Plastic Waste Reduction Standard

Project Ekonomia ya Bluu:

Recycling of mismanaged plastics and Enhancing waste worker livelihoods in Kenya

RINTZ INDUSTRIES

rePurpose

Document Prepared by rePurpose Global, Inc

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1 Project Details

1.1 Summary Description of the Project

Project Ekonomia ya Bluu facilitates the recovery and recycling of environment-bound plastic waste in Kenya, while simultaneously benefitting formal and informal waste workers associated with the project activities. Of the total plastic waste generated in Kenya, only 27% gets collected, largely sourced by the informal sector. 8% of this collected waste gets recycled and the remaining 19% usually gets disposed of in unsanitary landfills or dumpsites. This effectively equates to 92% of plastic waste being mismanaged - either openly burnt, dumped on land or in water bodies.[1] It is estimated that plastic packaging such as polypropylene (PP), polyethylene terephthalate (PET) and polyester make up most of the plastic waste generated in the country.[2]

This project will use plastic credit financing to incentivize informal waste pickers, aggregators and community-based organizations to recover mismanaged, recyclable plastic waste from dump and litter sites and channel the same towards recycling. This grouped project is jointly developed and managed by Rintz Industries Limited and rePurpose Global.

Primary processing centers located in different regions of Kenya are regarded as individual collection instances. In the project's first instance, PP plastic waste is purchased at market rates from waste aggregators working in and around Mombasa dumpsites[3] and brought to the Rintz Primary Processing Center for sorting. The sorted material is then transported to the recycler - Vintz Plastics' - Material Recovery Facility in Nairobi - where it is processed for recycling. From the project's second crediting year, future collection instances in other regions of Kenya will be added to the project and plastic polymers other than PP will also be recovered. The project intends to collect approximately 112,000 tonnes of plastics and recycle approximately 88,272 tonnes of recyclable plastics, across a 10-year crediting period starting 01 January 2024.

In addition to plastic recovery, the project also proposes long term benefits for both formal and informal waste workers engaged in the project activities. Some of the planned interventions include access to basic amenities and training, possible health insurance and also the creation of a sustainable waste supplier cohort. In addition to this, regularizing and streamlining collections also provides an avenue for enhanced livelihoods for the informal waste collectors and aggregators.

[1] IUCN-EA-QUANTIS, 2020. National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Accessible here.
[2] IUCN-EA-QUANTIS, 2020. National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Accessible here.
[3] The first collection instance of the project focuses on PP plastic waste recovery in and around Mombasa County. This is to ensure that the project activities can be piloted in one location, across one polymer before scaling up to include other polymer types and collection from other locations.

1.2 Project Type and Eligibility (2.1)

The project is eligible under the scope of the plastic program due to the following criteria:

a. The project intends to manage, the following types of plastic waste, which are all eligible under the plastic program:
   - PP
   - PET
   - LDPE
   - HDPE

b. The project is a grouped project with multiple instances of multiple project activities, involving both collection and recycling of plastic waste.

c. The activities carried out in the project involve informal collection, primary sorting at the primary processing centers, processing at secondary processing centers and mechanical recycling of plastic waste material.

d. The plastic waste managed in this project is sourced by informal waste aggregators who are primarily responsible for the existing recycling rate in the country as established in Section 3. With 92% of the plastic waste being mismanaged, the plastic waste recovered in this project is not generated with the sole purpose of collecting and/or recycling.

1.3 Project Configuration (3.3)

The project is a grouped project with multiple instances of multiple project activities. The project involves both collection and recycling of plastic waste.

Collection Instance

In this project, a collection instance is defined as a processing center located within a defined geographical location from where waste is sourced. Waste is recovered from dump and litter sites by informal pickers, aggregators and/or community based organizations. A primary processing center operated by the project proponents is located within this geographical location and this facility is tasked with purchasing the waste from these collection sources. The purchased waste is brought to the processing center and thus this is considered as a collection instance in the project.

During the first year of crediting, the project activities involve only one collection instance - Rintz Industries Limited's processing center in Mombasa. Future instances will involve similar collection and primary processing activities located in other areas within Kenya. The

collection activity will also be scaled up to include other types of plastic polymers as mentioned in Section 1.2.

Recycling Instance

Recycling activities of the collected material is carried out at Vintz Plastics in Nairobi where the waste is processed for recycling.

Eligibility Criteria (grouped projects only) (3.3.13)

The following eligibility criteria shall be ensured for inclusion of all new project instances:

- All new project instances shall meet the applicability conditions set out in the latest version of the applicable methodologies - PWRM0001 Plastic Waste Collection Methodology and PWRM0002 Plastic Waste Recycling Methodology.
- All new project activity instances shall be located and operate within the designated geographical region, which is the country, Kenya.
- All new instances will have a start date which would be the same or later than the project start date (1st September 2023), and only volumes generated during the crediting period (1st January 2024 to 31st December 2033) will be eligible for plastic credits.
- All new project activity instances shall apply the processes specified in this document to perform plastic waste collection, processing and recycling. Any new equipment or technologies that will be adopted during the project will be indicated in the subsequent monitoring reports.
- All new project activity instances shall have the same baseline approach as determined for the plastic waste collection and recycling activity within Kenya.
- All new project activity instances shall have the same additionality criteria that are consistent with the initial instance within the determined geographical area. For plastic waste collection and recycling, this is a penetration rate below 20%.
- The grouped project must meet specific requirements as stipulated by the entity responsible for coordinating and managing grouped projects and for conducting local stakeholder consultations, as applicable.
- Evidence of project ownership, with respect to each project activity instance will be held by the project proponents.

1.4 Project Proponent

Organization name	rePurpose Global, Inc
Contact person	Aditya Siroya
Title	Co-Founder and Chief Impact Officer
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Organization name	Rintz Industries
Contact person	Aruna Varsani
Title	Director
Address	Bombolulu off Mombasa Malindi road, Mbungoni
Telephone	+254 722 74 63 33
Email	aruna@rintzindustries.com /aruna@vintzplastics.com

1.5 Other Entities Involved in the Project

Organization name	Vintz Plastics Limited
Role in the project	Recycling Facility
Contact person	Mavji Varsani
Title	CEO and Founder
Address	Vintz Plastics Limited, Off Airport North Road, Nairobi, Kenya
Telephone	+254 724 76 48 62
Email	info@vintzplastics.com

1.6 Ownership (3.4)

The credits generated from the project shall be owned and shared between rePurpose Global (rePurpose) and Rintz Industries Limited (Rintz).

rePurpose's right to ownership of the plastic credits generated from the project activities arises via an agreement to be signed between rePurpose Global and Rintz Industries prior to the start of the crediting period. This document shall be furnished at the time of validation.

Rintz's right to ownership and right to operate the project arises from the implementation or enforcement of laws, statutes, or regulatory frameworks that require activities to be undertaken or incentivize activities that facilitate and/or perform plastic waste collection and/or recycling. Rintz also owns the asset and rights to the collected waste by virtue of purchasing the collected plastic waste for recycling.

1.7 Project Start Date (3.5)

The project start date is 01/09/2023, the date when the agreement was established between Rintz Industries and rePurpose Global.

1.8 Project Crediting Period (3.6)

The project crediting period starts on 1st January 2024 and shall be fixed at 10 years, ending on 31st December 2033.

1.9 Estimated Collected and/or Recycled Plastic Waste

Year	Estimated Net Collected Plastic Waste (tonnes)
2024	6,600
2025	7,200
2026	8,800
2027	9,400
2028	10,000
2029	12,200
2030	12,800
2031	13,400
2032	15,500
2033	16,100
Total estimated amount	**112,000**

Total number of crediting years	10
Average annual amount	11,200

The estimated net recycled plastic waste considers a) reduction of quantity lost in the recycling process and b) the subtraction of baseline recycling volumes. This is elaborated upon in Sections 4.2 & 4.3.

