EXECUTIVE SUMMARY

This 10-year municipal solid waste management plan was prepared in accordance with the requirements of Republic Act No. 9003 (Ecological Solid Waste Management Act of 2000). This law delegates the power and duty to the LGUs to prepare and implement plans for the reduction, recycling, processing and disposal of municipal waste generated in their area of jurisdiction. The responsibility and authority for the collection is delegated to barangays and transportation of municipal wastes is delegated to local municipality.

Republic Act 9003 provides the legal framework for the country's systematic, comprehensive and ecological solid waste management program that ensures the protection of public health and the environment. It seeks the creation of mechanisms and incentives to pursue effective solid waste management at the local government levels.

The law calls for mandatory segregation of solid waste; establishment of local materials recovery facilities; prohibition against the use of open dumpsites, littering in public places, open burning of solid waste and squatting in open dumps and landfills among others.

Republic Act 9003 gives the Local Chief Executive a strategic position to set policies and directions, provide support and assistance, create incentives, and develop consolidating services and facilities for the entire municipality. Apart from the statutory powers of supervision of the municipality, the municipal Mayor administered its barangays for the unity and harmony among each other may further wielded to enhance solid waste management throughout the whole municipality of Santa Fe.

This 10-year plan, which attempts to consolidate the respective plans of all barangays in the municipality, also sets out the directions, strategies and milestones that will serve as guide to all public and private stakeholders instituting compliance with RA 9003, with a sense of ownership and commitment for a sound, peaceful and healthy environment.

Based on the results of WACS conducted in residential, the urban and rural barangays have per capita generation of 0.4328 and 0.4292 kg of waste per day, respectively.

The Ecological Solid Waste Management Plan for the municipality of Santa Fe is anchored in its vision and goals:

Vision:

"A green, clean and ordered municipality open to agri-tourism with a society educated and organized in ecological solid waste management services by 2028."

Mission:

"Develop an effective and efficient Solid Waste Management System with active participation of all stakeholders "

Goals:

- ✓ To reduce the amount of waste that Santafenhons dispose by preventing waste generation and increasing reuse, recycling, composting and other organic material recycling methods.
- ✓ To promote a change in behavior among Santafenhon in the proper practice of ESWM through targeted information, education and communication strategies.
- ✓ To develop strategies in solid waste reduction, recycling and recovery and in reducing and/or recovering costs in ESWM.
- ✓ To link composting processes and products with the organic agriculture agenda of the municipality.
- ✓ To prioritize investment in reduction, reuse, recycling and composting over disposal.
- ✓ To promote adherence to ESWM laws and regulations.

Chapter 1

INTRODUCTION

Human activities create waste, and the way these wastes are stored and collected may pose risks to the environment and to public health.

With the economic and population growth of the municipality, the waste management is an important and urgent concern that must be addressed. One person alone is estimated to generate as much as half kilo of waste a day. In the municipality of Santa Fe, the per capita generation of waste in the residential area of urban and rural barangays are *0.43282 and 0.42922 kilogram kg per person per day*, respectively. The continuous streams into the market of new products that use the latest packaging technology further heighten the problem because new kinds of garbage are produced. Not only there is an increase in the amount of waste, there is also an increase in the variety of waste. Thus, it is imperative to effectively and urgently manage solid waste in the municipality.

1.1 Purpose

The municipality, through its leadership and initiative in enjoining and supporting its 11 barangays towards the ecological management of its solid waste, desire to see all stakeholder participate to achieve an ecological and cost-efficient management of its solid waste throughout the municipality.

The purpose of the Solid Waste Management Plan (SWMP) is to: 1) serve as a municipal-wide framework for the coordination of solid waste management; 2) establish municipal-wide solid waste goals and objectives, including an overall waste reduction goal and a plan to monitor progress toward the goals; and 3) satisfy law requiring the development of a waste reduction plan for the municipality.

The primary goal of the plan is to provide the Santa Fe constituency with an integrated program for managing solid waste, which is consistent with the major compliance areas under RA 9003, in an economically sound and environmentally manner. It also sets out the directions, strategies and milestones for the municipality. The contents of this plan shall serve as a guide to all public and private stakeholders in improving compliance with RA 9003, not merely for statutory compliance, but with a sense of ownership and commitment for a healthy and sustainable environment.

This SWMP provides municipality with policy and program direction for the next decade. This SWMP also recognizes that barangays, local junk shops, and mobile scrap buyers all play important roles in the current and future management of solid waste and recycling within municipality.

1.2 Approach

In preparing this plan, existing information on the profile of the municipality and its component barangays and the conduct of waste analysis and characterization survey (WACS). The plan also consolidates the different implementation plans of its components barangays. Sources of data are primarily the Municipal Planning and Development Office (MPDO), Municipal Engineering Office, Mayor's Office and provincial ENRO. Consultations were also made to solicit inputs, suggestions and ideas from as many sectors as possible.

1.3 Acknowledgments

The Municipality of Santa Fe gratefully acknowledges the valuable involvement and support of various barangays, provincial government and national agencies and individuals who have made possible the formulation of this municipal ESWM plan.

Chapter 2

MUNICIPAL PROFILE

2.1 Location

SANTA FE is a peninsular town on the southernmost part of Tablas Island, Province of Romblon. It is bounded on the northwestern side by the municipality of Looc, on the northeastern side by Alcantara, on the west by Tablas Strait and Santa Fe Bay, on the eastern and southern side by Sibuyan Sea and Guinbirayan Bay.

The municipality is geographically located at coordinates 12'9' latitude and 121`59` longitude. It is approximately 51 kilometers away from Odiongan, Romblon which is a growth center in the Island of Tablas. It is also accessible from Caticlan and Boracay Island via pump boat within 45 minutes to one (1) hour.

Table 1. Approximate Distance of Santa Fe from Other Municipalities of Romblon

Municipality	Distance from Santa Fe in Kilometers	Means of Transportation
Alcantara	12.1	PUJ, Habal-Habal or Single 2.2Motorcycle
Banton	90.7	PUJ, Motorboat
Cajidiocan	125.5	PUJ, Motorboat
Calatrava	53.6	PUJ, Mini Bus
Concepcion	112	PUJ, Mini Bus
Corcuera	71.9	PUJ, Mini Bus
Ferrol	21	PUJ, Habal-Habal or Single Motorcycle
Looc	12.1	PUJ, Habal-Habal or Single Motorcycle
Magdiwang		PUJ, Motorboat
Odiongan	27.3	PUJ, Mini Bus
Romblon	63.3	PUJ, Motorboat
San Agustin	48.4	PUJ, Mini Bus
San Andres	40.01	PUJ, Mini Bus
San Fernando	112.1	PUJ, Motorboat
San Jose	11.7	PUJ, Mini Bus

Source: *Google Earth (2017)*

2.1.1 Land Area

The municipality of Santa Fe has a total land area of 7,309.3417 hectares. 95.27 percent or a total of 6,122.3818 hectares of their land area is an agricultural land. Coconut comprises the largest share of the agricultural sector of the municipality (2,181 hectares) and it is dominantly grown in all barangays. In order to optimize production, intercropping under coconut plantation is a common practice among farmers. The fully irrigated rice fields cover 50.63 hectares, rain-fed rice fields cover 514.80 hectares and pastureland covers 350 hectares. Timberland accounts for 1.98%. The uncultivated agricultural lands cover an area of 43.2%. Fruit trees, vegetables, banana, root crops and livestock are usually planted and raised throughout the municipality.

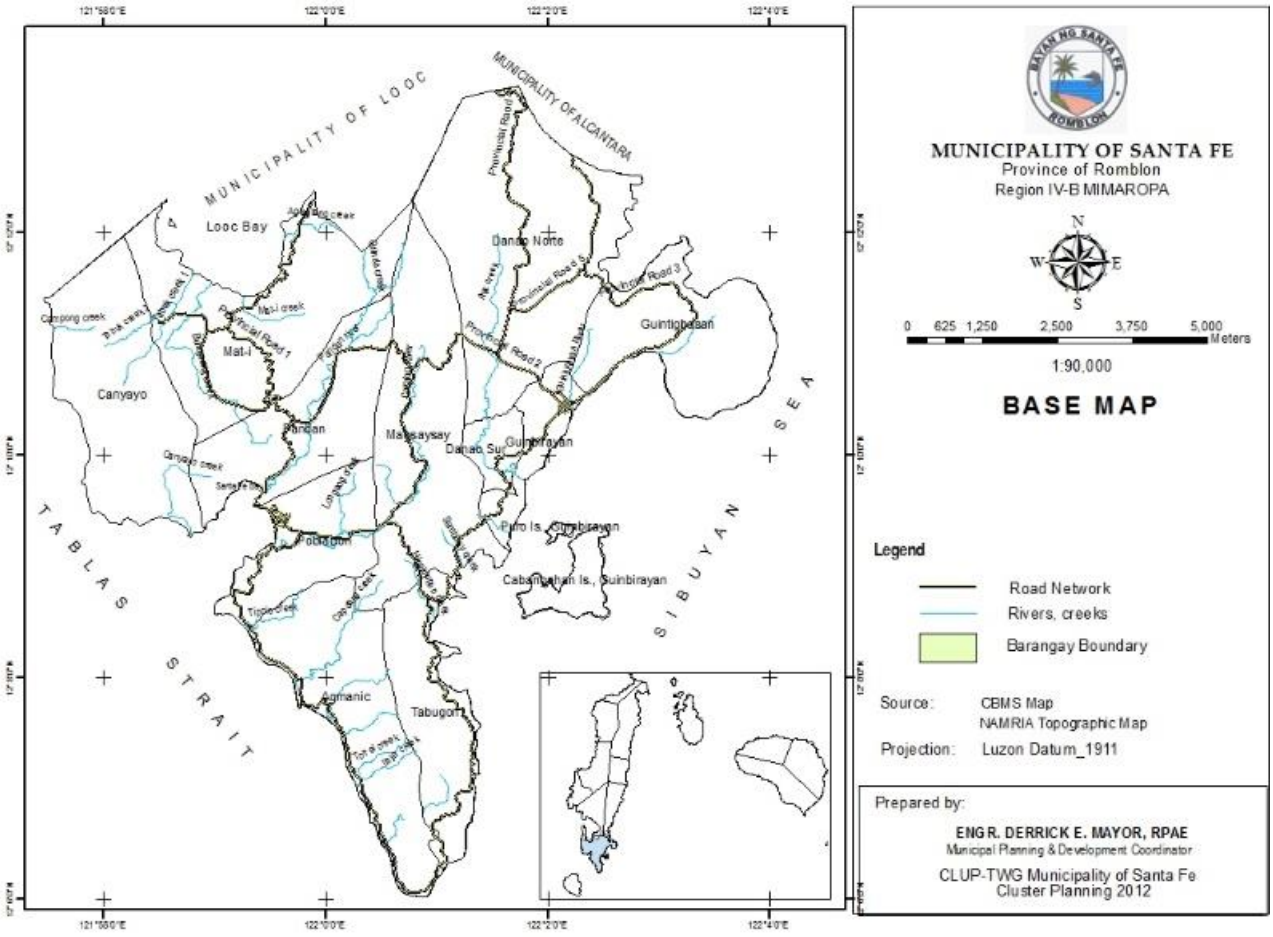
Santa Fe is one of the 17 coastal municipalities of Romblon province. It is composed of 11 barangays, only one of which is not coastal. The barangays of Poblacion and Guinbirayan are considered urban. The other nine barangays are considered rural. Among the barangays, Magsaysay has the largest area and Danao Sur has the smallest. There is also one small island (Cabangahan).

Table 2. Land Area per Barangay

Barangay	Land Area	Percent to Total
Agmanic	618.1209	8.46
Canyayo	429.1914	5.87
Danao Norte	902.981	12.35
Danao Sur	184.5766	2.56
Guinbirayan	450.4863	6.16
Guintigbasan	450.7415	6.17
Magsaysay	1987.6725	27.19
Mat-i	834.444	11.45
Pandan	702.7065	9.61
Poblacion	363.534	4.97
Tabugon	384.8869	5.27
Total	**7,309.3416**	100.00

Source: *Cadastral Survey*

Figure 1. Map of the Municipality



2.2 History

The negritos who are also called aetas and locally known as "ati" or "agta" are believed to be the first settlers of the municipality of Santa Fe. They came to this place from Panay (Nayon) and Carabao Island during the Paleolithic period via causeway of rock. The next wave of migrants were the Malays who came around 12th century who now from the majority of the people in this municipality with an admixture of other racial strains of later colonizers.

Very little is known of the pre-Spanish history of the Islands in the Romblon Group. They were, however, known to the Spaniards as early as the time of Don Miguel Lopez de Legaspi, the first governor of the Philippines, the "Maestro de Campo" and better known as "El Adelantado", but because of their being very sparsely populated, no record of interest was made of them. People must have lived in the island centuries before the arrival of the Spaniards, but nothing has been written about them.

The first written history of Osigan (Tablas) island, where the municipality of Santa Fe is located, was in the year 1570 when Spaniard conquistadores and explorer Martin de Goiti, on orders of Miguel Lopez de Legaspi, explored and conquered the settlement and native villages in Osigan Island. He noted it to have a population of around 250 indios who lived by gathering wax, almacega, raising domesticated animals and in agriculture. Also discovered was the presence of native pintados (painted a tattooed) Visayan Indios.

In the year 1582, the island of Osigan was again visited by another Spanish explorer Don Miguel Lopez De Loarca, who was a census officer dispatched by Spanish authorities to evaluate the vastness and wealth of their new conquered territory. He was the second European explorer to set-foot on the island of Osigan. He had almost the same observation of the island with that of Martin de Goiti. He also noted that the inhabitants had already been converted to Christianity. Loarca renamed the island from Osigan to Tablas. It happened when some of his men asked from the natives whom they met; "como se llama estesitio?" (What is the name of this place?) The natives did not understand what they were asking, but they saw native with finger pointed to a pile of lumber, table or tablas in Spanish, so from then on, the island was called Tablas.

The third European to set-foot in the island was a Spanish Missionary and explorer; Father Pedro Cubero Sebastian. He described Santa Fe as a rolling hills terrain, the island's lowest elevation.

Long before any settlement was founded in the island of Tablas, a large number of Panay Visayans have already lived long in the different parts of the interior of the island. It was known that, these people came as fugitives in most cases, so they preferred to live a nomadic life rather than settle in villages. Thus since the early days, the entire island, from the northern region of Andagao, (now Calatrava) to the southern seacoast of Sitio Cabalian in Santa Fewas peopled by wandering semi-civilized Panay Visayans, besides the Negritos and Mangyans.

As we know, the towns of Panay Island, like other towns of the Philippines, were victims of abuse on the part of the Spanish authorities, who made their absolute power unbearable to the people. In order to escape the tyranny of their officials, these people left their homes, went to the mountains and there lived the life of a "boyong" or outlaws. In many instances, these outlaws migrated to other islands where they expected to enjoy freedom. Many of this class of people found refuge in Tablas. They came on "baroto" or "paraw" by way of Boracay, Carabao Island or by crossing the Tablas strait.

Sometime in 1620, a boyong named Francisco Geguillan, native of presently known as Antique fled from the Spanish government because of the crime of killing his own son using baroto to traverse the treacherous Tablas Strait. Late in the evening, he drifted in the

shore of what is now called Barangay Poblacion of the Municipality of Santa Fe. Feeling exhausted from the long and hazardous journey, he had fallen asleep the whole night. Upon waking, he exclaimed "Aycatologtakon" and from that time on, he called the place Catolog, which literally means the place where he slept. Later, Francisco met some ati who were his friends from Dalanas in Antique. They helped him build his house and made kaingin for rice, corn, camote and vegetables in the area where the present town is located. After the harvest, Francisco returned to Antique and took his family with him back to his new-found home in Catolog.

Sometime later, three unnamed fishermen from Panay (presently Aklan) were drifted ashore by huge waves caused by typhoon. They found out the fertile and vast plains of Catolog with few yet friendly inhabitants and considering the opportunity of rearing a family with ample livelihood, they fetched their respective families and opted to settle with the growing community of Catolog and other barrios of the municipality.

Among them also came KapitanAndong and his wife Kapitana Embay who then occupied most plane of what is now called Barangay Pandan. The couple, not able to cultivate the area by themselves, decided that Kapitana Embay return to Antique and took with her Osfia and Rita Visca with their familia and made them their tenants in Pandan.

In the height of Moro piracy, Hindorokot Cove and Catolog bay were frequented by them. They found the place as good anchorage and source of fresh water and ample food supply collected from the inhabitants. Fearing these pirates, the early settlers moved to the interior of Catolog (Barangay Magsaysay today) which was also a settlement of the ati tribe in sitioLayog. Uncomfortable to mingle with domolo-ong or other race, the Ati tribe transferred to the interior of Tablas and settled their community at Patoo, a Barangay in Odiongan.

On May 31, 1837, Capiz, in the island of Panay, was classified as a province under the civil rule of the Spanish government, making Romblon as its territory. The province was governed by a "politico military commandanti". People were obliged to concentrate in the barrios and to send their children to school where they were taught to read the cartilla. They forced to work for the government without just compensation and were made to pay their taxes.

In that same year, Ignacio Patino was the leader of the settlement of Catolog and 1842 Pedro Ganoria established Guinbirayan.

Legend relate that the present name of Catolog got its name from a beautiful, kind, "Maria Clara" type and lovely daughter of one of the early settlers, named Fe. The town people were charmed by this lady. Unfortunately, she was afflicted with an unknown disease and nobody could cure her, causing her dismal and untimely death. The people felt sad and they found it hard to forget her character worth remembering. To immortalize her memory, they renamed the place FE. Later, they added the word SANTA because of her venerable character.

By the year 1876, Santa Fe became a regular municipality by the Spanish government under a Governadorcillo. The first Governadorcillo of the municipality was Macario Solano.

In 1886, the Spanish provincial governments were reorganized. Governors were appointed and were vested with executive powers. Don Jose Fernandez de Teran was appointed governor for the province of Capiz. During the "tiemponiTeran", Catolog was made a Barrio and was headed by a Cabesadel Barrio. During this time Governor Teran formally called the coastal part of Catolog to Santa Fe while the interior portion of the barrio remained as Catolog which was later became Barangay Magsaysay. Governor Terran also assigned the people their family names. He compelled them to plant more crops for local

consumption and for trade. People from neigboring islands come to barter with their finished products such as sinamayclothes, bolos, ax, sugar, wines, etc. with the local produce, rice, corn, domestic animals, cattle and even with parcels of land thus making some migrants owners of huge parcels of land.

