

**Reducing Marine Plastics in the East Asian Seas Region Project**  
funded by the  
**Ministry of Oceans and Fisheries (MOF) of the Republic of Korea**

**PROPOSED PILOT PROJECT IN  
CALBAYOG, SAMAR**



**Ocean Shield: Blocking Plastics with Trash Traps,  
Baling Solutions, and Green Transport**

## PROJECT PROPOSAL SUMMARY

<b>PROJECT TITLE</b>	<b>Ocean Shield: Blocking Plastics with Trash Traps, Baling Solutions, and Green Transport</b>	
<b>SUBMITTED BY</b>	Calbayog City	November 2024

<b>Location</b>	Brgys. Aguit-itan, Central and Dinagan, Calbayog City
<b>Background</b>	The city of Calbayog has undertaken various initiatives to enhance its waste management system. While waste collection services have improved in many barangays, significant gaps remain in areas without coverage, which continue to be major contributors to improper waste disposal. Households in these underserved areas frequently resort to dumping trash on open roads, leading to waste accumulation in waterways. Although the city operates landfills, rapid population growth has strained its capacity. To address these challenges, the city can focus on proactive measures such as installing trash traps in tributaries and bolstering waste collection efforts through baling technologies and eco-friendly transport solutions. These initiatives would play a crucial role in curbing ocean-bound plastics and fostering a cleaner environment.
<b>Objectives</b>	To significantly reduce the amount of waste entering local waterways and improve waste collection and processing. <ul style="list-style-type: none"> <li>• Installation of trash traps with units of flatboat</li> <li>• Acquisition of (2) small vehicles - CPCV</li> <li>• Purchase of a Baling machine</li> </ul>
<b>Resources</b>	The ODA will provide the Installation of trash traps and the acquisition and purchase of flatboats, small-scale vehicles (CPCV—Calbayog Plastic Collection Vehicle), and baling machines. The LGU of Calbayog will provide the maintenance, operations, and all other supporting equipment. The LGU is ready to allot Php 6.9 M annually to operate and support the project activities.
<b>Budgetary Requirement</b>	The pilot project is estimated to be around Php 4.1M (including the installation and procurement of equipment)
<b>Timeline</b>	The project intervention is anticipated to be implemented and installed, including the conduct of a feasibility study, within two years.
<b>Monitoring and Reporting</b>	As one of the Project Sites of the ODA-PEMSEA project in the Philippines on Reducing Marine Plastics in the East Asian Seas Region, regular reporting and updates shall be provided to the Project Team, the Funding Agency and the Philippine Government.

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## I. INTRODUCTION

Calbayog City, located in Samar in the Eastern Visayas region (Region VIII), is a coastal city with a coastline stretching approximately 54.182 km along the Samar Sea. It encompasses 157 barangays, 33 of which are coastal. Calbayog is a first-income class city and known to be the most populous city in Samar. Calbayog is a regular port of call for interisland ships since it is less subject to storms than the northern coast. It is a leading exporter of a number of goods for northern Samar Island

Despite its economic and geographic advantages, Calbayog City grapples with significant marine plastic pollution. High consumption of single-use plastics, improper waste disposal practices, and limited recycling facilities exacerbate the problem. A lack of public awareness about the impacts of plastic pollution hampers effective policy implementation and compliance with waste segregation initiatives. The city's waste diversion efforts are further constrained by the presence of only a limited number of junk shops along the coastline, limiting the capacity to redirect recyclable materials from the environment.

In combatting marine plastic pollution, a multi-pronged approach is essential. This includes strengthening waste management infrastructure, promoting community engagement to raise awareness and encourage compliance with local policies, and contributing to broader global initiatives to reduce plastic production and consumption.

This proposed pilot project for Calbayog shall form part of the Official Development Assistance (ODA) project for the Philippines, by the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) on Reducing Marine Plastics in the East Asian Seas Region.

## II. PROJECT DESCRIPTION

### A. Project Background

Despite the government's efforts to reduce waste and enhance waste management, garbage continues to enter the ocean and local water bodies in Calbayog. Aside from the ones mentioned above, this can also be attributed to the persistent dumping of waste beneath homes, especially in highly congested areas.

