PLEASE Project
Plastic Free Rivers and Seas for South Asia

South Asia Co-operative Environment Programme (SACEP) Plastic free Rivers and Seas for South Asia (P171269)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR PROJECT: USE OF TRASH2CASH SMART TECHNOLOGIES TO CHANGE CONSUMER BEHAVIOR AND ENHANCE THE COLLECTION OF RECYCLABLE PLASTICS

GRANTEE: CHAKRA SUTHRA (PRIVATE) LIMITED
SRI LANKA

Implemented by: SACEP
Supported by: UNOPS
Supported by: WORLD BANK GROUP

Environmental and Social Management Plan (ESMP)

1. Subproject Information

Subproject Title:	Changing consumer behavior and enhancing the collection of recyclable plastic using Trash2Cash smart technologies by Chakra Suthra
Estimated Cost:	USD 119,997
Start/Completion Date:	05 Jul 2024- 15 May 2025

2. Site/Location Description

This project involves installing and operating 10 Reverse Vending Machines for plastic waste collection, referred to as 'Trash2Cash' units, across multiple locations.

The selection of installation sites was based on predetermined criteria to ensure operational efficiency and effectiveness. Primary considerations included the availability of a sufficient supply chain, assessed through factors such as plastic waste accumulation, household consumption patterns, population density, and community presence at specific locations. Additional logistical criteria included proximity to Colombo, accessibility for small trucks, and the presence of a nearby Material Recovery Facility. Furthermore, while indoor or sheltered outdoor spaces were a requirement, priority was given to locations with readily available electrical outlets for the machines, reducing the need for additional wiring and related installations.

In summary, the selected installation sites comprise seven churches, one school, one local authority premises, and one corporate institute. The following presents the list of locations where the machines will be installed.

SN	Area and the GPS location	Site description
1	**Nagoda** St. John The Baptist's Church - Nagoda St John the Baptist Church, Nagoda	The site is situated in the Grama Niladhari Division No. 183, Nagoda, within the Ja-Ela Divisional Secretariat area. The surrounding area comprises 1,056 houses, creating a well-populated residential environment. Adjacent to the site is a school, which can provide additional support for collection efforts.
2	**Raddolugama** Katana Pradeshiya Sabhawa (Sub-office)	The site is located in front of the Katana Pradeshiya Sabhawa (Sub-office) in Katunayake. The surrounding commercial area holds significant potential for plastic collection. The site is well-connected to the Grama Niladhari Divisions of

		Raddolugama North, Raddolugama South, Raddolugama South-A, and Raddolugama North-A within the Katana Divisional Secretariat. These divisions collectively comprise 2,153 houses, further enhancing the area's suitability for collection efforts.
3	**Kurana** St. Anne's Church - Kurana St. Anne's Church, 51 St Anne's Rd, Kurana, Negombo	The site is located in the 157 - B Kurana GN Division of Negombo DS Area, which can provide the service of houses 1256. The machine will be installed in church premises and the surrounding area is residential.
4	**Angurukaramulla** Harischandra College Harischandra College, Negombo	The site is located in Angurukaramulla (161/A)GN Division within the Negombo Divisional Secretariat area. It serves 760 households, providing a strong residential base for collection efforts. Additionally, the presence of children in the school offers an opportunity for increased plastic collection, as they can actively participate in bringing recyclable materials.
5	**Thaladuwa** Risen Christ Church - Kadolkale Risen Christ Church, Kadolkale	The site is located in No. 160-A, Thaladuwa GN Division, within the Negombo Divisional Secretariat area. It serves 1,725 households, providing a solid residential base for collection efforts. Additionally, its proximity to the Mangrove Park maintained by NARA highlights the importance of an effective plastic collection system. This initiative will play a crucial role in preventing pollution and preserving the area's natural environment..
6	**Mahaveediya** St. Mary's Church St. Mary's Church, Main Street, No.100 Grand St, Negombo	The site is located in No. 156-A, Munnakkaraya North GN Division, within the Negombo Divisional Secretariat area. It serves 581 households, providing a strong residential base for collection efforts. The area is primarily residential, and the presence of a nearby school further enhances the potential for effective plastic collection.
7	**Kandana** St. Sebastian's National Shrine - Kandana | St Sebestian's National Shrine, Kandana	The site is located in No 184 Kandana West GN Division, within the Ja Ela Divisional Secretariat area. It serves 474 households, providing a solid residential base for collection efforts. The site is located in a compact residential area

