

B. PHYSICAL RESOURCES/ENVIRONMENT

PROTECTED AREAS (NIPAS and non-NIPAS)

The Mts. Iglit-Baco National Park (MIBNP) covering an estimated area of 75,445 hectares and which lies between Oriental and Occidental Mindoro traverses through the westernmost part of the Municipality of Gloria. The municipality covers an area of 3,294.0 hectares only. It was formerly a Game Refuge and Bird Sanctuary declared under Proclamation No.557 of 1969. The following year, it was declared as National Park by virtue of RA 6148. In 1992, the National Integrated Protected Areas System Act (RA 7586) came into passage, by which MIBNP was considered as an Initial Component. Areas which have been proclaimed, designated or set aside as national parks, game refuge and wildlife sanctuary, wilderness area, strict nature reserve, watershed, mangrove areas, fish sanctuary, natural and historical landmarks, protected and managed landscape and seascape and those which were identified as virgin forests pursuant to law, presidential decree, presidential proclamation or executive order were considered initial components under RA 7586.

Table RM-6. National Integrated Protected Areas System (NIPAS), Year 2017

Name of particular NIPAS area	(Location) Barangay	Area Covered (ha)	Type of NIPAS	Date proclaimed (mmddyy)	Agency responsible for maintenance	Hazard Susceptibility (H/M/L)							
						Fl	Tc	Eq	Vo	Ln	Ts	Su	Others
Mt. Iglit-Baco National Park	Westernmost part of the municipality/boundary between Oriental and Occidental Mindoro	3,294	National Park	November 11, 1970	DENR	L	H	M	L	H	L	L	

Source: Municipal Environment and Natural Resources Office 2017

There are also locally-declared areas in the municipality through Sangguniang Bayan resolutions or ordinances. These areas which are now being promoted as eco-tourism sites include the Walang Langit Waterfalls, Aagsalin Fish Sanctuary, Sta. Theresa Fish Sanctuary and Tambong Fishery Reserve. Aagsalin Fish Sanctuary which is located in Brgy. Aagsalin is a multi-awarded Marine Protected Area (MPA). It was adjudged as the Best Marine Protected Area in the Philippines during the 2017 Para El Mar Awards held in Iloilo City. The Para El Mar awards, which means “For the Sea”, gives recognition to best practices in the management of marine protected areas. It is organized by the Marine Protected Areas Support Network (MSN) with the support of the University of the Philippines (UP) - Marine Science Institute and in cooperation with the Department of Environment and Natural Resources (DENR) - Coastal and Marine Ecosystems Management Program.

There are other areas in the municipality that need to be declared as protected areas such as the mangrove forests along the coastlines of Gloria and the Twin Pantan Cave in Brgy. Malubay.

Table RM-7. Locally Proclaimed Protected Areas, Year 2017

Name of particular Non-NIPAS area	Type of Non-NIPAS	Legal Basis for establishing the Non-NIPAS AREA	Date proclaimed (mmddyy)	Agency responsible for maintenance	Hazard Susceptibility (H/M/L)							
					Fl	Tc	Eq	Vo	Ln	Ts	Su	Others
Walang Langit Waterfalls	Walang Langit Waterfalls	SB Resolution No. 114	March 10, 2008	LGU-Gloria and DENR	L	H	M	L	H	L	L	
Aagsalin Fish Sanctuary	Aagsalin Fish Sanctuary	SB Ordinance No. 11	September 13, 2011	LGU-Gloria, PAgO	L	M	L	L	L	H	H	
Sta. Theresa Fish Sanctuary	Sta. Theresa Fish Sanctuary	SB Ordinance No. 05	July 7, 2014	LGU-Gloria, PAgO	L	M	L	L	L	H	H	
Tambong Fishery Reserve	Tambong Fishery Reserve	SB Ordinance No. 05	July 7, 2014	LGU-Gloria, PAgO	L	M	L	L	L	H	H	

Source: Municipal Environment and Natural Resources Office 2017

ENVIRONMENTALLY CRITICAL AREAS (ECA)

The municipality of Gloria is home to diverse life. Its ecosystems range from ridge to reef or from mountains down to the sea. Each ecosystem has its share of areas considered as environmentally critical. First is the terrestrial ecosystem which is home to forest species and native plants and with altitude ranging from sea level to the tip of the highest mountain located in the westernmost part of the municipality. This ecosystem includes the beach and mangrove forests, grasslands and other upland and lowland forests and greeneries.

