

AVERTING TIDES OF CRISES

THROUGH ZERO WASTE



ZERO WASTE CITIES ASIA SERIES

Siquijor, Philippines

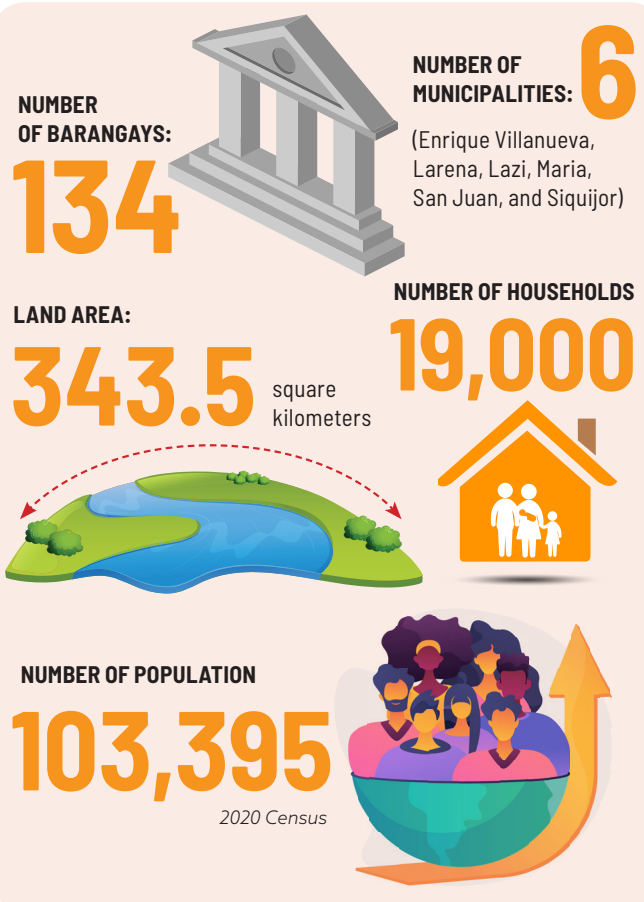


Coastal MRF

Known for its association with witchcraft, folklore, and mysticism, the island province of Siquijor has since redefined its image on the national stage. In 2022, GAIA Asia Pacific and Mother Earth Foundation named it as the Philippines' first Zero Waste island province—an achievement that positions Siquijor as a model for sustainable development and Zero Waste practices in island communities.

Located in the Central Visayas region of the Philippines, the third smallest province in the country is blessed with a breathtaking 102-kilometer long coastline, refreshing waterfalls, and stalactite caves. Located at a crossroads for many migratory species, its waters are teeming with abundant marine life and thriving coral reefs. The island hosts 20 marine protected areas (MPAs)—zones where human activities are regulated to protect marine ecosystems and allow them to thrive.

Before the COVID-19 pandemic, annual tourist arrivals stood at 85,713 for foreign travelers and 82,653 for domestic visitors.¹ Tourism is the driver for the huge service economy in the province. From 2018-2020, the service sector contributed 70% of the province's gross domestic product.² Tourism was practically non-existent during the lockdown period, but it began to pick up in 2021 with 9,017 arrivals.³ In 2022, nearly 100,000 tourists visited the island — even higher than the pre-pandemic numbers.⁴ By 2023, the number of annual visitors exploded to 169,225.⁵



¹ <https://siquijorprovince.com/about-siquijor/>

² Philippine Statistics Authority. December 3, 2021. <http://rso07.psa.gov.ph/article/siquijor%E2%80%99s-economy-mainly-driven-services-2018-2020>

³ Regional Travelers 2021. http://tourism.gov.ph/Tourism_demand/02102023/RegionalTravelers2021.pdf

⁴ Regional Travelers 2022. http://tourism.gov.ph/Tourism_demand/06072023/RegionalTravelers2022.pdf

⁵ Regional Travelers 2023. http://tourism.gov.ph/files/2024/tourism_demand/07/07-11/RegionalTravelers/RegionalTravelers2023.pdf

