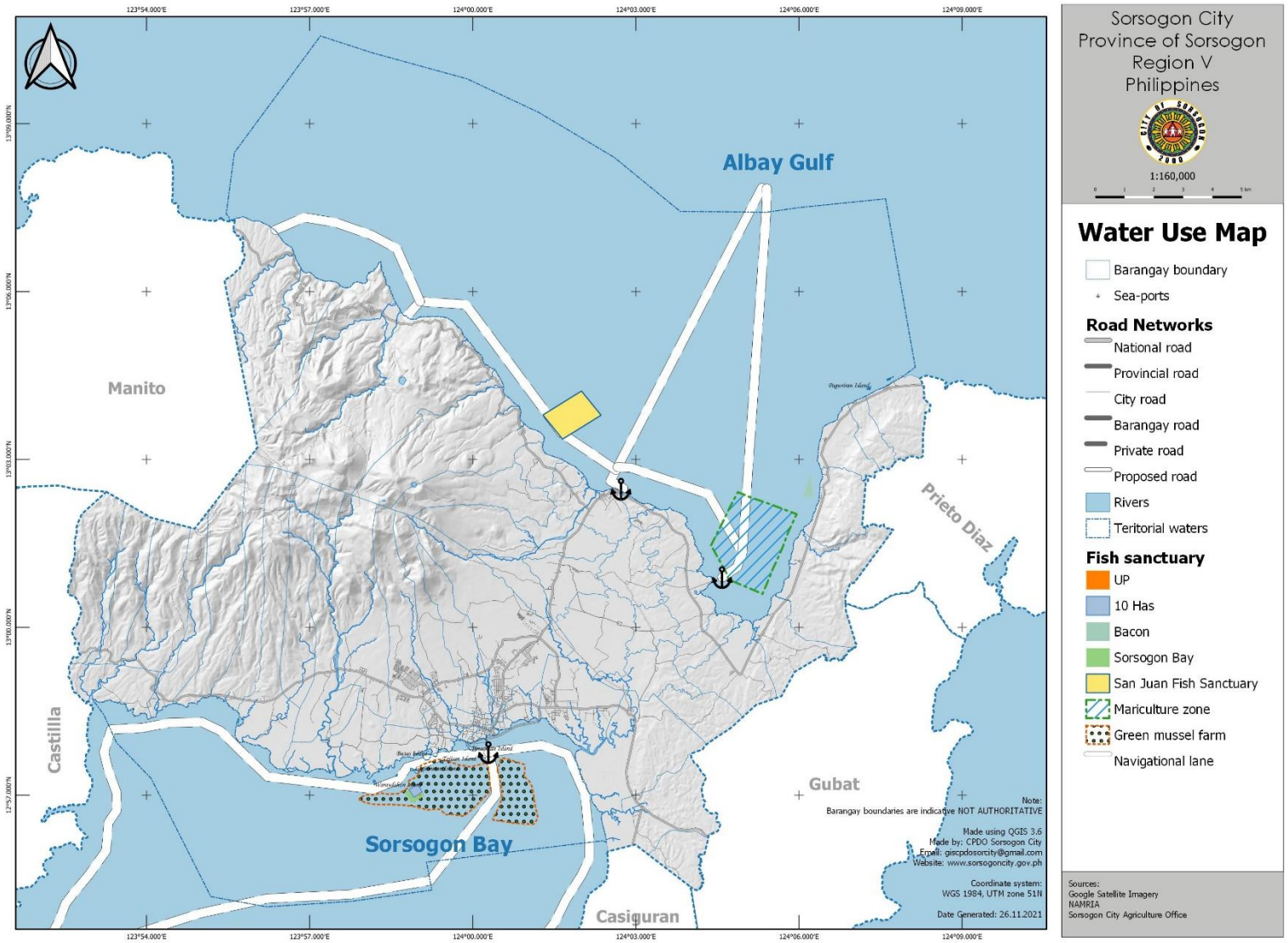
Note: Overlapping areas results to bigger areas

WATER USE

The main bodies of water of the city are Sorsogon Bay (share with other municipalities of Sorsogon) and Albay Gulf (also shared with other municipalities). Fishery areas and navigational lanes are the main uses of these big bodies of water. Fixed areas are the mariculture area in Sugod Bay (part of Albay Gulf) and the green mussel farm in Sorsogon Bay.

Existing fishponds are situated on the marshlands of barangays Abuyog and Buhatan. Once these are unused, mangrove planting or reforestation is recommended. Fresh water includes rivers and lakes. Setbacks are mandatory for lots adjacent to it depending on the location as urban, agricultural, and forest areas.

Figure 17. Water Use Map



Hazard Overlay Zones

Table 28. Hazard Overlay Zones

Hazard	Location and Area	Land/Water Use Policies
Flood Overlay Zone	• Moderate Susceptibility to • Floods • Floodplain Area (outside the Floodway) where risk is manageable and evacuation (whether vertical or horizontal) is possible during flood	Allowable Land Uses: • Agriculture • Recreational • Residential* • Commercial* • Industrial* *With appropriate density, building design, and environmental restrictions below: Building Design Standards • Required elevation requirements for the lowest floor line of new constructed and improved buildings • Requirements for construction of structures on stilts where applicable • Limitations on uses of enclosed spaces below flood elevation (for parking, access, or limited storage only) • Wet and dry flood proofing measures such as backflow valves, waterproofing for doors and windows, elevated electric circuits, etc. • Measures to compensate storm water retention capacity of the building site due to infilling; and • Measures to retrofit existing buildings on Floodplain Zones.
Flood Overlay Zone		Environmental Conservation and Protection Standards Developments shall: • Preserve riparian strips/ ecological buffers along water channels • Not alter natural drainage patterns • Not alter or fill or build on the floodplain without proper drainage design and without proper drainage design and without proper consideration of possible inundation effects of nearby properties

Hazard	Location and Area	Land/Water Use Policies

		• Avoid/ minimize culverting or canalization of watercourses unless necessary for access
		• Use permeable pavement materials and sustainable urban drainage systems such as filtration trenches, retention ponds, swales, rainwater storage, green roofs and other related technologies that can improve storm water quality, decrease runoff, manage peak flows, and make productive use of stormwater.
		  • Protect water bodies from sedimentation and erosion.
		  • Design internal drainage so as not to increase turbidity, sediment yield, or discharge harmful substances.
		  • Retain at least 10% of the property for open space.
		