Year	Estimated Net Recycled Plastic Waste (tonnes)
2024	4,388
2025	4,967
2026	6,511
2027	7,090
2028	7,669
2029	9,792
2030	10,371
2031	10,950
2032	12,977
2033	13,556
Total estimated amount	88,272
Total number of crediting years	10
Average annual amount	8,827.2

1.10 Description of the Project Activity

Although Kenya is one of the more forward-looking countries in Africa when it comes to waste management, close to 92% of the plastic waste generated in the country is mismanaged. Kenya's struggle with plastic waste was also adversely impacting its coastal areas and water bodies. According to a UNEP report, in Mombasa, 3.7 kilos of plastic per capita leaks into water bodies annually.[4] The country's waste management system has a key focus on recycling and plastic recycling has been practiced in Kenya by private formal and

[4] UN-Habitat Waste Wise Cities Tool (WaCT) Assessment for Mombasa, Kenya 29th Jan 2021. Accessible here

informal entities since the 1980s.[5] But less than 10% of the plastic waste is collected and channeled for recycling and all of this is carried out by the informal sector.

PROJECT EKONOMIA YA BLUU:

Project Ekonomia ya Bluu is developed to enable and incentivize informal collection of plastic waste with the intention to recycle the same. The project focuses on collecting and recycling mismanaged recyclables plastics widely used in packaging and are mostly not preferred over higher value recyclables. In the first instance, the project focuses on collecting PP from Mombasa. Other recyclable polymers such as PET, HDPE and LDPE will be subsequently included into the project over the crediting period. The project engages in both plastic collection and recycling activities under the methodology PWRM0001 (v1.1) and PWRM0002 (v1.1), respectively. Since the project is a grouped project with multiple instances of multiple project activities, further project instances will be added in the future across different regions in Kenya. The inclusion of new polymers and instances will be detailed out in subsequent monitoring reports.

The first instance is located in Mombasa where the initial material focus will be on improving existing operational sites of Rintz Industries and processes for the collection of PP by 2024. A primary collection center operated by Rintz Industries serves as the collection point of the waste. Rintz Industries sends trucks to various waste sources (primarily located around the Mombasa dumping ground) to collect the PP waste. The waste is sourced on cash payment basis from informal waste pickers, aggregators or community-based organizations in and around the Mombasa County area. The waste is brought to the Rintz facility for sorting into various color streams and to remove any contamination. The material is then shredded and transported to the Vintz Plastics recycling facility in Nairobi where washing, agglutination and pelletization is carried out. The recycled material is then sent to companies who manufacture recycled products. This process is illustrated in Figure 1, the project's value chain.

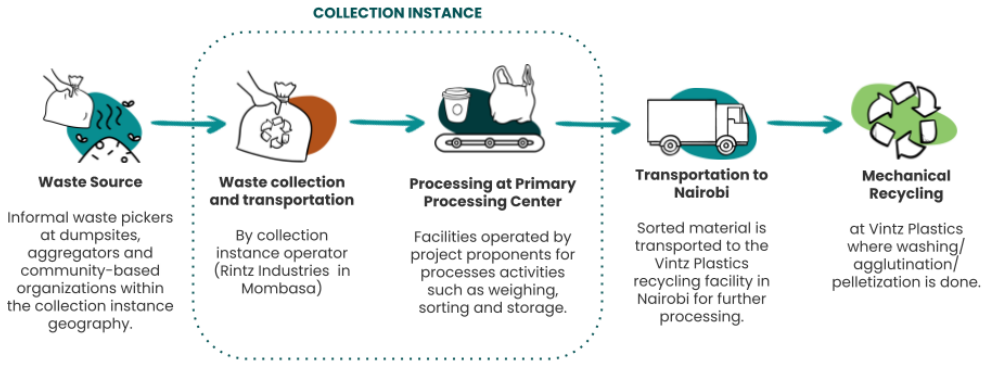

Figure 1: Diagram depicting the project activities from collection till end disposal

[5] Richa Singh, Minakshi Solanki and Siddharth Singh, Plastic Waste Management in Africa - An Overview, 2023, Centre for Science and Environment, New Delhi, India

Collection Activities

Plastic waste is recovered through informal collection channels - done by informal waste pickers from Mombasa dump or litter sites and also aggregators and/or community based organizations. Rintz Industries purchases the plastic waste (PP) from these sources and transports it to the processing center in Mombasa. Here the PP is weighed, sorted by color as well as for removing any contamination, shredded and stored to be transported for recycling as illustrated in the photos in Figure 2.

The equipment involved in collection activities are provided in Table 1.

Location	Equipment type	Number	Capacity (tonnes/day)
RINTZ, MOMBASA	Baler	1	2
	Big grinder	2	8
	Small grinder	1	2

Table 1: Existing equipment involved in collection activities



Figure 2 (from L to R, top to bottom):
Unloading of collected waste at the Rintz facility in Mombasa; Recording the weight of the material; Sorting the collected material by color; Crushing the collected material for ease of transportation.

Recycling Activities

The PP sorted at the Mombasa facility is transported to the Vintz Plastics MRF in Nairobi, where further washing, agglutination and pelletization of the PP is carried out. The water used for washing is treated and reused within the facility. During the washing process, there is a loss of approximately 3.5% of the material. This is recovered and reprocessed into fencing poles along with other polymers.

Almost all the equipment and machinery used in the recycling facilities are designed, built and assembled in-house, using materials and items purchased from scrap yards and second-hand shops. Advanced recycling machinery would have to be imported to Kenya and plastic credit financing would enable to increase the recycling capacities and efficiencies. At present, in case of breakdowns, repairs are carried out in situ by the team of technicians who operate the machinery. Table 2 lists the equipment available at the recycling facility and Figure 3 showcases the various activities undertaken at the recycling facilities.

Location	Equipment type	Number	Year of Installation	Capacity (tonnes/day)
Vintz, Nairobi	Baler	2	2022	30
	Washing lines	4	2022	15
	Grinder	2	2016	16
	Shredder	1	2021	16
	Pelletizer	10	2015	35
	Dryer	7	2015	10

Table 2: Existing equipment involved in recycling activities







Figure 3 (from L to R, top to bottom):
Unloading of the waste at the Vintz facility in Nairobi; Weighing and recording the waste quantity;
Washing of the sorted waste; Weighing of the pellets;
Pelletization of the various polymers.

1.11 Project Location (3.7)

The project is located in Kenya and the first instances operate within the coast region of Mombasa which comprises Mombasa and neighboring counties and capital city, Nairobi. Extension into other geographies are scheduled from the second year of the project and details of the same will be provided in the subsequent monitoring report. The locations of existing instances including geodetic polygons are provided in the attached KML file. Table 3 provides the location for existing collection and recycling instances.

No.	Instance Type	Name of Instance	Geo-Coordinates

1	Collection Instance	Rintz Industries, Mombasa	4°01'08.7"S, 39°42'10.0"E
2	Recycling Instance	Vintz Plastics, Nairobi	1°18'58.0"S 36°54'26.5"E

Table 3: Existing equipment involved in recycling activities

Figure 5 illustrates the locations of the collection instance in Mombasa in blue and the recycling instance in Nairobi in pink.