Second, the freshwater ecosystem consists of rivers, streams, creeks and other inland bodies of water which are also habitat to important species. The municipality has two major rivers namely Balete and Banus rivers. Third is the brackish/estuarine ecosystem located along the shoreline and extending seaward. It includes coastal wetlands where fresh water and sea water mix. In eight (8) coastal barangays of Gloria, mangrove and nipa swamps are present. Fourth, marine ecosystem is where seagrasses and coral reefs can be found. The eastern part of Gloria is the municipal waters fronting the Tablas Strait.

The municipality has caves which are considered as special ecosystems. The popular cave in Gloria is the Twin Panton cave which became habitat of swiftlets, “balinsasayaw” in local term, and bats which produce the organic guano. Table RM-10 shows prominent ecologically critical areas in the municipality. No concrete or permanent structures should be constructed in these areas. In the case of the Mangyan communities, permanent structures can be constructed provided these will contribute to the basic needs of the IPs such as Health Centers, Day Care Centers and churches. Provided further that the areas for traditional worships and other indigenous practices will not be altered, critical slopes will be protected and prime forest species will not be affected. Although not declared formally, it is assumed that upon enactment of Proclamation No. 2146 (Proclaiming Certain Areas and Types of Projects as Environmentally Critical and Within the Scope of the Environmental Impact Statement System Established under Presidential Decree No. 1586), these areas as described are considered environmentally critical.

Table RM-10. Environmentally Critical Areas, Year 2017

Name of Environmentally Critical Area (if applicable)	Type of Environmental Critical Area	Date when the area is declared critical	Agency that declared the area critical
Mt. Iglit-Baco National Park	A	December 14, 1981	DENR (Proc. No. 2146)
Pula Watershed	A	December 14, 1981	DENR (Proc. No. 2146)
Bongabong Watershed	A	December 14, 1981	DENR (Proc. No. 2146)
Mangyan Communities	E	December 14, 1981	DENR (Proc. No. 2146)
		October 29, 1997	DENR (Proc. No. 2146)
Twin Panton Cave	C	December 14, 1981	NCIP (IPRA Law)
Mangrove Areas of 8 coastal barangays (Tambong, Kawit, San Antonio, Balete, Sta. Theresa, Guimbonan, Maragooc, Agsalin)	K	December 14, 1981	DENR (Proc. No. 2146)
Agsalin Fish Sanctuary	A	December 14, 1981	DENR (Proc. No. 2146)
Sta. Theresa Fish Sanctuary	A	December 14, 1981	DENR (Proc. No. 2146)
Tambong Fishery Reserve	A	December 14, 1981	DENR (Proc. No. 2146)

Source: Municipal Environment and Natural Resources Office, 2017

ENVIRONMENTALLY CRITICAL PROJECTS (ECP)

Environmentally critical projects are those that have critical environmental impacts like heavy industries, infrastructure projects, resource extractive industries and golf courses. These projects need to submit the environmental impact assessment and apply for Environmental Compliance Certificate (ECC). In the municipality, ECPs are mostly resource extractive industries like quarry and crushing plants, heavy industries like large-scale (cono) ricemills or rice processing centers, gasoline stations, housing subdivisions and tourism establishments like inland and beach resorts (Table RM-11). The ECP owners or operators should comply with the conditions and restrictions stipulated in their ECCs or else, their ECCs would be cancelled.