8	**Waththala** St. Anne's Church St. Anne's Church, Waththala	The site is located in No 175 - A Awariwaththa GN Division, within the Wattala Divisional Secretariat area. It serves 1750 households, providing a solid residential base for collection efforts. The area is surrounded by a small green patch, residences, and a school. The presence of a school nearby offers an opportunity for increased plastic collection, as children can actively participate in bringing recyclable materials.
9	**Bopitiya** St.Nicholas Church St Nichola's Church, Bopitiya	The site is located in No. 166 B Bopitiya, Nugathe, Kunjawaththa GN Divisions within the Ja Ela Divisional Secretariat area. It serves 2250 households, providing a solid residential base for collection efforts. The location is mostly residential.
10	**Kandawala** MAS Intimates (Pvt) Ltd MAS Intimates (Pvt) Ltd, 7th Lane, Off, Borupana Rd, Ratmalana	The site is located in MAS Intimates premises with access to the community. The site is located in the industrial zone of the Ratmalana area managed by the Dehiwala Mount Lavinia PS.

3. Sub-Project Description and Activities

The "Deploying Trash2Cash Smart Technologies" project is designed to promote behavioral change in consumers and improve the efficiency of recyclable plastic collection within local communities. This initiative introduces an innovative dual-system approach, combining Trash2Cash smart bins for plastic collection with an app-based home pickup service. Both systems operate on an incentive-driven model, where consumers accumulate recycling credits for each recyclable item deposited. These credits can then be redeemed for utility bill payments or mobile phone recharges, motivating increased participation in recycling activities.

The Trash 2 Cash machines will be managed by a network of micro-entrepreneurs (MEs), who will be trained and equipped as part of the project. They will act as the custodians of smart bins while engaging in community collection and act as agents for circular economy by reselling items such as clothing and books (supplied by Chakra Suthra through city collections) to the local community. Furthermore, the initiative includes community engagement programs to raise awareness about the importance of recycling and the proper use of these systems.

3.1 Project activities

1. Selection of Installation Locations: Identifying suitable sites for the placement of Trash2Cash machines.
2. Partnership Agreements: Formalizing agreements with location partners, who will provide the sites for installation.
3. Smart Bin Procurement: Securing agreements with suppliers for the purchase and delivery of Trash2Cash smart bins.
4. Machine Installation and Testing: Transporting and installing the machines on-site, followed by testing for functionality.
5. App Development and Integration: Developing the Trash2Cash app in phases, integrating Telco software with Trash2Cash software to enable the redemption process.
6. App Testing: Conduct rigorous testing to ensure the app operates seamlessly.
7. Micro-Entrepreneur Selection: Identifying and onboarding suitable micro-entrepreneurs to operate the system.
8. Training and Support: Providing comprehensive training and resources to micro-entrepreneurs.
9. Community Awareness Campaigns: Organizing group sessions and door-to-door visits to inform the community about the machines and app usage

3.2 Institutional Arrangements

The project will be implemented by Chakrasuthra in collaboration with its partner, ZeroPlastic Movement. As the lead implementing partner, ChakraSutra will be responsible for the procurement, installation, and maintenance of the Trash 2 Cash machines, the development of the associated app, and all administrative aspects related to the project. ZeroPlastic Movement is responsible for executing the groundwork, which includes the identification and selection of location partners and micro-entrepreneurs, in consultation with relevant stakeholders and in line with the criteria established by Chakrasuthra. Furthermore, ZeroPlatic Movement will conduct community outreach programs, including group awareness sessions and door-to-door visits, to ensure that the public is informed and trained on the correct use of the Trash 2 Cash machines and app.In addition to the lead implementing partner and the implementing partner, two additional types of partners are involved in the project: Location Partners and Micro-Entrepreneurs.