		The following may also be required for the locational clearance of allowable residential, commercial, industrial uses:
		  • Drainage Impact Assessment Statement,
		  • Environmental Compliance Certificate, and
		  • evaluation of existing infrastructure capacity for drainage

Landslide susceptibility zone	• Low-Moderate Susceptibility to Landslide or • Area where landslide risk is manageable through low-intensity development or site development	Allowable land uses • Low-density residential (R-1) • 2. Neighborhood commercial (C-1) Site Development Requirements: • Locate buildings away from steep slopes, streams and rivers, or the mouths of mountain channels • Maintain low density (as designated for R-1 use) • Employ slope stabilization measures such as control of surface and ground water drainage, earth buttresses, restraining walls, terracing, etc.

Hazard	Location and Area	Land/Water Use Policies
Liquefaction Susceptibility Overlay Zone	• Areas Susceptible to Liquefaction	Allowable land uses • Agricultural • Recreational • Low Density Residential (R-1) • Low Density Commercial (C-1) • Industrial Building Design Requirements: • Conduct geo-testing to verify soil suitability • Employ soil mitigation such as engineered fill if found necessary • Employ structural mitigation such as mat foundation or piles if found necessary
Storm Surge Overlay Zone	• Moderate Susceptibility to Storm Surge or • Area where storm surge risk is manageable through site development or building design	Allowable land uses • Forest (mangroves) • Agricultural • Recreational • Residential* • Commercial* • Industrial* *With restrictions on building design and environmental performance as below: Building Design Requirements: • Required elevation requirements for the lowest floor line of new constructed and improved buildings requirements for construction of structures on stilts as applicable • Limitations on uses of enclosed spaces below flood elevation (for parking, access, or limited storage only) • Wet and dry flood proofing measures such as backflow valves, waterproofing for doors and windows, elevated electric circuits, etc. Environmental Conservation and Protection Standards Developments shall: • Build only in the allowable areas beyond the required coastal easement

Hazard	Location and Area	Land/Water Use Policies
		• Preserve and maintain mangroves and natural vegetation along the coast
Tsunami Inundation Overlay Zone	• Tsunami Inundation Area	Allowable Land Uses: • Agriculture • Recreational • Residential • Commercial • Industrial The following critical facilities should not be built on the Tsunami Inundation Area: • Government centers (city and barangay hall) • Civil emergency structures such as evacuation centers and hospitals Or if unavoidable, the following should be ensured: • The structure can withstand a tsunami • Vertical evacuation is possible
Ground Subsidence Overlay Zone	• Areas Susceptible to Ground Subsidence	Allowable land uses • Agricultural • Recreational • Low Density Residential (R-1) • Low Density Commercial (C-1) • Industrial With the following restrictions: Developments shall: • Conduct geotesting to verify soil suitability • Employ soil mitigation such as engineered fill if found necessary • Employ structural mitigation such as mat foundation or piles if found necessary • Follow government regulations on ground water use

III.D. LAND AND WATER USE POLICIES

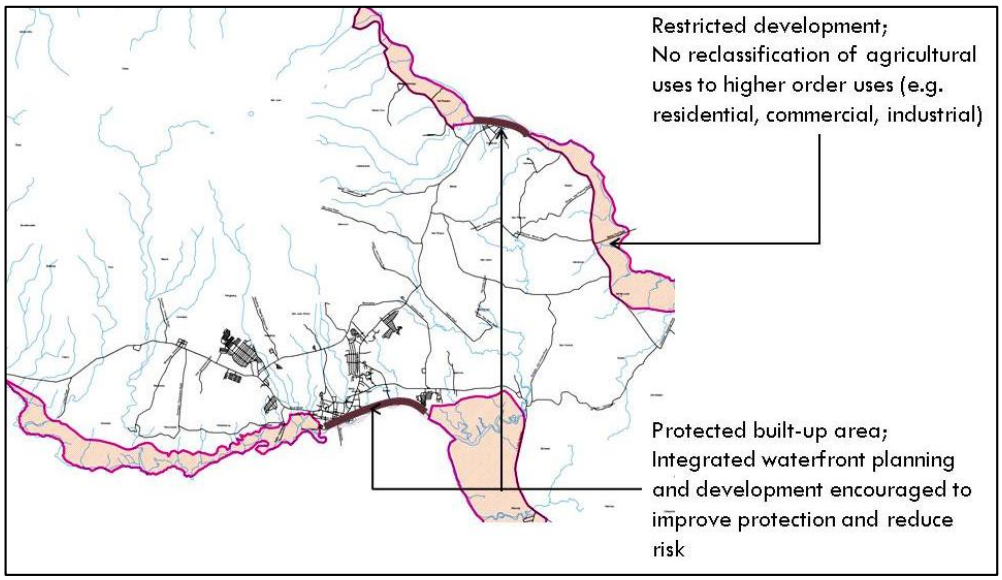


Figure 18 . Land and Water Use Policies

In the same way, the development will adopt the objectives in disaster risk reduction. To realize this, the following policies will be adhered to:

All existing development shall be protected. These are the built-up areas near the coastlines. This can be achieved through integrated waterfront planning and development. The main purpose will be to improve protection and reduce risks.

Areas identified as vulnerable areas shall have restricted development. There shall be no reclassification of agricultural uses to higher order uses such as residential, commercial or industrial uses.