Table RM-11. Environmentally Critical Projects

Name of the Environmentally Critical Project	Brgy.	Area (ha)	Owner/Developer	Type of Environmentally Critical Project	ECC No.	Development Permit Number	Date when the project was given a permit	Status of Development
Helman Ricemill	Maligaya	3.300	Manuel L. Tan	Heavy Agro-Industry	ECC-4B-076-ORMIN-120-2002			Operational
VT Ricemill	Narra	1.000	Teresita M. Ong	Heavy Agro-Industry	ECC-R4B-1102-0040			Operational
Masilungan Ricemill	G. Antonino		Lorenzo Masilungan Jr.	Heavy Agro-Industry	2016-POA-E-0452-811			Operational
Shell Service Station	Bulaklakan	0.1825	Oscar Valenzuela Jr.	Heavy Industry	ECC-4B-134-ORM-6280-2004			Operational
Emrian Petron Gasoline Station	Maligaya	0.030	Antonino S. Yang	Heavy Industry	ECC-4B-074-ORMI-120-2001			Operational
Flying V Filling Station	Lucio Laurel	0.060	Jimmy S. de Castro	Heavy Industry				Operational
Bali Beach Resort and Spa	Tambong		Ana Maria Concepcion	Infrastructure-Tourism	ECC-R4B-1181-0004			Operational
Villa Imaculada Concepcion Resort	Maligaya		Jose S. Mondoñedo	Infrastructure-Tourism				Operational
Royal Splash Beach Resort	San Antonio		Anthony L. Yap	Infrastructure-Tourism				Operational
Dupong Inland Resort (?)	Kawit			Infrastructure-Tourism				Operational
Prime Megastructures Inc.	Malamig	6.600	Francis Lloyd T. Chua	Resource Extractive Industry-Crushing Plant	ECC-OL-R4B-2017-0104			Under Construction
Tamaraw Rock Enterprises	Malayong		Shernet Sagdullas	Resource Extractive Industry-Crushing Plant	ECC-R4B-1507-0069			Operational
Montalban Concrete and Asphalt Inc.	Manguyang	4.000	Nancy Ong Hsieh	Resource Extractive Industry- Crushing Plant	ECC-R4B-1312-0162			Under Construction
Camilla Bianca Homes	Tambong	1.000	Shirley Chua Phi	Infrastructure-Housing Project				Operational
Municipal Public Market	Maligaya	1.600	Municipal Government of Gloria	Infrastructure-Public Market	ECC-4B-048-ORMIN-6290-2006			Operational
Crisostomo Quarry	Alma Villa	1.578	Carmensita M. Crisostomo	Resource Extractive Industry- Quarry	ECC-R4B-1504-0048			Operational
Leano Quarry	Alma Villa	5.000	Remedios P. Leano	Resource Extractive Industry- Quarry	ECC-OL-R4B-2017-0111			Operational
Balbuena Quarry	Balete	3.616	Maria Luz J. Balbuena	Resource Extractive Industry- Quarry	ECC-OL-R4B-2017-0062			Operational
Yang Quarry	Alma Villa	1.000	Alven M. Yang	Resource Extractive Industry- Quarry	ECC-4B-025-ORMIN-303-99			Operational
Dimalibot Quarry	Malamig	4.9995	Ruben N. Dimalibot	Resource Extractive Industry- Quarry	ECC-4B-025-ORMIN-303-2000			Operational
Blanco Quarry	Narra	0.9105	Isagani F. Blanco	Resource Extractive Industry- Quarry	ECC-NO-4B-112-ORMIN-303-99			Operational
Domanais Quarry	M. Adriatico	3.677	Marcelina Domanais	Resource Extractive Industry- Quarry				Operational
All Coconuts Organics Corp.	Banus	0.060		Heavy Agro-Industry	ECC-R4B-1501-0002			Operational

Source: Municipal Environment and Natural Resources Office, 2017

WETLANDS

Rivers and Creeks

There are two major rivers in the municipality that drain to Tablas Strait - the Balete and Banus Rivers. These rivers are categorized as Class C by the Department of Environment and Natural Resources (DENR). The beneficial use of Class C is for recreational, industrial uses as well as for the propagation and growth of fish and other aquatic resources.

Minor rivers include the Agsalin, Tambong, Malusak, Guimbonan, Malubay, and Papandungin Rivers. These rivers are primarily used for irrigation, livestock watering/drinking and other agricultural activities. Three creeks are located in the municipality, namely the Quinabigan, Tinalunan and Langgang Creeks.

One of the major environmental problems in the municipality is the river siltation. It occurs due to increased surface run-off because of reduced infiltration in the upper catchment areas. Thus, less water emerges from springs during the dry season and the base flow of rivers is reduced. Riverbeds are choked with sediments, increasing the tendency of floods.

There is a need to undertake river protection and management measures to reduce if not totally eliminate the cases of erosion and sedimentation in the municipality. In addition, watershed management study shall be undertaken, in major rivers of Gloria to assess the required management and protection to improve and/or preserve the environmental conditions of the covered area.