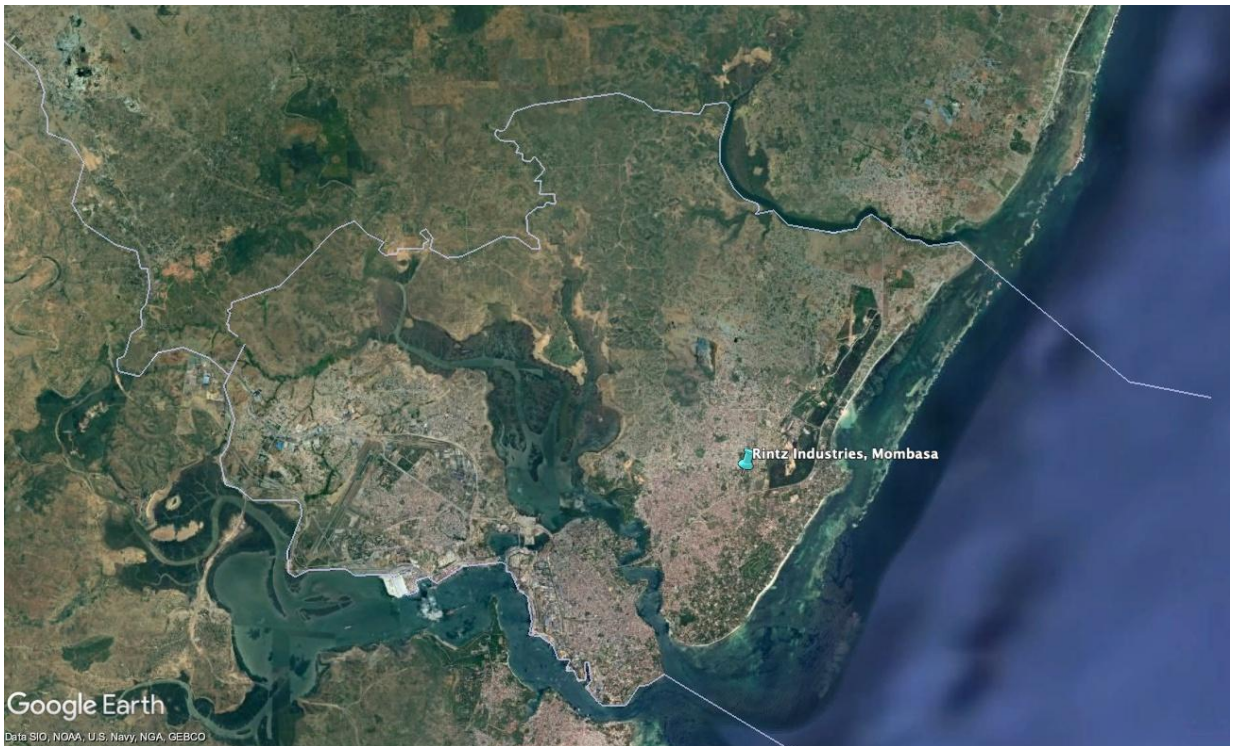



Figure 5: Diagram illustrating the locations of Mombasa collection instance (in blue) & Nairobi recycling instance (in pink)

1.12 Conditions Prior to Project Initiation

1.1.1 General Conditions

The general conditions existing prior to project initiation are the same as the baseline scenario described in Section 3.5 - Plastic Waste Collection Baseline.

1.1.2 Social and Environmental Conditions

Environmental Impact

According to the 2020 IUCN-EA-Quantis report, there is a 92% mismanaged rate of plastic waste.[6] In fact, only 27% of all plastic waste generated in Kenya is collected, of which just 8% gets recycled and the remaining 19% is disposed of in unsanitary landfills or dumpsites. Kenya lacks waste management infrastructure, specifically sanitary landfills with appropriate ecological safeguards such as landfill sealing.[7] In the absence of minimal recovery and no

[6] IUCN-EA-QUANTIS, 2020. National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Accessible here.
[7] Kenya News Agency, 2023. Concern Raised over poor Waste Management in Murang'a. Accessible here.

collection services in rural areas, plastic leaks into terrestrial and marine ecosystems, with an estimated 37,000 tonnes of plastic waste leaking into the ocean and waterways every year.[8]

Adding to the above, it is estimated that around 56% of mismanaged plastic waste ends up in open burning (Figure 6).[9] This fact poses not only a significant risk for human health, as the burning of plastic waste releases harmful substances and particulate matter into the air, but also has a direct contribution on climate change. This scenario is projected to deteriorate, as the plastic waste generation in Kenya is estimated to increase to 1.9 million metric tons per year, by 2060.[10]



Figure 6: Open burning of waste at Nakuru Dumpsite

By channeling the recyclable waste to an appropriate end destination, the project prevents the leakage and mismanagement of waste thereby contributing positively to the overall environmental impact of the region.

Economic and Social Impacts

In Kenya, the informal waste pickers have a key role to play in enabling plastic recovery. This process involves the collection of recyclable materials by these informal pickers, mainly from

[8] IUCN-EA-QUANTIS, 2020. National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Accessible here.
[9] IUCN-EA-QUANTIS, 2020. National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Accessible here.
[10] Griffin, M., and R. Karasik. Plastic Pollution Policy Country Profile: Kenya. NI PB 22-06. Durham, NC: Duke University. Accessible here.

dumpsites, which are sold to informal middlemen for sorting and aggregation of plastic waste. The sale price of the waste is not standardized and oftentimes, the waste pickers are subjected to fluctuating revenue streams and marginalization. In Mombasa, for example, the buying price for different types of unprocessed plastic ranges between KES 10 and KES 27 (USD 0.07 and USD 0.19) per kilogram (conversion rates as of June 2023 applied).[11]

Although these workers are an integral part of waste management in Kenya, they are usually neglected and their livelihoods and working conditions are not integrated into formal plans. This project not only prevents the negative environmental impact of plastic waste, but also enhances livelihood opportunities for the informal workers, provides formal workers with a consistent income stream and improves working conditions for both.

1.13 Compliance with Laws, Statutes and Other Regulatory Frameworks (3.1.3)

The project operates in compliance with local laws and regulations applicable within Kenya as described in Table 4 below:

Regulatory Tier	Name of Law/Policy/Regulation
National	Environmental Management and Coordination Act (EMCA) of 1999[12] states "No person shall discharge or dispose of any wastes, whether generated within or outside Kenya, in such a manner as to cause pollution to the environment or ill health to any person".
	Occupational Safety and Health Act, 2007[13]: Formulated by the Ministry of Labour, Social Security and Services, a workplace registration is a formal requirement to get your workspace registered with the concerned authorities.
	The National Environment Policy 2013[14]: formulated by the Ministry of Environment, Water, and Natural Resources, this policy establishes the development of an integrated national waste management strategy; promotes the use of economic incentives to manage waste; and promotes the establishment of facilities and incentives for cleaner production, waste recovery, recycling, and reuse.
	The National Solid Waste Management Strategy 2014[15] formulated by the National Environment Management Authority (NEMA) is the most recent government action establishing a common platform for action between stakeholders to systematically improve waste management.

[11] Njoroge G., Nikam J., Ddiba D., Plastic Waste Management and recycling in Mombasa, Kenya, SEI report (2022). Accessible here.
[12] Environmental Management and Co-ordination Act. 2012. The Republic of Kenya. Accessible here.
[13] Occupational Safety and Health Act. 2007. The Republic of Kenya. Accessible here.
[14] National Environment Policy. 2013. The Republic of Kenya. Accessible here.
[15] The National Solid Waste Management Strategy. NEMA. 2015. Accessible here.