Tourism poses opportunities but also presents enormous challenges for island destinations without proper solid waste management systems. Local entrepreneurs – from small roadside eateries to business establishments hoping to capitalize on tourism – used to heavily rely on plastic packaging to sell their goods. Roads and public spaces were strewn with single-use plastic and other disposable items. Moreover, households were not segregating their waste and there was no regular waste collection. The province's disposal site, designed to be a landfill for residual waste or those considered as non-compostable and non-recyclable such as napkins, disposable diapers, worn-out rugs, ceramics, and plastic-lined cartons, has been receiving mixed waste and is now overcapacity. Republic Act (RA) 9003 or the Ecological Solid Waste Management Act of 2000 requires segregation of solid waste into compostable, reusable, and recyclable and only residual waste is allowed for final disposal in landfills.

Without waste segregation, the island's landfill was full long before it should have been, and the province had to look for another site for a landfill that will take in only residuals. Unfortunately, the province has yet to find a suitable location. The island is made of limestone with numerous caves, and underneath are bodies of water which could be contaminated with the establishment of another landfill. Without a new landfill and without drastic waste reduction and waste segregation measures, waste disposal was posed to become a bigger environmental issue.

STAGE 1. LAYING THE GROUNDWORK FOR ZERO WASTE

Things began to change in 2017 when the provincial government started implementing a solid waste management program, as mandated by the ESWM Program Ordinance No. 014-2017, authored by Engr. Cle Bern Paglinawan. At the time, Engr. Paglinawan was a member of the Sangguniang Bayan of the municipality of Larena and president of the League of Councilors. The provincial ordinance mandates at-source waste segregation and regular segregated waste collection.

In 2018, Engr. Paglinawan and Geoffrey Pecot, also a staff of the provincial government, attended the Zero Waste Academy co-implemented by GAIA, Mother Earth Foundation (MEF), and War on Waste-Break Free From Plastic-Negros



Waste Assessment and Brand Audit (WABA)

Oriental (WoW-BFFP-NegOr) in nearby Dumaguete City. Their participation in the Academy proved pivotal to the direction of waste management on the island. Inspired by the lessons he learned from participating in the course, Engr. Paglinawan moved to make Zero Waste a priority program of the province. It was around this time that Boracay, another Philippine island popular among local and foreign tourists, was closed off to visitors for six months for rehabilitation due to poor solid waste and wastewater management.⁶

For island economies reliant on tourist arrivals, such closure could mean economic crisis. Government leaders in Siquijor knew they had to do something if they did not want the same thing to happen to them.

"We started implementing Zero Waste to preserve the province and ensure that tourism, one of our main sources of livelihood, is protected," Engr. Paglinawan said.

Thus, in 2019, the province partnered with MEF for the implementation of the Ecological Solid Waste Management (ESWM) program for the whole island.

That same year, the province passed another policy, the Plastic Ordinance No. 2019-120⁷ which regulates and prohibits single-use plastic bags and the use of styrofoam and other disposable containers for food and drinks, while



⁶ Aljazeera. Philippines to shut down tourist island Boracay for six months. <https://www.aljazeera.com/economy/2018/4/5/philippines-to-shut-down-tourist-island-boracay-for-six-months>

⁷ <https://www.scribd.com/document/635975668/1647437615836-Siquijor-Provincial-ordinance-no-005-2019>



Constructing a materials recovery facility

CHALLENGING IMPLEMENTATION

The goal of the partnership was ambitious: to make the entire island — all of its six municipalities, 134 barangays, and 19,000 households — become Zero Waste.

When MEF started the Zero Waste project in Siquijor, the province was in the initial stages of implementing a waste management program based on the ordinance the province had recently passed. Three-quarters of the barangays (100 of the 134) already had a drop-off collection, but there was no regular waste collection system in place in most parts of the province. Only the downtown areas and households along the roads were covered by regular garbage collection. Far-flung areas and uphill communities relied on merchants (nangangalakal) for the disposal of their waste, even though the practice was illegal.