Mangroves

Mangroves in the municipality is located in coastal areas of Bulaklakan, Tambong, Kawit, San Antonio, Balete, Sta. Theresa, Guimbonan, Maragooc and Agsalin. It covers an area of approximately 12.26 hectares.

During the mangrove assessment in 2008 by the DENR-CMMD 4-B and MENRO staff in the municipality's 9 coastal areas, twenty-four (24) species of mangroves were identified. Bungalon (*Avicennia marina*), Bakauan lalaki (*Rhizophora apiculata*) and Api-api (*Avicennia officinalis*) are the three most dominant species. Other species present include: Bakauan babae (*Rhizophora mucronata*), Pagatpat (*Sonneratia alba*), Gapas-gapas (*Camptostemon philippinense*), Bakauan Bankau (*Rhizophora stylosa*), Saging-saging (*Aegiceras corniculatum*), Tabigi (*Xylocarpus granatum*), Tui (*Dolicandrone spathacea*), Tualis (*Osbornia octodonta*), Busain (*Bruguiera gymnorhiza*), Tinduk- tinkdukan (*Aegiceras floridum*), Langarai (*Bruguiera parviflora*), Pototan lalaki (*Bruguiera cylindrical*), Piapi (*Avicennia lanata*), Bungalon puti (*Avicennia alba*), Buta-buta (*Excoecaria agalloche*), Bantige (*Pemphis acidula*), Piagau (*Xylocarpus mollucensis*), Alipata, Nigi, Pangkalan, and Buia-lipata. (Note: We could identify the last four of that list by local names only.) Agsalin is the most diverse area with 15 species, followed by Maragooc with 10. The assessment result showed that there were no mangrove areas in excellent condition. They were determined to be in either poor, fair to good condition.

The assessment resulted in the conduct of mangrove rehabilitation activities by various sectors of the municipality such as propagules planting particularly in poor and denuded areas. The municipality has declared a 9-hectare Municipal Mangrove Plantation in Brgy. Balete in 2008 through Sangguniang Bayan Resolution No. 113. At present it is jointly maintained by municipal government through the MENRO and Barangay Balete. More than half of the plantation has been planted with mangrove propagules, mostly *Bakauan Lalaki* and *Bakauan Babae* and is now a productive forest as compared before that only vine plants and a few mangroves can be found in the area. Mangrove species in other coastal areas in the municipality also increased due to rehabilitation and enforcement of laws on mangrove cutting.

Table CO-7. Mangrove habitat assessment, 2008

Barangay	Species Diversity	Ave. Height (m)	Percent Crown Cover (%)	Regeneration Rate	Observations (disturbance, threats, uses, cuttings, garbage, fauna)	Condition
Tambong	8	7.4	7.2	3.0	Fresh cuttings, some trash	Good
Kawit	7	4.6	49.3	1.8	Many cuttings, some trash	Fair
San Antonio	7	6.9	42.4	0.0	-do-	Poor
Balete	4	6.0	0.03	0.2	Lots of debris, trash	Poor
Sta. Theresa	7	5.7	63.5	4.2	Some trash, Some cuttings	Good
Guimbonan	9	6.0	52.7	1.2	Many cuttings	Fair
Maragooc	10	5.8	57.0	0.5	-do-	Fair
Agsalin	15	6.4	64.4	1.2	Some cuttings	Good

Source: Municipal Environment and Natural Resources Office, 2008

In 2014, the Fishery Section under the Municipal Agriculture Office, conducted mangrove habitat assessment in Brgy. Tambong. Table CO-7 shows the assessment data sheet that was used where they analyzed the mangrove seedling, sapling and mature abundance in different sites at Brgy. Tambong.

There is a move to strengthen the protection and rehabilitation of the municipality's mangrove forests through a Municipal Ordinance. It is expected to be enacted and implemented in 2019. It will be spearheaded by the Office of the MENRO with the assistance of DENR, PG-ENRO and Conservation International. Mangroves, like coral reefs, are extremely productive ecosystems. These are home to a large number of marine species like fish, shrimps, crabs and other species which serve as food and source of income for coastal residents. These also serve as nurseries for various fish species. Mangroves help stabilize coastlines and prevent erosions from waves and storms because of its dense root systems. Mangrove forests can also be potential for eco-tourism.