Where settlements are not possible for protection, relocation shall be a solution and shall be planned on a long term.

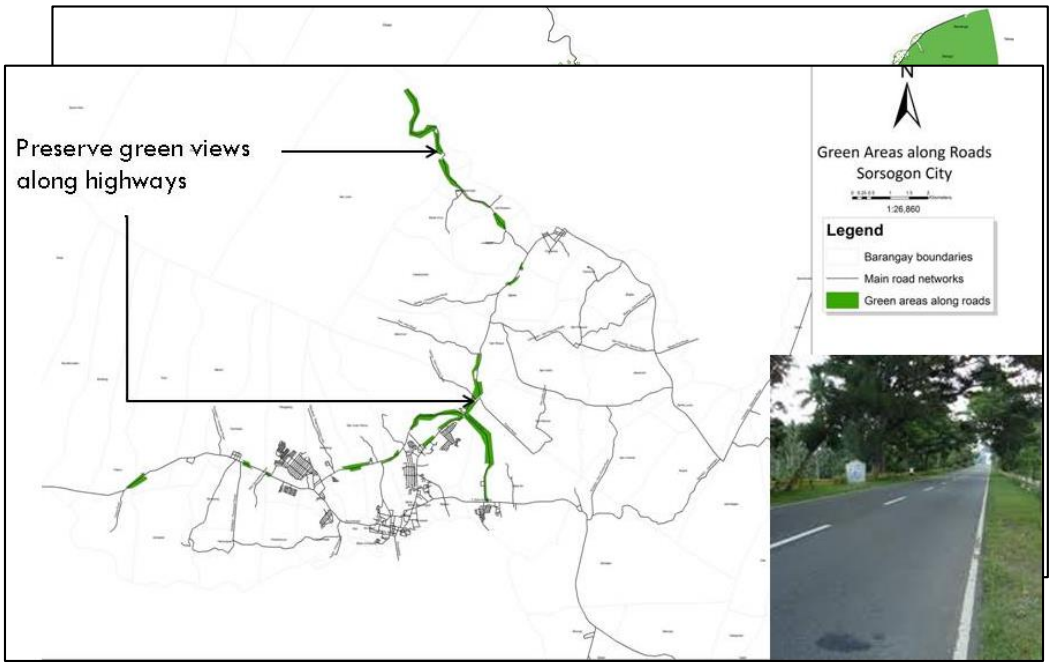


Figure 19. Green Areas AlongThe Road

LAND WATER USE POLICIES

Figure 20. Land Water Use Policies

Land/Water Use Category/Sub-category	Location and Area	Land/Water Use Policies
Forest and Forestland – Protection (Area = hectares)		
Forest Reserve	• Upland areas in ___	• The area is essentially for biodiversity conservation and no human activity is allowed in this zone except for scientific studies and purpose for which site is reserved. • Allowable uses are reforestation, recreation,
Geothermal Reservation Area	• Upland areas in Barangays Salvacion, Panlayaan, San Isidro, Rizal, Bucalbucalan, Bulabog, Capuy, Guinlajon, Sto. Nino, and San Juan as defined in R.A. _____	• Allowable uses are geothermal energy production facilities, cooling and reinjection facilities, administrative facilities, roads and transport facilities to drilling and production sites • Under the administration of Department of Energy • Allowed are reforestation,
Mangroves	•	•
Forest and Forest Land - Production		
Forest Buffer	• Areas outside the forest lands with a strip of 20 meters downhill in Barangays of Salvacion, Panlayaan, San Isidro, Rizal, Bucalbucalan, Bulabog, Capuy, Guinlajon, Sto. Nino, and San Juan	• • Allowed are landslide mitigating structures
Plantation	• Areas outside the forest lands with a strip of __ meters downhill in Barangays of _____	• The following regulated activities may be allowed provided these will not destroy the soil, water and biodiversity resources: • Existing settlement

		• Traditional and/or sustainable land use including agriculture, agroforestry and other income-generating or livelihood activities • Recreation, tourism, educational or environmental awareness activities • Installation of projects of national significance, such as development of renewable energy sources, telecommunication facilities and electric power lines • Animal hunting and gathering of non-timber forest products
Agriculture - Protection		
SAFDZ	• Rice crops in Rizal, Panlayaan, San Isidro, Capuy, Basud, Barayong, Gimaloto, Guinlajon, Pamurayan, Penafrancia, Tugos, Cambulaga, Piot, Macabog, in West District	• Zoned as SAFDZ and given protected status are the rice areas of Irosin • Conversion to other uses is prohibited, except for those areas identified for urban expansion in this CLUP • Allowable uses are cultivation of rice and other staple crops, growing of diversified fruit trees, fishponds, backyard livestock raising, single-detached dwellings, customary agriculture support facilities, farmhouses, home business and home industries • Areas declared as prime agricultural planted to rice crops, with or without irrigation systems • Conversion to other uses is not allowed except those defined as areas for urban expansion under this land use plan. • Allowable uses are rice production and other staple crops, backyard livestock production, fishponds, fruit trees, rice mills and other agricultural support facilities such as farmhouse, home business and home industries,
Agriculture - Production		
Crops	• Coconut, abaca, pili, and other fruit trees	• Agricultural land outside of SAFDZ and declared as production agriculture use • All allowable uses in SAFDZ including