While the city has landfills, the growing population has led to an increase in waste, straining existing facilities. In response, the Local Government Unit (LGU) of Calbayog is proposing a project that is an encompassing approach that aims to address the growing issue of waste management and plastic pollution, first by installing trash traps along four strategic locations along Calbayog River. Due to the lack of comprehensive source-to-sea assessments to accurately identify the key sources, pathways, and leakage points of plastic waste into waterways, the traps will act as

preventive measures and a proactive approach to preventing OBPs. Secondly, the acquisition of green vehicles for collection and a baler machine to optimize waste processing. This approach offers an innovative and sustainable solution to mitigate environmental harm, enhance the LGU’s recycling efforts, and improve waste handling efficiency and support Calbayog City’s long-term sustainability and economic competitiveness.

*1. Issued Ordinances Related to Waste Management*

The city of Calbayog has issued several ordinances aimed at improving waste management and the environment in general. However, despite these measures, solid waste management in the city remains problematic, highlighting the need for additional initiatives to address persistent challenges effectively, especially in dealing with plastic waste.

<b>Ordinances</b>	<b>Short Title</b>	<b>Main Provision</b>
City Ordinance No. 2011-33-064	Calbayog City Ecological Solid Waste Management Ordinance	The provisions focus on sustainable waste management through mandatory segregation, eco-friendly practices, and bans on non-biodegradable materials. They emphasize materials recovery, proper disposal, public education, and cleanliness, with penalties for violations to ensure compliance and environmental protection.
IRR of City Ordinance No. 2011—33-064	Implementing Rules and Regulations	The Rules are promulgated for the purpose of prescribing procedures and guidelines for the implementation of the Calbayog City ESWM in order to facilitate compliance and achieve its objectives.
City Ordinance No. 2010-26-067 or	An Ordinance Prohibiting the Construction of Toilets and Pig Pens along River Banks	The program is designed to safeguard the environment, public health, and community welfare. Funds are allocated to ensure implementation and sustainability. Penalties are imposed for violations of the rules or guidelines associated with the program.
City Ordinance No. 2007-10-047	Ordinance for Junkshop Owners	The ordinance requires Junkshops Owners to maintain a journal/logbook indicating their daily transactions/activities

*2. Available Facilities for Waste Management*

Included in the waste management efforts of Calbayog is the acquisition of equipment including various functional units (10-wheelers, 6-wheelers, etc.) stationed strategically for operational

efficiency. The Sanitary Landfill is also equipped with essential heavy equipment including a Wheel Loader, excavators, bulldozers, and a Road Roller, all in functional condition. Waste collection in the city has significantly improved since 2012 due to the availability of these vehicles and regularly scheduled pick up of waste. Waste processing equipment comprises two functional waste composters installed at the Market MRF in Brgy. Bagacay and the Pilot MRF in Brgy. Payahan, along with a shredding machine installed at the Pilot MRF.

The city's sanitary landfill in Brgy. Dinagan, compliant with R.A. 9003, serves as the final depository and treatment site for residual and special wastes. Special wastes are collected separately, treated in designated cells, and regulated by the City Solid Waste Management Office (CSWMO). The facility is managed by city employees and job order workers who oversee operations, including waste dumping and facility maintenance.

The city also operates multiple Materials Recovery Facilities (MRFs). A Central MRF in Brgy. Dinagan produces 100% recycled and upcycled products, while the Pilot MRF in Brgy. Payahan, donated by the Japan International Cooperation Agency (JICA), serves as an educational center for recycling, upcycling, and composting biodegradable waste. The facility includes a shredding machine, and a rotating composter, and functions as a redemption center employing a barter scheme for exchanging plastics for organic fertilizers. The Market MRF in Brgy. Bagacay focuses on waste segregation from the public market and utilizes donated equipment to process biodegradable waste into soil enhancers. Additionally, it provides training and displays recycled and upcycled products.

Barangay-level MRFs, totaling 147, are mandated in each barangay to support segregation, recycling, upcycling, and composting. These facilities are operated by Barangay Solid Waste Management Officers, officials, and local organizations, ensuring the storage, processing, and transformation of recyclable materials. It is said that 136 MRFs are fully functional either as temporary storage or for direct selling of recyclables. The city also has partnered with junkshops that support waste recovery and recycling, complementing the city's efforts in sustainable waste management.

### 3. Existing SWM Programs/Projects

Calbayog City has implemented various plastic waste management programs to reduce and recycle plastic waste, diverting significant amounts annually. Through the Segregated Collection Program, recyclable plastics are recovered and sold to 12 junkshops, while the Recycling and Upcycling Program diverts approximately 1,738.64 kg of plastic waste daily, amounting to 634,603.60 kg annually. Functional Barangay Materials Recovery Facilities (BMRFs) contribute 755 kg/day or 275,575 kg annually, while smaller facilities like the Pilot MRF (1,460 kg/year), Market MRF (1,095 kg/year), and Central MRF (18,250 kg/year) play supportive roles.

