

Waste Generation

Waste is generally all materials that are unwanted. The province of Cavite is generating wastes coming from residences, industrial and market wastes. The volume of wastes is generally affected by the population as well as the type of industries that thrive in the area. Appropriate and environmentally accepted manner of waste management is necessary in order to promote environmental protection and development.

Table 8.1. Volume of Residential and Market Wastes Generated, Province of Cavite: as of August 2013

City/Municipality	Residential Wastes (tons/day)	Market Wastes (tons/day)	Total (tons/day)
1st District			
Cavite City	15.0000	25.0000	40.0000
Kawit	30.0000	3.9600	33.9600
Noveleta	7.0000	1.0000	8.0000
Rosario	128.0000	1.0000	129.0000
2nd District			
Bacoor	260.0000	23.7600	283.7600
3rd District			
Imus	130.0000	3.0000	133.0000
4th District			
City of Dasmariñas	250.0000	2.0000	252.0000
5th District			
Carmona	44.8700	2.2400	47.1100
Silang	69.0000	3.0000	72.0000
Gen. M. Alvarez	60.0000	4.0000	64.0000
6th District			
Trece Martires City	17.0000		17.0000
Amadeo	5.0000	0.8000	5.8000
Gen. Trias	75.0000	2.0000	77.0000
Tanza	60.0000	6.0000	66.0000
7th District			
Tagaytay City	10.4000	8.0000	18.4000
Alfonso	1.5000		1.5000
Gen. Emilio Aguinaldo	2.0000	0.0700	2.0700
Indang	3.0000	1.0000	4.0000
Magallanes	0.0004	0.2100	0.2104
Maragondon	5.0000	2.2000	7.2000
Mendez	4.0000	1.5000	5.5000
Naic	62.5000	4.1200	66.6200
Ternate	2.0000	1.0000	3.0000
TOTAL	1,241.2704	95.8600	1,337.1304

Source: Provincial Government Environment and Natural Resources Office

The highest volume of residential wastes was observed in the City of Bacoor with 260 tons of wastes daily. It is followed by the City of Dasmariñas which is producing residential wastes of 250 tons per day. The third most towns in terms of residential wastes is the City of Imus with 130 tons.

In terms of market wastes, the City of Bacoor produces the highest volume of wastes with 23.76 tons per day. The municipality of Naic also produces a large volume of market wastes at 4.21 tons followed by Kawit with 3.96 tons.

Bacoor is the locality producing the highest volume of wastes per day. Considering this, it is necessary that Bacoor come up with an effective waste management system in order to control and manage the wastes production and disposal. The second largest producer of waste is the City of Dasmariñas (252 tons/day) and City of Imus (133 tons/day) (Table 8.1).

Solid Waste Disposal System

According to the Solid Waste Management Act, ecological solid waste management shall refer to the systematic administration of activities which provide for segregation at source, segregated transportation, storage, transfer, processing, treatment, and disposal of solid waste and all other waste management activities which do not harm the environment.

Given this definition, the province has a long way to go in complying with the stipulations of the law. The most appropriate manner of solid waste disposal in the province considering the type and volume of wastes is through a sanitary landfill. Currently, there is no sanitary landfill yet that would address the waste disposal challenges of Cavite. Despite this, the local government units are doing its best in conforming to RA 9003 thru various means like recycling, composting, etc.

Composting System

Composting is technically defined as controlled decomposition of organic matter by micro-organisms, mainly bacteria and fungi, into a humus-like product. Composting is the environment friendly way of disposing biodegradable wastes. These wastes are subjected to composting process in order to be used as fertilizer. For some, this system is being utilized to create value added products which are being sold in order to serve as income generating projects. Some of the products of composting are organic fertilizers, fish meals, animal feeds, among others. The product of composting is called Compost.

Compost is an organic matter that has been decomposed and recycled as a fertilizer and soil amendment. Compost is a key ingredient in organic farming. At the simplest level, the process of composting simply requires making a heap of wetted organic matter (leaves, "green" food waste) and waiting for the materials to break down into humus after a period of weeks or months. Modern, methodical composting is a multi-step, closely monitored process with measured inputs of water, air and carbon- and nitrogen-rich materials. The decomposition process is aided by shredding the plant matter, adding water and ensuring proper aeration by regularly turning the mixture. Worms and fungi further break up the material. Aerobic bacteria manage the chemical process by converting the inputs into heat, carbon dioxide and ammonium. The ammonium is further converted by bacteria into plant-nourishing nitrites and nitrates through the process of nitrification.