Moreover, most households were just learning about waste segregation. The compliance rate to the waste segregation policy was very low at 10%-20%. All types of waste (garden wastes, food waste, and low-value recyclable materials) were ending up in the landfill.

Even at the municipal level, the capacity to implement regular collection and waste management was weak. Budget allocation for a comprehensive waste management program that would mobilize not only collectors but also environmental police was limited, if not non-existent. The province was focused on strengthening tourism as its lifeblood but overlooked the very thing that could sustain it: the environment.

There was also a lack of data on waste generation and reduction rates, and limited capacity to operate and sustain their own waste management systems.

MODIFYING SOLID WASTE MANAGEMENT

As the community Zero Waste program with MEF started, the province expanded its plastic-free ordinance to include ambiguous materials such as “oxo-degradable” and “oxo-biodegradable” plastic bags, styrofoam, and other disposable plastic containers among the banned materials.

Moreover, the province mandated the construction of a materials recovery facility (MRF) in every barangay and enforced at-source waste segregation as required by RA 9003. Collected waste is brought to the MRFs where biodegradable waste is composted, recyclable waste is

temporarily stored until they had enough volume to sell to the local junk shops, and residual waste is temporarily kept until the city collects them to bring them to the residual containment area, formerly dump site.

At the LGU level, the municipalities strengthened the enforcement of their ordinances. They created a Zero Waste Task Force whose mandate was to enforce the ordinances. The task force issued citation tickets to violators. For a first offence, violators are required to attend an orientation at the LGU. Succeeding violations mean penalties ranging from PHP1,000 to PHP5,000 (USD18 to USD91).

To understand the province’s existing waste management system and the broader issues involved, MEF conducted baselining activities such as interviews with local government officials and randomly selected households, and waste assessment and brand audits (WABA) to gather waste generation data.

The WABA results showed that more than half of the municipal waste generated in the province was biodegradable (56.2%). Nearly a quarter of the waste generated (22%) was recyclable. The rest were useless and even hazardous discards: residual (e.g., plastic bags, sachets, candy wrappers), 11.4%; special residual (e.g., used diapers and sanitary napkins), 8.3%; and hazardous (e.g., used light bulbs and battery), 1.9%.

WABA findings also showed that per capita waste generation was 0.23 kilogram per day. This information was crucial in the design and size of the barangay MRFs and the frequency of collection.



Waste collection

Through MEF's assistance, barangays and municipalities drafted their own SWM ordinances, the main points of which were adopted from the provincial ordinance, with modifications to make their own ordinance more responsive to the needs of the barangay/municipality.

Unfortunately, while the implementation of the program was still in its initial stages, the COVID-19 pandemic reached the province, causing major hurdles in pushing forward with the program implementation. Face-to-face activities were prohibited, thus the house-to-house information, education and communication (IEC) campaign, a crucial step in the successful implementation of the program, had to be stopped.

To ensure that the households still received the information they needed, MEF designed other means of reaching out to the communities. They guested in local radio stations, providing timely updates and reminders about the new ordinances and waste management systems being implemented in the province.

They also used the bandillo system, wherein a vehicle equipped with loudspeakers went around the community to broadcast the same announcements and reminders to ensure that they reached as many households as possible.

In addition, the Zero Waste Siquijor Facebook page was created to regularly post community activities and important announcements, and update and connect the residents for collaborative initiatives.

The door-to-door segregated waste collection was likewise halted as part of the health protocol at the height of the COVID-19 pandemic, forcing MEF to design a different collection system. Instead of waste collectors going door-to-door, designated areas were identified for households to temporarily drop off their waste on schedule to limit physical contact, thus minimizing the spread of the COVID-19 virus. The temporary drop-off points were monitored to ensure compliance.

Waste collectors picked up trash from the drop-off points and brought it to the barangay MRF.

With the changes in the collection system, the compliance rate for waste collection stood at 65% on average from barangays, with compliance rates slightly higher in communities that were recipients of the house-to-house IEC. The new waste collection system also addressed the problem with collection in far-flung areas, since households had to bring their waste to the drop off points.