	National Sustainable Waste Management Policy 2021[16] will help ensure that waste is collected, separated at the source, reused, and recycled and that the remaining waste stream is destined to a secure, sanitary landfill.
	Gazette Notice No.4858, 2019[17]: This notice banned the use of specific single-use plastic items, plastic bottles, straws, and related products within protected areas in the national parks, national reserves, conservation areas, and any other designated wildlife protected areas. This follows a 2017 existing ban on disposable PET bottles in Karura Forest and the Plastic Carrier Bag Ban, Kenya's ban on the production, selling, and use of plastic carrier bags which came into effect in August 2017. It is considered the toughest in the world, with a penalty of up to 4 years in prison or up to 4 million in fines for breaking this law.
	Sustainable Waste Management Act (2022)[18]: The act establishes the legal and institutional framework for the sustainable management of waste; the realization of the constitutional provision on the right to a clean and healthy environment; and for connected purposes enacted by the Parliament of Kenya. It also emphasizes the establishment of Material Recovery Facilities across all counties to facilitate sustainable recycling and incorporation of the circular economy. Another tenant of the act is waste segregation at the source and county governments.
	National Marine litter Action Plan (2021)[19]: The Action plan provides pathways and identifies an agreed road map on which Kenya will ensure how waste is properly managed (prevention, reduction, sustainable management, circular economy, enhanced research, awareness, and data dissemination) to ensure it does not reach marine ecosystems that are a livelihood, especially to coast and lake region counties.
Local (County-level)	The Mombasa County Solid Waste Management Act, 2021[20] was formulated to provide for the collection, treatment, transportation and disposal of solid waste.
	Nairobi County Waste Management Action Plan (2021)[21]: Schedule 4 of Kenya's constitution identifies waste management to be a function of the County Government and this plan develops key structures to ensure waste management is effective and efficient in aligning with the right to a clean and healthy environment, pursuant to Article 42 of the Constitution of Kenya.

[16] National Sustainable Waste Management Policy, 2021, The Republic of Kenya. Accessible here.
[17] Wildlife Conservation and Management Act, Gazette Notice No. 4858, 2019, The Republic of Kenya, Accessible here.
[18] The Sustainable Waste Management Act, 2022, The Republic of Kenya. Accessible here.
[19] National Marine Litter Action Plan, NEMA, 2021, The Republic of Kenya. Accessible here.
[20] The Mombasa County Solid Waste Management Act, Mombasa County, 2021. The Republic of Kenya, Accessible here.
[21] Nairobi Climate Action Plan 2020-2050, Nairobi City County. Accessible here.

	Mombasa County Vision 2035[22] envisages a scenario of a developed integrated waste management facility, enacted waste segregation at source, a recycling rate of 50%, and restricted illegal dumping and open burning of waste.

1.14 Additional Information Relevant to the Project

Commercially Sensitive Information (3.2.2)

All commercially sensitive information, such as contracts and agreements, have not been attached in the public version of the project description. These will be provided during the time of validation and verification assessments.

Further Information

Not applicable.

2 Stakeholder Engagement and Safeguards

2.1 Stakeholder Engagement (3.13)

2.1.1 Stakeholder Identification (3.13.1)

Stakeholders mapping was carried out based on any direct or indirect impact that the project activities would have on any individual, groups, organizations or entities. Once the relevant stakeholders were identified, they were contacted via formal invitations and personal invites to participate in the first stakeholder session that was conducted. The responsibility for identifying and engaging with the stakeholders for the duration of the project, including future instances, lies with the project proponents, Rintz Industries and rePurpose Global.

2.1.2 Stakeholder Description (3.13.2 – 3.13.3)

The key stakeholder groups identified for the project are:

[22] Nippon Koei Co., Ltd, PADECO Co., Ltd., Eight-Japan Engineering Consultants Inc., Project for Formulation of Comprehensive Development Master Plan in the Mombasa Gate City in the Republic of Kenya, Mombasa County Vision. Accessible here.

Stakeholder Group	Description
Waste workers	1. Informal waste collectors dropping waste to the waste aggregators. 2. Waste workers working with the waste aggregators 3. Waste Aggregators/ Yard Owners 4. Waste workers working with Rintz Plastic.
Local authorities	Waste Management continues to be a domain that requires inputs from local authorities especially since they formally control the dumpsites and access to the same requires permission from the local county offices. Furthermore, the national and local government organizations are instrumental in formulating the rules and regulations that define waste management operations in the country.
Local community and community-based organizations	Considering that the plastic problem affects not just direct project participants but also the community at large, members of various community organizations and groups are invited to partake in the project development processes.
Local not-for-profit organizations, research groups or think tanks.	In Kenya, there are many groups who contribute to the overall plastic waste problem through thorough research, active on ground support or bringing together people and communities to share in the larger goal of creating solutions against plastic pollution. They form a key stakeholder group who are also impacted by the project activities.

The project proponents, rePurpose Global and Rintz Industries, play the roles of project developer and project implementation partner respectively. rePurpose is responsible for the creation and monitoring of the project, which includes overall project coordination and management. They provide technical support through community education, the establishment of end-to-end reporting and traceability systems, and the upgradation of infrastructure required for the project activities. Rintz Industries has the right to operate the assets required for the conduction of project activities and hold the rights to the collection and disposal of the waste under the project.

2.1.3 Stakeholder Consultation (3.13.4 – 3.13.8)

In order to facilitate early and structured participation by the various identified stakeholder groups, an initial consultation session was organized and held in Mombasa on 28th February, 2023. This session brought together waste pickers, collectors, workers, local authority and specific community group representatives as well as other plastic program developers. The session was planned as a participative process for the stakeholders to understand the requirements of Verra's Plastic Waste Reduction Standard and the generation and issuance of plastic credits.

The main objective of the meeting was to provide a platform for the various stakeholders to engage with one another on the project activities, their implementation and impact on the region. This was facilitated through in-person and online presentations made by representatives of the project proponents (rePurpose Global & Rintz Industries) and technical experts (Climetrek) as showcased in Figure 7.

The exchange that followed centered on the pressing need to scale up the collection and recycling of plastic waste to reduce the production of virgin plastic and to prevent the leakage of plastic waste back into the environment (Figure 8). The challenges of establishing a plastic reduction project were discussed at length. All stakeholders participated in the discussions and provided their feedback which was noted down by the project proponents.



Figure 7 (from L to R; top to bottom):
Presentation and introduction to the project by rePurpose Global and Rintz Industries representatives respectively; Introduction to Verra and the Plastic Program by representative of Climetrek



Figure 8: Stakeholders participating and engaging with others in the session

Future Consultations:

Stakeholders consultations will be an ongoing process for the entire duration of the program particularly when newer regions and instances are included into the project boundary. Similar engagements and exchanges will be held at regular intervals to assess the progress of the project and receive feedback from the stakeholders. The project proponents intend to employ a participative approach involving all stakeholders at all stages of the program, including project development and management.

2.1.4 Free, Prior and Informed Consent (3.13.6)

As a practice, all identified stakeholders are invited to the formal consultation session. Since some of the stakeholders (community, youth and women groups involved in the collection of plastic waste) were engaged before the inception of the project, their valuable inputs were

taken during the regular day-to-day operations. Through word of mouth, many other stakeholder groups approached the project proponents requesting to be included in the project and they were invited to the first consultation meeting. Local community groups also showcased their interest in the project when told that it would improve the living standards in the area along with having a positive impact on the environment.

No individual's or groups' property rights are being affected by the project activities and for facilities that are used in the project operations, lease/ownership agreements with the owners will be established to state the same.

2.1.5 Continued Consultation and Adaptive Management (3.13.9)

Organizing the first consultation with all stakeholders in any new instance will be a continuous process for the entire duration of the program. Simultaneously, continued engagements will be maintained with stakeholders from existing project instances. To begin with, an email ID will be provided to all stakeholders to ensure a smooth feedback loop.

2.1.6 Anti-Discrimination (3.13.10)

The project proponents' operations do not encourage any discrimination in any location or facility associated with project activities. Rintz Industries and rePurpose Global have internal organizational anti-discrimination policies that ensure there is no discrimination in the workplace and frequent training is provided to all workers to establish the same.

2.1.7 Feedback and Grievance Redress Procedure (3.13.11)

Direct and indirect communication channels will be established for all stakeholders to provide constant feedback to the project proponents. To begin with, an email ID will be provided to all stakeholders to ensure a smooth feedback loop. Before the start of the crediting period, this structure will be expanded to also consider regular meetings, setting up WhatsApp groups, formulating registers and also providing the information in the pertinent local languages on the project proponent's websites for ease of access.