Table CO-7. Sample mangrove assessment data sheet

Data Sheet for Mangrove Assessment

Transect no. : 1

Recorder:

Date: February 17, 2014

Location:

Site: Sitio Palaisdaan

Barangay: Tambong

Municipality: Gloria

Province: Oriental Mindoro

Quadrant no.	Line no.	Species		Seedlings Abundance (%)	Sapling Abundance (%)	Mature Abundance (%)	Remarks
1	1	<i>Avicennia rumphiana</i>	Bungalon/apiapi/miapi	29.9	29.0	14.7	Considered vulnerable, in the IUCN Red List of Threatened Species
		<i>Bruguiera gymnorrhiza</i>	Pototan, busain	0.0	0.0	0.3	Flowering/fruitletting
		<i>Nypa fruticans</i>	Nipa	0.0	0.0	19.9	
		<i>Xylocarpus granatum</i>	Tabigi/Nige	2.5	8.7	9.4	Fruitletting
		<i>Ceriops decandra</i>	Baras-baras	64.9	24.6	35.2	Near threatened-IUCN Red List; flowering stage
		<i>Bruguiera sexangula</i>		2.0	1.4	5.2	
		<i>Rhizophora apiculata</i>	Bakawang lalake	0.0	15.9	3.9	
		<i>Sonneratia alba</i>	Pagatpat	0.8	4.3	7.2	Flowering/fruitletting
		<i>Ceriops tagal</i>		0.0	15.9	1.6	
		<i>Acrostichum speciosum</i>	Palaypay; lagolo; pakupakuan	0.0	0.0	2.3	
		<i>Excoecaria agallocha</i>	Lipata; Buta-buta	0.0	0.0	0.3	

Source: Municipal Agriculture Office-Fishery Section, 2014

Figure RM-3 shows the areas under production and protection forests. Production forest consists of timber production, agro-forests, pasture/grazing land, watershed areas and Community-Based Forest Management (CBFM) areas. National Integrated Protected Areas System (NIPAS) and non-NIPAS areas that need to be conserved and protected belong to protection areas. Total forest land area is 9,026.54 and 32.20% of the total municipal land area.

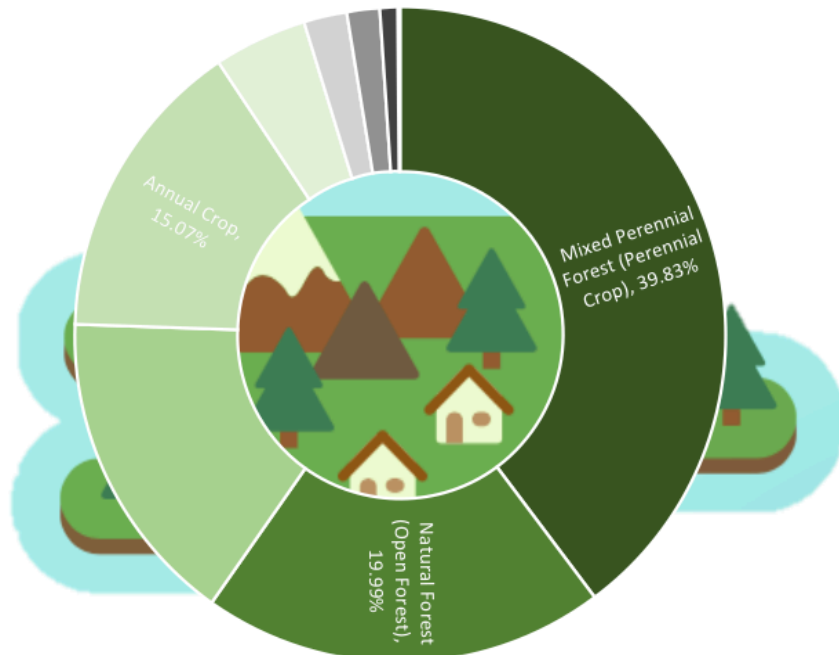
Of the total land cover of the municipality, the mixed perennial forest occupy the largest tract while fishponds occupy the smallest (Figure RM-4). Majority of fishponds in Gloria are backyard fishponds and for personal/family consumption only. Most large fishponds, mostly in coastal areas, are already unutilized or abandoned.