Compost can be rich in nutrients. It is used in gardens, landscaping, horticulture, and agriculture. The compost itself is beneficial for the land in many ways, including as a soil conditioner, a fertilizer, addition of vital humus or humic acids, and as a natural pesticide for soil. In ecosystems, compost is useful for erosion control, land and stream reclamation, wetland construction, and as landfill cover (see compost uses). Organic ingredients intended for composting can alternatively be used to generate biogas through anaerobic digestion. Anaerobic digestion is fast overtaking composting in some parts of the world including central Europe as a primary means of downcycling waste organic matter. (Wikipedia)

For 2012, the composting facilities being maintained and operational in the province decreased from 21 in 2011 to only 19 in 2012. These composting facilities are located in Alfonso, Carmona, Cavite City, City of Dasmariñas, Gen. Mariano Alvarez, Imus, Indang, Magallanes, Maragondon, Mendez, Naic, Noveleta and Tanza (Table 8.2).

For 2012, the composting facilities being maintained and operational in the province decreased from 21 in 2011 to only 19 in 2012.



A private composting facility at Gourmet Farms, Silang, Cavite.

Table 8.2. Barangays with Composting Facility by City/Municipality and Congressional District, Province of Cavite: 2012

City/Municipality	Barangays with Composting Facility
1st District	
Cavite City	Bagong Pook, San Antonio
Kawit	
Noveleta	Poblacion, San Antonio I
Rosario	
2nd District	
Bacoor	
3rd District	
Imus	Alapan I-A, Tanzang Luma IV
4th District	
City of Dasmariñas	Eco-Center at Central Market
5th District	
Carmona	Carmona Ecology Center
Silang	
Gen. M. Alvarez	Olaes, Poblacion I, Poblacion V
6th District	
Trece Martires City	
Amadeo	
Gen. Trias	
Tanza	Tanza Public Market, Bunga
7th District	
Tagaytay City	
Alfonso	Marahan I
Gen. Emilio Aguinaldo	
Indang	Banaba Lejos
Magallanes	Kabulusan, Bendita I
Maragondon	Layong Mabilog
Mendez	Asis II
Naic	
Ternate	

Source: Provincial Government Environment and Natural Resources Office

Material Recovery Facility (MRF) System

Republic Act No. 9003, otherwise known as the Ecological Solid Waste Management Act of 2000, defines materials recovery facility or MRF as a facility designed to receive, sort, process, and store compostable and recyclable materials efficiently and in an environmentally sound manner. This system was introduced by the Department of Environment and Natural Resources (DENR) to address the pressing problem of solid waste disposal. The basic premise of the system is to reduce the volume of solid wastes by maximizing the volume of recyclable wastes. The system was proven to be effective and environment friendly. The main idea that MRF implements is the sorting of wastes, basically into biodegradable and non-biodegradable. The biodegradable materials are to be composted in order to create other value added products such as fertilizers. On the other hand, the non-biodegradables are further classified into recyclables and non-recyclables. The recyclables will then be recycled in order to be re-used while those that are non-recyclable shall be brought to sanitary landfills for disposal.

The establishment of a material recovery facility in every locality is mandated both under the Local Government Code of 1991 as well as Republic Act 9003 otherwise known as the Solid Waste Management Act.

Section 17 of the Local Government Code of 1991 states that local government units shall likewise exercise such other powers and discharge such functions and responsibilities as are necessary, appropriate, or incidental to efficient and effective provision of such basic services and facilities such as solid waste disposal system or environmental management system and services or facilities related to general hygiene and sanitation.

Correspondingly, Section 12 of Republic Act No. 9003, otherwise known as "The Ecological Solid Waste Management Act of 2000," provides that local government units should develop a solid waste management plan and, all the same time, adopt specific revenue generating measures to promote the viability of the said waste management plan. Likewise, Section 32 of the same Republic Act likewise provides that "There shall be established a Material Recovery Facility (MRF) in every barangay or cluster of barangays. The MRF receives mixed waste for final sorting, segregation, composting and recycling.

Despite being mandated by law, out of 829 barangays in Cavite, there are only seventy-seven (77) MRFs in the entire province. Majority of the MRFs are located in the municipalities of Imus and Carmona with 30 and 31 MRFs, respectively. Only 56.52% of the municipalities/cities have MRF in their localities.

Centralized MRF are those that cater to the entire city/municipality. The facility can accept a bigger volume of wastes and they usually have better equipment

and machineries. Out of 23 cities/municipalities, only thirteen (13) of them has centralized MRFs, an increase of 2 MRFs from 2011.

The lack of this kind of facility only implies that a lot of work still has to be done to fully comply with the provisions of Republic Act 9003. It is also fair to note that the province itself also does not have a sanitary landfill at present (Table 8.2 and Table 8.3).