Innovative initiatives include the Trashion Show and Waste Minimization Fairs, which divert 3,000 kg/year, and the Fluvial Parade, utilizing 1,000 kg of recycled/upcycled plastics per event. The City River Clean-Up Program that is held periodically and with an average collection of 2.2 T/year,

while the PET Bottle Bank (PBB) Redemption Program employs a barter scheme with an estimated recovery of 1.7T/year by exchanging plastics for organic fertilizers. Policies like "No to Single-Use Plastics" and the weekly regular Clean-Up Drive Program, involving 100 barangays, significantly reduce plastic waste, with the latter diverting 295.99T annually. These efforts collectively underscore the city's commitment to sustainable plastic waste management.

**4. Existing Partnerships**

Several organizations and boards are involved in supporting and maintaining solid waste management (SWM) initiatives in Calbayog City. The City Solid Waste Management Board, reorganized on January 8, 2023, provides policy direction and recommendations, while the Barangay Solid Waste Management Coordinators’ Federation and Barangay SWM Committees, both reorganized in 2024, actively drive project implementation, including plastic collection and recovery through barangay-level Material Recovery Facilities.

Other key partners include the Philippine Coast Guard and the Philippine Ports Authority, which contribute to project implementation and recycling/upcycling activities. Educational institutions like San Policarpo National High School’s Yes-O program and Christ the King College’s NSTP also participate in clean-up drives, emphasizing community involvement in maintaining sustainable waste management practices.

**B. The Proposed Pilot Project**

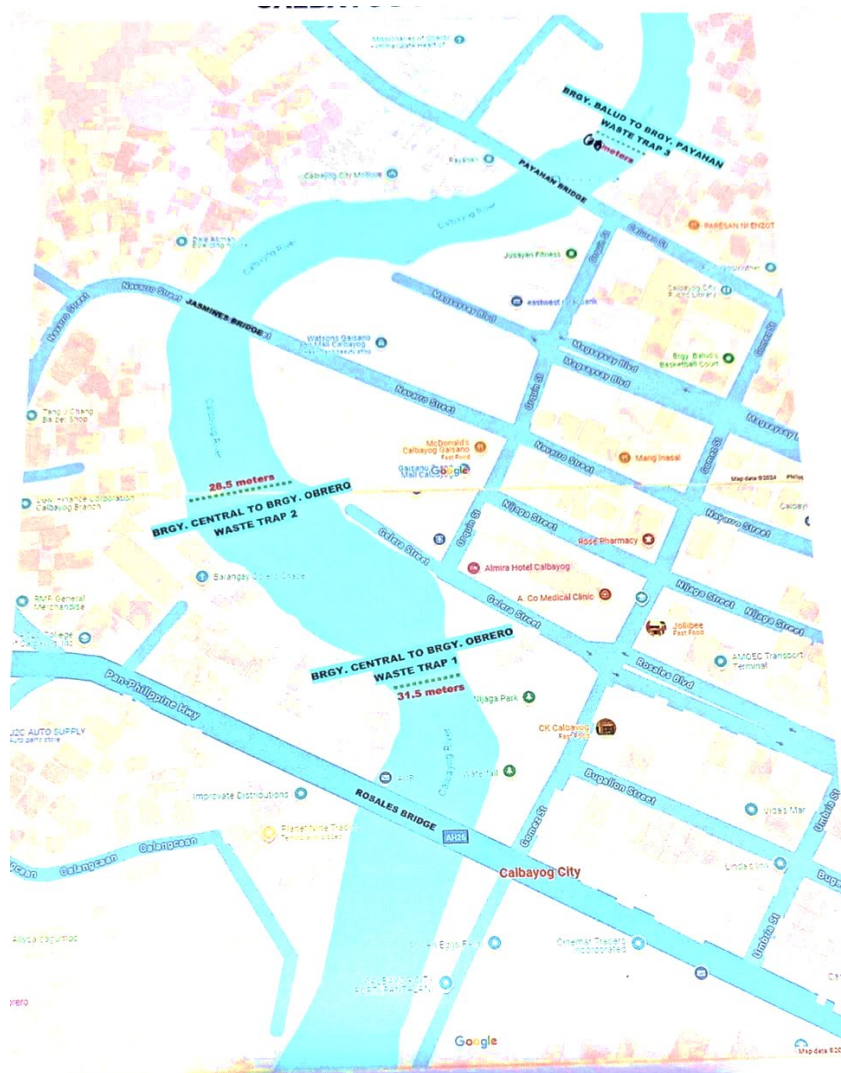
The proposed project aims to enhance waste management efficiency and environmental protection by implementing three key components - Installation of trash traps in waterways, paired with boats for waste collection. Purchase of a baling machine to compress and compact collected waste, optimizing storage space in the Material Recovery Facilities (MRFs) as well as in the Sanitary Landfill Facility (SLF). Lastly, small vehicles will be purchased to improve waste collection in hard-to-reach areas that are inaccessible to standard garbage trucks, ensuring comprehensive coverage and cleaner barangays.