2.1.8 Feedback and Grievance Redress Procedure Accessibility (3.13.12)

To begin with, an email ID will be provided to all stakeholders to ensure a smooth feedback loop. Before the start of the crediting period, this structure will be expanded to also consider regular meetings, setting up WhatsApp groups, formulating registers and also providing the information in the pertinent local languages on the project proponent's websites for ease of access.

2.1.9 Stakeholder Access to Project Documentation (3.13.13)

All documents submitted to Verra will be available on the Verra Registry once it is open for public comment. The project proponents also intend to provide project documentation and

monitoring reports to all stakeholders through a website and WhatsApp account. By offering a choice between these two platforms, stakeholders can select the platform that best aligns with their accessibility needs and personal preferences.

2.1.10 Information to Stakeholders on Validation and Verification Process (3.13.14)

Information regarding the validation and verification process will be communicated to the shareholders, verbally or in writing well in advance. For all future instances, information about the validation and verification process shall be shared with stakeholders during the initial consultation process. Stakeholders will also be informed of any probable site visits at least ten days prior to the date of the visit.

2.2 Public Comments (3.13.15 – 3.13.18)

Demonstrate how due account of any comments received during the public comment period has been taken. Include details on any updates to the project design, or demonstrate the insignificance or irrelevance of comments.

Note – This section is only required to be completed after the 30-day public comment period, prior to validation or crediting period renewal. However, if any general comments on the project activity from local stakeholders were received prior to the commencement of the public comment period, please include those here.

2.3 Safeguards (3.14)

2.3.1 Health and Safety (3.14.2 – 3.14.3)

The collection and recycling of any waste products including plastics poses health and safety risks to the workers involved in the activity. Workers working in the various project waste facilities are likely to be exposed to health hazards, such as[23]:

- Respiratory symptoms: runny nose, sneezing, frequent headache;
- Musculoskeletal or neuro symptoms: tiredness, backache, body pain;
- Other symptoms: skin rashes, vomiting and diarrhea.

Additional potential work-related hazards and safety risks faced by waste workers include:

- Injuries while operating waste handling equipment, such as shredders or grinders: Heavy machinery users have an increased risk of entanglement, crush injuries, or amputations if proper safety measures are not followed.
- Ergonomic Hazards: Poor ergonomics and repetitive tasks can lead to musculoskeletal disorders, including strains, sprains, and other injuries.

[23] Gowda, Bharat & Gurusiddappa, Lingaraju & Kalikeri, Shankramma. (2023). Study on Occupational Health Hazards of Municipal Solid Waste Workers - A Review. World Journal of Environmental Biosciences. 12. 24-31. 10.51847/dmEF1XWBtq.

rePurpose Global's Impact Code ensures that all participants in the project activities adhere to the safety standards stipulated in the code. Regular training sessions are conducted for the workers to refresh the information. The project proponents provide SOP, PPE, workflow and manual for all employees and informal waste workers. Routine health and safety training are conducted for all workers included in the project activities. First aid kits are also provided at the collection centers manned by staff having basic training in first aid. Rintz Industries has an Occupational Health Safety (OHS) policy in place and health insurance is also provided to all full-time employees.

2.3.2 Labor (3.14.4 – 3.14.8)

The project complies with all relevant labor and human rights laws of the country and strict measures are in place to ensure compliance with all applicable laws governing project operations. The workers engaged in this project are adequately compensated for their work and they are not mandated to work in conditions that would compromise their health, safety, or religious beliefs. The project activities do not involve any child or forced labor.

For informal workers, the project activities generate additional income and this benefits their livelihood as most of them are from underprivileged sections of society. There is no loss of employment or income generation as a result of project activities.

2.3.3 Energy Efficiency and Greenhouse Gases (3.14.9 – 3.14.13)

While the project does not actively measure energy consumption or GHG emissions yet, the project proponents endeavor to make active efforts to enhance energy efficiency during the course of the project. Our primary focus is on optimizing vehicle capacity for material delivery, aiming to improve the efficiency of material dispatch on a per-kilogram basis. Baling of the collected material is thus encouraged at the primary processing centers. Additionally, plans have been devised to upgrade the lighting system by installing energy-efficient LED lights throughout the facilities.

For the recycling activity, GHG emissions are mainly due to the energy consumption of machinery utilized in recycling facilities and the transportation. But the recycling activity itself results in overall reduction in GHG emissions due to a) Recycled goods replacing virgin plastic for manufacturing processes; b) reduction in GHG emissions associated with better management of plastic waste that otherwise would have been disposed off through open burning. The transportation costs are reduced, and efficiency increased by ensuring that trucks are filled to the maximum allowable limits. While no active initiatives to reduce GHG emissions or improve energy efficiencies have been undertaken at the recycling facilities, future scenarios include switching over from fossil fuel-based electricity sources to alternative sources of energy.

2.3.4 Condition of Natural Resources (3.14.14 – 3.14.15)

Impact on air: Close to 56% of the mismanaged plastic waste is openly burnt in Kenya as established in Section 3.6. By channeling the collected waste towards recycling, the project activity aids in reduction of pollution caused by open burning therefore having a positive impact on air quality within the project boundary.

Impact on water resources: In the baseline scenario, water resources are affected either through the pollution of chemicals from plastic waste leaching into groundwater or by the runoff of plastics into water bodies. By channeling the collected waste towards recycling, the project ensures that these negative impacts are reduced within the project boundary. Furthermore, the project endeavors to also achieve positive impacts through encouraging waste water recharge and reuse in the recycling facilities, thereby reducing consumption.

Impacts on soil: Slow degradation of plastics present in landfills and dumpsites may result in leaching of harmful chemicals into the soil. Reduction of plastic waste ending up in landfills because of regularized collection will lead to substantial improvement in the soil quality of the region.

Impact on biodiversity: Project activities do not take place in protected areas or in biodiversity hotspots. Collection of plastic waste prevents leakage of waste into the oceans resulting in an overall improvement of the marine ecosystem. By focusing collection from coastal communities in the first instance, the project enables the prevention of plastic pollution in eco-sensitive wildlife hotspots.

2.3.5 Additional Impact Certifications (3.14.16)

No additional impact certifications.

3 Application of Methodology

3.1 Title and Reference of Methodology (3.1.2)

Methodology 1: PWRM0001 Plastic Waste Collection Methodology , Version 1.1 (dated 30th June 2022)

Methodology 2: PWRM0002 Plastic Waste Recycling Methodology , Version 1.1 (dated 30th June 2022)

3.2 Applicability of Methodology

The project activities meets the applicability conditions of PWRM0001 Plastic Waste Collection Methodology, Version 1.1 as follows:

1. *Project activities result in plastic waste collection from the environment through **informal collection** activities:*

   The plastic waste collection activities in the project are conducted by informal sector waste pickers, aggregators or community-based organizations which are then bought by the project proponents.

2. *The collection activity is a **new activity** resulting in an increase in the total capacity of recovered recyclable plastic waste.*

   At each collection instance, the project proponents regularize the collection of plastic waste in order to ensure recycling of the collected waste thus establishing new, sustained collection activities.

3. *The sources of the collected waste are clearly identifiable and are existing or potential sources of plastic waste that would have been left or dumped in the environment.*

   As described in Section 3.5, this is demonstrated through the baseline study.

4. *The collected waste is transferred to mechanical recycling facilities for recycling.*

   The collected waste is first presorted to retrieve the different plastic polymers at the primary processing centers and then transported to the MRF at Nairobi where secondary sorting is conducted before the sorted plastic waste is mechanically recycled.