In the year 1898 the Spanish rule in the Philippines ended. They were defeated in the war against the Filipino and American soldiers. The pueblos were abandoned so with the barrios. The people returned to their respective homes and farms.

Most of the Spanish nationals returned to Spain but some Spaniards decide to stay in the country and married Filipino women. Among them were, Lucas Carralero, Domingo Lopez, Joaquin Villar and Francisco Casas who settled in the town of Santa Fe and established their business. Lucas Carralero put up a cattle ranch in Barangay Agmanic, Domingo Lopez at Barangay Mat-I, Joaquin Villar in Campong, Canyayo and Francisco Casas at Guinda, Barangay Pandan and at Palate, Layug, Maambong at Barangay Catolog. Santa Fe then was once known as "The Little Spanish Town".

Immediately after the war, the Americans wanted the Filipinos to recognize the United States of America's sovereignty over the Philippines but the Filipinos refused. They (Filipinos) claimed that it was they who defeated the Spaniards. This ignited the war between the Filipino and American soldiers. Disunited, the Filipinos vowed to the superior American forces and finally surrendered in 1902. The Americans now in control, they established their government making Santa Fe a municipality with Guinbirayan, Agmanic, Busay, Agcogon and Lanas as its barrios.

The municipality was under a municipal president, like the Municipal Mayor of today and Juan Gutierrez, Sr. was appointed the municipal president of Santa Fe. Schools were constructed and classes were opened but enrolment was limited. Only very few children were able to go to school.

In 1906, the municipality of Santa Fe was reverted to a barrio status for the reason that its income did not warrant its continuance as a municipality and became apart of the municipality of Looc. Santa Fe being a barrio was ruled by a Teniente del Barrio.

In 1940, Santa Fe was made a Municipal District by virtue of Commonwealth Act No. 485 which was formulated by Representative Leonardo Festin. Barrios Agmanic, Guinbirayan, Agcogon, Busay, Lanas and Poblacion were its territorial barrios. On January 1, 1941, Rafael Gomez was elected member of the ayuntamiento or district Councilor pursuant to Act 581. He was in-charged, with the powers and function of a Mayor, of the Municipal District of Santa Fe.

It was very early of a Monday morning of December 8, 1941, that the news of the bombing of Pearl Harbor reached the province of Romblon. Japan, without declaration of war, started a swift attack of the Pacific Islands. On the following day, Tuesday, the United States of America declared war against the Axis. The Philippines as an ally was involved in the war. The government was placed under military Control. School were closed and abandoned. In 1944, Rafael Gomez was appointed Police Inspector of the Province of Romblon and Juanito Sanchez was appointed Mayor to replace Rafael Gomez. Santa Fe regained its municipal status in the year 1948. In that same year, Gervacio Lopez was elected as its first elected municipal mayor until 1951. He was succeeded by Gaudencio Molina, Sr. in 1952-1959; Amador B. Medina in 1960-1967; Perfecto M. Condes, Jr. in 1968-1979; and Conrado M. Medina in 1980-1986. During the transitional government of President Corazon Aquino, Fred R. Dorado was appointed as OIC in July 1, 1986 to December 1, 1987; the 1988 election placed Leo M. Machon into the mayoralty until 1995; Asher C. Visca for 1995-2004; Elsie D. Visca, 2004-2007; and again Asher C. Visca, 2007 up to present. On June 23, 1969, under R.A. 3423, sponsored by Congressman Jose D. Moreno, Carabao Island with

its five (5) barangays namely; Agcogon, Busay, Lanas, Lendero and Pinamihagan, was separated from Santa Fe and became the Island municipality of San Jose, Romblon.

Santa Fe has a population of 16,098 and 3,711 households with a land area of 7309.3217 hectares. It is composed of 11 Barangays: Agmanic, Canyayo, Danao Norte, Danao Sur, Guinbirayan, Guintigbasan, Magsaysay, Mat-I, Pandan, Poblacion and Tabugon. It is bordered by the municipality of Looc in North West; Alcantara in North East; Tablas Strait in the West; Sibuyan Sea in the East; and Tablas Strait in the South. Unhan/ taga-unhan or inunhan, is the native tongue of the municipality's inhabitants. Indeed, Santa Fe has a colorful history which we can call our own. Knowing the past can make our future generations understand, be proud and love the place and its people more.

The following are the years of tenure of the mayors and members of the municipal council who serve in Santa Fe from the time of its creation up to the present.

Table 3. List of Preceding Mayors and Their Inclusive Term of Office

NAME OF OFFICIAL		INCLUSIVE YEAR	NAME OF OFFICIAL		INCLUSIVE YEAR
1	Rafael D. Gomez	1940-1947	**7**	Fred R. Dorado	1986-1987
2	Gervacio Lopez	1948-1951	**8**	Leo M. Machon	1988-1995
3	Gaudencio Molina	1952-1959	**9**	Asher M. Visca	1995-2004
4	Amador B. Medina	1960-1967	**10**	Elsie D. Visca	2004-2007
5	Perfecto M. Condes Jr.	1968-1979	**11**	Asher M. Visca	2008-2016
6	Conrado B. Medina	1980-1986	**12**	Elsie D. Visca	2016- present

2.3 Population

The Province of Romblon posted a total population of 292,781 for the censal year 2015. This represents a 9.88 percent share in the total population of MIMAROPA. The Municipality of Odiongan in the Island of Tablas has the most number of population comprising approximately 15.5 percent of the province's total followed by the Municipality of Romblon with 13.24 percent. The least populous municipality in the province is the Municipality of Concepcion.

The Municipality of Santa Fe in Tablas Island posted a total population of 16,098 representing 5.50 percent in the total population of Province of Romblon. Table 4 shows the provincial population, household population, and number of households per municipality.

Table 4. Provincial Population, 2015

MUNICIPALITY	TOTAL POPULATION	HOUSEHOLD POPULATION	NUMBER OF HOUSEHOLDS
Alcantara	16,351	16,343	3,673
Banton	5,536	5,531	1,420
Cajidiocan	21,861	21,849	4,983
Calatrava	10,275	10,274	2,334
Concepcion	4,037	4,036	1,048
Corcuera	10,283	10,271	2,471
Ferrol	6,694	6,963	1,656
Looc	22,264	22,243	5,380
Magdiwang	14,142	14,133	3,079
Odiongan	45,367	44,638	11,460
Romblon	38,758	38,466	8,997
San Agustin	22,598	22,541	5,273
San Andres	15,589	15,589	3,550
San Fernando	23,271	23,244	5,055
San Jose	10,881	10,848	2,392
Santa Fe	16,098	16,094	3,711
Santa Maria	8,508	8,506	1,880
TOTAL	**292,781**	**291,569**	**68,362**

Source: *Philippine Statistics Authority (2015)*

2.3.1 Historical Population Growth, from 1903-latest census (2015)

The population of Santa Fe is consistently increasing from 1975 to 2007 censal years. In 2010, there was a decrease in growth rate at 1.27 percent that may be attributed in out-migration to Boracay Island. In 2015, the population growth rate increased from to 0.50. The Rate of Natural Increase of the municipality is 16.87 per 1000 persons which indicate that the population is growing at a rate of 1.687 percent through natural increase.

Table 5. Historical Growth Rate (1903-2015)

			ANNUAL GROWTH RATE (%)			
YEAR	**POPULATION**	**INCREASE / DECREASE**	**MUNICIPAL**	**PROVINCIAL**	**REGIONAL**	**NATIONAL**
1903	3,746	—	—	—	—	—
1948	8,168	↑ 4,422	1.75	—	—	2.25
1960	8,987	↑ 819	0.80	—	—	3.40
1970	8,032	↓ 955	-1.12	2.41	—	3.54
1975	8,939	↑ 907	2.16	1.75	—	2.94
1980	9,948	↑ 1,009	2.16	1.18	2.31	2.87
1990	11,628	↑ 1,680	1.57	1.65	2.73	2.62
1995	12,665	↑ 1,037	1.72	1.45	2.46	2.61
2000	14,140	↑ 1,475	2.23	1.56	2.59	2.30
2007	16,315	↑ 2,175	2.06	0.81	—	2.25
2010	15,700	↓ 615	-1.27	0.49	1.79	1.42
2015	16,098	↑ 398	0.50	0.62	1.47	1.87

Source: *National Statistics Office (1995, 2000, and 2010), Philippine Statistics Authority (2015)*
**Computed using Geometric Method*

Population Distribution

Total Population by Barangay (2015)

The municipality posted a total population of 16,098 in 2015. The highest population were accounted in Barangays Poblacion and Tabugon with 2,342 and 2,109 or 14.55 percent and 13.10 percent, respectively. Barangay Guintigbasan is the least populated barangay with a total population share of 741 or 4.60 percent.

Urban-Rural Households by Barangay

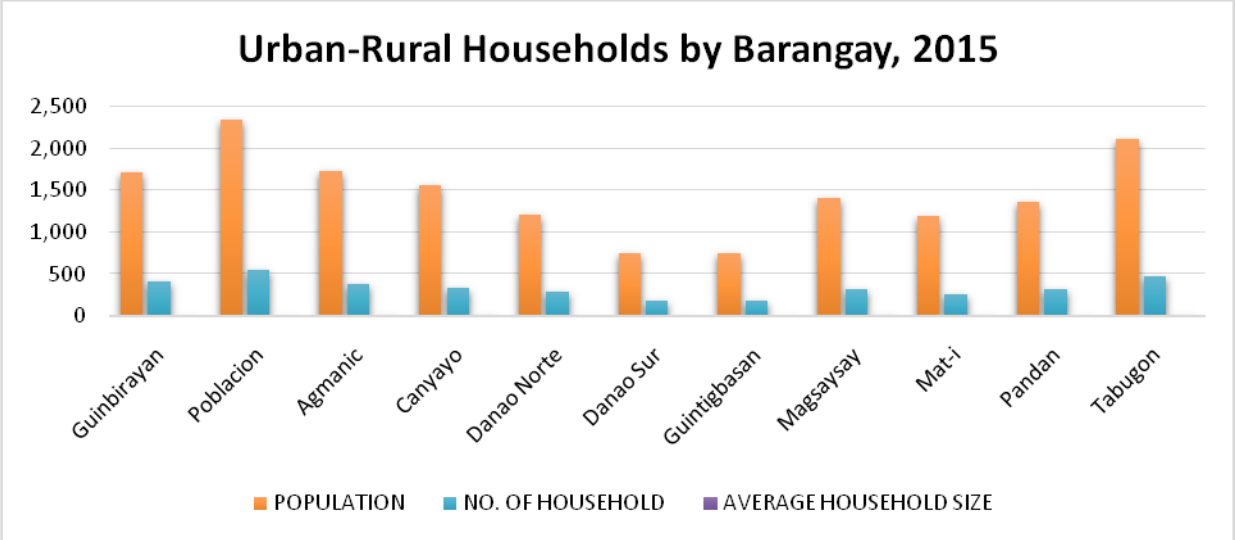
Latest census shows that out of 16,098 total population, 25.20 percent resides in urban barangays composed of Poblacion and Guinbirayan. The rest are distributed in eight rural barangays. The data likewise manifest total households of 3,711 with an average household size (AHS) of four (4). However, looking at average household size by barangay data shows that Barangays Agmanic, Canyayo, Mat-i, and Tabugon have higher average household size compared with the computed municipal average.

Table 6. Urban-Rural Households Population and Average Household Size by Barangay

BARANGAY	POPULATION	NO. OF HOUSEHOLD	AVERAGE HOUSEHOLD SIZE
Urban			
Guinbirayan	1,714	416	4.12
Poblacion	2,342	549	4.27
Sub-Total	4,056	965	—
Rural			
Agmanic	1,729	379	4.56
Canyayo	1,552	338	4.59
Danao Norte	1,200	292	4.11
Danao Sur	751	185	4.06
Guintigbasan	741	180	4.12
Magsaysay	1,409	321	4.39
Mat-i	1,191	259	4.60
Pandan	1,360	324	4.20
Tabugon	2,109	468	4.51
Sub-Total	**12,042**	**2,746**	**—**
Total	**16,098**	**3,711**	**4.32**

Source: *Philippine Statistics Authority (2015)*

Figure 2. Urban-Rural Households by Barangay, 2015



Source: *Philippine Statistics Authority (2015)*

Population Projection by Barangay, 2019-2028

At an annual growth rate (APGR) of .48 percent, the total population is expected to reach 17,356 by 2028 based from PSA. At this rate, Sta. Fe has a relatively slow rate of increase and will likely double in 139 years or in 2154. Barangay Poblacion is estimated to hold the highest population.

Urban-Rural Population Projection by Barangay

Table 7. Urban-Rural Population Projection by Barangay

		POPULATION									
BARANGAY	**2015 (Base Year)**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Urban											
Guinbirayan	1,700	1,725	1,728	1,731	1,733	1,736	1,739	1,742	1,744	1,747	1,750
Poblacion	2,186	2,475	2,509	2,544	2,580	2,615	2,653	2,689	2,726	2,764	2,802
Sub-Total	**3,886**	**4,200**	**4,237**	**4,275**	**4,313**	**4,351**	**4,392**	**4,431**	**4,470**	**4,511**	**4,552**
Rural											
Agmanic	1,691	1,760	1,768	1,776	1,784	1,792	1,800	1,808	1,817	1,825	1,833

Canyayo	1,557	1,548	1,547	1,546	1,545	1,545	1,544	1,543	1,541	1,540	1,540
Danao Norte	1,259	1,155	1,144	1,133	1,122	1,111	1,100	1,090	1,079	1,068	1,059
Danao Sur	794	718	710	702	695	687	679	672	664	657	650
Guintigbasan	657	816	836	856	877	899	921	943	966	990	1,014
Magsaysay	1,375	1,437	1,444	1,451	1,458	1,465	1,472	1,480	1,488	1,494	1,501
Mat-i	1,170	1,208	1,213	1,219	1,224	1,226	1,230	1,235	1,239	1,243	1,248
Pandan	1,376	1,348	1,344	1,341	1,338	1,335	1,332	1,329	1,326	1,323	1,320
Tabugon	1,935	2,260	2,299	2,339	2,380	2,421	2,463	2,506	2,550	2,594	2,639
Sub-Total	**11,814**	**12,250**	**12,305**	**12,363**	**12,423**	**12,481**	**12,541**	**12,606**	**12,670**	**12,734**	**12,804**
Total	**15,700**	**16,450**	**16,542**	**16,638**	**16,736**	**16,832**	**16,933**	**17,037**	**17,140**	**17,245**	**17,356**

Source: NSO Census of Population 2015

Table 7 shows the population projection from year 2019-2028 with 2015 as base year. The data indicated a minimal yet gradual increase in population which can be attributed to the fact that inhabitants from far flung areas were not included in the survey. The annual growth rate used in projecting the population is 0.48%.

2.4 Economic Profile/Land Use

Santa Fe represents an area of 7,309.3417 hectares or some 49.90% devoted to agriculture. Of this coconut paddy rice irrigated, rice rainfed, and pasture land account for the 4 landing land use each of the area of 2,181; 131.23; 444.62; and 350 hectares respectively. There still remain 43.2% of uncultivated agricultural lands. Timberland on the other hand accounts for 1.98% while lands under other classification represent 1.68% of the physical land area.

Coconut comprises the largest share of the agricultural area of the municipality and is dominantly grown in all barangays. In order to optimize production intercropping under coconut plantation is a common practice among farmers. Fruit trees, vegetables, bananas, rootcrops and livestock are usually planted and raised as intercropped to coconuts.

Rice production is also one of the major activities of the municipality. Paddy rice irrigated during wet season are cultivated in the area particularly in barangay Danao Sur, Magsaysay, Pandan, Mat-I, Guintigbasan, Guinbirayan and Danao Norte. All the rest are all rainfed.

Pasture is also dominant land use and wide hectares are found in Mat-I, Magsaysay and Danao Norte. These lands entail area development in order to sustain livestock production for the giving demands of the populace. Other crops grown are includes Bananas, mango, cassava, camote and vegetable.

Various annual and perennial crops are grown in the upland of Santa Fe. The annual crops grown include corn, upland rice, rootcrops, and vegetables. Among the rootcrops that are planted include Cassava, sweet potato and gabi. Banana accounted the highest yield of 6,650.00 kgs./ha. while cassava yield 5,500 kgs./ha. Like any other groups (Perennial) banana utilized less inputs and labor cost that makes it productive. Optimum production can be achieved through crop rotation, establishment of SALT and proper soil management. By increasing the productivity of agricultural crops, problems such as inequitable distribution of income and declining growth in economy could be overcome to achieve and sustain economic growth in the municipality.

Of the estimated 350 hectares of pasture lands in the municipality 57.14 are considered pasturable. The remaining percentage of lands has land limitation such as slope. Only barangay Mat-I, Danao Norte and Magsaysay with an area of 175,150 and 25 hectares respectively have suitable pasturelands.

Forest

Santa Fe has 1,380 hectares forestland, which is now under reforestation. The DENR had funded some seedlings for the Municipal Nursery under Social Reform Agenda Program (PAF 2). The Municipal Nursery had 40,000 seedlings to be distributed to DECS and the 11 barangays of this municipality. The tree planting of Kamagong, Paper Tree and Mahogany is going on for every barangay. The water shed in Sitio Longa-og is being planted also with Mahogany and so far it is where the Municipal Nursery is located.

Forest production areas account to 133.9193 hectares or 2.19 percent of the agricultural areas located in Barangay Guinbirayan. Products gathered from the municipal forest can be categorized into timber such as logs, for local consumption like making house, pandan china for making *banig*, and bamboo for sawali, balsa and floating cottage, and non-timber such as nipa which is used for making *pawid*, a rood used for cottages and old houses, and rattan used for making tying materials.

Livelihood

Copra trading is the major economic activity in Santa Fe. Out of the 46.43% of the land area devoted to agriculture, 77.52% of which is planted to coconuts. Inspire of cutting trees in lieu of good lumber coconut is still the major economic activity and Copra trading consists of local purchasing and export marketing of copra wherein a big percentage of the labor force is engaged in. Because of the easy transportation nowadays copra buyers are busy trading their business to Lucena or Manila thru Batangas. Other members of the labor force are engaged in palay planting, fishing, commerce in services and a few is small/medium scale piggery and poultry.