Water - Protection		
Rivers and Creeks	•	• Rivers and riparian buffer zones are protection policy areas • Areas within 20 meters of river banks in agricultural areas and 3 meters in urban areas are restricted areas and declared as "no dwelling zone" and "no build zone", except for the construction of flood and erosion control structures • An additional buffer area of 3 meters from legal riparian easement in urban areas is declared as "no build zone" • Allowable uses are regulated fishing and aquaculture •
Lakes	• Bacon District	• The lake and its buffer zone are protection policy area • Allowable uses are regulated fishing, aquaculture and recreational tourism • Only non-permanent structures are allowed within the lake such as fish cages. • The 20 meters easement from lakeshore will be zoned as eco-tourism area where the allowed activities are trekking and camping
Fish Sanctuary	• San Juan • Talisay/Cambulaga	• Regeneration of marine life • Marine research and studies
Water - Production		
Fishing area	• Sorsogon Bay • Albay Gulf	• Municipal fishing area in Sorsogon Bay and Albay Gulf/Sugot Bay
Green mussel production	• Sorsogon Bay	• Installation of trellis for green mussel production
Mariculture production	• Sugot Bay	• Installation of fish pens and similar structures for marine fish culture
Tidal set net (Bunoan)	• Sorsogon Bay	• Installation of banata (bamboo nets)
Navigational/Sea lane	• Albay Gulf • Sorsogon Bay	• Navigation of water vessels/sea craft as delineated by NAMRIA • Allowed travel by small and medium sized vessels • No trellis for green mussel or fish pens or similar shall be allowed

Tourism	• Albay Gulf • Sorsogon Bay	• Bay cruise
Eco-tourism	• Mt. Pulog • Buhatan river • Cabarbuhan	•
Residential		
General Residential	• Citywide (plains, sloping)	• An area intended principally for dwelling/housing purposes • Allowable uses are single-detached and semi-detached dwelling units, townhouses, apartments, residential condominium, subdivisions, boarding houses, dormitories, pension houses, hotel apartments or apartels, hotels, museums, libraries, home occupation for the practice of one's profession, home industry classified as cottage industry, recreational facilities for the exclusive use of the members of the family residing within the premises, parks and open spaces, nursery/elementary school, high school, vocational school, tutorial services, sports club, religious use, multi-purpose/barangay hall, clinic, nursing and convalescing home, health center, plant nursery, parking buildings (aboveground/underground), and customary accessory uses incidental to any of the principal uses •
Socialized housing	• Housing sites	• Areas designated to housing projects to be undertaken by the government or private sector for the underprivileged and those residing in climate change and disaster risk areas as relocation sites • Allowable uses are in accordance to BP 220 • With city designed housing prototype
General Commercial	• Existing commercial areas in the central business district • Selected areas along the national	• An area intended for trading/services/ business purposes • Allowable uses are wholesale stores, wet and dry markets,

	• highway, diversion road • Barangay centers	shopping center, malls and supermarkets, retail stores and shops, food market warehouse/storage facility for non-pollutive/non-hazardous finished products, personal service shops, bayad centers, laundries, internet café and cyber stations, photo/video, lights and sounds services, catering services, event planners, water stations, courier services, security agencies, janitorial services, travel agencies, repair shops, recreational centers/establishments, restaurants and other eateries, bars, sing–along lounges, bistros, pubs, beer gardens, disco, dance halls, lotto terminals, off-fronton, on-line bingo outlets and off-track betting stations,
Agri-industrial	• (Indicative) Bibincahan area within the vicinity of Slaughterhouse/Cold storage • Existing 10 has at Cabid-an • Barangay Balogo • Barangay Sampaloc • Barangay San Juan (roro)	• Areas reserved for agricultural support processing plants such as coconut products, marine products, pili/high value crops processing. • Coconut/coco water processing
Industrial	• (Indicative) Bibincahan area near/within the vicinity of Sorcom (Cement) area of 55 hectares • Barangay Guinlajon	• All industrial production and manufacturing pollutive non-hazardous, non-pollutive hazardous
Institutional Institutional	• Schools • Health facilities • Area/sites of barangay administration centers	• An area intended principally for general type of institutional establishments • Offices of national government agencies and local government units will be relocated/sited at the City Government Center in Cabid-an • Existing location of National and Provincial Offices • Private and government hospitals • Places of worship
Parks and Recreation	• City hall park	• An area for amusement and for maintenance of ecological balance

	• Pepita park (Bucalbucalan) • Capitol Rizal park • Rompeolas • Plaza Bonifacio? • Barangay and Chapel parks	• Allowable uses are parks, playgrounds, promenades, open air or outdoor activities facilities, ball courts, memorial/shrine monuments, parking spaces • Includes center island and separator islands •
Burial grounds/ Cemetery/memorial Park	• Existing cemeteries and memorial parks •	• An area intended as burial space for the dead. Establishment/Expansion of public cemetery to accommodate dead of multi-religious groups • Exiting cemeteries/memorial parks
Infrastructure	• Road right of Ways • Railways • Airport • Ports • Water • Power. • Communications	• An area designated for low to high density community support functions such as terminals, power facilities, water facilities, telecommunication facilities and the like • Road right of ways • Power line right of way • Power Sub-stations •
Landfill	• Buenavista • Bato (for closure) • Support facilities of waste disposal	• The existing solid waste disposal facility at Buenavista Landfill shall be completed to conform with sanitary landfill guidelines • Closure of Bato controlled dump site • Establishment of sanitary landfills shall be in accordance with the guidelines as provided in the IRR of RA 9003 • Measures will be put in place to reduce the waste being disposed at the landfill • Post-closure rehabilitation measures will be put in place for closed disposal sites (Bato) • Greenbelts will serve as buffer zones for the disposal facility •
Heritage conservation	• Capitol • Provincial Jail/CFI • Muralla walls	• The identified heritage houses and structures shall be preserved • Repair and renovation works shall ensure that the original architectural design is maintained.