5. *The dry weight of the final output of collected plastic waste that reaches the recycling instances is directly measured and recorded.*

   The final output sent to mechanical recyclers is weighed and recorded at the processing facilities and/or third party weighbridges and at the recycling facility. The weighslips provided at time of weighment provide this information.

6. *The output of the collection activity is not used in any unauthorized, illegal or non-statutory activities within the project boundary.*

   The collected material is transported for recycling and payment logs and transport logs indicating dispatch and receipt of material from the processing center to the recycling facility can be provided to demonstrate the ethical use of the output of collected waste.

7. *The material collected in the project activity is taken to the **mechanical recycling as the appropriate end destination** throughout this methodology.*

   The collected waste material is transported to the Vintz Recycling Facility in Nairobi where it is processed into pellets and/or flakes.

8. *There is plastic waste available in the region that would not have been collected in the absence of the project.*

   The availability of uncollected and mismanaged plastic waste is demonstrated in the baseline scenario using recent most publicly available data on plastic waste.

9. *The project activity does not compete with other collection activities or include plastic waste that has been diverted from a historically existing collection activity:*

   The baseline for Kenya established that less than 8% of generated plastic waste is managed and that too is done owing to the contributions of the informal sector. Since the project sources waste that is already collected but dumped, the project does not compete with other collection activities.

10. The project activities do not include any of the following end-of-life destinations of plastic waste:
    a. Open burning,
    b. Dumping on open land,
    c. Dumping in water bodies and/or dumpsites, or
    d. Incineration without energy recovery.

11. No transboundary movement of collected plastic waste occurs between countries.

The project activities meets the applicability conditions of PWRM0002 Plastic Waste Recycling Methodology, Version 1.1 as follows:

1. *Project activities result in recycled plastic waste through capacity addition to or technology improvement of an existing recycling facility and also through incentivizing and/or facilitating an increase in the collection and sorting of plastic waste to enable an increase in its recycling.*

   The project activities involve incentivizing and facilitating an increase in the collection and sorting of recyclable plastic waste through informal waste suppliers. This is enabled through consistent payments to waste collectors and waste aggregators for their efforts towards increased collection & sorting. The project also intends to introduce better purchased equipment that enables enhanced recycling rates.

2. *The plastic waste being recycled through the project activities are collected and/or diverted from the environment.*

The plastic waste collected in this project is sourced by waste pickers from dumpsites or from waste aggregators and community-based organizations. In the absence of the project activities, this waste would have been either openly burned or leaked into the environment if left uncollected, as established in Section 3.5.

3. *The project activities include mechanical recycling as defined in the latest version of the Plastic Program Definitions.*

   The project end destination includes one active mechanical recycling facility in Nairobi as mentioned in Section 1.

4. *The plastic waste stream is sorted before it enters the recycling process.*

   The waste undergoes multiple stages of sorting from collection till processing. The initial sorting occurs at the primary processing centers. The waste received at the recycling facilities are further sorted to ensure that only relevant plastic polymers are put through the recycling process, thus enabling increased plastic recovery efficiency.

5. *The plastic waste intended for recycling is not mixed with hazardous substances.*

   Sorting of the plastic waste ensures that no contaminated waste is mixed with the plastics intended for recycling. During the course of project conduction, if plastic waste containing hazardous material or substances is observed, it will be treated following relevant national, regional and local regulations, industry best practices.

6. *It is possible to directly measure and record the final output of the recycling facility (i.e. the weight of recycled plastic waste)*

   The recycled plastic waste at the recycling facility can be measured as the net quantity derived from the material that reaches the recycling facility and the weight of the material that turns into pellets. Hence it is possible to directly measure and record the final output of the recycling facility.

7. *The quality of the recycled plastic waste allows it to be used as feedstock in the manufacture of recycled products, thereby displacing the use of virgin plastic.*

   The quality of the recycled waste is checked at the recyclers' before it is sent into the conversion process.

8. *There is recyclable plastic waste available in the region that would not have been recycled in the absence of the project.*

The availability of recyclable plastic waste is demonstrated in the baseline scenario using recent most publicly available data on plastic waste.

9. Project activities do not include any depolymerization of sorted plastic waste.

10. *The project activity does not compete with other recycling activities or include plastic waste that has been diverted from a historically existing, legally recognized recycling activity.*

    The baseline for plastic waste recycled in Kenya is established at a negligible 8%. Therefore, the project does not compete with other recycling activities and instead, aims to enhance and supplement the existing recycling efforts in the project locations while empowering waste entrepreneurs.

11. *The plastic waste that enters the project recycling facility but is not recycled is managed in a responsible and non-polluting way that does not include dumping on open land, in water bodies and/or at dumpsites, open burning, or incineration without energy recovery.*

    The plastic waste quantities that is lost during the washing process is recovered and reprocessed into fencing poles to be used during construction and hence is managed responsibly and in a non-polluting way.

12. No plastic waste to be recycled in this project has been collected in or/and imported from other countries.

3.3 Project Boundary (3.8)

Source		Material Type	End-of-Life	Explanation
Baseline	Unregulated dumpsites or landfill disposal sites	PP	Continues to remain in the dumpsites, sometimes openly burnt and leaks into the environment	In Kenya, almost 92% of the generated plastic waste is mismanaged eventually making its way to dumpsites. In the absence of collection activities, most waste ends up in unsanitary landfill sites that are government owned but mismanaged. Mixed waste that reaches these sites are often piled, sometimes leading to leakage of plastics back into the environment and most often, burning caused due to the heat generated in the landfill.
		LDPE		
		HDPE		
		PET		
	Littering in the environment	PP	Continues to remain in the environment or if cleaned up, is	
		LDPE		
		HDPE		

	- on land or water	PET	transported to a dumpsite.	
Project	Unregulated dumpsites or landfill disposal sites	PP	Recycled into feedstock such as pellets or flakes, etc.	The collected waste is sorted and through mechanical recycling, the material is converted into pellets or flakes to be sold to product manufacturers or converted into utility products.
		LDPE		
		HDPE		
		PET		
	Littering in the environment - on land or water	PP	Recycled into feedstock such as pellets or flakes, etc.	
		LDPE		
		HDPE		
		PET		