2.4.1 Commerce and Industry

Based from the List of Business with Permits issued by the Business Permit and Licensing Office (BPLO), the total business in year 2016 is 418 which declined by 35.49 percent from year 2015 with 648 and 1.18 percent from year 2014 with 423 registered business. The significant decline of business permits from the preceding years is due to the unlisted businesses that get permits late but collection from business revenue has increased from year 2015 to 2016.

Fees collected from business owners include the local tax and fees for regulatory and charges. Local taxes include the gross sale tax, tax on delivery vans/trucks, tax on storage for combustible/flammable or explosive substances, and tax on signboards or billboards, if any. While the regulatory fees and charges is subdivided into the mayor's permit fee, garbage charges, sanitary inspection fee, building inspection fee, electrical inspection fee, mechanical inspection fee, plumbing inspection fee, signboard or billboard renewal fee, storage and sale of combustion, flammable, or explosive substances, sticker, and document stamp. This falls on the category of other receipts of the cash flows which constitutes the 26.60 percent of the cash inflows.

For retailers such as sari-sari stores, the rate of two percent per annum shall be imposed on sales not exceeding 400,000 pesos while the rate of 1% per annum shall be imposed on sales in excess of the first 400,000. However, barangays should have the exclusive power to levy taxes on stores whose gross sales or receipts of the preceding calendar year does not exceed 30,000 subject to existing laws and regulations.

2.4.1.1 Inventory and Distribution of Commercial Establishment by Type

Based form the list of business permits CY 2016, commerce and trade concentrates in the two urban barangays, Poblacion and Guinbirayan. Poblacion, being the municipal town center has the most number of commercial establishments which has a total of 143 out of 297 establishments in the municipality. Most of the businesses located in the municipal town center are stores (52), dry goods (15), and business related to food services (13). Business establishments that are only located in the town proper are drugstores, funeral services, billiard halls, birthing home, boarding houses, cockpits, computer shops, general merchandise, banks and pawnshops, and private school. A commercial strip managed by the local government unit is located in Sitio Proper along the sea wall which can be rented for selling purposes. Commercial establishments located in rural barangays

are usually sari-sari stores. Among the rural barangays, Magsaysay has the most number of commercial establishments with 33 structures. The total area devoted for business establishments excluding the sari-sari stores is 0.8632 hectares. Businesses which are categorized as non-establishment, or those that do not need a structure in order to operate includes rice mills, chainsaw, motor boats, and other registered fishing equipment such as fish nets and fishing boats. This accounts to the 119 business with permit from the mayor thus, subjected to payment of fees.

From year 2015 to 2016, the most frequent nature of business is categorized under wholesale and retail trade. Particularly sari-sari stores, commodities sold are bought from the Municipality of Odiongan. Table 8 shows the changes on the number of commercial establishments in year 2015 and 2016 categorized per economic activity. Aside from wholesale and retail trade all other type of economic activity under commerce and trade has retained or increased. 7.65% of the labor force or 758 individuals depend on commerce and trade as their source of income

Table 8. Inventory of Commercial Establishments by Economic Activity, 2015-2016

ECONOMIC ACTIVITIES	2015	2016	INCREASE/ DECREASE (%)
	Number of Establishments	**Number of Establishments**	**Number of Establishments**
Wholesale and Retail Trade	310	226	27.0968 ↓
Hotel and restaurants, Transport & Storage	2	5	150↑
Communication	2	2	Same
Financial inter-mediation	7	8	14.28571↑
Real Estate renting and Business activities	4	6	50↑
Education	1	1	Same
Health and Social work	2	3	50↑
Other Community, Social and Personal Services Activities	32	46	43.75↑
TOTAL	360	297	17.5↓

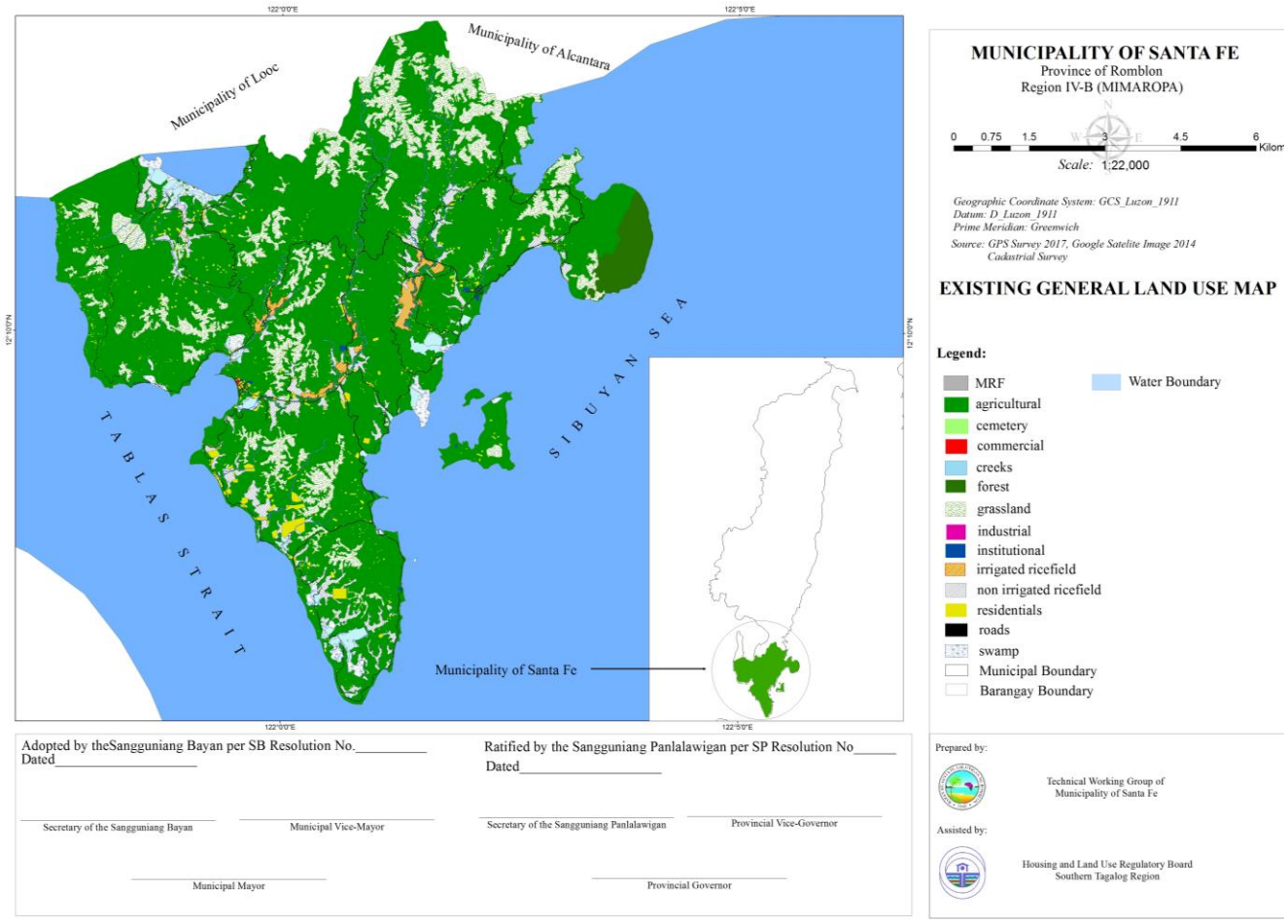
Source: Business Permit and Licensing Office

Table 9 Employment by Type/Classification of Business and Trade, 2016

TYPE/ CLASSIFICATION KIND OF BUSINESS AND TRADE	NUMBER OF EMPLOYMENT	REVENUE (PESO)
WHOLESALE TRADE AND RENTAL	440	13,478,040.00
BANKING AND FINANCES	23	4,200,303.75
REAL ESTATE/CONSTRUCTION SERVICE	31	1,142,000.00
OTHERS	264	4,983,638.00
TOTAL	**758**	**23,803981.80**

Source: Municipal Mayor's Office

Figure 3. Existing Land Use Map



Major Transportation Routes and Traffic Conditions

The traffic inside the LGU is usually light. Traffic becomes moderate during the time 7-8 AM and 3-5 PM, these are the times where classes on schools starts and ends. This is also the time when working hour starts and ends.

As seen in Figure 4, the arrows represent the roads accessible to public utility jeepneys. All roads are accessible to private vehicles. The arrow shows the route of jeepneys from Santa Fe going to Looc.

Figure 4. Route of Public Utility Vehicles along the Poblacion Area

Aside from the dump trucks, only small to medium vehicles frequent the area. Buses only appear when there are trips to Batangas via Oriental Mindoro. Trucks also pass through the LGU frequently when there are deliveries and transport of materials. Most of the times jeepneys, private cars and motorcycles are the vehicles that can be seen.

2.5 Physical Characteristics

Santa Fe is one of the 17 coastal municipalities of Romblon province. It is composed of 11 barangays, only one of which is not coastal. The barangays of Poblacion and Guinbirayan are considered urban. The other nine barangays are considered rural. Among the barangays, Magsaysay has the largest area and Danao Sur has the smallest. There is also one small island (Cabangahan).

2.5.1 Topography

The topography of the municipality is generally rolling. The elevens barangays, which include the Poblacion are separated from each other by hills or mountain ridges. The most prominent of these are Mount Malbog and Calatong Hill. Water bodies draining the area are Magsaysay River, Pandan River, Manhac Creek, Magsaysay River, Guinbirayan River, Guintigbasan Creek, Binaluca Creek and Tinago River. These water bodies empty at Tablas Strait and Sibuyan Sea.

2.5.2 Slope

Slope ranges from 0-3% to 18-30%. Fifty percent of the land area is rolling with slopes of 8-19%. These areas mostly are planted to coconuts, sometimes intercropped with root crops and upland crops.

The lowland areas extending from the coast are devoted to rice production. Some marshes and swamps situated on the level areas, usually covered by mangroves are partially converted into rice lands by building dikes to prevent sea water from flooding the area.

Table 10. Slope, Slope Characteristics and their Suitable Uses

SLOPE	AREA/LOCATION (HAS)	SLOPE CHARACTERISTICS	SUITABLE USES
0 – 3%	904 (Mat-I, Canyayo, Pandan, Poblacion, Guinbirayan, Danao Norte)	Broad area of level to nearby level land	Intensive development high density urban development
3 – 8%	248 (Parts of Mat-I, Canyayo, Poblacion)	Gently sloping areas with land sloping and rolling in more than one general direction.	Intensive development high-density urban development
8 – 18%	3528 (practically all barangay)	Alternating moderate to steeply undulating and rolling lands sloping in many directions.	Agriculture and low-density urban development, limited cultivation, pasture and forest.
18 – 30%	1380 (Danao Norte, Poblacion, Danao Sur and Guintigbasan)	Very steeply sloping land in many directions to many mountainous and hilly areas.	Forest and Pasture

2.5.3 Soil Characteristics/Composition

There are three types of soil found in the municipality. These are Santa Fe Loan Sandy Loam and Hydrosol.

Around 74% of the soil cover of Santa Fe is of Sandy Loam Type while 21% is of Santa Fe Loam type which is generally suitable for coconuts, rice, corn, root crops and fruit trees. There is however, 5% hydrosol area, which is suitable for fishpond development.

Table 11. Soil Types

SOIL TYPES	AREA/LOCATION (Hectares)	CROP SUITABILITY
Santa Fe Loam	1,300 (Guinbirayan, Guintigbasan)	Coconuts, rice, corn, root crops and fruit trees
Santa Fe Sandy Loam	4,485 (Mat-I, Pandan, Canyayo, Poblacion, Danao Sur & Norte, Magsaysay, Tabugon and Agmanic)	Limited Agriculture, pasture, coconuts
Hydrosol	275 (Parts of Mat-I, Canyayo, Pandan, Guinbirayan, Agmanic & Tabugon)	Fishpond development

Soil Depth

Majorities of the soils have a depth from 60-150 cm thick over coarse loamy, fine loam or clay materials.

Soil Fertility

The general fertility is medium to low with a soil reaction of very strongly acid to neutral at PH-4-5 to 7-0. Organic matter content is medium to low; nitrogen ore moderately low and phosphorous is moderate. Exchangeable potassium is low (less than 15 ppm/100) and exchangeable calcium and magnesium is high.

Soil Drainage

Drainage is slow in external while the internal drainage is moderately well to poorly drained. Areas with higher slopes are classified as well-drained to moderately drained.

2.5.4 Geology

Rock Formation

The surface area of Santa Fe is underlain by five (5) types of rock formation.

a. Romblon Metamorphics (Crm) – schistose and banded rocks consisting predominantly of chlorite-quartz-serisite schist, quartz-albite mica schist and amphibolite; with thin, vari-colored banded marble interbeds; thick and massive marble overlie the schistose rocks as in Romblon Island.

b. Quarternary Alluvium (Qal) – unconsolidated and unsorted floodplain deposits and beach sand.

c. Binoog Formation (Nb) – buff to light pink, massive limestone and alternate layers of calcarenite and argillite or calcisiltite with local intercalation of igneous rocks.

d. Peli Formation (QNp) – conglomeratic limestone, sandy shale, lithic fragments of volcanic rocks, schist, shale and limestone.

e. Sibuyan Ultramafics (PKsu) – undifferentiated ultramafic suite consisting of peridotite, pyroxenite, dunite and gabbro.

2.5.5 Climate

Climate is the most important physical aspect of project implementation and it is dependent in the land characteristics of the municipality.

Under the Corona's classification of climate in the Philippines, the province of Romblon falls under Type III which is considered by no pronounced wet and dry seasons from June to November and sometimes December and from January to May respectively. Areas are partly sheltered from the northeast monsoon and trade winds open to the southeast monsoon or at least to frequent storms.

Temperature:

Minimum and Maximum temperature ranges from 20ºC during the monthly of February when the Siberian wind is blowing to 35 ºC at day time for the month of May when summer seasons is at its peak.

Relatively Humidity:

Monthly average relative humidity ranges from 75% during the month of April or May to 84% during December.

Rainfall:

As per rainfall analysis that was presented using the means and the 75% probability analysis it is more reliable and safe from the risk of not implementing projects and crop less due to drought. This shows that the Island is generally wet from the middle of June to November when the southwest monsoon is preponderant and dry during the rest of the year. Annual rainfall varies, from 1 - 2000 to 1 - 750mm.

Chapter 3

CURRENT SOLID WASTE MANAGEMENT CONDITIONS

The collection, transportation and disposal of municipal waste are administered by the local government of Santa Fe. Personnel involved in all solid waste management activities were LGU's utility workers/garbage collectors under the Office of the Mayor.

Currently, the LGU has submitted a proposed SCRP to the regional office. At present, the operation of the dump site is stopped. Because of the abrupt closure of the dump site, the MRF is being utilized as Temporary Residual Containment Area (TRCA) where residuals collected are temporarily stored.

3.1 Institutional Framework

Santa Fe is a 5th class municipality which has a population of 16,098 based on 2015 Census of Population. Poblacion is an urban barangay with a population of 2,186 is the center of the town and location of all government agencies and business establishments. Being a densely populated place where households has limited space for solid waste composting, wastes generated in the town proper is being collected.

Due to a limited budget for additional staff to be assigned to solid waste management, existing staffs or employees were detailed to do the work. There is no permanent MENRO. The Local Disaster Risk Reduction and Management Officer is being designated as Solid Waste Management Coordinator under Office of the Mayor. As a coordinator, she acts as the supervisor of all the utility workers assigned in the monitoring of the cleanliness of the town proper and the collection and hauling of wastes generated going to the disposal site. She even coordinated programs and projects of SWM in the concerned offices and agency.

3.2 Inventory of Equipment and Staff

The available logistics for SWM in the LGU will be important information for capacity building and budget calculation. From the following data the required capital expenditure and operating expenditure could be derived.

3.2.1 Personnel Working in SWM

Annually, the municipality is allocating a certain amount of budget for the solid waste management. Casual and contractual employees are being employed to help and assist the permanent utility workers in cleaning the town and in hauling and dumping of wastes from the parks and plazas, households, commercial and institutional establishments to the dump site.

There are eleven (11) personnel assigned in the implementation of waste management and broken down as follows:

1. One (1) solid waste management coordinator
2. One (1) garbage truck driver
3. Three (3) garbage collectors
4. Eight (9) utility workers/street cleaners *(one (1) permanent employee and (8) job orders)*

3.2.2 Equipment for SWM

There is 1 dump truck under repair, 1 garbage truck with compactor and one 3 in 1 Backhoe Loader available in the LGU which are functional. The capacity of the truck is 4 cu.m., the garbage truck is 5 cu. m and the backhoe's capacity is 74 Hp. The list of heavy equipment is shown in Table 12.

Table 12. List of Equipment Used in Waste Management

Equipment	*Load Capacity*	*Present Condition*	*Make/Model*	*Location of Repair*
Dump Truck	4 cu. m.	For Repair	Isuzu ELF 150	Local
3 in 1 Backhoe Loader	74 Hp	Fair	John Deere 310G	*Manila *(source of spare parts)* *Minor repairs done locally
Garbage truck with compactor	5 cu. M	Good	Isuzu	

3.2.3 Staff Training Done

Currently, no training is done on the staff responsible for the collection and segregation. But members of the Agriculture and Environmental Committee attended seminars about present problems and practices in SWM.

3.3 Source Reduction

Generally, majority of wastes generated by the households are biodegradable materials. These wastes are bulky and contribute almost to 60 percent of total wastes generated. To reduce the waste generated in the source, households are practicing composting of biodegradable yard wastes.

Source reduction programs are implemented through specific ordinances that abide to the target SW minimization by R.A 9003. For every three years, there will be an inspection that 9% decrease in waste diversion will be observed.

Biodegradable

Biodegradable are processed by the citizen through backyard composting. This is encouraged to be done at source through specific ordinances and incentives, spearheaded by the Office of the Municipal Agriculturist in line with its campaign for the use of organic fertilizers.

Some biodegradable wastes are used as food feeds for animals which usually practiced by the households living in far flung barangays.

Recyclable

Promote the reduction of recyclable waste through increased campaign on the use of reusable materials. These can be done on creating ordinances for food stalls that uses a lot of recyclable materials. The barangay LGUs are in charged with the collection of their recyclables and selling of it to the registered junk shops.

Residual

No plastic cups, styro-cups, containers or ice chest, sando bags, plastic spoon and forks, straws will be used or there will be an effort to limit these kinds of utensils or materials. Also, there will be an effort to promote buying in bulk rather than in sachet or "*tingi*". This could be achieved through IEC and incentives. The LGU has passed an ordinance prohibiting the use of cups, styro-cups, containers or ice chest, plastic spoon and forks, straws and regulating the uses of plastic bags in the municipality.