Figure RM-3. Land Classification



Source: Municipal Environment and Natural Resources Office, 2017

Figure RM-4. Land Cover



Source: Municipal Environment and Natural Resources Office, 2017

Solid Waste Management

The Waste Analysis and Characterization Study (WACS) conducted in May 2018 yielded the following results:

- Average per capita waste generation is 0.34 kg. per day
- Of the total solid wastes, 60.92% are biodegradable or can be composted, 24.17% are recyclable, 14.84% are residuals and 0.07% special wastes.

Table SO-18. Solid Waste Generation by Source, Year 2018

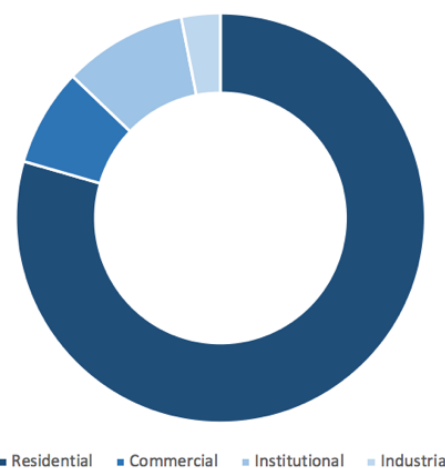
Source	Types of waste	Volume of solid waste generated (tons/day)	Volume of solid waste collected (tons/day)	Disposal methods/ treatment facilities	Disposal site
Domestic	Food waste, paper, cardboard, plastics, textiles, leather, yard waste, wood, glass, metals, ashes and household hazardous waste	12.89	1.50	Collected by Municipal Garbage truck Burned, segregated, composted, recycled, dumped (open/close pit)	Mun. Controlled dumpsite Individual backyards
Commercial	Paper, cardboard, plastics, wood, food waste, glass, metals, special waste and hazardous waste	1.25	1.20	Collected by Municipal garbage truck Burned, segregated, composted, recycled, dumped open/close pit)	Mun. Controlled dumpsite
Industrial	Housekeeping wastes, packaging, food wastes, construction materials, wood, rice hull, ashes and hazardous waste	0.50	0.41	Collected by Municipal garbage truck Burned, segregated, composted, recycled, dumped, (open/close pit)	Mun. Controlled dumpsite
Hospital	Disposable needles, syringes, blades, broken glasses, body fluids, human flesh/parts, medicine bottles, waste from office, kitchen, rooms including bed linen	0.03	0.02	Collected by Municipal garbage truck segregated, composted, recycled, toxic medical wastes are buried and cemented	Mun. Controlled dumpsite
Institutional	Same as commercial	1.53	1.07	Collected by Municipal garbage truck Burned, segregated, composted, recycled, dumped (open/close pit)	Mun. Controlled dumpsite
Others	Same as domestic, commercial and industrial	0.13	0.08	Collected by Municipal garbage truck Burned, segregated, composted, recycled, dumped (open/close pit)	Mun. Controlled dumpsite
TOTAL		16.325	4.28		

Source: Municipal Environment and Natural Resources Office, 2018

Table SO-18a. Daily Waste Generation, Year 2018

Sources of Wastes	Daily Solid Waste Generation
	Waste Generation (Kg/day)
Residential	12,890
Commercial	1,250
Institutional	1,583
Industrial	500
Total	16,223

Source: MENRO, 2018



Source Reduction

The Municipal Government promotes the three Rs (reduce, reuse and recycle) at source. There are municipal ordinances passed by the Sangguniang Bayan to support this.

The Comprehensive Solid Waste Management Ordinance of Gloria (Municipal Ordinance No. 05, series of 2005), as adopted from RA 9003, serves as the legal basis for enforcing the segregation of wastes at source

Despite IECs on waste segregation, many households are still practicing mixed waste disposal. This is still common in barangays and households which are still not covered by municipal collection. Wastes are often burned or disposed of in open pits. However, there are a number of households which are already practicing backyard composting. A few are into vermi-composting.