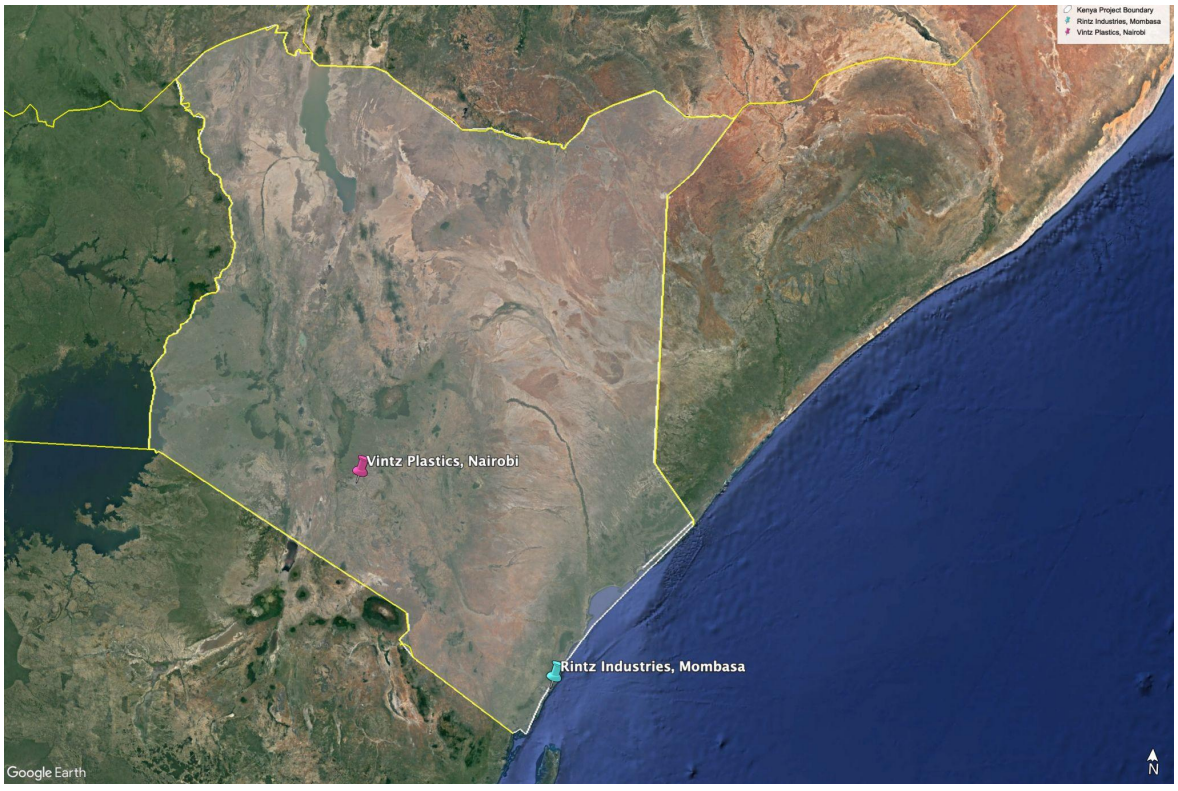

Figure 9: Map of the project boundary including the current operational instances located in Mombasa and Nairobi
Source: Google Earth

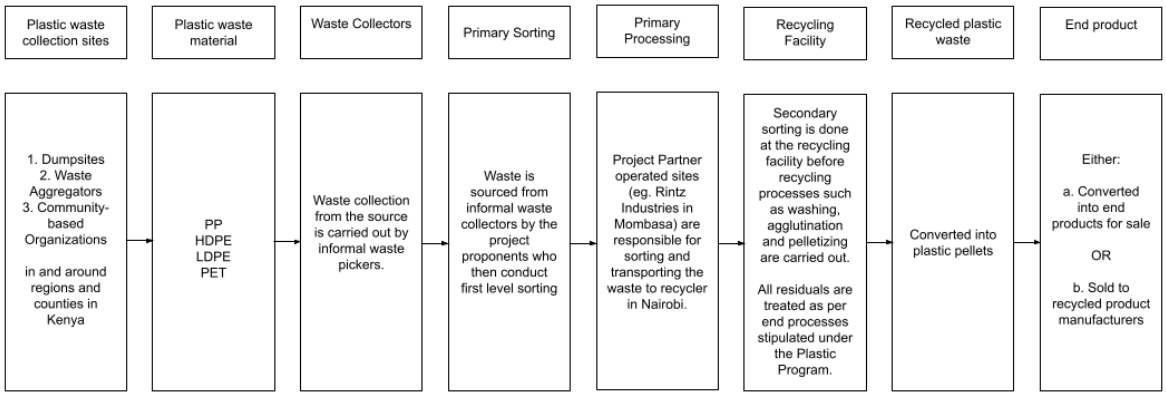

Figure 10: Project Boundary Diagram as per Plastic Waste Collection & Recycling Methodologies

3.4 Project Region

The project operates in different locations of Kenya with all project instances located within the country's national boundary.

The first collection instance is located in Mombasa and the recycling instance is in Nairobi. As a grouped project with multiple instances of multiple activities, all future instances will also be located within this defined project region - i.e. the country of Kenya.

3.5 Plastic Waste Collection and/or Recycling Baseline Scenario (3.9)

As per the IUCN 2020 report, National Guidance for Plastic Pollution Hot Spotting and Shaping Action for Kenya, 92% of plastic waste produced in Kenya is mismanaged. And only approximately 7% of the 503,000 tonnes of plastic waste generated is recycled domestically.[24] Plastic waste management constitutes a significant challenge in Kenya, due to the rampant use of plastic packaged products and deficient formal waste management systems.

Kenya has an estimated population of 47.6 million people[25], with the largest concentration being in the capital city, Nairobi (4.6 million) followed by the second biggest city, Mombasa (over one million). The rapid development of the country is also reflected in the plastic waste generation data where on average, 0.39 kg of waste per capita occurs daily.[26] [27] Roughly a tenth of the municipal waste volume in Kenya comes from plastics, mainly packaging material. Although approximately 27% of the plastic waste generated is collected, only 8% of

[24] IUCN-EA-QUANTIS, 2020, National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Available here.
[25] Kenya National Bureau of Statistics. 2019. Accessible here.
[26] World Bank (2018). What a Waste 2.0: A Global Snapshot on Solid Waste Management to 2050 [pdf]. Available here.
[27] OECD (2017). Municipal waste. [online] Available here.

the collected waste is sent for recycling. The remaining 19% is disposed of in unsanitary landfills or dumpsites.[28]

Collection & Recycling Baseline

According to the Plastic Waste Collection Methodology (PWRM0001), the baseline scenario represents the plastic waste management activities that would most likely occur in the absence of the project activity. According to the Plastic Waste Recycling Methodology (PWRM0002), the baseline scenario is that, in which, without project implementation, the plastic waste would not have been recycled. In this project, this represents the collection of plastic types mentioned in Section 1.2 with the intent to recycle the same across the project region.

Although there exists laws and regulations that govern waste management in the country, the inefficient public service provision leads to the rise of a dominant informal sector in waste management - ranging from waste pickers, collectors, sorters to even recyclers. This informal sector focuses on the collection of waste with high value and such items are cherry picked before transporting to dumpsites. In the absence of waste segregation at source, most low value plastics are contaminated with other types of waste and the recovery of plastics, particularly flexibles for recycling, from dumpsites poses an enormous challenge.

Figure 11 provides an overview of the waste management scenario for the top four urban centers in Kenya as well as other urban and rural archetypes. On average, it is seen from the data below that although the plastic waste collection rates range between 30-70%, waste that is collected for recycling specifically averages at 19% across the country. The remaining collected waste and uncollected waste is mismanaged and most likely improperly disposed of at dumpsites or leaks into the environment.

Archetypes	Population 2020	Generated t	Collected t	Collected for recycling t	Properly disposed t	Improperly disposed t	Uncollected t	Mismanaged t	Leaked t	Generated kg/hab	Collected for recycling kg/hab	Mismanaged kg/hab	Share of collected	Share of mismanaged
Mombasa	665449	19915	14275	3799	0	10475	5641	16116	1010	29.9	5.7	24.2	72%	81%
Kisumu	400942	11999	4231	2289	0	1942	7768	9710	498	29.9	5.7	24.2	35%	81%
Nakuru	846194	25324	14053	4831	0	9222	11271	20493	1204	29.9	5.7	24.2	55%	81%
Nairobi	4782357	143124	85736	27305	0	58430	57388	115818	11582	29.9	5.7	24.2	60%	81%
Urban other	3903692	116828	23366	0	0	23366	93462	116828	9210	29.9	0.0	29.9	20%	100%
Rural	43535850	185577	0	0	0	0	185577	185577	11634	4.3	0.0	4.3	0%	100%

Figure 11: Diagram representing the mismanaged plastic waste across various locations in Kenya
Source: IUCN-EA-QUANTIS (2020)

Furthermore, Project Ekonomia ya bluu intends to recover polymers that have the highest leakage rates and are mostly mismanaged in the country, From Figure 12, it is evident that of the polymers that have domestic recycling options available, PP, PET, LDPE, HDPE and

[28] IUCN-EA-QUANTIS, 2020, National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Available here.

PVC form the top contributors in absolute leakage. Most of these exist as packaging as this is the sector with the highest absolute leakage. Half of generated PP waste comes from the packaging sector and yet, only 5% gets recycled domestically. Data for the other polymers also showcase recycling rates lower than 20% and thus, the project's baseline scenario is that "without project implementation, the plastic waste would have remained in the environment, been disposed of by open burning, incinerated without energy recovery, and/or disposed of in a dumpsite, and the plastic waste would not have been recycled".