For now, the MLGU is collecting residuals from the two rural barangays of the municipality on a schedule; however, rural barangays will be collected upon request.

The LGU has purchased a shredding machine for the residuals with potential to diversion to be used as one of the components in making eco-bricks. These bricks can be sold or used in some infrastructure projects.

3.4 Collection

The Poblacion proper and barangay Guinbirayan, two urban areas, are covered by regular waste collection. Barangay Magsaysay was added in the collection area since it is adjacent to Poblacion and wherein the dumping site is located. Following the plan that was agreed upon for implementation, the dump truck scheduled their waste collection in Poblacion & Magsaysay and Guinbirayan, thrice and twice a week, respectively. This has been done to limit the trip of dump truck in going to and from the dumping site.

Aside from Poblacion, Guinbirayan and Magsaysay, other barangays are not covered by collection services. These areas are too far from the dumping site and their built-up areas are small and the houses are sparsely scattered.

LGU administered a strict policy of collecting "residuals only". To really know if the specific household or establishment is following this policy, every households or establishments should have their own garbage containers. This is to know readily if there is a violation and who is responsible for it.

The accredited mobile junkshops will also have their own schedule of collecting wastes. It is suggested that there is one place per area where people could put their recyclables so that the mobile junkshops will only have to go to that specific place, and not go around each house anymore. This is for security purposes.

To really monitor if the policies that are existing and those proposed will be implemented properly, proper delegation of powers, i.e. to Philippine National Police (PNP) and to other municipal personnel should be done. Additional enforcers are also suggested, but if it is hard to do this, citizen could also be empowered. A citizen watch could also be campaigned.

To further encourage the participation and compliance of the citizens, reward system is recommended. Guidelines for this should be made.

3.5 Final Disposal

The Municipal Dump Site is a controlled dump site and has an area of one (1) hectare, with an approximate distance of 4 kilometers from the town proper. It is located at

sitio Sambiray at barangay Magsaysay. The site is accessible for all types of vehicle and the access road is concreted and in good condition.

This site was maintained and operated since late 2004. It was acquired through a Deed of Absolute Sale from a private individual. It has a total storage capacity of 50,000 cubic meters. No upgrading was be made with this facility since it did not passed the criteria set by the Environmental Management Board. Because it is illegal and is required to close, the municipal government stopped using this site and utilized the current MRF as Temporary Residual Containment Area (TRCA) which will serve as temporary storage of collected residual wastes while the Sanitary Landfill (SLF) is not yet established.

Wastes generated from the town proper are collected and stored at the Temporary Residual Containment Area (TRCA). Two (2) vaults will be separately constructed for hazardous waste (e.g. bulbs, used batteries and etc.) and for wet residuals for disposal (e.g. sanitary napkins, diapers and etc.).

3.6 Special Wastes

The LGU is responsible in the collection and storage of toxic, hazardous and special wastes and placed in containers. There is no available data of its quantity disposed in the municipality. However, based on results of the WACS conducted, the total daily generated special waste is 0.53% or about 41.11 kg/day. The total daily generated special waste from WACS (0.53%), and the projected population of 2019 (16,450), the projected special waste generation of the municipality is 39.697 kg/day.

3.6.1 Health Care Wastes

Health care wastes are usually from health centers and birthing facility. In the municipality, there is one Rural Health Unit with birthing facility operated by the municipal government headed by the Municipal Health Officer. These facilities have their septic tank/vault for the disposal of their health and infectious waste. There is no available data of its quantity disposed in the municipality.

3.7 Markets for Recyclables

Recyclable materials are being sold to mobile scrap buyers and local junkshops in all barangays. PeT bottles as well as styropor are used as floating devices by the fisherfolk in seaweeds farming.

Table 13. List of scrap buyers/junkshops and types of materials accepted

Name	*Types of materials accepted*
1. Mercury Fernando	Plastics, tin can, aluminum, bottles, carton, PeT bottles
2. Romeo Gusi	Plastics, tin can, aluminum, bottles, carton, PeT bottles
3. Jeffey Chavez	Plastics, tin can, aluminum, bottles, carton, PeT bottles
4. Rodolfo Alcala	Plastics, tin can, aluminum, bottles, carton, PeT bottles
5. Jenebeth Madrid	Plastics, tin can, aluminum, bottles, carton, PeT bottles

3.8 IEC

Information dissemination and education campaign for reduction, segregation, collection and compliance to ordinances has been done during the barangay assembly meetings and quarterly IEC of MDRRMO. The public is informed and educated on the general provisions of the waste ordinance; what are the residual wastes that they should collect; what are punishable acts; and what are the fines and penalties imposed for violating the provisions of the ordinance; the ill effects of burning of wastes and throwing of wastes into the river; and responsible waste management practices.

Flyers or leaflets were distributed.

3.9 Costs and Revenues

The municipality has a current budget of Php 830,000.00 for the Solid Waste Management Program as integrated in the Annual Investment Fund. This includes the salaries/wages of utility workers on job order basis who are in charge in the maintenance of the cleanliness of the town proper, collection of garbage from the service areas and dumping such wastes to the disposal site.

The repair, maintenance and fuel expenses of dump trucks and back hoe used in the collection of waste and maintenance of dump site are also appropriated out of the abovementioned program. Every year the budget incurred from the solid waste does not exceed much more or much less than the present budget.

Last year, the total expenditures for SWM were PhP 722,633.22.

On 2017, the municipality had accumulated PhP 52, 104.00 from the garbage collection fee of the business establishments covered by the collection area. The LGU did not generate any revenues from SWM whereas income from sales of recovered materials was merely aimed at by local junkshops and other external mobile scrap buyers.

Table 14. Budgetary Allocation and Expenditures for 2015-2017

Year	LGU Total Annual Budget	Solid Waste Management Allocation	SWM Expenditures
2015	56, 785,855.10	984,000.00	974,979.00
2016	61,432,943.41	1,704,531.80	1,404,218.50
2017	68,613,098.14	1,506,742.00	1,405,941.80

3.10 Key Issues

This plan aims to overcome the following shortcomings of the existing solid waste management system and related challenges:

1. Weak political will to maintain, steer and solve the problem of SWM;

2. Scarce financial and economic resources for SWM *(equipment, human resources, safety)*

3. Solid waste is mixed;

4. Uncontrolled open dumping and burning of waste;

5. Practice of throwing rubbish beside the rivers/seas and in non-authorized areas;

6. Lack of IEC to change public culture;

7. There is no clear vision of the problem or clearly defined SWM policies

Chapter 4 WASTE CHARACTERIZATION

TABLE 15. Quantity and Composition of Waste Disposed by Sector/Source from Sample Sources, Municipality of Santa Fe, Romblon, CY 2013.

Major Sources	PCG* kgs/person / day	Total Waste Generation (kgs/day)			Waste Composition (kgs/day)						
		Vol./day	VOLUME GENERATED ON SAMPLES	Percentage	Biodegradable	Recyclable	Residual				Special
							***Sando bags/ candy&bisc wrap	PPe (Thin/Elastic)	***Metallic / Tetra Pack	Others (RW for Disposal)	
RESIDENTIAL											
URBAN	**0.43282**	1,708.431	58.43107	*26.01*	32.10517	6.31507	1.04673	1.01667	0.90110	16.93333	0.11300
RURAL	**0.42922**	5,278.136	101.72500	*45.28*	63.46526	10.23541	2.11417	1.55966	1.58450	22.70700	0.05900
Total		**6,986.567**	**160.15607**		**95.57043**	**16.55048**	**3.16090**	**2.57633**	**2.48560**	**39.64033**	**0.17200**
							8.22				
	PERCENTAGE BY WASTE COMPOSITION				*59.67*	*10.33*	*5.13*			*24.75*	*0.107*
COMMERCIAL											
GENERAL STORES	**0.4366**	146.273	5.217	*2.32*	2.598	1.764	0.04	0.485	0.045	0.285	0.00040
							0.57				
	PERCENTAGE BY WASTE COMPOSITION				*49.80*	*33.81*	*10.93*			*5.46*	*0.008*
WET MARKET	**0.2080**	2.496	5.998	*2.67*	2.357	2.08	0.0013	1.257	0.022	0.271	0.00004
							1.2803				
	PERCENTAGE BY WASTE COMPOSITION				*39.30*	*34.68*	*21.35*			*4.52*	*0.0007*
FOOD ESTABLISHMENT	**0.1927**	46.237	11.41	*5.08*	9.961	0.479	0.073	0.232	0.323	0.339	0.00300
							0.628				
	PERCENTAGE BY WASTE COMPOSITION				*87.30*	*4.20*	*5.50*			*2.97*	*0.026*
INSTITUTIONAL											
OFFICES	**0.1236**	11.743	5.33	*2.37*	1.304	2.214	0.1419	0.1334	0.1816	0.347	1.00700
							0.4569				
	PERCENTAGE BY WASTE COMPOSITION				*24.47*	*41.54*	*8.57*			*6.50*	*18.89*
SCHOOL	**0.0399**	202.931	**36.55**	*16.27*	19.430	4.25	6.83	2.87	1.25	1.92	0.00400
							10.95				
	PERCENTAGE BY WASTE COMPOSITION				*53.15*	*11.63*	*29.96*			*5.25*	*0.011*
TOTAL		**7,396.25**	**224.664**		**131.224**	**27.33**	**22.10803**			**42.80193**	**1.18640**
% of Total					*58.41*	*12.16*	*9.84*			*19.05*	*0.53*

RESIDENTIAL

The municipality conducted WACS in one urban and four rural barangays. Poblacion is urban and Danao Sur, Magsaysay, Mat-i, and Pandan are rural barangays. There are 81 sample households with a population of 372 individuals.

The total volume generated on samples is 160.156 kg wherein the biodegradable waste is 59.673%; recyclable waste is 10.334%; residual wastes is 5.134%; and, special and residual wastes for disposal is 24.858%.

The per capita generation (PCG) of wastes in terms of kg/person/day in urban and rural barangays are 0.43282 and 0.42922, respectively. It is noted that the PCG of urban barangay is slightly higher than of the rural.

By 2019, it is projected that the residential total waste generation of the municipality will be 1,948.97 tons; 1162.95 biodegradable, 201.33 recyclable, 99.98 residual with diversion, 484.71 residual and special waste for disposal.

Urban

The WACS was conducted in barangay Poblacion with a 31 households as samples which is comprised of 136 individuals. Result shows that the total volume generated on samples is 58.43 kg. The per capita generation (PCG) is 0.43282 kg/person/day.

Based on the result, the total biodegradable waste is 32.105 kg or 54.95 %; recyclable is 6.315 kg or 10.81 %; residual waste is 2.964 kg or 5.07 %; and, the special and residual waste for disposal is 17.046 kg or 29.17 %.

As per WACS 2013, projected urban waste of the municipality for 2019 is 711.08 tons composed of; 390.74 biodegradable, 76.87 recyclable, 36.05 residual with diversion and 207.42 residual and special waste for disposal.

Rural

WACS was conducted in four rural barangays namely, Danao Sur, Magsaysay, Mat-i and Pandan. Danao Sur is the only non-coastal barangay. Total sampled households are 50 HHs and with 231 sampled population or individuals. Result of the WACS shows that the per capita generation in rural barangays is 0.42922 kg/person/day.

The result shows that the total volume generated on samples is 101.725 kg. Of this, biodegradable waste is 63.465 kg or 62.39 %; recyclable waste is 10.235 or 10.06 %; residual waste is 5.258 kg or 5.17 %; and, the special and residual waste for disposal is 22.766 kg or .

Projected waste generation on rural areas of the municipality by 2019 is 1,237.89 tons which composed of 772.32 biodegradable, 124.53 recyclable, 64 residual for diversion and 277.04 disposal.

INSTITUTIONAL

In this sector, the data used is based on WACS results of the same income class municipality which is Magdiwang. WACS was conducted in Municipal Building, Rural Health Unit and Elementary School as samples and composed of a total 2,147 employees, teachers and pupils.

By typology, the total waste generated on sample is 41.88 kg. The biodegradable, recyclable, residuals and special wastes are 20.73, 6.46, 13.68, and 1.01 kg., respectively. The per capita generation on offices is 0.1236 kg/person/day and 0.0399 kg/person/day on schools.

Out of the total waste generated on samples, the biodegradable wastes is 49.50%, recyclable is 15.43%, residuals is 32.65 and special waste is 2.41%.

It is expected by 2019, total waste generation in the institutional sector of the municipality would be 509.86 tons wherein biodegradable, recyclable, residual waste with diversion, residual waste and special waste for disposal are 252.33 tons, 78.72 tons, 138.89 and 39.92 tons respectively

COMMERCIAL

There are three different commercial establishments that were sampled for the conduct of WACS which are general stores, restaurant and wet market with sample population of 187.

Total generated waste from sample is 22.625 kg. Out of this sample, the biodegradable waste is 14.92 kg or 65.93%; recyclables is 4.32 kg or 19.11%, residual waste is 3.37 kg or 14.91% and special waste is 0.0034 kg or 0.015%.

The per capita generation of general stores, wet market and food establishment are 0.4366, 0.2080, and 0.1927 kg/person/day, respectively.

Waste generation on commercial sector of the municipality by 2019 is projected to reach 275.03 tons. It mainly composed of 181.52 tons biodegradable, 52.50 tons recyclable, 30.06 tons residual for diversion and 10.95 tons of waste for disposal.

4.1 Disposed Waste from WACS

Disposed waste from WACS is 224.66 kg. This is composed of biodegradable, recyclable, residual and special wastes.

Biodegradable wastes with a total of 131.122 kilograms composed of yard waste, vegetables and fruit residues, fish cleanings, food/kitchen wastes, animal carcasses and agricultural wastes.

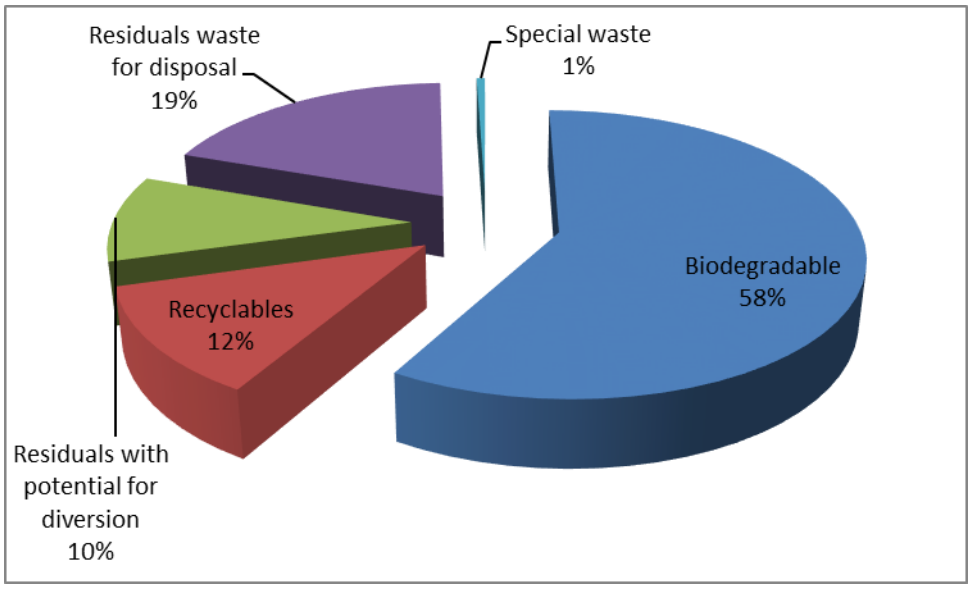
Recyclables material which was 27.33 kilograms has been recycled and some are sold to junkshop and mobile scrap buyers. Its composition are PET bottles, tin can, PE (sibak and plastic), paper, carton, plastic cup, garapa, rubber, tire, broken glass (bubog), straw, bottles, aluminum and softdrink bottles.

Residual wastes with potential for diversion is 22.11 kilograms and composed of sando bags/candy & biscuit wrappers, PPE (thin/elastic) and metallic/tetra pack.

Residual wastes for disposal is 42.99 kilograms and composed diapers, textile trimmings, metallic foil laminates and composites, rags, broken ceramics, leather trimmings, worn out shoes and slippers, styropor, sanitary napkins, and inerts.

Special waste with a total of 1.19 kilograms are composed of busted bulb/tube/lamps, container of paints/thinner & other solvents, containers of rugby, containers of roof cement, grease and oil , worn out appliances, asbestos materials, spent dry and cell batteries and cosmetic waste.

Figure 5. Types and Proportion of Wastes Collected



For the population of 15,700 the calculated average solid waste generated per day is 7,396.137 kgs. Based on this data, the per capita generation per day is 0.45532 kg. The distribution of amount (in kg) of waste per type is presented in Figure 5 according to their rank.

Figure 6. Amount of Solid Waste by Type (in kg.)