Fortunately, the lockdowns started to ease up in the latter part of 2021. MEF took advantage of this and started doing door-to-door IEC to speak with the households and directly respond to questions they may have. They likewise started doing door-to-door segregated waste collection.

By the end of the stage 1 of program implementation in 2022, 104 out of the 134 barangays were already implementing an ESWM program. About 70 barangays already had their own functional MRFs and 30 more were being constructed.

With the shift from online and bandillo IEC to door-to-door, more households were engaged, which translated to 68% compliance rate to waste segregation and 57% waste diversion rate.





In public markets in Siquijor, buyers bring their own reusable bags.

ENABLERS OF CHANGE

Despite the challenges and limitations brought about by the pandemic, the program has been successful in some municipalities, especially the early adopters. Besides modification of the existing waste management ordinances, two important contributors in the success of the program were the people — the provincial leadership for their strong commitment to enforce the program and members of the community who stepped up to champion Zero Waste.

Police Senior Superintendent Enrique Belciña, head of Siquijor's Zero Waste Task Force, played a major role in the success of the implementation of Zero Waste. The Task Force is credited for the high province's compliance rate, especially of the capital.

The municipal environment and natural resources officers (MENRO) and the village leaders' steadfast ownership of the program were also critical in the successful implementation. In the villages that have been cited by the province for their outstanding program implementation, village officials did not limit themselves to making ordinances and strategic plans. They were also hands-on in program implementation — involved in the construction and even in the upkeep of their MRFs.

It's noteworthy that local vendors, residents, and visitors have started becoming Zero Waste practitioners. In the province's capital, restaurants no longer serve food in single-use plastic containers and are encouraging their customers to bring their own containers when buying takeout. Customers bringing containers when going to restaurants and eateries to buy take-outs have become

a common sight. This also happens in markets and some groceries — the buyers either bring their own reusable bags or baskets, or just hold their purchase with their bare hands, especially if they live close by.



Baselining

STAGE 2. PROGRAM STRENGTHENING

As the province continued to take ownership of the program implementation, MEF partnered with Blue Pacific Action Fund (BPAF) to further strengthen the impact of their initial interventions on the island and prevent household waste from leaking into the ocean, by involving more stakeholders — the youth, waste workers, and members of the Bantay Dagat (sea patrol). Started in May 2023, the interventions in this partnership focused on conducting a combination of more studies in the form of WABA and capacity building activities.

ENGAGING AND NURTURING THE YOUTH

Zero Waste Schools. Fully understanding the power of educational institutions in behavioral change, the project gathered together 166 students and teachers from various schools in Siquijor to inspire them to forge partnerships and lead the charge against marine litter while promoting Zero Waste solutions. This initiative aimed to enhance the capacity of schools through comprehensive training and information campaigns.

Participants delved into key topics such as the Zero Waste Schools concept and the Ecological Solid Waste Management Scorecard and Planning. To further bolster their efforts, educational materials were developed and distributed, raising awareness among all attendees.

By the end of the event, a remarkable commitment emerged: students and teachers from 83 schools pledged to implement Zero Waste programs to improve their Ecological Solid Waste Management Scorecards. The Department of Education also threw its support behind the Zero Waste Schools initiative, promising to regularly monitor related school activities.

One of the most significant outcomes of this event was the creation of a network of schools and communities. This network will facilitate the exchange of information and best practices, ensuring that the momentum for Zero Waste solutions continues to grow.



Zero Waste Youth Camp. Envisioned as an incubation program for budding youth leaders, this three-day boot camp targeted the participation of members of the Youth for Environment in Schools Organization (YES-O). Fifty enthusiastic youth leaders were invited to immerse themselves in Zero Waste concepts and marine litter education.





Throughout the camp, participants engaged in dynamic sessions designed to equip them with the knowledge and skills needed to champion Zero Waste initiatives. By the end of the program, each participant was expected to develop an initial plan to support Zero Waste programs and raise awareness about marine litter in their communities.