FEU CAVITE NSTP student visited the award winning Materials Recovery Facility of the Municipality of General Mariano Alvarez (GMA), Cavite.

Table 8.3. Barangays with Material Recovery Facility by City/ Municipality and Congressional District, Province of Cavite: 2012

City/Municipality	Barangays with Material Recovery Facility
1st District	
Cavite City	
Kawit	
Noveleta	San Antonio I
Rosario	
2nd District	
Bacoor	Phase 6, Bahayang Pag-Asa
3rd District	
Imus	Brgy. Alapan 1- A, Brgy. Alapan 1- B, Brgy. Alapan 1-C, Brgy. Alapan 2- A, Brgy. Anabu 1-A , Brgy. Anabu 1-B Brgy. Anabu 1-D, Brgy. Anabu 1-F, Brgy. Anabu 2-A, Brgy. Anabu 2-B, Brgy. Anabu 2-C, Brgy. Anabu 2-D Brgy. Anabu 2-F, Brgy. Bayan Luma 1, Brgy. Bagong Silang, Brgy. Buhay na Tubig, Brgy. Carsadang Bago 2 Brgy. Magdalo, Brgy. Malagasang 1-B, Brgy. Malagasang 1-E, Brgy. Malagasang 2-A, Brgy. Malagasang 2-C Brgy. Malagasang 2-E, Brgy. Malagasang 2-G, Brgy. Mariano Espleta 1, Brgy. Mariano Espleta 2, Brgy. Mariano Espleta 3, Brgy. Medicion 2-B, Brgy. Pag-asa 1, Brgy. Pag-asa 2, Brgy. Pag-asa 3, Brgy. Poblacion 1-A, Brgy. Poblacion 4-A, Brgy. Poblacion 4-C, Brgy. Tanzang Luma 1, Brgy. Tanzang Luma 2, Brgy. Tanzang Luma 3, Brgy. Tanzang Luma 4, Brgy. Toclong 2-B
4th District	
City of Dasmariñas	Brgy. San Agustin III, Salitran 1, Zone IV,
5th District	
Carmona	Barangay 1,Barangay 2, Barangay 4, - St. Joseph Parish, Barangay 5, Barangay 6, Barangay 7,Barangay 8 Barangay 10, Barangay 11, Barangay 12, Barangay Patindig Araw, Barangay Oregano, Barangay Altarez Barangay Maduya - Main , Barangay Maduya – Oregano, Barangay Maduya – Altarez, Barangay Cabilang Baybay, Barangay Mabuhay - City Land, Barangay Milagrosa - Proper , Barangay Milagrosa – Townhomes, Barangay Milagrosa - Phase 1, Barangay Milagrosa - Phase 2, Barangay Milagrosa - Phase 3, Barangay Lantic – Main, Barangay Lantic - Kinnari Subdivision , Barangay Lantic - Cedar Subdivision, Barangay Bancal Carmona National Highschool, Kinnari 1, Kinnari 2, CES (PDAO)
Silang	
Gen. M. Alvarez	Brgy. Maderan, Brgy. De las Alas, Brgy. R. Cruz, Brgy. Lumbrenas, Brgy. Poblacion V, Brgy. Poblacion I
6th District	
Trece Martires City	Brgy. Inocencio, Brgy. De Ocampo, Brgy. Gregorio, Brgy. Cabezas, Ciudad Adelina
Amadeo	
Gen. Trias	
Tanza	Brgy. Santol, Brgy. Julugan I, Brgy. Bunga, Brgy. Julugan VIII
7th District	
Tagaytay City	Brgy. Kaybagal South, Brgy. Maitim II-Central
Alfonso	Marahan I
Gen. Emilio Aguinaldo	Brgy. Castaños Lejos
Indang	Brgy. Kayquit II, Brgy. Kayquit III
Magallanes	Kabulusan
Maragondon	
Mendez	
Naic	
Ternate	
TOTAL	77 MRFs

Source: Provincial Government Environment and Natural Resources Office

Table 8.4. Locations of Centralized Material Recovery Facilities (MRF) by City/Municipality, Province of Cavite: 2012