III.E. MAJOR DEVELOPMENT PROGRAMS

Roads and Bridges/Infrastructure Development Program

Completion of Bacon Manito Road
Construction/completion of Coastal Road
Construction of Pangpang-Tugos-Cambulaga-Talisay Alternate Road
Rehabilitation and Improvement of Buhatan-Jamislagan-Sugod Road
Rehabilitation and Organizational Development of Bacon Water System
Rehabilitation and Improvement of Sorsogon Community Airport
Rehabilitation and Improvement of Drainage Systems
Repair and Improvement of Urban and Rural Roads

Economic Development Program

Development of Light Agro-Industrial Center
Operationalization of Cold Storage Facility
Development of Pili Oil Processing Center
Development of Pinaculan Island Resort
Development of Rompeolas Leisure Park
Improvement of beaches, attractions, and tourism destinations
Development of Water Detention facilities for Irrigation
Establishment of Community Based Tourism program`

Social Development

Relocation of Informal Settlements in Vulnerable Areas
Identification, Acquisition and Development of Barangay Relocation/Expansion Areas
Construction of Water Impounding projects
Construction of School Buildings and Educational Facilities
Improvement of Health Centers
Construction of Balay Bukas Palad
Construction of Secondary Hospital/Dialysis Center
Construction and Improvement of Street Lights
Construction of City Jail

Environment

Construction of Sanitary landfill
Improvement of Materials Recovery facility
Urban Greening program
Parks and Public Open Spaces Development
Development of Wetlands and
Establishment of Water Quality Monitoring System
Establishment of Pollution Control

Establishment of Septage facilities
Mangrove Reforestation

Institutional

Construction of City Hall (new)
Repair and Improvement of Existing City Hall (conversion to other use)
Organizational restructuring
Capacity Development Programs
Legislative Tracking System
Updating of Citizen's Charter/ISO certification
Repair and Improvement of Barangay Halls
Automation of City Transactions
Information, Education and Communication (IEC) Plan /Advocacy

Proposed Barangay Development Projects

Table 29. Proposed Barangay Development Projects

Barangay	Project
Abuyog	Purchase of Lot for Barangay Site
	Metered Streetligths Boundary to Boundary of the Barangay
	Construction of Abuyog Gymnasium at Barangay Site
	Farm to Market Road at Purok Hangaan & Tigib (5km)
	Purchase of Barangay Site
	Construction of Local Roads/Pathway at Purok Dalan Pagubat (KM12) Patalibong
	Construction of Local Roads/Pathway at Purok Kuta going to Tigib (Bubuyog Eco Park)
	Construction of Local Roads/Pathway at Purok Hangaan going to Mr. Buen
	Construction of Laundry Shed at Central II (Tinago), Purok Kuta (KM8) & Dalan Pagubat (KM11)
	Construction of Flood/River Control at Purok Bisita
	Construction of Flood Control at Purok Kuta near Ex. Capt. Lando Azures
	Construction of Flood Control at Purok Kuta near Mr. Rolando Carlin
	Construction of Basketball court at AES
	Construction of New 2 storey Public Market
	Construction of New Barangay Health Center
	Construction of Local Roads/Pathway Re opening of Old Barangay Road at Purok Central I and Samurai
	Construction of Box Culvert at Purok Central II
	Construction of New Day Care Center at Purok Bisita and Dalan Pagubat (KM12)

Barangay	Project
	Repair of Barngay Road (Bisita-Calle Nueva) (Bisita-Punta)
	Construction of Local Roads to Sabang (Long Term)
Almendras-Cogon (Pob.)	Installation of Solar Streetlights Purchase of Lot Construction of Barangay Hall/Multi-purpose Hall
Balogo	Purchase of Dump Truck
	Land Improvements
	Construction of Shallow well in all purok areas (P30,000.00/unit)
Balogo	Rehabilitation of Purok 4 Multi-purpose Hall
	Installation of Solar Power Streetlights
	Capital expenditures related to the implementation of livelihood or entrepreneurship/local economic development projects
	Rehabilitation of Water Canal in Purok 3 (near Bonita's Residence)
	Construction of drainage canal
Barayong	Local Road with footbridge (Purok 2,4,6) Construction/Installation of Streetlights Construction of Farm to Market Road
Basud	Farm to Market Road (800 meters)
	Construction of river control Construction of Local Roads Installation of Streetlights
Bibincahan	Installation of Streetlights
Bitan-o/Dalipay (Pob.)	Construction of Local Roads Construction of River Control (Purok 4)
Bucalbucalan	Construction & Installation of Water Supply System, Phase 3 Construction of River Control Installation/maintenance of street lighting system Installation of streetlight with solar panel along the seawall Installation of CCTV Cons't/Rehab. Of Pathway/ Local Roads/Bridges with railings Cons't/Rehab. Of MRF Rehabilitation/Construction of Drainage System, De-clogging Canal Construction of Covered Basketball Court & pavement at elementary school Const. of Evacuation Center Purchase of lot for the Construction development Const. and Rehab. Of seawall Construction of mini park playground at seawall Rehab/Repair of multi-purpose hall/ daycare Center and health center Construction of Barangay public toilet

Barangay	Project
	Construction of laundry shed Rehabilitation/ repair of water reservoir system with galvanized & repair of steel mating Construction of concrete fence of the barangay property construction of slope protection landslide prone area Purchase of the utility service/ motorcycle/ van/ garbage truck Construction of roofing of st. lourdes (groto)
Buenavista Buenavista	Construction/Rehabilitation/Improvement of Water System Construction of Local Roads Construction of Evacuation Center
Buhatan	Purchase of Lot for Multi-purpose Facilities
	Construction of Water Irrigation
	Construction of Farm to Market road
	Development of buhatan River Eco adventure
	Construction of river control
	Construction of water facilities at purok quirino
	Construction of sport center
	waste material recovery
	installation of hazard signage
	Construction of line canal at purok aguinaldo
Bulabog	Construction of Gov't. Owned Potable Water System
	Maintenance of water supply system
	Construction of river control
	Construction of seawall
	Construction of local road (P-5)
	Repair/Rehab. of health center
Burabod (Pob.)	Const. of Multi-purpose Hall, Phase III
	Construction of lined canal
Cabid-An	Purchase of Dump Truck
Cambulaga	Construction of River Control, Phase II Purchase of Lot for Multi-purpose Hall Construction of local Roads Purchase of lot for Relocation
Capuy	Construction of Water Supply System @ Purok 3 (Capuy Main Source) Construction of Local Roads
	Construction of river control
Gimaloto	Construction of bridge Construction of Local Roads
Guinlajon	Construction of Local Roads
Macabog	Construction of Footbridge/500m Local Roads Construction of Local Roads
Marinas	Construction/Fabrication/Installation of Solar Streetlights Proposed Level III Water Supply System Construction of Local Roads
Pamurayan	Purchase /Dev't of lot for Informal Settler