**1. Budgetary Requirement: PhP 4.1M**

<ul style="list-style-type: none"> <li>Trash Booms: PhP (120 m in total @ PhP 21,240/meter)</li> </ul>	PhP 2,548,800
<ul style="list-style-type: none"> <li>Baling Machine (1 unit)</li> </ul>	PhP 1,000,000
<ul style="list-style-type: none"> <li>CPCV* – small vehicles (2 units)</li> </ul>	PhP 400,000
<ul style="list-style-type: none"> <li>Motorized Flat Boat (2 units at 60k each)</li> </ul>	PhP 120,000

## 2. Location of Target Sites for the Barriers

Trash Barrier	Distance
Brgy. Central to Brgy. Obrero	31.5 meters
Brgy. Central to Brgy. Obrero	28.5 meters
Brgy. Balud to Brgy. Payahan	60 meters
Total in Trash traps	120 meters



The location of the trash traps in Calbayog River has been initially identified, encompassing two barangays as seen on the map. The proposed traps will have a length of 120 meters in total with two units of motorized flat boats to be used for waste collection.



### 3. Proposed Type of Trash Barrier and Motorized Boat



This design would allow for an efficient and eco-friendly cleanup process in rivers, the boat needs to be motorized due to the depth of the river.

### 4. The CPCVs and the Bailing Machine

Additionally, the customized Calbayog Plastic Collection Vehicle (CPCV) shall navigate the narrow roads in the city and shall be used to specifically collect plastics that can be brought directly to partner junkshops. The LGU will place collection bins in strategic areas for easier and systematic collection of the recyclables. Baling compacts recyclable materials into manageable units for storage and transport.

## C. Timeline

It is estimated that within two years, the proposed project can already be implemented and operational. Pre-implementation activities may include the following:

1. Site visits and validation - to determine the exact location and identify the specifics of the proposed projects. A simple study can be conducted to ensure that the sites identified for the traps are strategic and can be utilized to their maximum. Also, the navigation route of the CPCV can also be planned as well as the location of the bins that shall be provided by the LGUs.
2. Canvass and Procurement – canvass and purchase of the proposed CPCVs (including customization) and flat boats are necessary to get the most appropriate vehicle to navigate and collect the waste.

3. Planning and Development of Manual – development of a plan and manual, identifying the protocols, maintenance, schedules etc. may be necessary to ensure successful implementation of the project.

#### D. Co-Financing Arrangements

The LGU is ready to allot a budget to warrant the successful implementation of the project and to conduct other activities to complement it e.g. water quality testing, procurement of bins, etc.

SOURCE OF FUNDS	PROGRAM/ACTIVITY	AMOUNT ALLOTTED /YEAR PHP
LGU Calbayog City General Fund for CITY SOLID WASTE MANAGEMENT OFFICE (CSWMO)	bins exclusively for plastic waste	280,000.00
	Maintenance of Waste Traps, bancas and small vehicles	660,000.00
	Water quality testing	100,000.00
	Operations and Administrative Expenses	5,125,000.00
	IEC Program (for the proposed pilot project)	300,000.00
In Kind Contribution – from various NGOs	Clean-up drive and waste collection activities	500,000.00
TOTAL (including in kind contribution)		6,965,000.00

### III. BENEFITS OF THE PROPOSED PROJECT

The installation of trash traps, balers, and eco-friendly vehicles can have significant impacts on reducing ocean-bound plastic (OBP) and improving waste management. Key impacts include:

1. *Prevents plastic leakage from key pathways:* Trash traps capture floating waste in tributaries, preventing it from reaching oceans and local water bodies, significantly reducing OBP. It is estimated that a 2.90% in waste diversion can be achieved once the trash traps are operationalized.
2. *Enhanced Waste Processing:* The baler compresses waste, making it easier to store and transport, improving efficiency in waste management, and contributing to extended landfill lifespan.