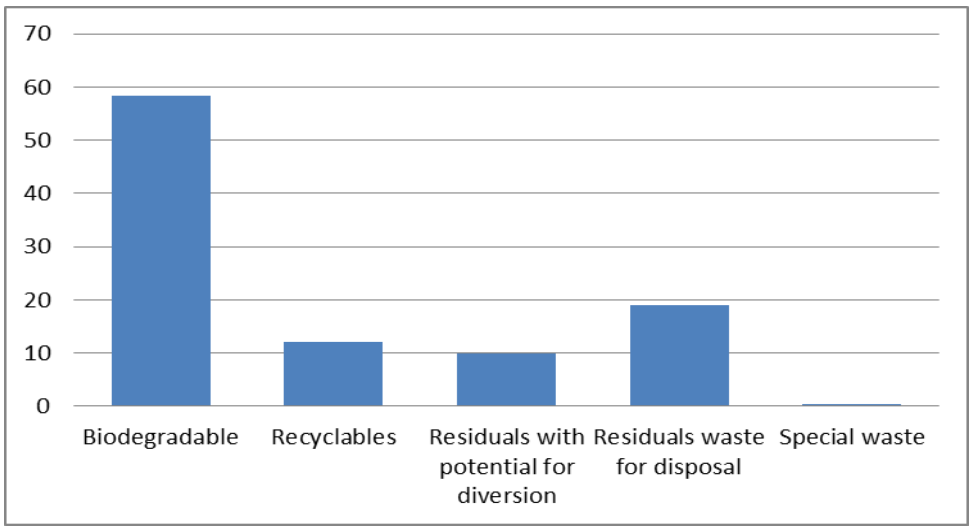
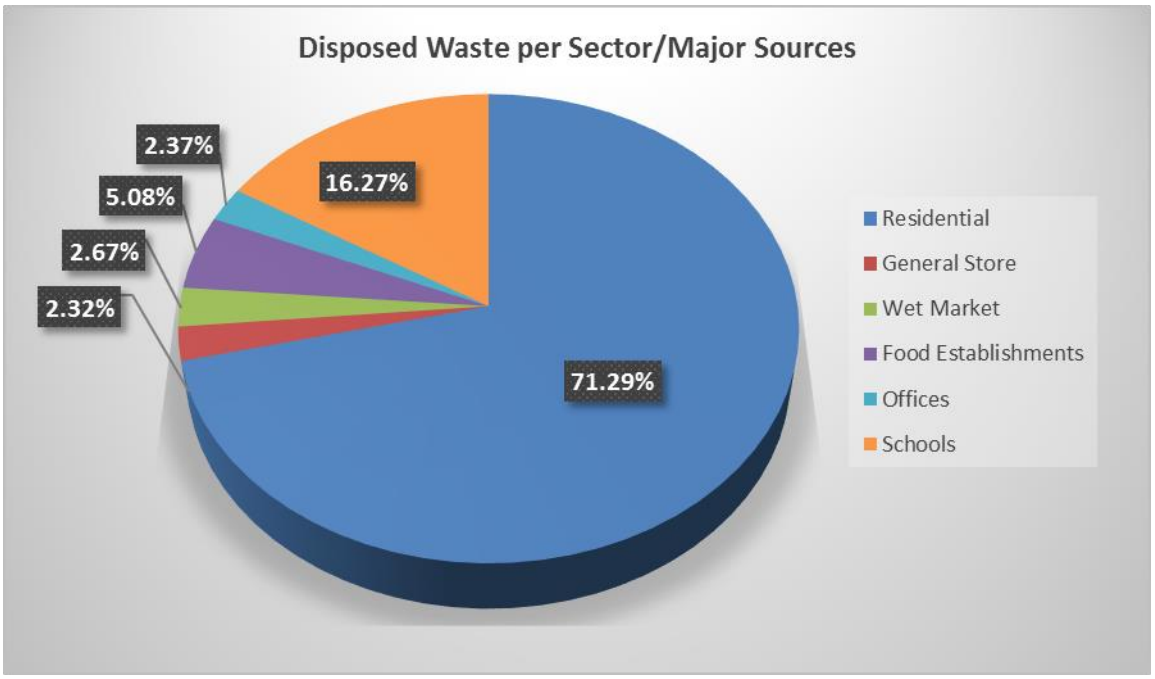


Figure 7. Quantity of Wastes Disposed by Sector



Based on the table above, most wastes were disposed by residential sector and followed by the institutional and commercial sectors. Residential sector is composed of urban and rural area; commercial sector includes general stores, wet market and food establishments; and, institutional sector includes offices and schools.

4.2 Diverted Waste

Based on result of WACS conducted, generated waste from three major sources namely, residential (urban & rural), commercial and institutional areas has a total of 224.664 kilograms of mixed waste per day. Out of this, the biodegradable is 131.224 kg or 58.41%; recyclables is 27.33 kg or 12.16%; residual waste with potential for diversion is 22.10 kg or 9.84%; residual waste for disposal is 42.80 or 19.05 %; and, special waste is 1.186 kg or 0.53%

Diverted waste is 180.654 kg which is composed of biodegradable, recyclable, and residuals with potential for diversion with 80.41% diversion rate.

Total disposed waste is 43.986 kg composed of residual and special waste for 19.58% disposal rate.

4.3 Generated Waste

The primary purpose for estimating the amount and composition of municipal waste which will be generated in the municipality during the 10 year planning period is to provide the basis for determining the amount of disposal capacity required.

The quantity of municipal waste generated in Santa Fe, as a result of WACS conducted in year 2013, and population projections were used to calculate the current per capita rate of municipal solid waste generation.

Table 16 identifies the projected waste generation from year 2019 to 2028 using the per capita generation of 0.45532 kg/person/day based on WACS result.

Table 16. 10-Year Projected Population and Waste Generation per Year

Year	Projected Population	Total Waste Generation (tons/year)
2019	16,450	2,733.86
2020	16,542	2,749.14
2021	16,638	2,765.10
2022	16,736	2,781.39
2023	16,832	2,797.34
2024	16,933	2,814.13
2025	17,037	2,831.41
2026	17,140	2,848.53
2027	17,245	2,865.98
2028	17,356	2,884.42
T O T A L		**28,071.30**

Using the PCG of 0.45532 kg/person/day and the year 2019 municipality population, the gross municipal waste generation rate has been calculated at 0.1662 tons per capita per year or a total of 2,733.86 tons/year as shown in Table 16.

Table 17. Summary of Waste Generation, Santa Fe, Romblon, CY-2013

No.	MAJOR SOURCES/ BARANGAY	PER CAPITA GENERATION (kg/person/day)	DAILY VOLUME OF GENERATION (DVG) IN KGS.	ANNUAL VOLUME GENERATION (AVG) IN TONS	LGU WASTE GENERATION IN PERCENT (%)
RESIDENTIAL					
	URBAN				
1	Poblacion	0.43282	968.651	348.714	13.10
2	Guinbirayan	0.43282	739.689	266.288	10.59
	sub-total		**1,708.341**	**615.003**	
	RURAL				
3	Agmanic	0.42922	758.432	273.035	10.26
4	Canyayo	0.42922	749.418	269.791	10.13
5	Danao Norte	0.42922	535.237	192.685	7.24
6	Danao Sur	0.42922	370.846	133.505	5.01
7	Guintigbasan	0.42922	288.436	103.837	3.90
8	Magsaysay	0.42922	589.319	212.155	7.97
9	Mat-i	0.42922	507.338	182.642	6.86
10	Pandan	0.42922	601.337	216.481	8.13
11	Tabugon	0.42922	877.326	315.837	11.86
	sub-total		**5,278.118**	**1,899.968**	
	Total	**0.44500**	**6,986.459**	**2,514.971**	
COMMERCIAL					
1	General stores	0.4366	146.261	52.654	1.98
2	Wet Market	0.2080	2.496	0.899	0.03
3	Food Establishment	0.1927	46.248	16.649	0.63
	sub-total	**0.3322**	**195.005**	**70.202**	
INSTITUTIONAL					
3	Offices	0.1236	11.742	4.227	2.87
4	School	0.0399	202.931	73.055	49.53
	sub-total	**0.04143**	**214.673**	**77.282**	
	TOTAL	**0.07103**	**409.678**	**147.484**	**100**
	OVERALL TOTAL	**0.45532**	**7,396.137**	**2,662.45**	

Currently, as shown in Table 18 , the total amount of waste generated daily in the whole municipality is about 7,396.137 kilograms/day or 7.396 tons of mixed waste but only 0.766 tons/day or about 10.36 % of the total waste generated is being collected or covered by garbage collection. Out of the total waste generated, it is composed of 60.26 % biodegradable, 10.768 % recyclable, 5.95 % residual waste with potential for diversion, 22.91 % residuals for disposal, and 0.117 % special waste.

Total volume of waste with potential for diversion is 5.69 tons/day or 76.98% (biodegradable + recyclable + residual waste with potential for diversion) and the total volume of waste for disposal is 1.69 tons/day or 22.91 % (residual wastes for disposal + special waste).

The current amount of waste generated in the whole municipality is expected to have minimal increase in volume due to the minimal increase of population with a growth rate of 0.48 from year 2010-2015. Unsustainable practices, the life style and the continuous stream into the market of new products that utilize the latest packaging technology. Solid waste problems continue to escalate with the influx of the new garbage produced.

Waste density is a very important parameter for planning, scheduling and designing of municipal solid waste management infrastructure. The average loose or bulk density of the municipal solid wastes from all three sources was observed to be about 160 kg per cubic meter. The density of the wastes once compacted could be as high as 300 to 400 kg per cubic meter. The low density is therefore an indication that open non-compacting trucks are not suitable for the collection of municipal solid waste. It also indicates that if the waste is simply in the landfills without compaction, the life of the landfills would be significantly reduced.

By the year 2028, the projected population of the municipality is approximately 17,356. Considering the average daily waste generation of 0.45532 kg/person/day, the total weight per day of waste generated is about 7,902.53 kg/day or about 27.53 cubic meter/day for an average bulk density (compacted) of 300 kg/cu. m. If we convert this into an area needed for the waste generation per day, it would require about 1.659 sq. m (height = 10 m) of land area per day to cater this bulk of waste generated daily.

As shown in Table 13 the total quantity of waste generated is 7,396.137 kgs/day which is composed of 5,693.352 kgs/day of waste for diversion and 1,702.78 kgs/day for disposal. Wastes for diversion includes biodegradable, recyclable and residuals with potential for diversion; and, wastes for disposal is composed of residuals and special wastes.

Table 18. Summary Showing the Quantity and Composition of Waste Disposed by Sector/Source, Municipality of Santa Fe, Romblon, CY 2013.

Major Sources	Per Capita Generation (kgs/person per day	Total Waste Generation (kgs/day)		Waste Composition (kgs/day)				
		Vol./day	Percentage	Biodegradable	Recyclable	RW with potential for Diversion	Residuals for Disposal	Special
RESIDENTIAL								
· Urban	0.43282	1,708.731		1,056.93	207.90	97.59	557.46	3.72
· Rural	0.42922	5,278.136		2,089.33	336.96	173.11	747.53	1.94
Sub-total		**6,986.459**	94.46	**3,146.26**	**544.86**	**270.70**	**1,304.99**	**5.66**
COMMERCIAL								
· General Stores	0.4366	146.273		85.53	58.07	18.76	9.38	0.37
· Wet Market	0.2080	2.496		77.59	68.48	42.15	8.92	0.0013
· Food Establishments	0.1927	46.237		327.92	15.77	20.67	11.16	0.098
Sub-total		**195.0050**	2.64	**491.04**	**142.32**	**81.58**	**29.46**	**0.47**
INSTITUTIONAL								
· School	0.0399	202.931		639.65	139.91	360.48	63.21	0.13
· Offices	0.1236	11.743		42.93	72.89	15.04	11.42	33.15
Sub-total		**214.6730**	2.90	**682.58**	**212.80**	**375.52**	**74.63**	**33.28**
GRAND TOTAL	**0.45532**	**7,396.25**	**100**	**4,319.88**	**899.98**	**727.80**	**1,409.08**	**39.41**
	PERCENTAGE BY WASTE COMPOSITION			***58.41***	***12.16***	***9.84***	***19.05***	***0.53***
				5,947.66			**1,448.49**	
				Total Volume with Potential for Diversion			Total Volume for Disposal	
	PERCENTAGE			***80.41***			***19.58***	

Chapter 5

LEGAL/INSTITUTIONAL FRAMEWORK

The existing institutional framework for SWM is shown already in Table 19. Presently there is an existing ordinance about SWM. SWM is a social imperative. Having an ecological solid waste management is a concern of everyone. Thus, RA 9003 will only be realized if all stakeholders will be part of its fulfillment.

5.1 Local Resolutions and Ordinances

Table 19. Existing Resolution/Ordinances

Title/Number	Relevant Provision
Municipal Ordinance No. 26, series-1997	Comprehensive Solid Waste Management Ordinance of Santa Fe, Romblon
Executive Order No. 14, s-2010	Organization of Ecological Solid Waste Management Board
Municipal Ordinance No. 82, s-2012	Comprehensive Ecological Solid Waste Management Ordinance of the Municipality of Santa Fe, Romblon and Creation of Municipal Solid Waste Management Board in Compliance of RA 9003
Municipal Ordinance No. 114,s-2017	Regulating the Use of Plastic Packaging or Bag on Wet Goods Banning the Use of Plastic Packaging or bags on Dry Goods, and Prohibiting the Use of Styrofoam, in the Municipality of Santa Fe and Prescribing penalties thereof
Executive Order No. 08, s-2018	Reorganization of Ecological Solid Waste Management Board

The stakeholder's analysis was done to identify the beneficiaries and implementers of Solid Waste Management and MRF installation and implementation.

5.2 Roles

- The municipality, as mandated by RA 9003, must take the primary role in the implementation and the enforcement of RA 9003, particularly in promoting

waste reduction/diversion, ensuring segregation at source providing for segregated collection, recovery/recycling and establishment of a final disposal facility/arrangement for residual wastes.

- All Santafenhons play a significant role in ESWM practices, foremost of which is the need for a lifestyle change that primarily seeks to minimize waste and thereafter segregate any unavoidable waste at source for segregated collection and final disposal.
- Barangays shall primarily be responsible for biodegradable wastes, including the composting.
- The education sector both public and private, have significant roles to play in educating, via formal settings, the young population in proper ESWM practices.
- Business establishments may promote the reduction of waste and the use of environment-friendly packaging materials.

5.3 Municipal Solid Waste Management Board (MSWMB)

The Municipality of Santa Fe through E. O. No. 14, s-2010, has organized the MSWMB and re-organized by Municipal Ordinance No. 8, s-2018 which is composed of the municipal Mayor as chairperson, Chairperson on Committee on on Environment as V-Chairperson, and the members are president of Liga ng mga Barangay, president of Sangguniang Kabataan Federation, a sanitary health officer, municipal agriculturist, municipal engineer, DepEd district supervisor, PNP, representative from junkshop owner, representatives from NGOs. The MSWMB meets at least once a year or as often as necessary. The following are functions and responsibilities of MSWMB:

1. Develop the Municipal Solid Waste Management Plan to ensure long solid waste management, as well as assess, integrate in solid waste management plans and strategies of various barangays in the municipality;

2. Adopt measures to promote and ensure the viability and effective implementation of municipal solid waste management programs in all component barangays;

3. Monitor the implementation of the Municipal Solid Waste Management Plan throughout the component barangays in cooperation with the concerned Non-Government Organization;

4. Adopt specific revenue-revenue generating measures to promote viability of local solid waste management plan;

5. Convene regular meetings for purposes of planning and coordinating the implementation of the solid waste management plans of component barangays;

6. Oversee the implementation of the Municipal Solid Waste Management Plan;

7. Review every two years or as needs arise the Municipal Solid Waste Management Plan for purposes of ensuring its sustainability, viability, effectiveness and relevance in relation to local and international developments in the field of solid waste management;

8. Develop specific mechanics and guidelines, and coordinate the efforts of component barangays in the implementation of the Municipal Solid Waste Management Plan;

9. Recommend to appropriate local authority specific measures or proposals for franchise or build-operate and transfer agreements with duly recognized institutions to provide either exclusive or non-exclusive authority for the collection, transfer, storage, processing, recycling or disposal of municipal solid waste. The proposal shall take into consideration appropriate government rules and regulations on contracts, franchise and build-operate-transfer agreement;

10. Recommend measures and safeguards against pollution and preservation of the natural ecosystems, and;

12. Coordinate the efforts of its component barangays in the implementation of the Solid Waste Management Plan.

5.4 Barangay SWM Committee

The Solid Waste Committee was organized at the barangay level which is composed of Punong Barangay as Chairman, one barangay Kagawad, SK chairman, public school principal, PTA president, representatives from NGO, business sectors, religious organizations as members and with following functions and responsibilities:

1. Formulate solid waste management programs consistent with the municipal plan;

2. Segregation and collection of biodegradable, compostable, reusable wastes;

3. Establish a materials recovery facility in its barangay cluster with other neighboring barangays;

4. Allocate barangay funds and look for sources of funds;

5. Organize core coordination; and,

6. Submit monthly report to the Municipal Solid Waste Management Board.

5.5 Stakeholders Participation

The barangay leaders with some citizens were gathered to identify the Strengths, Weaknesses, Opportunities and Threats of fully implementing RA 9003.

Though there are few residents practicing segregation, the LGU especially barangay leaders shall promote public awareness and encourage segregation at source to the whole community. An ordinance and resolutions will institutionalize and provide authority and power for proper implementation.

STAKEHOLDER ANALYSIS

Table 21. Stakeholder's Analysis of SWM Implementation

STAKEHOLDERS	Motivation/ Beliefs	Powers	Resources	Response
1. Households	Disposal of their wastes Clean and healthy environment	Segregate their wastes; reuse, recycle Cooperate with LGU	Household income They pay for disposal of their wastes	Positive
2. Commercial , institution and industrial establishments	Disposal of their wastes Clean and healthy environment	Segregate their wastes; reuse , recycle Compliance of laws and policies	Business income; Educational campaigns	Positive
3. Municipal Government	Enforcement of R.A. 9003 Provide SWM service to the town people; collection system Manage residual wastes	Create enabling laws Enforce rules and regulation Collect fees Plans and programs for SWM	Land Authority Government fund Employees Legislations Technical knowledge	Positive On-going construction of MRF

4. Barangay government	Collection and disposal of wastes Keep barangay clean and ecological	Legislate and enforce policies on collection, segregation and disposal of wastes Functionalization of MRFs Plans and programs for SWM Collect fees	Barangay tanods ,aids , people Barangay fund	Positive
5. Junkshops/ scavengers	Income	Go around and collect solid wastes Buy recyclable wastes Lessen collectibles	Vehicles Employees	Positive
6. Farmers/farmers organization	Input for fertilizer	Collect and utilize biodegradable wastes	Organic agriculture knowledge	Positive
7. National Agencies , DENR, Regional/Provincial Government	National solid wastes management ecological an healthy environment	Enforce R.A.9003 Financial operational and technical support	Government fund Technical knowledge	Positive
8. NGOs	Ecological and healthy solid wastes managements	Financial operational and technical support	Fund Technical knowledge	Positive

SWOT analysis was vital to the projection of success of policy. The barangay leaders with some citizens were gathered to identify the Strengths, Weaknesses, Opportunities and Threats of fully implementing RA 9003.

Chapter 6

PLAN STRATEGIES

The Municipal SWM plan is intended to:

1. Consolidate all information and strategies of the barangays;
2. Identify and provide assistance on common/similar concerns and needs of all barangays;
3. Articulate the role of the municipal government and the MSWMB in supporting clustering of barangay resource sharing arrangements, and
4. Steer the municipality through its component barangays a unified SWM program.

6.1 Vision

"A green, clean, and ordered municipality open to agri-tourism with a society educated and organized in ecological solid waste management services."