Barangay	Project
	Purchase of solar panel
	Cons't of line Canal, Roads, Box Convert @ Purok 5
	Improvement/Rehabilitation of an Existing Line Canal
	Rehabilitation/Existing Line canal must have a protection of plain metal cover
	Construction of Unfinished local road
	Brgy. Land Improvement (for survey & title)
	Purchase /Dev't of lot for Senior Citizen
	Construction of Senior Citizen Hall
	Construction of Hanging Bridge
	Construction of Guard Rail/Concrete Barrier
Pamurayan	Improvement of Barangay Hall
	Construction of Multipurpose Covered Court with Stage (Pamurayan Integrated School)
	Construction of river control
	Irrigation System From Felipe Janoras Residence to Rice field P-3
	Purchase of CCTV, Service Vehicle, Two-way Radio, gadget & equipment, etc.
	Purchase of Furniture & Fixture (Brgy. Hall)
	Installation of Streetlights
Pangpang	Construction of Local Roads (Purok 1, 2, 3) Purchase of Rescue Vehicle Purchase of Mini-Dumptruck
Panlayaan	Rehabilitation/Maintenance of Water System Construction of Local Roads Construction/Installation of Streetlights
Peñafrancia	Construction of evacuation center
	Construction/Rehabilitation of local roads and bridges P4, P6 & P7
	Installation and maintenance of street lighting system
	Construction of seawall
	Capital expenditures related to the implementation of livelihood or entrepreneurship/local economic development projects
	Construction of river control
	Rehabilitation and construction of drainage system, de-silting of rivers and de-clogging of canals
	Construction of farm to market road P3, P5 & P6
	Construction of barangay health center
Piot (Pob.)	Construction of River Control
	Construction/Rehabilitation of water system
	Construction of evacuation center
	Construction/rehab of local roads/bridges
	Construction/rehab of local roads/bridges
	Construction of farm to market road
	Construction of river control facility
	Implementation of flood erosion facilities
	Construction of multi-purpose hall

Barangay	Project
	Construction of river control facilities
	Construction of covered court
Polvorista (Pob.)	Purchase of land intended for the construction of Day Care Center
	Construction of Day Care Center
	Construction of Covered Canal along Monreal St.
	Construction of Covered Line Canal at the Interior of Crystal Clear
	Construction of River Control
	Purchase of Garbage Collection Vehicle
Polvorista (Pob.)	Construction of Covered Line Canal along M. Santos and Quezon Street
	De-clogging and Repair of Covered Lina Canals
	Purchase of land intended for the construction of Material Recovery Facility (MFR)
	Construction of Material Recovery Facility (MFR)
	Construction and Rehabilitation of Multi-Purpose Hall
Rizal	Construction and Installation of Water System
	Construction and Installation of Water System
	Construction/Installation of Street Lights
	Daycare Center and Senior Citizen multi-Purpose Hall
	Construction of Barangay Road
	Construction of Food Stall
	Construction of Path Way
	Construction of Brgy. Site/Flooring
	Construction of Drainage Canal/Food Control
	Maintenance of Street lights
	Construction of Land Mark
	Construction of Wet Market Phase
	Renovation of Brgy. Hall
	Open Canal
	Construction of bridge
Salog (Pob.)	Improvement of Streetlighting system
	Construction of free-flowing well @ purok8, 3, 5
	Improvement of Drainage system @ purok 2 & 1
	Rehabilitation of local road and drainage system @ Arellano & Alburo St.
	Improvement of local road at purok 1 & 2 going to Brgy. Bibincahan
	Construction of farm to market road purok 1 going Brgy. San Juan Roro
	Construction of Materials Recovery Facilities
	Construction of Level III Water system @ purok 1 to 8
	Instllation of Solar Light Panels
	Improvement of Streetlighting system
	Construction of footbridge connecting to Isla Gigante, Brgy. Burabod
	Installation of river control railings

Barangay	Project
	Construction of multi-purpose Bldg. Phase 3- Youth Center & Research
	Construction of Shed for various common wate rwell and ponds
	Construction of multi-purpose Bldg./evacuation center
	Improvement of Drainage system @ purok 7
	Reblocking/ widening of roads @ purok 1 and 2
	Construction/rehabilitation of river control purok 3 side and purok 2, purok 8
	Purchase of lot for multi-purpose utilization
	Construction/rehabilitation /Improvement of footbridge connecting a) 2 to 3, b) 1 to 8 and c) 5 to Isla Gigante
Salvacion	Construction of New Source of Water System Construction of Farm to Market Road
Sampaloc (Pob.)	Construction of Covered Line Canal Construction/Rehabilitation of Local Roads @various Purok Construction/Installation of Streetlights Construction of Water System
San Isidro	Construction of Day Care Center/Health Center Purok 2
	Construction of Police outpost
	Construction of multi-purpose hall
	Construction of FMR at purok 2
	Additional Concreting of pathways
	Construction of Multi-purpose Hall
	Installation of water supply per household
	Installation of street lights
	Concreting of line canals
	Construction of reading center
	Rehabilitation of health center
	Maintenance of water system
San Juan (Roro)	Improvement of Water System
	Construction of river control
Sirangan (Pob.)	Purchase of Lot for Evacuation
	Cons./Rehab. of Multi-Purpose Hall (Included Health Center and daycare
	Cons./Rehab. of Evacuation Center
	Cons./ Rehab. of communal CR at Brgy. Sirangan
	Installation of street lighting system and electric post
	Cons./ Rehab. of local roads and bridges
	Cons./ Rehab. of Drainage system and declogging canal
	Cons./ of footbridge in purok 4 connecting brgy. Sirangan and Brgy. Sampaloc
	Cons. of communal swallow well with jetmatic pump
	Cons./ Rehab. of covered court in purok 2 & 3
Sulucan (Pob.)	Construction of lined Canal
	Construction and Rehabilitation of Local Roads and Pathways
	Rehabilitation/Addition of Bridge railings (Salog creek)
	Construction and Rehabilitation of Local Roads and Pathways