Table SO–19. Methods of Solid Waste Disposal/Treatment, Year 2014

Methods	Quantity (Total city/municipal solid waste generated)	No. of household served	Agency Responsible
1. Collected and disposed to:			MEO / MENRO / MHO
Open Dump	0	0	
Controlled Dump	3,825.04	1,396	
Sanitary Landfill	0	0	
2. Composting	3,994.56	1,314	
3. Recycling	7,606.41	1,249	
4. Not collected:			
Burned	297,121.95	8,143	
Dumped in individual open pit (not burned)	3,313.03	893	
Dumped in individual closed pit	2,047.92	552	
5. Throwing in the river	1,244.65	341	

Source: Municipal Environment and Natural Resources Office, 2014

Schools are also promoting the use of plastic bottles, used tires, among others, for their gardening and school beautification.

In barangays covered by waste collection, households either bring their wastes in barangay MRF or barangay collectors pick them up from house to house. Since there are schedules for different wastes, residents are required to segregate or else these will not be picked up. Currently, only 11 barangays are served by municipal collection.

The implementation of Ordinance on Plastic (Municipal Ordinance No. 17, series of 2015) helped in reducing plastic wastes in the municipality. The use of eco bags, paper bags, baskets and other environment-friendly packaging or containers is now regularly seen in the area. Although it is not yet considered to be 100% successful, we can say that at least since its implementation in 2017 more people are becoming aware of this policy.

The estimated daily volume of solid wastes generated and disposed by the municipality need to be reduced through various measures, particularly sorting and segregation of compostable, recyclable, special and residual wastes.

All 27 barangays shall be encouraged to adhere to the implementing rules and regulations of the RA 9003 in which each barangay has important role in waste management. Waste segregation at source and collection from every household shall be the mandate of every barangay. A barangay eco-aide,

whose task is to collect segregated waste from each household and manage the barangay MRF, shall be employed by the barangay. Wage of eco-aide can come from garbage fees of waste generators.

Other programs or activities to be carried out to address waste reduction and diversion shall include:

- Religiously enforce “no plastic” ordinance and bring back the use of paper and cloth bags, “bayong”, and other biodegradable packaging or containers.
- Tie up or coordinate with agencies or groups which give trainings on livelihood projects using recyclable and biodegradable materials.
- Business owners shall be required to attend orientation on proper waste management as a requirement for the issuance of their business permit. Giving of tax rebates can be a good reward for compliant businesses.
- Give rewards or incentives to barangays, business establishments and households that dutifully practice proper waste segregation and reduction through different alternative, yet environment-friendly, ways.
- Introduce various waste diversion and reduction schemes such as mixing of residual wastes with cement to produce pavement blocks, doing eco-bricks, turning colorful plastic containers into decors in homes, gardens and into other useful products that can be source of additional income.
- Enact more SWM-related ordinances that would be of help in successful implementation of waste management programs of the municipality.

Other areas to be given important and primary attention are the municipal public market and schools which generate bulks of wastes. Stall owners and other vendors shall be regularly given lectures to ensure that the market is free from litters or eye sores and wastes are properly managed and disposed. Market goers shall be encouraged to bring eco-bags and other eco-friendly containers. The municipality shall also maintain the wastewater treatment facility using the Helophyte Filter System located at the back of market initiated and assisted by the Department of Science and Technology-Oriental Mindoro Field Office.

Administrators of schools shall be encouraged to conduct their own waste reduction campaigns. Examples are projects made up of recyclable materials like candy wrappers, plastic, among others, composting, and other activities or projects that could help reduce the wastes that people dispose.

Areas where collection services are not available or where space is adequate, waste generators shall be encouraged to manage their wastes through the use of pits. Each type of waste shall have its own pit such as pit for compost, for residuals, for special waste that are small or not bulky; provided that the pits are far from bodies of water such as rivers, creeks, canals to avoid water contamination.

Collection

The municipal garbage compactor truck collects wastes every day except during Sunday. It covers nine (9) barangays along the National Highway namely: Bulaklakan, Maligaya, Kawit, Narra, Balete, Lucio Laurel, G. Antonino, Sta. Maria and Banus, one (1) coastal barangay of Tambong and one (1) inland barangay, Agos. The biggest bulk of waste comes from the Municipal Public market located in the Poblacion area.

Each of the eleven barangays has Materials Recovery Facility (MRF) which is also the pickup point or

where the garbage truck collects waste of the barangay.

Residual wastes are collected on Mondays, Wednesdays and Fridays. These wastes are brought to the disposal facility in Brgy. Manguyang. Compostable wastes are collected on Tuesdays, Thursdays and Saturdays. These type of waste are only collected in Poblacion area of the municipality and the public market. These are processed at the public market MRF to become compost.