3. *Lower Carbon Emissions:* Eco-friendly vehicles reduce the carbon footprint of waste collection operations, contributing to both environmental sustainability and cleaner air.
4. *Improved Waste Collection Efficiency:* Green vehicles and better waste management practices streamline waste collection, decreasing the chances of illegal dumping and littering, which are major contributors to OBP.
5. *Community Health and Cleanliness:* Cleaner waterways and more effective waste management systems enhance public health, reduce pollution-related risks, and promote a cleaner, healthier environment for the community.
6. *Cost Savings & Improved Recycling -* Trash traps streamline waste collection by intercepting debris in a localized area, reducing the need for costly manual cleanup efforts across larger waterways. Also, collected recyclables can be easily sorted and redirected to recycling facilities.
7. *increased safety through Baling -* With trash traps facilitating centralized collection, materials like plastics, cardboard, and metals can be baled, reducing storage space requirements and making handling safer.
8. *Community Engagement and Awareness -* The presence of trash traps in local waterways, CPCVs can surely often spark curiosity and conversation, providing an opportunity to educate communities about waste management and encouraging community involvement through cleanup drives, waste audits, and educational campaigns.

These measures collectively reduce OBP and increase waste diversion while creating a more sustainable and eco-conscious waste management system.

#### **IV. BARRIER ANALYSIS**

- *Trash Traps May Not Fit Every Waterway:* Some areas may not be suitable due to flow, depth, or accessibility.  
*Mitigating Measure:* Study sites carefully and choose designs that fit. Design traps to handle more waste and plan extra collections in heavy seasons
- *Equipment Needs Regular Maintenance:* Trash traps, balers, and vehicles might break down without proper care.  
*Mitigating Measure:* Create a maintenance schedule and use durable materials..

- *Running Costs Are Ongoing:* Fuel, repairs, and wages add up.  
*Mitigating Measure:* Look for like-minded partners or with recycling companies to share costs and earn from recyclables.
- *Weak support and Resistance from stakeholders:* Lack of awareness can lead to poor cooperation.  
*Mitigating Measure:* Run comprehensive information campaigns and involve the community early. Use local leaders to promote the project and offer rewards for participation
- *Temporary Impact on Ecosystems:* Installing traps might disturb nature.  
*Mitigating Measure:* Plan installations carefully to minimize disruption.
- *Rural Areas May Be Left Out:* Hard-to-reach places might not benefit.  
*Mitigating Measure:* Use small vehicles to target remote areas.

Overcoming these barriers requires strategic planning, stakeholder collaboration, and active community engagement. Addressing all these challenges ensures the successful implementation of the project.

## **V. PROJECT MONITORING**

Aside from the activities above, the implementation of the proposed intervention needs to be monitored including the evaluation of the intended impact, thus the need for the establishment of a management team or structure. The team should be composed of representatives from the different departments of the LGU and should also include representatives from partner private sector and Civic or volunteer organizations.

## **VI. SUSTAINABILITY AND CONCLUSION**

The sustainability of the project will be ensured by the following:

- Setting up the conditions to strengthen and adapt new ordinances shall ensure the sustainability and operation of the proposed intervention. Creating a practical and reasonable regulatory environment will also result in easy enforcement and compliance.
- The significance of the intervention in terms of the environmental and public health issues will guarantee support and sustainability. Thus, the implementation of the intervention

should also be supported by the Project's Component 4 (Capacity, Awareness, and Communication on Marine Plastics Management) and the LGU IEC Programs.

- The experience gained and the success of the various projects implemented by the LGU, provide a solid ground that the LGU can sustain its initiatives as well as in providing funds for their continuity.

The increasing waste generation driven by population and economic growth, coupled with the lack of source-to-sea assessments, highlights the urgent need for preventive measures such as trash traps, advanced waste processing systems, and improved collection infrastructure. This project will provide a critical solution by intercepting plastic waste before it enters marine environments, addressing immediate challenges while enabling comprehensive assessments for long-term management strategies.

In addition to trash traps, the small collection vehicles will enhance waste collection efficiency, particularly in hard-to-reach areas, ensuring broader coverage and minimizing uncollected waste. The baling machine will further transform waste management by compacting materials into dense, transportable bales, reducing storage and transportation costs, and increasing recycling effectiveness.

Together, the integration of these three components will deliver a comprehensive waste management solution. These technologies will prevent plastic leakage, optimize collection and processing systems, and promote sustainable growth. By adopting this multi-pronged approach, the project will protect marine ecosystems, improve operational efficiency, and create a more sustainable and effective waste management framework for the community.