Barangay	Project
	Rehabilitation/Construction of Brgy. Multi-Purpose hall Facilities
	Construction/Installation of River control/ Riprap
	Construction/Rehabilitation of Local Roads and Pathways
	Purchase of Lot for the Purpose (Multi-Purpose Hall)
	Improvement of Barangay Facilities
	Rehabilitation of Potable Water System
	Construction/Rehabilitation of Drainage Lined Canal System
	Purchase of garbage truck
Talisay (Pob.)	Const./Improvement of Multi-purpose Building
	Construction of Barangay Hall
	Construction of 2 Storey multipurpose Building for Brgy. Health Center & BRRMC
	On-site relocation/ reclamation
	Construction/widening of covered canal at Barangay Talisay
	Construction of Talisay-Bitan-o road
	Repair/rehab/improvement of line canal
	Construction of covered court
	Construction of flood/erosion control
Ticol	Construction of Local Roads, Phase II Rehabilitation of Water System
Tugos	Construction of drainage canal
	Construction/rehabilitation of river control Extension of Multi-purpose Hall
Balete	Construction of Water System
	Land Improvements
	Installation of Lighting System in basketball court
	Potable Water System
	Installation/Maintenance of street light system
	Repair of basketball court
	Line Canal
Balogo	Construction of Day Care Center
	Construction of drainage canal Purchase of Lot for Relocation Site
Bato	Construction of local road
	Farm to Market Road
	Construction of Evacuation Center
	Construction of Seawall
	Construction of Daycare Center
	Rehabilitation of Potable Water System
	Development of Bato Home lots
	Construction of Drainage Canal
	Rehabilitation of Multi-Purpose building
	Construction of local road
Bon-Ot	Purchase of Lot for Relocation Site
	Purchase of lot - extensions of Brgy. Site
	Construction of Brgy. Auditorium with covered court
	Construction of Multi-purpose Hall

Barangay	Project
	Construction of Daycare Center
	Construction of Health Center
	Construction of Water Supply
	Construction of ALS Learning Center
	Construction of Senior Citizen Building
	Construction of Children's Play Ground
	Construction of Irrigation
Bogña	Construction/Installation of Street Lighting System Lot Purchase for Evacuation Center
Buenavista B	Construction of Water System
	Purchase of Street Lighting Supplies & materials
	Purchase of land for the relocation information settler
	Construction and/or rehab of pathway local road/Bridges
	Construction/Rehab. Of Water System
	Rehab/Construction of drainage system de-clogging canal
	Construction of flood control
Cabarbuhan	Construction/Improvement of Water System Construction of Farm to Market Road Construction/Installation of Streetlights
Caricaran	Construction of Drainage Canal @ Purok 6
Del Rosario	Construction of Local Road, Purok 1
	Construction of river control
Gatbo	Repair/Improvement of Multipurpose Hall
	Installation of street lighting system at purok 7
	Improvement/Rehabilitation of water system
	Construction of Local Road
	Purchase of vehicle
	Purchase of lot & construction of evacuation center
	Installation of CCTV
	De-clogging of canals
	Reforestation & Urban Greening
	Construction or rehabilitation of material recovery facility
	Construction of flood control
Jamislagan	Construction of Covered Court Lot Purchase for Relocation Site Site Development of Relocation Site Construction of Local Roads
Maricrum	Construction of Farm to Market Road Rehabilitation/Improvement of Water System Construction of Local Roads/Footbridge
Osiao	Purchase of Dump Truck
	Construction of river control
Poblacion	Construction or rehabilitation of Multipurpose hall
	Installation and maintenance of street lighting system per puroks
	Construction of farm to market road at purok Gogon/Libjo

Barangay	Project
	Construction or rehabilitation of potable water system
	Purchase of ambulance/rescue patrol
	Maintenance of peace and order installation of CCTV and intercom.
	Construction of MRF Material recovery facilities
	Purchase of garbage truck and related equipment for environmental management
	Other development project that will create better source of economic development
Rawis	Const./Rehab of local Roads/Pathways
	Const. of open canal/de clogging canal
	Const. of Evacuation Center
	Const. of Multipurpose Hall/Health center/ALS
	Const. of Senior Citizens building
	Const. of Flood/River Control Purok 2, 5 and 7
	Construction of sea wall
	Construction of Irrigation Facilities
	Purchase of Relocation Site
	Construction of Water Facilities Purok 4 and 6
	Installation of Street Lihgting System
	Installation of CCTV
Salvacion B	Reahabilitation/Improvement of Water System Installation of Streetlights
San Isidro B	Construction of Day Care Center Construction/Improvement of RC Drainage Canal Construction of Double Barrel Box Culvert
San Juan	Construction/Rehabilitation of local Roads (Purok 1-7)
	Construction of covered court
	Construction/Rehabilitation of local Government owned potable water supply
	Construction of Drainage Canal/Flood Control Lot Purchase for Relocation Site Site Development of Relocation Site
San Pascual	Purchase of Lot
	Construction of communal irrigation canal
	Concreting of farm to market road
	Purchase of Brgy. Site
	Purchase of solar streetlighting
	Purchase of Multi-purpose hall
	Maintenance of Street light system
San Ramon	Construction/Improvement of Water System Construction of FMR
San Roque	Construction of Local Road @ Sitio Batuhan Iraya
	Rehabilitation of open canal at Sitio Proper
	Construction of Local Road @ Sitio Batuhan Isla
	Construction of Local Road @ Sitio Proper
	Construction of Local Road @ Sitio Ogob
	Construction of Evacuation Center