City/ Municipality	Centralized MRF
1st District	
Cavite City	Brgy. Bagong Pook
Kawit	
Novelita	Brgy. Poblacion
Rosario	Brgy. Kanluran
2nd District	
Bacoor	
3rd District	
Imus	Brgy. Alapan I-A
4th District	
City of Dasmariñas	
5th District	
Carmona	Carmona Ecology Center at Brgy. Lantic
Silang	
Gen. M. Alvarez	Brgy. Olaes, Brgy. Poblacion V and Brgy. Poblacion I
6th District	
Trece Martires City	
Amadeo	
Gen. Trias	
Tanza	
7th District	
Tagaytay City	Brgy. Maitim II
Alfonso	Brgy. Marahan I
Gen. Emilio Aguinaldo	
Indang	Brgy. Banaba Lejos
Magallanes	
Maragondon	Brgy. Layong Mabilog
Mendez	Brgy. Asis II
Naic	Brgy. Sabang
Ternate	Brgy. Sapang I
15 Centralized Material Recovery Facilities	

Source: Provincial Government Environment and Natural Resources Office

Solid Waste Disposal System Status in Cavite

All local government units in Cavite have clear manner of waste disposal except for the municipality of Silang. However, there are accepted manner such as sanitary landfill and the harmful manner of open dumpsite. Among the twenty-three localities, fourteen are using dumpsite wherein eight of which are open and only six are controlled. The remaining eight LGUs are engaged into a contract to a particular sanitary landfill. Silang is undergoing rehabilitation of their dumpsite.

Table 8.5. Waste Disposal System by City/Municipality, Province of Cavite: 2012

City/Municipality	Type of Disposal	Location	Land Area
1st District			
Cavite City	Open Dumpsite	Brgy. Pook, San Antonio	
Kawit	Open Dumpsite	Brgy. Batong Dalig	0.01 ha.
Noveleta	By Contract/ Sanitary Landfill	Brgy. De Ocampo, Trece Martires City	0.15 ha.
Rosario	By Contract/ Sanitary Landfill	Brgy. De Ocampo, Trece Martires City	
2nd District			
Bacoor	By Contract/ Sanitary Landfill	Montalban, Rizal	
3rd District			
Imus	By Contract/ Sanitary Landfill	Brgy. Pasong Buaya	1.37 ha.
4th District			
City of Dasmariñas	Open Dumpsite	Brgy. Salawag	6.0 ha.
5th District			
Carmona	By Contract/ Sanitary Landfill	San Pedro, Laguna	
Silang	Undergoing Rehabilitation	Brgy. Lalaan I	1.2 ha
Gen. M. Alvarez	By Contract/ Sanitary Landfill	Brgy. De Ocampo, Trece Martires City	0.07 ha
6th District			
Trece Martires City	Open Dumpsite	Brgy. De Ocampo	0.5 ha.
Amadeo	Controlled Dumpsite	Brgy. Poblacion V	0.18 ha.
Gen. Trias	Open Dumpsite	Brgy. Tapia	1.5 ha.
Tanza	Open Dumpsite	Brgy. Sahun-Ulan	5.0 ha.
7th District			
Tagaytay City	By Contract/ Sanitary Landfill	San Pedro, Laguna	
Alfonso	Controlled Dumpsite	Brgy. Marahan I	0.4 ha.
Gen. Emilio Aguinaldo	Open Dumpsite	Brgy. Lumipa	1.25 ha.
Indang	By Contract/ Sanitary Landfill		
Magallanes	Open Dumpsite	Brgy. Kabulugan	0.1 ha.
Maragondon	Controlled Dumpsite	Brgy. Layong Mabilog	1.6 ha.
Mendez	Controlled Dumpsite	Brgy. Asis II (Eco-Center)	0.75 ha.
Naic	Controlled Dumpsite	Brgy. Sabang	1.3 ha.
Ternate	Controlled Dumpsite	Brgy. Sapang II	3.0 ha.
TOTAL			24.38 ha.

Source: Provincial government Environment and Natural Resources Office

Waste Disposal Equipment and Machineries

Generally, the constituents of Cavite rely primarily to garbage collection in their waste disposal. Except for Magallanes, the rest of the province implements garbage collection. Garbage collection can be classified into two: domestic waste collection coming from the residential areas and industrial waste or those coming from public markets. In terms of waste disposal equipment and machineries, the province has 7 waste compactors, 34 big garbage trucks and 121 small garbage trucks. Considering the number of population and correspondingly the volume of waste being produced, the City of Dasmariñas has the most number of big garbage trucks amounting to twelve. This is complemented by an additional of three small garbage trucks. Similarly, the

populous city of Imus also has numerous garbage trucks. Despite having only two big garbage trucks, there are twenty small garbage trucks roaming the entire city for garbage collection. It can be noted that the municipality of Magallanes do not have any garbage truck at all. It can also be observed that the garbage collection schedule for public markets is more frequent than the schedule for residential areas.