A standout achievement of the event is the formation of the Zero Waste Youth Negros Oriental. This group has since been actively promoting a Zero Waste lifestyle, participating in campaigns against false solutions, and raising awareness of critical waste-related issues such as waste segregation and the use of reusable items.

MORE HANDS ON DECK: WASTE WORKERS AND BANTAY DAGAT PERSONNEL

Waste Warrior Marine Litter Police Training. With 20 Marine Protected Areas (MPAs) in Siquijor, involving the Bantay Dagat volunteers in the Zero Waste Program was a strategic move. Their involvement extended the program to areas that were otherwise inaccessible to typical locals. The Bantay Dagat (sea patrol) is a community-based volunteer organization that collaborates with local and national government officials to protect the marine environment, playing a crucial role in preventing waste from entering the ocean. They patrol against illegal fishing, assist in rescue operations, and — under the Zero Waste program — lead cleanup drives and WABAs.

In February 2024, MEF conducted a one-day training for waste workers and environmental enforcers, including the Bantay Dagat volunteers and village and local government officials. A total of 33 participants joined the training. The training aimed to equip participants with the knowledge and

skills to effectively carry out their duties and responsibilities in accordance with RA 9003 and foster strong relationships among the Marine Litter Police. Topics included the key points of RA 9003 and waste management action planning.

The training led to the establishment of the Waste Workers Association in Siquijor. Currently, the association has 42 members and has already elected its interim officers. Mr. Addie Sarupan serves as the President, while Mr. Glenn Tumala is the Vice President. The group is in the process of drafting its constitution and has been recognized by the Vice Governor of the Province of Siquijor. The group is also a member of the Philippine National Waste Workers Alliance.

Zero Waste Academy. In June 2024, GAIA and MEF conducted the “Implementing Zero Waste Program to Cities and Communities” track of the Zero Waste Academy. This immersive training program is designed to empower participants to lead initiatives in their communities that divert waste from landfills, protect land and marine ecosystems, and enhance solid waste management policies. The workshop featured a mix of lectures, practical exercises, and writing and planning sessions, tailored for project implementers and key community stakeholders. This year’s iteration of ZWA focused on the unique challenges of waste management in island communities and included a session on the concept of a Zero Waste island.

Multiple WABAs. In usual Zero Waste program implementation, MEF conducts only one type of WABA — household WABA — and only at the start of project implementation as part of their baselining. For the partnership with BPAF, they also conducted WABAs after stage 1 of their program implementation, and not just once but four times in various contexts: household WABA in two seasons (wet and dry); and coastal WABA, also in two seasons. This was done to have a clearer understanding



of the waste at the point of at the source and when the waste has already been leaked into the environment, and whether seasonal variation also plays a role.

The waste assessment in Siquijor barangays highlighted notable seasonal variations in waste profiles between the dry and wet seasons. During the dry season, household waste is predominantly compostable (67.71%), with recyclable and residual wastes coming in second and third at 12.04% and 6.58%, respectively. In contrast, the wet season sees an increase in compostable household waste (74.33%) and a higher generation rate of residual waste in coastal areas (71.29%). Recyclable waste decreases in both household and coastal areas, indicating a shift in waste composition.

Per capita and per household waste generation rates are higher in the wet season, with an average daily waste generation of 0.18 kg per person and 0.82 kg per household

According to Praxedes Rivera, Program Officer at MEF, the WABA data shows a clear way forward for the program implementers:

1. **Expand the organics management program.** Beyond composting, introduce various community organics management initiatives, especially given the high percentage of compostable waste in households during both seasons.
2. **Improve residual waste management.** Strict enforcement of the island's plastic ordinance will help lessen the residual waste being disposed of in their residual containment areas. Moreover, targeted interventions are needed to address the significant increase in residual waste in coastal areas especially during the wet season.