Barangay	Project
	Purchase of lot the Relocation Site of Informal Settlers
	Construction of Senior Citizens Building
	Installation of Water supply /drilling system in every Sitio for potable water system
	Installation/Completion of Permanent Streetlights
	Istallation of CCTV's
	Construction of Covered Court
	Construction of Farm to Market Road at Sitio Proper
	Construction of Local Road @ Sitio Bancal
	Rehabilitation and or Construction of Drainage canal in every Sitio
	Repair & Beautification of Office Buildings
	Purchase of Tractor for Agricultural Purposes
	Construction of Research Center
San Vicente	Purchase of Lot Site Development of Barangay Site
Santa Cruz	Construction/Rehabilitation of Water System Lot Purchase for Relocation Site
Santa Lucia	Construction of Water System (Brgy site, Puro, Pandayan)
Santo Domingo	Purchase of Rescue Vehicle
	Imp. Of multi-purpose hall
	Const. Rehab/Imp. Of local roads
	Improvement of court stage & bench
	Installation of drainage steel cover
	Consturction of concrete covered
	Drainage system
	Construction of SC Building
	Cons. Of Uniform Multi-Purpose Hall
Santo Niño	Widening/Reblocking of Local Roads Purchase of Rescue Vehicle
Sawanga	Construction of Spring Water Source Construction/Rehabilitation of Spring Water Source and Pipe Laying Phase III
Sugod	Purchase of Mini Dumptruck
	Construction /Rehabilitation of MRF including Purchase of Truck/Vehicle for Solid Waste Management
	Construction of Local Roads & Bridges
	Improvement of Water System
	Installation of CCTV at Purok 1,2,3,4 Purchase of Lot

III.F. CLUP AND ZONING ORDINANCE IMPLEMENTATION STRATEGIES, ARRANGEMENT

The Comprehensive Land and Water Use Plan of the city will be implemented through the City Zoning ordinance which forms part of this plan. The city zoning office will be responsible for the implementation of the ordinance.

Programs and Projects to implement the CLWUP are identified and implemented by the City Engineering Office for infrastructure and other department and offices depending on their concern and role.

The plan will have to be reviewed after five years or earlier depending on the pace of urbanization or growth of the city. Succeeding reclassification and minor changes maybe made on the amendments of this plan.

III.G. MONITORING REVIEW AND EVALUATION

The monitoring, review, and evaluation system of this CLUP will assess how fully and effectively the plan is being carried out and implemented. This will also measure the quality of life achieved as set forth in the vision. Moreover, an assessment on the CLUP and ZO implementation reflects its impact in achieving improvements in quality of life of the locality.

The City Development Council shall create a technical monitoring body or working group to undertake the monitoring, review an evaluation of this plan and zoning ordinance implementation. Members maybe selected from implementors of this plan. In addition to CPDO and Zoning administration offices, other members of this group may be selected from the local and national offices with concerns on forestry, coastal and marine waters, culture and heritage, and climate and disaster risk management.

The working group shall develop a system for easy monitoring and communicating the status of implementation of the plans and zoning ordinance. The development of an MRE systems and procedures shall ensure that changes in land uses and progress in priority programs and projects implementation are traced. The system shall include indicators on:

- Biodiversity
- Water production value
- Economic production value
- Nature based tourism value
- Protection to lives and properties
- Protection to infrastructures

An annual analysis and report shall be conducted by the working group and reported to the City Development Council and the office concerned. Recommendations may include Identified areas for co-management, convergence or inter-LGU/inter-governmental partnership arrangements. Below is a sample of the output and outcome indicators:

Proposed CLUP Outcome and Output Indicators

Table 30.Proposed CLUP Outcome and Output Indicators

A. Biodiversity Value	1. Total natural forests within protection zone (close canopy, open canopy and mangrove) 2. Presence of endangered species of wildlife
B. Water Production Value	1. Irrigation service areas (within the LGU, outside the LGU) 2. Number of HH benefited (by irrigation facilities, by domestic water infrastructures) 3. Number of water irrigation, power & domestic water infrastructure 4. Areas planned to be developed for irrigation, power and domestic water supply
C. Economic Production Value	1. Total A&D lands 2. Total production areas within forest lands (FL) 3. Residual forests in A&D lands and production zones 4. Plantations in A&D lands and production zones 5. Cultivated areas within FL
D. Nature-Based Tourism Value	1. Number of nature-based tourism sites (existing, potential)
E. Protection to Lives and Properties	1. Frequently flooded areas 2. Landslide prone areas 3. Estimated population affected by flooding and landslides 4. Total population 5. Settlement density
F. Protection to Infrastructures	1. Number of bridges which may be damaged by flooding or landslides 2. Road Density 3. Other infrastructures that maybe damaged

Other indicator systems such as that of population and development may be

The functions of the secretariat for monitoring, review and evaluation review shall include:

- Coordination with all relevant local and national agencies, including research/ academic, private sector, NGOs/CSOs groups, to generate and consolidate necessary information for MRE.
- Preparation of the CLUP Progress Report Card in cooperation with other relevant local and national agencies and institutions.
- Submission of monitoring reports to the SB, LDC and LCE on an annual basis.

Since the Zoning Administration Office, as an implementor of the zoning ordinance is a separate department from the City Planning and Development Office, it shall coordinate closely with the latter in terms of MRE.

While monitoring report is done yearly, the CLUP and ZO review shall be conducted every four years or as the need arises. It will be noted that certain development areas are deferred for development to avoid speculations and maximize the use of land. It is up for the committee recommend the action on these areas.