Goals:

- ✓ To capacitate and build up the knowledge and expertise of key technical personnel for ESWM
- ✓ To promote a change in behavior among Santafenhon in the proper practice of ESWM through targeted information, education and communication strategies
- ✓ To develop strategies that will assist the barangays in solid waste reduction, recycling and recovery and in reducing and/or recovering costs in ESWM
- ✓ To link composting processes and products with the organic agriculture agenda of the municipality
- ✓ To serve as a venue for knowledge sharing among barangays of the best initiatives, processes and technologies, as may be appropriate
- ✓ To promote adherence to ESWM laws and regulations

6.2 Targets

In general, these are the targets of the municipality vis-à-vis ESWM:

- Updating of SWM Plans of all barangays

- Compilation and submission barangay SWM Plan
- Active participation of all stakeholders in ESWM practices
- Waste reduction and diversion of waste
- Closure and rehabilitation of open dumpsite
- Establishment of final disposal facility

Tables 22-24 and Figures 8 & 9 shows the diversion and disposal targets of the urban and rural barangays and of the whole municipality using the projected population from year 2019 – 2028.

At the start of the planning period, the disposal target is 50% and the diversion target is 50%. At the end of the planning period which is on year 2028, the target disposal rate is 23% and the diversion target will be 77%.

Table 22. Diversion and Disposal Target 2019 -2028 of Santa Fe, Romblon

TARGETS (tons)	10 - Year Planning Period, 2019 – 2028																	
	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028	
	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%
Diversion	1,366.93	50	1,457.04	53	1,548.46	56	1,641.02	59	1,734.35	62	1,829.18	65	1,925.36	68	2,022.46	71	2,120.83	74	2,221.00	77
Disposal	1,366.93	50	1,292.10	47	1,216.64	44	1,140.37	41	1,062.99	38	984.95	35	906.05	32	826.07	29	745.15	26	663.42	23
Projected waste generation	**2,733.86**		**2,749.14**		**2,765.10**		**2,781.39**		**2,797.34**		**2,814.13**		**2,831.41**		**2,848.53**		**2,865.98**		**2,884.42**	

Figure 8. Quantity of Wastes for Diversion for 10 Years

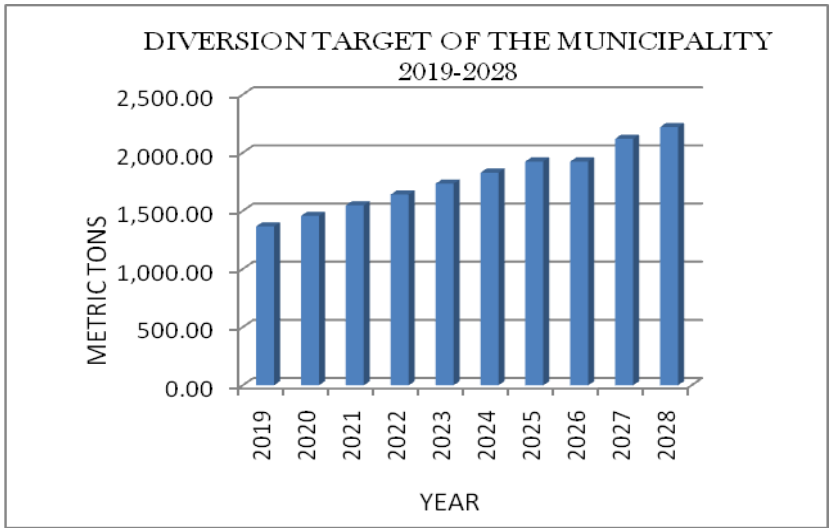


Figure 9. Quantity of Wastes for Disposal for 10 Years

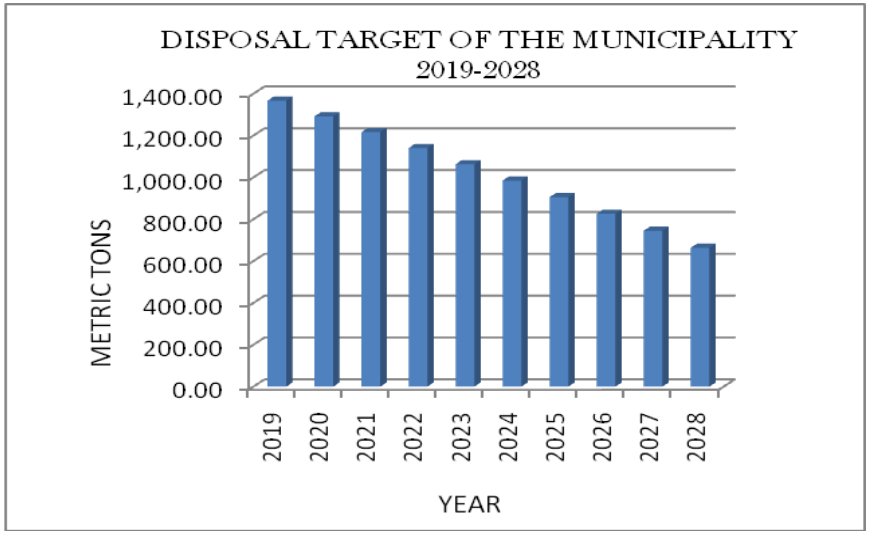


Table 23. Diversion and Disposal Target 2019-2028 of Urban Barangays, Santa Fe, Romblon

TARGETS (tons)	10 - Year Planning Period, 2019 – 2028																			
	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028	
	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%
Diversion	349.01	50	373.20	53	397.86	56	422.91	59	448.32	62	474.44	65	500.75	68	527.44	71	554.77	74	582.51	77
Disposal	349.1	50	330.95	47	312.61	44	293.88	41	274.78	38	255.47	35	235.65	32	215.44	29	194.92	26	174.00	23
Projected waste generation	**698.01**		**704.15**		**710.47**		**716.79**		**723.10**		**729.91**		**736.40**		**742.88**		**749.69**		**756.51**	

Table 24. Diversion and Disposal Target 2019 -2028 of Rural Barangays, Santa Fe, Romblon

TARGETS (tons)	10 - Year Planning Period, 2019 – 2028																			
	2019		2020		2021		2022		2023		2024		2025		2026		2027		2028	
	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%
Diversion	1,017.95	50	1,038.84	53	1,150.59	56	1,218.11	59	1,286.03	62	1,354.74	65	1,424.61	68	1,495.01	71	1,566.05	74	1,638.50	77
Disposal	1,017.95	50	961.15	47	904.04	44	846.49	41	788.21	38	729.48	35	670.40	32	610.64	29	550.24	26	489.42	23
Projected waste generation	**2,035.85**		**2,044.99**		**2,054.63**		**2,064.60**		**2,074.24**		**2,084.21**		**2,095.01**		**2,105.65**		**2,116.29**		**2,127.92**	

6.3 Strategies

These targets could be achieved by passing specific ordinances that controls the usage and disposal of the specific wastes like biodegradable, residual, and the controlled collection of recyclable wastes.

The following are the strategies that the municipality shall implement to achieve the previously mentioned targets:

SWM Planning and Data Management System

- Technical assistance in the formulation/updating of BSWM Plan of barangays
- Formulation and adoption of MSWM plan
- Provision of assistance to barangays in updating of SWM plans every three years

Waste Reduction and Recovery

- Conduct of municipal wide IEC campaign on segregated waste collection in every barangay
- Identification of potential cost recycling mechanisms including CDM options
- Create linkage and arrangement to some junk shops and mobile scrap buyers as possible buyer of the non-bio/non-recyclable plastic wastes
- Encourage the barangay to improve or to fully operationalize their MRFs to take charge of the composting activities and recyclable wastes
- Enhancement/Promotion of composting technology by providing mechanical shredders to speed-up decomposition process of biodegradable materials and linking composting processes and products with organic agriculture agenda
- Promotion of different composting technologies such as Vermicomposting and other backyard composting methods to divert the compostable/biodegradable wastes from household

Operation and Maintenance of Final Disposal Facility (FDF)

- Identification for possible final disposal facility
- Conduct evaluation on basic compliance and monitoring of SLF operations as well as evaluation of the design of the proposed SLF

SWM Enforcement Reward and Incentive and Policy Support

- Capacity building workshop for SWM Office and focal person on specific issues and concerns of SWM implementation
- Capability building of the personnel involved in the implementation of ESWM
- Conduct lesson learned workshop to consolidate the best practices of other municipal LGUs regarding SWM for replication in other localities

- Create linkages to other government offices like DENR-EMB
- Provision of incentives on most compliant barangay LGUs

Table 25. SWM Programs/Activities, Strategies and Implementation Schedules, Santa Fe, Romblon, CY 2019-2028.

PROGRAM/SEGMENTS IN ESWM IMPLEMENTATION	STRATEGY OF IMPLEMENTATION	YEAR									
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
A.SOURCE REDUCTION (SR) AND WASTE SEGREGATION AT SOURCE (SS): Households (HH), Institutions, commercial areas, bus terminals, transport groups, food chains, eateries, etc.	Provision of waste receptacles in public places (pcs.)		2	4	10	14					
	Conduct intensive IEC on SR & SS	x	x	X	x	x	x	x	x	x	x
	Meeting with all brgy officials (hrs.)	6	6	6	12	12	12	12	12	12	12
	Meeting/orientation with all sectors like heads of the ff: schools, offices, hospitals, commercial centers, transport groups, bus terminals, eateries, NGOs, etc (hrs.)	6	6	6	6						
	Flyer distribution (pcs.)	1,000	1,000	1,500	2,000						
	House to house campaign (HHs.)	1,000	1,000	1,500	2,000						
	Implement 4-type segregation within collection & non collection areas (HHs)		465	1,200	2,000	2,400	3,000	3,500			
	Implement no segregation, no collection (HHs)		124	465	1,200	2,000					
	Brgy level to impose HH composting of biodegradable waste (if there is a space) for the SR aspect (HHs)		1,200	2,000	3,000	3,300	3,500	3,700			
	Issuance of citation tickets to non -complying HHs, institutions, commercial areas, transport owners, etc. (pcs.)			10	15	20	50				
	Strict implementation of ordinances	x	x	x	x	x	x	x	x	x	x
B. COLLECTION, TRANSFER & TRANSPORT	Review collection route & frequency of collection (hrs)		2		2		2		2		2
	Barangay level to implement segregated collection at HHs & other sources agreed upon by the Mun (nos.)			1	4	9	11	11	11	11	11
	Brgy level to collect recyclables in all sources including biodegradable wastes where composting at source is not possible (nos.)				1	2	4	6	8	10	11
	Purchase garbage truck (if necessary based on waste assessment result) (unit)				1					1	

PROGRAM/SEGMENTS IN ESWM IMPLEMENTATION	STRATEGY OF IMPLEMENTATION	YEAR									
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
C. STORAGE, PROCESSING, AND RECOVERY	Make Municipal MRF operational (no.)				1						
	Facilitate the operationalization of MRFs, Brgy Level			x	x	x	x				
	Provide technical assistance and financial support in the operation of Brgy MRFs, if necessary (hrs.)			8	8	8	8				
	Diversion of residual waste with potential	x	X	x	x	x	x	x	x	x	x
	Establishment of vermi-composting facility						x				
D. DISPOSAL FACILITY	Convert open dumps into an eco-park if it is suitable for conversion and construct/establish controlled tipping area (years)	x	X	x	x	x	x	x	x	x	x
	Rehabilitate the closed dumps through the following post care closure:										
	Stabilize slope ranging from 30-35% (days)					10					
	Application of soil cover and properly compact the covered waste (days)					20					
	Construct drainage (run off)						30				
	Leachate Management		X								
	Gas management		X								
	Prevention of illegal dumping		X								
	Vegetation and greening		X	x	x	x	x	x	x	x	x
	Social Action plan		X								
	Establishment of TRCA	x			x						
	Identify site for SLF construction (no.)				1						

PROGRAM/SEGMENTS IN ESWM IMPLEMENTATION	STRATEGY OF IMPLEMENTATION	YEAR									
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
	Prepare Project Study for ECC application (no.)					1					
	Conduct Public consultation on the proposed project (brgy.)	x	X	x	x	x	x				
	Construct SLF (sq.m.)						10,000				10,000
E. IEC	Organize IEC Team(member)			5							
	Prepare IEC plan (Sectoral/Brgys)			x							
	Conduct trainer's training (nos.)			1							
	Install Billboards (pcs.)			2	11						
	Schedule for Radio Programs re ESWM (hrs.)	n/a									
F. ENFORCEMENT	Enactment/Amendment of Municipal ESWM Ordinance for adoption throughout the Mun. (no.)				1		1				
	Organize enforcement team to be under the office of SWM like: MENROs (member)					3					
	Conduct orientation of enforcers (nos.)						1				
	Deputize enforcers (member)						3			3	
	Provide paraphernalia for enforcers like:										
	Vests (pcs.)						6			6	
	ID (pcs.)						3			3	
	Citation Tickets (bklts.)						6			6	
	Two-way Radio (units)						3			3	

7.1 Source Reduction

Source reduction programs to be implemented through specific ordinances that abide to the target SW minimization by R.A. 9003. For every year there will be a monitoring and evaluation to see to it that from 50% residual waste to be disposed, it will be reduced to 23%.

To implement waste segregation and reduction at source strategies, a Comprehensive SWM Ordinance will be enacted and fully enforced by 2019. An Enforcement Plan will be prepared. SWM enforcers will be trained and deputized. To provide support to enforcement of this Ordinance, Information Education and Communication (IEC) activities will be conducted. IEC materials on proper waste segregation, backyard composting, different composting technologies, re-use of recyclable materials and MRF operations, including composting facilities and storages for recyclable wastes. Capacitating barangay LGUs, including BSWMCs, barangay officials and purok leaders, will be a major concern. Regular dialogues with barangay LGUs will be conducted to assist them in implementing SWM within their jurisdictions. Strengthening coordination with schools and industries, including farms and mills, will also be a priority target. This is to see to it that proper waste segregation and reduction at source are sustained at the barangay and purok levels.

Biodegradable

Biodegradable are processed by the citizen to compost or bury at backyard. This will be encouraged to be done at source through specific ordinances and incentives.

Recyclable

Promote the reduction of recyclable waste through increased campaign on the use of reusable materials. These can be done on creating ordinances for food chains and food stalls that uses a lot of recyclable materials.

Residual

No plastic cups, styro-cups, containers or ice chest, sando bags, plastic spoon and forks, straws will be use or there will be an effort to limit these kinds of utensils. This could be achieved through IEC and incentives.

7.2 Collection

LGU's waste collection service provided in Barangay Poblacion and Guinbirayan and in some areas of barangay Magsaysay will be sustained within the Plan period. By 2019, municipal LGU will cover 11 Barangays. No segregation, no collection policy started its implementation on 2018. A collection schedule for specific areas and waste types will be followed. IEC materials to increase compliance with segregated waste collection and collection schedule will be developed and distributed among major waste sources. Garbage fee collection has been implemented for establishments and by 1st quarter 2020 it will also be

implemented for households. For barangays outside waste collection area, barangay LGUs will coordinate with the municipal LGU on collection schedule. Only residual and special wastes will be collected from these barangays.

Since all the eleven barangays have its own MRFs, collection of segregated recyclable and compostable materials will be done by the barangay. The LGU will collect the residuals from the Barangay MRFs upon request of the barangay concerned.

7.2.1 Overview

Source reduction programs

Sectors to target

- Business establishments/market
- Offices/schools
- Residential

Materials to be addressed and methods to determine the categories of solid waste to be diverted

- Materials to be addressed
  - Styrofoams
  - Plastic bottles, cups, utensils, containers
  - Sando bags

- Categories of SW to be diverted
  - Recyclable
  - Domestic
  - Special

Capability and economic viability of LGU in implementing the program for this component

- Capability
  - Fines
  - Ordinances
- Economic viability
- Capability to fund IEC and logistics

Technical requirements for the ordinances and other formal actions to be taken by LGU

- Technical requirements
  - WACS
  - Capacity building for personnel (training/seminar)
  - IEC making
  - Survey (People their willingness to cooperation, to pay, to follow, etc.)

Social Impacts on stakeholders involved or affected

- Negative

- At first, difficulty of complying (needs familiarization)
- Positive
  - Take pride in being disciplined and advanced in SWM
  - Discipline for/to the people

Wastes from the various barangay MRFs will be collected by the LGU designated personnel with the supervision of the MENRO, if available, once a month.

7.2.2 Collection equipment and routes

There is one dump truck and one Backhoe Loader available in the LGU which are functional. The capacity of the truck is 4 cu.m., while the backhoe's capacity is 74 Hp. A new garbage truck with compactor was also acquired. The list of heavy equipment is shown in Table 9.

The garbage truck will collect the wastes from the barangay MRFs to the TRCA located at barangay Magsaysay through barangay Poblacion.

LGU's waste collection service provided in Barangays Poblacion, partly of Magsaysay and Guinbirayan will be sustained within the Plan period. This will be expanded within 1st quarter of 2019 to cover the remaining nine Barangays. Segregated waste collection will start to be adopted by the LGU within existing collection area next year. No segregation, no collection policy will be strictly enforced.

Table 26 presents proposed waste collection schedule for 2019 when municipal LGU's waste collection will be expanded. Collection of residual wastes in every barangays is specified in the table 26 shown below.

Table 26. Proposed Collection Schedule, Santa Fe, Romblon, 2019

Waste Sources	Waste Type for Collection	Collection Schedule
Barangay Poblacion	Residuals and Special Wastes	Monday & Thursday
Barangay Guinbirayan		Tuesday & Friday
Barangay Mat-I, Pandan and Canyayo		Upon request
Barangay Danao Norte, Danao Sur and Guinbirayan		
Barangay Agmanic, Guimpoingan and Tabugon		
Barangay Guintigbasan and Magsaysay		

Unsegregated wastes will not be collected. All types of wastes, too, will be collected from commercial establishments, service centers and health centers. Only segregated wastes will be collected. Wastes for collection should be placed in appropriate and labelled receptacles.

Residual waste with potential for diversion will be stored in the LGU's MRF while residual wastes for disposal will be temporarily stored in the TRCA. All special wastes collected will be placed in a septic vault that will be constructed. Waste collection service of the LGU will continue to be supervised by Mayor's Office.

When the proposed SWM Office has been established, this will oversee LGU's waste collection activities. Manpower resources will be trained by the LGU to help waste collection crew enforce the no segregation, no collection policy. LGU's waste collection crew will be provided with proper uniforms and tools. They will also be oriented on proper waste handling within 1st quarter of 2023. Waste collection schedule and route will be periodically assessed and modified, if necessary. The garbage trucks currently used will continue to be maintained by the LGU. A baling machine is planned to be acquired by the LGU within 1st quarter 2020.