3. **Mainstream reuse and refill systems.** With the logistical challenge of recyclables, reuse and refill initiatives will enable the community to further reduce its waste. Restaurants, commercial establishments, and resorts can invest in this kind of circular initiatives, and later save on their operational expenses.
4. **Boost recycling efforts.** Utilize results from WABA and assess how the identified recyclables can be given better market value. Maintain and improve recycling programs to manage the substantial amount of recyclable waste in both households and coastal areas, despite seasonal fluctuations.
5. **Enhance Hazardous Waste Handling.** Establish robust hazardous waste collection and disposal systems to prevent environmental contamination, given the presence of hazardous waste in both seasons.
6. **Seasonal Waste Management Plans.** Develop and implement strategies to address the fluctuations in waste generation and composition, ensuring efficient waste handling throughout the year.
7. **Intensive IEC. Develop IEC material specifically for tourists.** Infomercials are a very helpful IEC material. These could be played to TV stations, radio stations, and repeatedly played on tourist spots and establishments where there are tourists (i.e. restaurants; resorts; ports, etc).

"By addressing these key areas, the barangays can develop an even more sustainable waste management system that effectively manages the increased waste production and varying waste profiles seen in the dry and wet seasons," she added.



Youth camp

WAYS FORWARD

While their interventions for the 2023-2024 project did not involve door-to-door IEC as it focused only on capacity building of other stakeholders, MEF is pleased to find out that the province was able to sustain its Zero Waste program implementation. Between 2022 and 2024, additional MRFs and eco-sheds were constructed, bringing the total number of MRFs to 89; and eco-sheds or containment area for recyclables, increased to 30.

Data from various municipal environment and natural resources offices (MENRO) show that as of June 2024, the average waste diversion is up to 60% from 57% in 2022.

There was a slight backsliding in compliance in waste segregation. It was at 68% in 2022 but was only at 65% as of June 2024. According to Rivera, the leadership transition after the elections is a factor, citing that backsliding post-elections is common in their project sites.

"After the elections, the communities need to start over especially if a lot of the newly elected leaders are new," she said.

In starting over, the whole menu of recommendations outlined above based on the results of the WABAs will need to be implemented.

In addition, engaging more sectors is likewise a clear way forward, as indicated by the

2020

Start of house-to-house IEC

Start of the COVID-19 pandemic

Imposition of mobility restrictions and other health protocols

2019

Start of engagement with Mother Earth Foundation

Creation of Zero Waste Task Force

Passage of the Plastic Ordinance No. 2019-120 or the Plastic-Free Bill Amending Ordinance No. 2018-185

2018

Passage of Ordinance No. 2018-185 Regulating the Use of Single-Use Plastic Bags

2017

Passage of ESWM Ordinance No. 014-2017



positive impact of having multiple Zero Waste champions in the province.

Taking note of the importance of collaboration, Raphaello Villavicencio, Deputy Director for Programs at MEF, suggested that this could be a second phase of a stage 2 program implementation.

"During the first phase of Stage 2 implementation, we collaborated with various land and marine groups in order to mitigate the impacts of plastic and marine pollution. If we can have a second phase, MEF can support the momentum and help transition those trained in the first phase to becoming implementers and enforcers, as well as monitor the phase 1 activities and impact. Formal engagement of additional key stakeholders like the tourism sector, resort owners, and seaports will make the program more holistic," he added.

He likewise underscored that the establishment and strict enforcement of more enabling key environmental policies in Siquijor [and Apo Island] can be a game-changer. "These will enable them to institutionalize and sustain the impacts of the project," he said.

2021

f
d restrictions

tion of
o-house IEC

2022

Recognition of Siquijor as the Philippines' first Zero Waste island province by GAIA Asia Pacific and Mother Earth Foundation

2023

Start of Program Strengthening with funding support from BPAF

Conduct of youth camp

Conduct of wet season WABAs

Conduct of dry season WABAs

2024

Conduct of Zero Waste Academy





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Unit 330 Eagle Court Condominium, 26 Matalino St.,
Barangay Central, Quezon City, Philippines
www.no-burn.org | +63 2 436-4733

Facebook: @GAIAAsiaPacific | **Instagram:** @zerowasteasia

Authors: SHERMA BENOSA AND MARLET SALAZAR

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