The sixteen (16) other barangays are not yet included in garbage collection routes. These are the upland, coastal and interior barangays.

Barangays shall be responsible in the collection of waste from every household. Segregated collection shall be strictly implemented. They shall be encouraged to assign eco-aides who will be in charge of collecting segregated wastes and maintenance of barangay MRF. Collected wastes from households shall be transferred to the MRFs which shall also be the collection point for each barangay. The MRF has a compartment for residuals that will be collected by the municipal collectors thrice a week and another compartment for special wastes to be picked up by special waste buyers and treaters every two months depending on the volume.

In a rural setting like the municipality of Gloria, compostable materials like yard and kitchen wastes can be dumped in backyards using compost pits. After several months, these become compost that gives nutrients to backyard plants. For households that do not have backyards like those who rent apartments or rooms, barangays shall have community gardens where they can use these biodegradable wastes turned composts.

The municipality shall increase collection routes for the next 10 years. From its present 11 collection routes using one unit of garbage compactor truck, the municipality shall target another eight barangays in the next three to six years. These are the coastal barangays of Agsalin, Maragooc, Guimbonan, Sta. Theresa and San Antonio. Also to be included are the interior barangays of Malamig, Alma Villa and A. Bonifacio. It purchased another unit of garbage compactor truck for its expansion of covered barangays. The remaining upland barangays like Manguyang, Malayong, Malubay, Mirayan and Buong Lupa and interior barangays of Banutan, M. Adriatico and Papandungin shall be the last priorities as they still have ample spaces for their wastes, provided they shall be taught how to dispose of properly. Since one of the compactors which was purchased in 2011 has always been in need of repair and incurred so much costs due to damaged parts that must be replaced with new ones, the municipality shall acquire a new truck in 2020.

Processing Facilities

The eleven (11) barangays covered by waste collection were provided with mini Materials Recovery Facilities (MRFs) by the municipal government. These also serve as pick up stations for each barangay. MRFs have two compartments for recyclable wastes and one for residuals which are collected during MWF. Compostable wastes are commonly used for community gardens in most barangays. Recyclable wastes are either sold by residents to ambulant buyers or given to collectors who in turn sell them for extra income.

The Municipal compound has also its MRF for use by offices. The bigger MRF with approximately 3.5 X 3.5 meters size is located at the back of the municipal public market. It has three compartments and a bigger area which is used during processing of compostable wastes. A shredder and a rotary composter

are operated by two personnel from MENRO. A bulk of compostable waste they are processing come from the public market. There are two tiangge days in Gloria – Tuesday and Friday. A week's operation can produce more or less 11 sacks of compost. Each sack weighs about 40 kilos. The workers apply Indigenous Micro Organism (IMO) to lessen bad odor of waste and at the same time to hasten its decomposition. Presently, there is no market for the compost because it just started in June 2018. The products are delivered, for the meantime, at the Municipal Farm which promotes organic farming. Vermicomposting is also done in the farm.

Another MRF will be put up in our proposed sanitary landfill in Agos before the end of the year. Fund for the construction of MRF and purchase of one unit shredder was provided by the EMB-Region IVB Office amounting to Five Hundred Thousand Pesos (PhP 500,000.00).

The municipality is planning to purchase machines that will be used for processing of residual wastes into useful products. A Municipal Ecology Center shall be established to house the machines and to serve as venue for eco-waste recycling, marketing and training. Prior to this, Lakbay-Aral to manufacturers using waste materials shall be conducted.

Final Disposal

The controlled disposal facility of the municipality is located in Barangay Manguyang. It is more or less 7 kms. from the National Highway. It is approximately 1.5 kms. from the Mangyan community of Tadyawan at Sitio Mansaring, the nearest residential area from the site.

Collected residual wastes are brought to the site thrice a week. In October 2018, the disposal facility has started implementing its closure plan, phase by phase, and maintaining a temporary residual containment area. Last February 2018, the municipal government has acquired a six-hectare land in Barangay Agos for the establishment of a permanent sanitary landfill. By end of 2018, the municipal government will complete the legal, technical and administrative documents for the establishment of the said facility through the assistance of an external service provider.