Garbage fees will be collected by LGU from all waste generators. Fees on establishments have been collected annually during their business permit application while collection on households will start to be implemented by 2020. Households will be required to bring their wastes to barangay MRFs which will serve as collection points. With composting and selling of recyclable wastes at source more compliant waste generators are expected to increase within the Plan period.

7.2.3 Private collection service

The municipality has no plan to hire private haulers in collecting the solid waste since it can be done by cooperation of the stakeholders within the municipality.

7.3 Segregation, Recycling, and Composting

Waste segregation, recycling and composting are essential components of the solid waste management strategy in Santa Fe. This could minimize the cost in solid waste collection and disposal. The implementation procedure and plans regarding these processes will be discussed in this section.

7.3.1 Segregation

Material Recovery Facilities were established to 11 barangays to accommodate the segregation of collected solid wastes. The MRFs will serve as the storage area of waste prior to classifying it whether it will be composted, recycled, or brought to the dump site. Additional income can also be generated from recyclable products.

The ecological Solid waste management in Santa Fe will be best directed and mechanized by enacting a resolution and Ordinance on the implementation of RA 9003 and providing penalties thereof to fulfil the mandates of the law. This will also fuel the implementation and installation of Municipal Materials Recovery facility.

At present, the LGU's waste is facilitated by the LGU where collection is scheduled twice or thrice a week, however three (3) barangays only are covered by the collection. The LGU shall start to intensify information and education campaign in the barangays about waste segregation at source. Generally, segregation is encouraged to be practiced by the households.

For the municipal government to push for the full implementation of the Ecological Solid waste Management Act (RA 9003) there shall be the functional Material Recovery Facility in each barangay and centralized MRF will be established by the municipality by the end of year 2018

7.3.2 Recycling

Residual waste collected regularly will be inspected for recyclable materials. Waste sorting will be done in the facility. These kinds of activities will be done by the households and the various MRFs at every barangay.

The municipality has an existing MRF. The establishment of new central MRF will expand the activities on recycling of the MLGU, though some households already practice the same.

7.3.3 Composting/Management of Biodegradable Waste

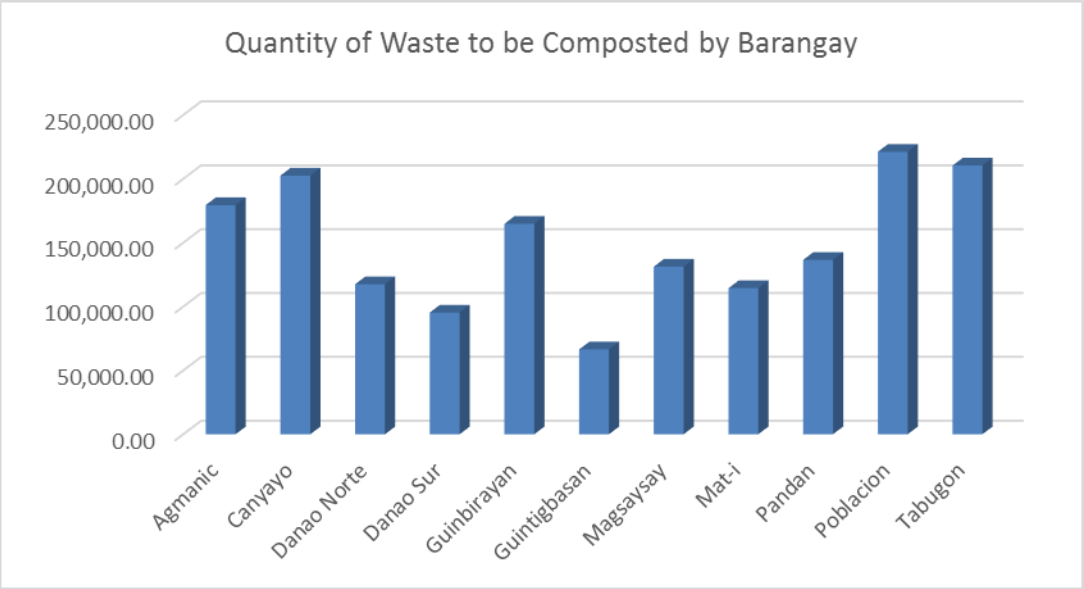
The LGU collects 0.766 ton/day and 58.41 % of which is biodegradable material most of which are backyard wastes. This amount of waste could reduce the transport and dumping cost once properly managed.

A composting facility will be established to facilitate the biodegradable solid waste management. This facility will be a center of research and development in terms of composting and decomposition of solid waste. Various technologies like vermin-culture and inoculants will be tested and applied to produce marketable grade of compost. Different stakeholders will collaborate in this project. While waiting for the facility to be operational, small scale composting /decomposition bins will be utilized to divert some biodegradable waste from the sanitary landfill pathway. Some of which will be buried in unused land in the municipality for decomposition/composting purposes.

The various institutions and departments involved in this project will form a committee for biodegradable waste management. This committee will formulate strategy and technologies to be applied to facilitate the municipal composting facility from its start-up to its operational stage.

The quantity of waste to be composted by barangay is shown in Figure 8.

Figure 10. Showing the quantity of waste to be composted by barangay



7.3.4 Marketing and Market Development

Current good ecological solid waste management practices identified in the Philippines are the co-processing of waste materials for resource recovery.

The municipality shall encourage the farmers to use the organic compost in farming. Meanwhile biodegradable materials from some of the food establishment in the LGU were collected through internal arrangement (some are doing backyard composting while others feed this waste to domesticated animals). The rest of these waste were collected during the garbage collection. Once the compost facility was established, it compost products could be sold to various farms and gardens near or within the LGU. The compost selling price varies along with the quality. Recent compost price ranges from P300.00 - P500.00 per 50 kg sack. Organic and edible gardens and ECO-parks should also be established to support the campaign not only in environmental awareness but also for additional income from the sales of various products. Organic backyard farming should also be encouraged and initiated by the barangay committees for biodegradable solid waste management and participating LGUs not only in the residential area of the municipality but also to its nearby communities for market expansion. This can be done by providing free seedling and organic farming seminars.

The recyclables will be temporarily stored in the MRFs and shall be sold to the junkshops.

7.4 Transfer

There is no necessity to have a transfer station since the LGU's garbage collection team and logistics is adequate to cope up with the demand, therefore the LGU is not considering utilizing transfer facilities.

7.5 Alternative Technologies for Residual Wastes

Residual wastes with potential for diversion will be used as a component in making hollow blocks, bricks and other similar products. This product will be sold to the public to be used in construction of walls, pavement and other structure which the same are deemed applicable/ suitable.

7.6 Disposal

7.6.1 Solid Waste Disposal Capacity

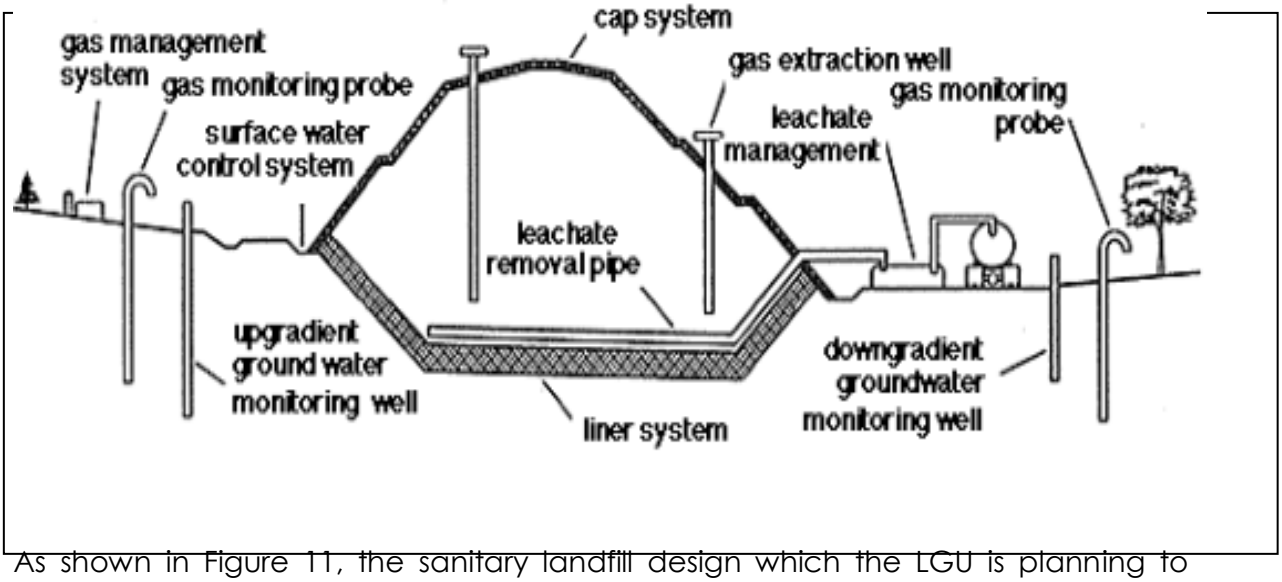
For now, the municipality has stopped using the dumpsite located at barangay Magsaysay. The MRF is utilized as Temporary Residual Containment Area while waiting for the establishment of RCA on the first quarter of 2019. It will serve as the residual waste storage area and another TRCA will be established on 2021. This TRCA will be used while waiting for the SLF establishment. The LGU is planning to buy a lot for sanitary landfill facility. Once the SLF is established the waste from the Temporary Containment Area will be transferred to it and this TRCA will be closed.

7.6.2 Existing Facilities

Presently, the LGU is temporarily utilizing the old MRF facility as Temporay Residual Containment Area (TRCA) where residual wastes collected are stored. Because of the abrupt closure of the dumpsite, the LGU prioritized to establish a Residual Containment Area located at barangay Magsaysay by the first quarter of 2019.

7.6.3 Categorized Disposal Facilities (Sanitary Landfill Design)

Figure 11. Sanitary Landfill Design



As shown in Figure 11, the sanitary landfill design which the LGU is planning to establish on the fifth year of the planning period.

7.7 Special Wastes

The LGU is responsible in bringing household toxic, hazardous wastes into the designated area. A vault will be constructed for these special waste. Other recyclables extracted in some selected hazardous waste (e.g. used motor batteries, etc.) will be brought to its appropriate recyclers for further treatment and proper disposal.

7.7.1 Health Care Wastes

The pre-treated health care wastes (e.g. syringe, needles and others) are stored in their concrete vault after such this vault is sealed.

7.8 Information, Education and Communication

The Education Component of this SWM Plan intends to achieve increasing waste diversion within the Plan period. It aims to increase compliance with mandatory waste segregation at source and establishment and operation of on-site MRFs. It seeks to strengthen collaboration among municipal LGU and barangay LGUs in implementing SWM Plan strategies.

Ultimately, it aspires for high participation among waste sources with the end in view of decreasing SWM costs and sustaining good SWM best practices.

7.8.1 Target Audiences and Key Messages

SWM Information, Education and Communication (IEC) activities that will be undertaken should contain messages targeting specific audiences. Target audiences include the following:

- Households;
- Barangay Poblacion Public Market stall operators and transient vendors;
- Barangay Guinbirayan market stall operators, transient vendors and boat operators;
- Municipal Hall (employees);
- Schools (students, principals, administrators, owners, teachers, Parent-Teacher Association, SWM School Coordinators);
- Industries (agricultural plantations, rice mills, corn mills);
- Barangays (barangay officials, purok leaders, BSWMCs, Barangay and Purok SWM Coordinators);
- CRM-related groups such as fish wardens, fishery enforcement teams, Barangay Fisheries and Aquatic Resource Management Councils or BFARMCs); and
- Non-government organizations (NGOs) and People's Organizations (POs)

Target Audiences and Key Messages

Barangay Poblacion Public Market

- Reduce, Reuse, Recycle
- Cleanliness contributes to improved public health.
- We can set examples to consumers on how to practice proper waste segregation.

Barangay Guinbirayan Market

- Reduce, Reuse, Recycle
- Our market can be a showcase of proper waste segregation within the Province.

Households

- Reduce, Reuse, Recycle
- Proper waste segregation will help improve our family's health.
- Backyard composting can help in maintaining our vegetable and flower gardens.
- You are responsible for your wastes.

Schools

- Reduce, Reuse, Recycle
- Proper waste segregation is one discipline that should be taught to students.
- SWM can be part of school curricula.
- Promoting SWM among students can reach their families, neighbors and friends
- Practicing on-site composting is a powerful demonstration tool to encourage students and their families practice backyard composting.

- Managing on-site MRFs for recyclable wastes will help students appreciate the meaning of recycle.

Commercial establishments

- Reduce, Reuse, Recycle
- Practicing proper waste segregation is one way of doing good business.

Industries

- Reduce, Reuse, Recycle
- Open burning of solid wastes is against RA 9003.
- You are accountable to managing your wastes properly.
- There are other ways of maximizing agricultural wastes; processing them into compost provides benefits to community and environment.

Barangays

- Reduce, Reuse, Recycle
- You are responsible for managing biodegradable and recyclable wastes within your jurisdictions.
- Coordinating with municipal LGU will assist you in improving SWM within your jurisdictions.

Chapter 8

IMPLEMENTATION STRATEGY

8.1 Legal Framework

The municipality formulates strategies for the implementation of the SWM system. This is shown in the table below.

Table 27. Implementation Strategies of SWM System

Project Description	Objectively Verifiable Indicator	Mode of Verification (MOV)	Assumption
GOALS /OBJECTIVES			
1. To harness the MSWMB for municipal-wide policy-setting, program implementation, monitoring and evaluation of the 10-year MSWM Plan covering its 11 component barangays.	By the end of 2019, a 10 year MSWMP is formulated and submitted to the RSWMC/NSWC;	Approved MSWMB; minutes of the MSWMB meetings; Resolution endorsing the MESWM plan; SB Resolution adopting and approving the MSWMP	MSWMB and Sangguniang Bayan enact resolutions endorsing the plan as scheduled
	By 4th quarter of 2019, 15 component barangys have submitted updated barangay ordinance on SWM	Compilation of updated barangay ordinance on SWM	Barangay Council enacted Ordinance on SWM
	By 3rd quarter of 2020 Monitoring and Evaluation Team has been created to conduct quarterly monitoring and evaluation of 15 component barangays	Resolution creating the M & E Team; Monitoring report	Availability of the members during the actual monitoring
2. To trained and capacitate key technical personnel for ESWM and create a pool of technical role models in the municipality	By May 2020, a pool of Trainers have been created to assist component barangays to implement their SWM program	Documentation report; attendance to the training/s ; training module	Availability of the person/s to conduct the training and knowledge transfer

3. To promote a change in behavior among constituents in the proper practice of ESWM through targeted information, education and communication strategies and prioritization of ESWM in the development agenda of component barangays through incentives mechanism and adherence to ESWM laws and regulation	By 1st quarter 2019, two (2)) urban barangays implement segregated collection in 50% of their HHs; By June 219, additional nine (9) barangays implement segregated collection in 50% of their HHs;	Daily Collection record; Record & income of the recyclable waste materials	Availability of IEC materials, fund and staff
4. To develop strategies that will assist component barangays in solid waste reduction, recycling and recovery and in reducing, and/or recovering costs in ESWM	By the end of 2020, all eleven (11) barangays implement waste reduction/recovery program /strategies	Data or income derive from recyclable materials	Acceptance of the LGU on the developed strategies; Availability of market outlet
5. To link composting processes and products with the organic agriculture agenda of the municipality	By 2020, 11 barangays have substantially allocated budget for SWM implementation	Annual investment Plan; Ordinance; Functional SWM structure /organization	Financial constraints/Low prioritization of LCEs and other officials
6. To eliminate the use of ecologically harmful materials and practices in the municipality	By 2020, 11 barangays have linked their composting initiatives with the organic agriculture agenda	Orientation workshops and training modules given to LGUs	Availability of focal person
	By June 2020, started rehabilitating dumpsites and construct central MRF	Dumpsites are closed & rehabilitated	Community participation and involvement
	By end of 2024, the LGU is operating their FDF/SLF	Operational and functional facility	Availability and suitability of the area

7. To serve as venue for knowledge sharing among component barangays of best initiatives, process and technologies as maybe appropriate	By May 2020, best initiative of component barangays are properly documented and are available at the municipality for sharing with other LGUs.	Compilation of best practices Documentation	Availability of fund and staff

Plan Activities & Expected Result/Output:

Project Description	Objectively Verifiable Indicator (OVI)	Mode of Verification (MOV)	Assumption
1.1 Plan Formulation and Submission			
• Formulation and submission of the 10-year Municipal Solid Waste Management Plan	MSWM Plan is formulated and submitted to PSWMC/RSWMC/NSWMC	Approved MESWM Plan by NSWMC	Quorum during MSWMB meeting
• Provide Technical Assistance in formulation updating of SWM Plan of Component barangay	11 Barangay submitted updated SWM plan	11 approved updated SWM plan	Availability 0f focal person on SWM
1.2 Monitoring and Evaluation			
• Organization of M & E Team (SLF & Basic Law Compliance	M & E Team was organized	Signed of letters of appointments by the LCE;	Availability of focal person on SWM
• Creation of M & E Strategy	M & E Team was organized and conduct actual monitoring & evaluation	M & E Reports Monitoring module;	
• Conduct of M & E and feed-backing	M & E Team was organized and conduct actual monitoring & evaluation	Minutes of feed-backing meetings; monitoring modules	

2.1 Capacity Development

• Provision of assistance in capacity building on the implementation of SWM in barangays	At least 2 trainings workshop had been conducted every year for SWMB	Minutes of the meeting; Attendance Documentation and training modules	Availability of focal and resource persons and board members
• Creates linkages to other government offices like DENR-EMB, MIMAROPA Region to provide technical assistance trainings for barangays which are not available in the province and for updating of new technologies available in the national level	Appropriate Trainings Modules available	Minutes of the meeting ; Attendance	

3.1 Waste Segregation and Collection

• Promotion of different composting technologies & other backyard composting methods)	At least 50% of the HHs in eleven (11) Barangays developed and promotes different composting technologies	Record of composting products	Availability of training modules on composting technologies
• Promotion of MRF Establishment in barangay clusters of barangays	At least 100% of the Barangays established MRF	Site monitoring records	

• Formulation of a province wide IEC concept for dissemination and use of LGUs	IEC materials are available for distribution	Letter of request from the LGUs	LGUs active participation

4.1 Technical Assistance

• Provide technical assistance towards the establishment of an operational/ functional MRF of Barangays	By end of 2020, at least 11 barangays have operational MRF	Attendance and Letter of request for assistance from the Barangays	Availability of focal and resource persons and board members
• Provide technical assistance towards closure and rehabilitation of dumpsite			

5.1 Linkage with Municipal Agriculture Office

• Initial planning/discussion • Assessment of current programs • Standard setting/leveling off with organic standards • Orientation of MSWMB and Barangays • Training and capacity building • Implementation and M & E • Marketing/ Distribution	By June 2019, market available for organic agriculture product	MOA; Minutes of Meeting; Documentation	Active participation of LGUs and Market availability

7.1 Knowledge Management

• Compilation/documentation of SWM best practices	By 2020, compilation of SWM best practices are available in MPDC Office	Documentation; Pictures/Videos/Electronic and hard copies	Availability of SWM focal personnel

8.2 Diversion projections

As stated earlier, from the start of the plan a target of 50 % of the projected waste generation is expected to be diverted. Additional 3-5% per year will be diverted to recycling centers. At the end of the planning period, 80.42% of waste generation is expected to be diverted. Refer to Tables 20 – 22 and Figures 7 & 8.