Location Partners

Location partners are the owners of the premises where the Trash2Cash machines will be installed. These partners provide the physical spaces for the machines

Micro-Entrepreneurs

Micro-Enterpreneurs are responsible for managing the collection, sorting, and handling of recyclable materials collected by the Trash 2 Cash machines and the community collection. The recyclable materials, including aluminum cans, plastics, and tetrapaks, will be collected by the micro-entrepreneurs and handed over to Chakrasuthra. Micro-entrepreneurs will be

compensated based on the quantity of plastic waste collected. Once collected, the materials will be sent to designated Material Recovery Facilities (MRFs) for further processing and recycling. Apart from plastic waste collection, these micro-entrepreneurs will engage in a home business to resell pre-loved items such as clothes and books, supporting the circular economy.

4. ESMP Matrix: Risk and Impacts, Mitigation, Monitoring

The below ESMP Tables reflect the E&S risks and impacts that are related to the installation of machinery and operations.

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
Public nuisance due to disturbances by the machine installation process.	1. Conduct installations during off-peak days and hours to minimize disruption. 2. Notify location partners and the community in advance to obtain consent.	All 10 locations during the installation phase	Operation Executive-Chakra Sutra	Complaint due to public nuisance.	Regular monitoring during and after installations	Project Manager, Chakra Suthara Technical Expert-UNOPs Sri Lanka Country team	No cost involved
Solid waste accumulations during the installation process	1. Sort solid waste into reusable, recyclable, and non-recyclable categories 2. Use reusable materials for the work 3. Direct recyclable waste to the relevant vendors 4. Dispose of non-recyclable waste through the municipality	All 10 locations during the installation phase	Operation Executive-Chakra Sutra	Waste accumulation records Waste disposal records	Monitoring after installations	Project Manager, Chakra Suthara Technical Expert-UNOPs Sri Lanka Country team	50

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
Potential electric shock, electrocution, short circuits during the installation phase	1. Prioritize locations with existing electrical outlets during site selection. 2. Conduct safety checks on the existing electrical system before installation. 3. Installed circuit breakers near each machine to ensure protection and prevent electrical hazards.	All 10 locations during the location selection process	Electronic Engineer - Chakrasuthra	The checklist of locations needs electrical installations.	Before completion of installations	Project Manager, Chakra Suthara Technical Expert-UNOPs Sri Lanka Country team	35
The acceptance of unacceptable waste by the machine may lead to improper disposal and contamination of recyclable materials.	1. Integrate image recognition technology alongside barcode scanning to improve the accuracy 2. Conduct awareness sessions and door-to-door visits on the acceptance	Before procurement and during machine operations	Electronic Engineer - Chakrasuthra ZeroPlastic Movement	Features of the machines Number of awareness sessions	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara Technical Expert-UNOPS Sri Lanka Country team	300

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
	categories of materials for the machines.						
Limited support from the Government and other stakeholders	1. Identify Stakeholders and associated communities 2. Conduct awareness programmes/ consultations as appropriate.	Throughout the project period	ZeroPlastic Movement	Number of awareness sessions conducted	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	100
Occupational, Health, and Safety (OHS) risks for workers during electrical work, ground preparation, and handling equipment at the installation stage	Ensure Safe work procedures 1. Provide appropriate PPE, continuous reminders to use PPEs based on EHS Guidelines on OHS 2. Occupy trained workers on OHS risks, safe handling of equipment, and Safety procedures. 3. Fully stocked and mobile first aid kit 4. Maintain an Incident and Accident register	All 10 locations during the installation phase	Electronic Engineer, Operation Executive-Chakrasuthra	Use of PPEs Availability of First Aid kits Accident registry	Regular monitoring during and after installations	Project Manager, Chakra Suthara Technical Expert-UNOPs Sri Lanka Country team	150

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
Lack of OHS measures during the operational stage	1. Providing required PPE, and operational Guidelines on safety to all the Microentrepreneurs and the project staff. 2. Provide the training related to OHS 3. Chemical and hazardous chemical-contaminated plastic cans and plastic materials will not be accepted from the machines 4. Establishment of an accident reporting mechanism	Throughout the project period, Machine locations	Operation Executive-Chakra Sutra	Use of PPE during operation Training records Accident registry machine learning technology and barcode reading were incorporated into the identification of the input plastic packages	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	500
Risks of Sexual exploitation and abuse (SEA) and sexual harassment (SH) among	1. Provide a workers' grievance redress mechanism (Workers' GRM), incorporating	Throughout the project period	ZeroPlastic Movement	Availability of complaint boxes at each site	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara	100