Table 8.6. Inventory of Waste Disposal Equipment and Machineries and Frequency of Garbage Collection by City/ Municipality, Province of Cavite: 2012

City/ Municipality	Number of Compactors	Number of Big Garbage Truck	Number of Small Garbage Truck	Frequency of Garbage Collection
1st District				
Cavite City		1	4	Main roads/market – Daily City Streets – Twice a week
Kawit			3	Daily
Noveleta			3	2 trips/Truck/ day
Rosario	1	2	6	Daily / Twice a day
2nd District				
Bacoor			6	Daily
3rd District				
Imus		2	20	Market - Daily Barangays – Once a week
4th District				
City of Dasmariñas	5	12	3	Daily
5th District				
Carmona	1	3	7	Twice a week
Silang		3	6	Public Market – Daily Barangays – Once a week
Gen. M. Alvarez			7	Thrice a week
6th District				
Trece Martires City		2	3	10-12 times / day
Amadeo			2	Thrice a week
Gen. Trias		3	17	Twice a week
Tanza			18	Twice a week
7th District				
Tagaytay City		5	5	Daily
Alfonso		1	2	Twice a week
Gen. Emilio Aguinaldo			1	10 Trips/ week
Indang			2	Daily except Saturday
Magallanes				
Maragondon			2	Daily
Mendez			2	Five times a week
Naic			3	Once or twice a week
Ternate			1	Daily
TOTAL	7	34	121	

Source: Provincial Government Environment and Natural Resources Office

Anti-Plastic Use Campaign

Environmental degradation is a serious issue being faced by all localities at present. The impact of such is widely felt through the occurrences of different phenomenon due to climate change and is aggravated by the environmental mismanagement happening in various areas. One example is the damaging floods being experienced in Cavite due to clogged waterways.

Given these scenarios and in adherence to national efforts to reduce the volume and damaging effects of wrongly disposed plastics, the Legislative Body of the Provincial Government of Cavite passed the **Provincial Ordinance No. 007-2012**: An ordinance prohibiting, regulating and prescribing certain uses of plastics for goods and commodities that end-up as residual wastes and promoting the use of eco-bags and other environment friendly practices as an alternative and providing penalties for violations thereof.

In order to have a coherent action among different localities in Cavite, ten LGUs also passed their Plastic Ordinance and another six have adopted the PO 007-2012. It is noted that there are municipalities who had their plastic ordinances even before the Sangguniang Panlalawigan, such as the municipality of Tanza, Magallanes, Trece Martires City and Tagaytay City.

The following LGUs are strictly implementing the Plastic Ordinance:

1. Carmona
2. Rosario
3. Naic
4. Tanza
5. Maragondon
6. City of Imus
7. Gen. Trias
8. Noveleta
9. Indang
10. Magallanes
11. Alfonso
12. GMA
13. Gen. E. Aguinaldo
14. Kawit
15. Ternate
16. City of Dasmariñas

This action paved the way for the use of all sorts of ecologically-friendly bag or ecobag for short.



Table 8.7. Local Government Units with Plastic Ordinances: as of August 2013

City/Municipality	Ordinance No.	Date Approved
Carmona	Municipal Ordinance No. 004-09	August 12, 2013
City of Bacoor	Municipal Ordinance No. 14-s-2002 Executive Order No. 12-s-2011	January 12, 2012
Trece Martires City	City Ordinance No. 2011-194	August 23, 2011
City of Dasmariñas	City Ordinance No. 03-s-2012	April 10, 2013
Tanza	Municipal Ordinance No. 23-s-2011	June 01, 2011
Magallanes	Municipal Ordinance No. 2011-004	July 04, 2011
Tagaytay City	City Ordinance No. 2011-025	January 24, 2012
Maragondon	Municipal Ordinance No. 097-s-2012	February 17, 2012
Gen. Trias	Municipal Ordinance No. 12-03	February 20, 2012
City of Imus	Ordinance No. 2012-134	June 15, 2012

Source: Provincial Government Environment and Natural Resources Office

Table 8.8. Local Government Units that Adopted the Provincial Ordinance 007-2012 through a Sangguniang Bayan Resolution

City/Municipality	SB Resolution No.	Date Approved
Noveleta	SB Resolution No. 11-S-2012	May 25, 2012
Kawit	SB resolution No. 03-S-2012	June 04, 2012
Cavite City	City Council Resolution No. 2012-054	June 28, 2012
Mendez	SB Resolution No. 165-S-2012	October 09, 2012
Alfonso	SB Resolution No. 40-S-2012	June 21, 2012
Ternate	SB Resolution No. 35-S-2012	September 03, 2013

Source: Provincial Government Environment and Natural Resources Office