8.3 Monitoring Program

The municipality will be adopting a municipal wide monitoring and evaluation program to monitor component barangay compliance with respect to enforcing the implementation of RA 9003.

Some component barangay in the municipality implemented the SWM Program in their locality; however, no monitoring plan is available as of the moment. As the municipal government extends their assistance to component barangays and with the help of monitoring team it is expected that by the end of 2022 at least 11 barangays have their own monitoring plan for their compliance to implement the ESWM Act.

8.4 Incentive Program

A volunteer corps for monitoring the implementation of solid waste management inside the campus, such as the no littering policy and waste segregation, shall be formed. Volunteers includes, but not limited to residents and employees of the LGU. They will undergo a series of trainings and seminars to gain accreditation. Once accredited, the volunteers will have authority to reprimand and even collect fines from SWM violators. To ensure the integrity of the service, the volunteer shall show an ID and issue receipts.

The stakeholders who will excel in the implementation of solid waste management will be given an incentive from the LGU.

Incentives will be given to selected SWM stakeholders.

For SWM enforcers,

- 30% share of total collected fines and penalties

For barangays,

- SWM Model Barangay Award

For schools,

- SWM Model School Award

Chapter 9

INSTITUTIONAL ASPECTS

Environmental governance is important in the sustainable and efficient implementation of ESWM program in the municipality. Effective governance structures and policies supporting ESWM programs must be in place. As provided in RA 7160 the LGU geared towards environmental programs including that of ESWM on the following principles of (a) stewardship (b) shared responsibility (c) conservation (d) enhancement and development (e)prevention, regulation and protection, and (f) transparency. Moreover, the municipality of San Fe recognizes the role of barangays in the promotion of healthful and balanced ecology.

9.1 Roles

Consistent with the power of supervision of the municipality exercised through the Municipal Mayor and Sangguniang Bayan granted under RA 9003, the municipality of Santa Fe shall continue to oversee the SWM implementation of its components barangays.

The municipality shall continue to strengthen the MSWMB as venue for policy formulation, harmonization of SWM programs, sharing of information and best practices, and compliance monitoring and evaluation.

In accordance with their mandates, national government agencies such as the DENR-EMB, DOST, DTI and DepED shall be tapped even more for their concrete contribution to the implementation of RA 9003.

Participation of NGOs, POs as well as academe, the church and the media shall likewise be harnessed.

As the municipality explores possibilities for consolidating services or facilities, recycling companies, junkshops, business organizations and leaders shall be exhaustively tapped in the coming years.

9.2 Legal

In support of the existing policies and regulations governing ESWM, the municipality shall also review existing ordinances and based on these findings; develop a template listing least requirements for an SWM ordinance that will actually work on the ground, including allowing cost recovery options for LGU.

Presently, the LGU has no approved Comprehensive Land Use Plan and Zoning Ordinance.

Chapter 10

Social and Environmental Aspects

10.1 Social Aspects

With barangays recycling solid wastes into functional and useful products, community-based organizations become more productive as they engage in the production/recycling of these products. These strategies also allow households to earn additional income. It also helps to conserve our environment.

There are many factors to consider for the social acceptability of the program. There are different strengths and weaknesses as well as the available threats and opportunities for development. Social acceptability of the project could be analyzed using SWOT Analysis.

Strength no. 1 (S1): There is strong environmental awareness among the citizens and government of Santa Fe.

Weakness no. 1 (W1): Presently there are only few available infrastructures and the 10-year solid waste management requires the creation of different facilities to accommodate its implementation.

Weakness no. 2 (W2): There is minimal fund available for its implementation.

Opportunity no. 1 (O1): The present government of Santa Fe prioritizes the environment protection of the LGU and willing for an eco-tourism program.

Opportunity no. 2 (O2): Presently, the solid waste management program is not sustainable. Minimal income is generated and the flow of money is outward.

Opportunity no. 3 (O3): Santa Fe is focusing in its eco-tourism program, thus there are many opportunities to collaborate with other LGU regarding the SWMP.

Threat no. 1 (T1): Possible conflict of interest among the different research institutions and stake-holders involved.

Threat no. 2 (T2): People in the Santa Fe will not patronize the SWMP due to different reasons like additional fees, banning of products, strict implementation of policy, etc.

10.2. Environmental Aspects

Apparently an improved SWMP will have positive effects of the beautification and minimization of the harmful effects caused by solid wastes. But to make this plan sustainable, it will be important to determine not only the positive but also the negative impact of the SWMP to the environment. Establishments like ECO-sites, sanitary landfill, organic farming, decomposition pits, and hazardous waste treatment facility require an Environment Impact Assessment before its establishment. This will be assigned to the respective committees designated for the specific project. Proper zoning must be implemented considering the proper land-use and the nearby bodies of water.

Waste management projects are listed under Non-Environmentally-Critical Project type of Environmentally Critical Areas or group 2, as per DAO 2003-30. The highest documentary requirement for this group is the IEE or Initial Environmental Examination. Since the proposed waste management project is still in its infancy, requirements for new projects will also be done. The other requirements are the Environmental Impact Statement (EIS), Programmatic EIS (PEIS) and, as an option, a Project Description Report (PDR). The decision document for these requirements is the ECC or Environmental Compliance Certificate.

In accomplishing the IEE, an IEE Report (IEER) and IEE Checklist (IEEC), is required. The proponent undertakes the IEE study. IEER/IEEC will be the basis of the Environmental Management Bureau for prioritization in compliance monitoring and evaluation. Non-conforming documents will be returned. If conforming, the proponent will pay the filing fee and will show the receipt to the Case Handler for the substantive review of the document. Finally, if all documents proved compliant, ECC is transmitted to the concerned party, including recommendations into the decision making process.

Chapter 11

Cost Estimates/ Financial Aspect

11.1. Investment Cost

Considering the factors and calculations mentioned above and from the projected waste generation and population, the projected cost for investment shall be calculated. This will serve as basis for policy making and fund appropriation. The approximated cost is also checked and compared to prevailing prices for other references.

Table 28. Investment Cost

PROGRAMS/ACTIVITIES	YEAR					ESTIMATED BUDGET
	2019	2020	2021	2022	2023	
Rehabilitation of Dumpsite		x				1,000,000.00
Procurement of Baling Machine		x				500,000.00
TRCA Establishment	x		x			1,000,000.00
Land Acquisition*(2,000 sq m @ 1,000.00/sq m)*				x		2,000,000.00
Establishment of Sanitary Landfill					x	2,000,000.00
TOTAL						**Php6, 500,000.00**

11.2. Annual Cost

The annual cost includes the maintenance and operating cost of SWM facilities which includes fuel, repair and supplies; the administrative cost including the office expenses; and the labor cost or salary of personnel as presented in Table 29. These are accounted every year depending on the expected capacity of solid waste.

Table 29. Breakdown of SWM Annual Cost

Components	Year				
	2019	**2020**	**2021**	**2022**	**2023**
Labor cost	250,000.00	250,000.00	270,000.00	270,000.00	270,000.00
Administrative cost	300,000.00	300,000.00	300,000.00	300,000.00	300,000.00
Operation & Maintenance cost	250,000.00	300,000.00	350,000.00	400,000.00	450,000.00

11.3. Funding Options

Solid Waste Management fund is derived from the Development Fund and General Fund of the municipality's municipal budget.

Aside from the local budget, fund can also be loaned from Local and International Funding Agencies such as the Land Bank of the Philippines, the World Bank, Asian Development Bank and others. Loans can be having at least 5% interest. This will be accounted for the total expenses.

Currently, the MLGU has no existing loans from any lending institutions/ agencies. However, the entity considers acquiring a loan if it is deemed necessary.

Amortization payment can be sourced out from the local fund. Other possible sources shall be imposition of fees, charges and fines from the implementation of SWM.

11.4. Cost Evaluation and Comparison

A. Possible Expenses (5 years)

Initial Investment: Php 6,500,000.00
Operations Expenses: Php 4,560,000.00

Total possible expenses: **Php 11, 060,000.00**

B. Possible Income (5 years)

Income from SWM Fee:

Garbage Fee from households

(P15.00/month) (3,711 ave. no. of households) (12 mos.) (4 years)(2020-2023)
= P 2,671,920.00

Garbage Fee from business establishments

(P25.00/month) (448 ave. no. of commercial establishments) (12 mos.)(5 years)
= P 672,000.00

Income from Recovered Products:

Income from Recyclable materials

(332,710.76 kg recyclable for 5 years)(P4.00/kg average selling price of recyclable)(0.3 collection ratio of recyclable) (5 years)
= P 1,996, 264.56

Income from Compost

(1,596, 847.63 kg biodegradable waste for 5 year)(0.10 decomposition ratio) (0.30 collection ratio) (50kg) (P400.00/sack)
= P 1,916,217.16

Total Possible Income: PhP 6,368,535.95

Based from Table 29, funding for Solid waste management varies. Capital outlays bear the biggest part of the proposed annual budget for the solid waste management activities. Aside from income on the over-all implementation of the SWMP of about PhP 7,256,401.70 other sources of fund will be tapped to be allocated to the SWM project to improve the implementation. The proposed SWMP is expected to be financially sustainable at the end of the planning period.

11.5 Summary

Table 30. Summary of Cost

Year	Investment Cost	Annual Cost	Annual Revenues
2019	500,000.00	800,000.00	916,896.34
2020	1,500,000.00	850,000.00	1,584,876.34
2021	500,000.00	920,000.00	1,584,876.34
2022	2,000,000.00	950,000.00	1,584,876.34
2023	2,000,000.00	1,020,000.00	1,584,876.34
2024	2,000,000.00	1,200,000.00	1,500,000.00
2025	4,500,000.00	1,200,000.00	1,500,000.00
2026	1,000,000.00	1,500,000.00	1,500,000.00
2027	1,000,000.00	1,500,000.00	1,500,000.00
2028	2,000,000.00	2,000,000.00	1,500,000.00

Table 31. Cost Evaluation and Comparison

Costs	Year					Total
	2019	2020	2021	2022	2023	
Investment Cost	500,000.00	1,500,000.00	500,000.00	2,000,000.00	2,000,000.00	**6,500,000.00**
Annual cost	800,000.00	850,000.00	920,000.00	970,000.00	1,020,000.00	**4,560,000.00**
Annual revenues	916,896.34	1,584,876.34	1,584,876.34	1,584,876.34	1,584,876.34	**7,256,401.70**

Chapter 12

IMPLEMENTATION

12.1 Phases and Responsibilities

Table 32. Phases and Responsibilities of Implementation

SWM Program Components	Office/Person Responsible
Phase 1 Formulation of 10 year MSWM Plan	
Formulation of MSWM Plan integrating the 10-year SWM Plans of component Barangays • Review of 10-year SWM plans of barangays • Compilation of LGUs SWM Plans • Presentation of draft municipal plan to MSWMB/SB	SB/MSWMB
Finalization and submission and submission of MSWM plan to NSWMC • Finalization of the Municipal 10 Yr. Plan • Submission of ESWM Plan to NSWMC	MSWMB
Technical Assistance • WACS training/ workshop	MSWMB
Phase 2 Monitoring and Implementation of 10-year SWM Plan	
Oversee implementation of SWM plans • Creation of MTWG Monitoring Team for SLF • Creation of MTWG monitoring Team for basic law compliance • Planning meeting for monitoring/coaching sessions • Development and agreement on standard monitoring tool • Plan, conduct and document site/project visits	MSWM Board/ MHO/ MAO/MEO/Mayor's Office
Conduct Monitoring Visits • Conduct 11 monitoring visits • Document monitoring visits	MTWG
Phase 3. All barangays have started recycling and segregation in June 2019	
Assist in recycling and segregation of Solid Waste • Assist in recycling in 11 barangays • Assist in solid waste segregation through IECs in barangay assembly	MSWMB/MHO
Phase 4. All barangays implement waste reduction/recovery programs/strategies by the end of 2019	
Assist in the implementation of waste reduction/recovery programs of all barangays.	MSWMB/MHO/OM

• Assist in review/creation of waste reduction/recovery plan of at least 11 Barangays • Assist in assessment of current situation of waste reduction of Barangay if necessary	
Development of municipal wide waste reduction/recovery strategies and / consolidating services/facilities • Identification and development of municipal-wide waste reduction/waste recovery strategies and other consolidating services/facilities that the municipality can provide.	MSWMB/MHO/OM
Phase 5. Assist in the implementation of segregated waste collection of 11 barangays.	
Facilitating planning workshop on segregated waste collection • Facilitating workshop • Presentation of results	MSWMB/MHO
Facilitating workshop on IEC • Facilitating workshop • Presentation of results	MSWMB
Facilitating workshop on law enforcement • Plan the workshop • Organizing workshop • Presentation of results	MSWMB
Phase 6. Municipal wide Knowledge Management	
Promote municipal wide IEC campaign on SWM, with focus on opinion leaders/social role models • Development of municipal wide IEC strategy and concept • Design, test, refine and finalized IEC materials and tools • Train the trainer (IEC Workshop) • Implement, monitor and evaluate IEC	MSWMB

12.2 Milestones

- 2019-2028 - To fully enforce waste segregation at source at 11 barangays
- 2019-2028 - To implement waste segregation
- 2019 - To establish and operate a new municipal MRF
- 2019-2028 - To rehabilitate dumpsite
- 2019 & 2021 - To establish Residual Containment Area
- 2020- To establish SWM Office
- 2019 – 2028 - To fully enforce the Solid Waste Management Ordinance
- 2019 – To include all barangays of the municipality in the collection service coverage
- 2019 – 2028 - To increase participation of private sector, including schools and agricultural production

- 2020 - To mobilize barangay LGUs, purok leader and BSWMCs in implementing ISWM Plan at barangays and purok leaders
- 2023- 2024 - Formation, training and deputization of SWM enforcers
- 2022 – 2028 - Feedback sessions on compliance with ISWM Ordinance
- 2020 – 2028 - Giving of SWM incentives
- 2021 – Hiring of permanent MENRO
- 2020 – Public hearing
- 2023 – 2028 - Establishment of SLF

12.3 Implementation Schedule

Table 33. Implementation Schedule of Solid Waste Management System

Item No.	Programs/Projects/Acivities	Implementation Schedule										Proposed Budget	Source Of Fund	Implementing Office/Agency
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028			
1	Rehabilitation of Dumpsite		x									1,000,000.00	20% Dev. Fund	Engineering office, Office of the Mayor
2	Procurement of Bailing Machine		x									500,000.00	20% Dev. fund	Engineering office, Office of the Mayor
3	TRCA Establishment	X		x								1,000,000.00	20% Dev. fund	Engineering Office & Office of the Mayor
4	Operationalization of Central MRF (New)	X										10,000.00	Gen. Fund	Office of the Mayor & Engineering Office
5	Communication, Education and Public Awareness Campaign (CEPA)	X	x	x	x	X	x	x	x	x	x	500,000.00	Gen. Fund	Office of the Mayor & MHO
6	Establishment of Solid Waste Management Office		x									50,000.00	Gen. Fund	Office of the Mayor & Engineering Office
6	Creation of Plantilla Position for MENRO		x										Gen. Fund	HRMO
7	Hiring of MENRO			x								840,000.00	Gen. Fund	HRMO

8	Land Acquisition				x							1,000,000.00	20% Dev. fund	Office of the Mayor, Assessor's Office & MPDC
9	Construction of Sanitary Landfill (by Phase)					X			x		x	6,000,000.00	20% Dev. fund	Office of the Mayor, Engineering Office & MPDC
10	Waste Transfer from RCA to SLF						x					10,000.00	Gen. Fund	Office of the Mayor & MHO
11	Hiring of manpower for SWM Program	X	x	x	x	X	x	x	x	x	x	200,000.00 per annum	Gen. Fund	HRMO
12	Conduct Search for Model institutions, commercial establishments, & schools on ESWM implementation		x	x	x	X	x	x	x	x	x	45,000.00 per annum	Gen. Fund	Office of the Mayor & MHO
13	Search for cleanest and greenest barangay		x	x	x	X	x	x	x	x	x	100,000.00 per annum	Gen. Fund	Office of the Mayor & MHO
14	Monitoring and Evaluation Team has been created to conduct quarterly monitoring and evaluation of 15 component barangays		x									15,000.00	Gen. Fund	Office of the Mayor, MHO & MPDC
15	Implementation of Municipal Ordinance on the regulation of using plastics and Styrofoam.	x	x	x	x	x	x	x	x	x	x	10,000.00	Gen. Fund	Office of the Mayor & MHO

16	Implementation of Municipal Ordinance on Anti-Littering	x	x	x	x	X	x	x	x	x	x	10,000.00	Gen. Fund	Office of the Mayor & MHO
17	Promotion of "Bayong" and Eco Bag	x	x	x	x	X	x	x	x	x	x	10,000.00	Gen. Fund	Office of the Mayor
18	Promotion of backyard composting and gardening	x	x	x	x	X	x	x	x	x	x	10,000.00	Gen. Fund	Office of the Mayor & MAO
19	Construction of Special Waste Vaults.	x										50,000.00	Gen. Fund	Office of the Mayor & Engineering office
20	Establishment of Barangay Composting Facility			x								100,000.00	Gen. Fund	Engineering Office & Office of the Mayor
20	Regular maintenance and monitoring on the operation of established MRFs in all barangays	x	x	x	x	X	x	x	x	x	x	50,000.00	Gen. Fund	Office of the Mayor