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
workers and between workers and community members at the facility	SEA/SH focal points for both genders, and an effective referral mechanism will be adopted 2. Provide training on anonymous reporting and complaining system, along with protection measures for individuals who report 3. Provide referrals to SEA/SH service providers as required 4. Provide training on recognizing, preventing, and responding to SEA/ and SH for workers and communities 5. Prepare a Code of Conduct for workers and		Operation Executive-Chakra Sutra	Training records Number of SEA/SH awareness sessions for a) workers, and b) surrounding communities Percentage of workers that have signed the CoC		Technical Expert(Envt) Country team	

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
	micro-entrepreneurs that includes reference to SEA/SH 6. Ensure workers/ micro-entrepreneurs sign a Code of Conduct (CoC)						
Risk of child labor	1. Comply with minimum age requirements of national laws, and the World Bank regulation, and document the age of workers upon hiring. 2. Verify the age of workers with communities where required 3. Raise awareness in communities 4. Conducting a background check before being involved with the project.	Throughout the project period	Operation Executive-Chakra Sutra	Number of workers filling the grievances applications Age verification documents Number of awareness sessions	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	40

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
Risk of forced labor	1. Provide workers' GRM and access to Project GRM 2. Raise awareness in communities	Throughout the project period	Operation Executive- Chakra Sutra	Number of grievances filed in workers' GRM		Project Manager, Chakra Suthara Technical Expert(Envt) Country team	50
Gender discrimination in selecting microentrepreneurs	1. Preparation of non-discriminatory criteria for the selection process. 2. Equal wages to men and women.	During the selection and throughout the project period	ZeroPlastic Movement Operation Executive- Chakra Sutra	Non-Discrimination guidelines in the recruitment Selection criteria	Monthly site visit Throughout the project period	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	No cost involved
Machines become idle or broken, leading to user dissatisfaction and reduced social acceptance and engagement.	1. Conduct thorough testing before installation 2. Perform regular preventive & predictive maintenance on the machines	Before the installation During the operations	Electronic engineer - Chakra Suthra	Test Records Maintenance records Availability of GRM and complaint on the machine idling	Regular Monitoring	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	200

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Mitigation and Monitoring Cost USD
		Location/Timing/Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility *	
	3. Establishing a GRM system for the community						
Insufficient community engagement due to a lack of understanding regarding the use of the machines.	1. Conduct visits and sessions to educate the community on using the machines and app. 2. Make the app easy to use.	Throughout the project period During the app design and development	ZeroPlastic Movement	Number of training sessions User records	Regular Monitoring	Project Manager, Chakra Suthara Technical Expert(Envt) Country team	500

5. Capacity Development & Training

Training and Capacity Building for Project Workers and Micro-Entrepreneurs

All workers involved in the project will be trained on Occupational Health and Safety (OHS) standards, including the proper use of Personal Protective Equipment (PPE), to ensure a safe and productive working environment. In addition, workers will receive training on the Grievance Redress Mechanism (GRM), Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), and Gender-Based Violence (GBV) to foster a respectful and safe workplace.

Further to the above, Micro-entrepreneurs will undergo extensive training covering proper machine handling, and basic troubleshooting. This training will equip them with the necessary technical skills and safety knowledge to operate the machines efficiently, address issues that may arise, and ensure a safe and supportive working environment for all involved.

Community Awareness and Capacity Building

Community awareness sessions will be organized to educate the public, including school children, on the importance of waste management and to encourage behavior change.

In addition, micro-entrepreneurs, location owners, and the broader community will receive awareness training on the Grievance Redress Mechanism (GRM), Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), Gender-Based Violence (GBV), and the correct use of the app and machines. These sessions will ensure that all stakeholders are well-informed, empowered, and prepared to actively participate in the project, promoting safety, responsibility, and inclusivity within the community.

6. Implementation Schedule and Cost Estimates

	Timeline											
	2024						2025					
	07	08	09	10	11	12	01	02	03	04	05	Cost - USD
Integrating the MCS, Image recognition, to the Reverse vending machines												Included in the machine cost
Solid waste management at installation												50

OHS measures at installations												200
PPEs												200
Awareness sessions and door-to-door visits												500
GRM and SEA/ SH mitigation measures												200
Maintenance and testing												205
Stakeholder engagement activities												500
Total Cost												1855

7. Attachments

Environmental and Social screening report
Photos of the locations
PSEA