Polymer Type	Waste produced in country	Domestic recycling of collected	Export of collected	Properly disposed	Improperly disposed	Uncollected	Tot	Collected	Mismanaged	Leaked	Waste produced and imported	Domestic recycling incl imported
PET	44	10%	3%	0%	21%	66%	100%	34%	87%	12%	44	11%
PP	109	5%	1%	0%	19%	74%	100%	26%	94%	9%	110	6%
Polyester	113	0%	0%	0%	23%	77%	100%	23%	100%	5%	113	0%
LDPE	53	15%	2%	0%	18%	64%	100%	36%	83%	10%	53	16%
HDPE	52	19%	2%	0%	16%	63%	100%	37%	79%	8%	53	20%
PS	5	0%	0%	0%	18%	82%	100%	18%	100%	8%	5	1%
Other	69	4%	1%	0%	18%	77%	100%	23%	95%	5%	69	4%
Synthetic Rubber	24	8%	0%	0%	21%	71%	100%	29%	92%	7%	24	8%
PVC	35	1%	0%	0%	13%	86%	100%	14%	99%	4%	35	1%
All	503	7%	1%	0%	19%	73%	100%	27%	92%	7%	506	7%

Figure 12: Diagram representing the mismanaged plastic waste by plastic types
Source: IUCN-EA-QUANTIS (2020)

The lack of robust waste management practices in Kenya has damaging consequences for both the environment - with the deterioration of air quality and leakage of plastics into waterways,- and also, public health. Studies have shown that serious illnesses like diarrhea, malaria and infections of the respiratory system have also been associated with populations living near dumpsites.[29] At present, there is limited investment in plastic recycling and recovery systems in the country. Project Ekonomia ya bluu endeavors to use plastic credit financing to recover mismanaged recyclable plastics, scale up formal recycling centers in the country while also enhancing the livelihoods of formal and informal waste workers.

3.6 Additionality (3.10)

Applied methodologies: Plastic Waste Collection Methodology, version 1.1 (PWRM0001) and Plastic Waste Recycling Methodology, version 1.1 (PWRM0002)

Step 1: Regulatory Surplus

The Kenyan government has been proactive in setting up regulatory frameworks that work towards good plastic waste management with a key focus on recycling. These include both national and regional drivers. Plastic bag manufacturing bans were introduced in the country

[29] Brian Gicheru and Gordian Kimbio, The Toxic Plastic Waste Trade - a Case Study of Muoroto Slum in Mombasa, Kenya, IPEN (2021). Accessible here.

as early as 2015. The government has been trying to address plastic pollution through a set of legal and regulatory frameworks such as the Plastic Bag Ban for Secondary Packaging (2017), Plastic Bag Control and Management Regulations (2018), National Sustainable Waste Management Bill (2019) and Ban on Single Use Plastics (2020). The government has also worked extensively to launch the Kenya Plastics Pact (KPP) to develop financial and innovation support to manage plastic waste in Kenya. The Pact also promotes bringing together many key players and stakeholders from the whole plastic value chain and builds collective solutions to plastic waste and pollution.

Although the country has been successful in implementing some of these regulatory frameworks, there is a need for stricter implementation and enforcement of these bans. Due to the lack of an EPR system that targets all plastics, it is evidently difficult to manage all single-use plastic products, particularly packaging. As demonstrated in Section 3.5, plastic waste management data demonstrates widespread non-compliance with the applicable legislation throughout Kenya. 92% of Kenya's plastic waste is mismanaged with the plastic recycling rate estimated at around 8%.

Outcome 1: *There are laws and regulations that enforce the collection and recycling of plastic waste, but these are not systematically enforced, and non-compliance is widespread.*

—----------

Step 2: Positive list

The project does not meet any criteria under the positive list to be deemed automatically additional.

Outcome 2: *The project activity is not included in the positive list.*

—----------

Step 3a: Penetration rate (PR)

In Kenya, although some of the generated plastic waste is collected, most of it is brought to dumpsites as the waste is most often mixed and not segregated thereby disabling recovery. As previously established in Section 3.5, the plastic waste collection that results in recycling is led by the informal sector either through plastic collection at the source and/or recovery post-disposal (from dumpsites, landfills or nature).

Therefore, informal recovery that is channeled to recycling is used as a reference to calculate the Penetration Rate (PR). Since the first project instances are located within Mombasa and Nairobi, the PR for both these regions have also been demonstrated.

<u>Collection</u>

According to the Plastic Waste Collection Methodology, the penetration rate is calculated by determining the ratio between plastic waste collection in the region (C) and the plastic waste

generation (G). Plastic waste collection and generation data is derived from the report issued by IUCN, EA & Quantis on the National Guidance for Plastic Pollution Hotspotting and Shaping Action (2020).

Total waste generated in Kenya is 503,000 tonnes per year. Only 27% of the plastic waste generated is collected: 8% for recycling and the remaining 19% disposed of in unsanitary landfills or dumpsites, i.e. only 40,240 tonnes are collected and channeled to recycling.[30]

Collection Penetration Rate (Kenya) = C/G x 100
= 40.240 / 503,000 x 100
= 8%

Individual waste generation, collection and mismanaged quantities for Mombasa and Nairobi, the projects first instances, as well as other urban centers like Nakuru and Kisumu are established in the table below:

Geography	Generated (t)	Collected for recycling (t)	Mismanaged (t)
Mombasa	19,915	3,799	16,116
Nairobi	143,124	27,305	115,818
Nakuru	25,324	4,831	20,493
Kisumu	11,999	2,289	9,710
Urban other	116,828	0	116,828

Recycling

According to the Plastic Waste Recycling Methodology, the penetration rate is calculated by determining the ratio between the total installed recycling capacity (C) and total plastic waste generation (G). Only 27% of the plastic waste generated is collected: 8% for recycling and the remaining 19% disposed of in unsanitary landfills or dumpsites, i.e. only 40,240 tonnes are collected and channeled to recycling.

Domestic recycling rates for the individual polymer types that are collected also indicate less than 20% in the country as indicated below[29]:

- PET - 10%
- PP - 5%

[30] IUCN-EA-QUANTIS, 2020, National Guidance for plastic pollution hotspotting and shaping action, Country report Kenya. Available here.

- LDPE - 15%
- HDPE - 19%

Outcome 3: The project penetration rate for collection and recycling is below 20%. Therefore, the plastic collection activities are deemed additional.

3.7 Methodology Deviations (3.15)

No deviations were applied from the Plastic Waste Collection or Recycling Methodologies.

4 Estimated Collected and/or Recycled Plastic Waste

4.1 Baseline Collected and/or Recycled Plastic Waste

As per the Plastic Waste Collection Methodology, baseline plastic waste is calculated as:

$$B_{collected,d,y} = \sum_{i=1}^{n} B_{collected,i,d,y} \quad \text{(Equation 2)}$$

where

$B_{collected,d,y}$

= Total baseline plastic collected and transferred to destination d in year y (tonnes), where d is an appropriate end destination

$\sum_{i=1}^{n} B_{collected,i,d,y}$

= Amount of plastic collected in the absence of the project activity and transferred to destination d in a year y (tonnes).

Since the collection of the plastic waste is a new activity that focuses on recovery of the uncollected or mismanaged plastic waste in all collection instances,

$B_{collected,d,y} = 0$

As per the Plastic Waste Recycling Methodology, baseline plastic waste is calculated as:

$$B_{recycled,y} = \sum_{i=1}^{n} B_{p,recycled,i,y} \times AF_i + \sum_{i=1}^{n} B_{dp,recycled,i,y} \times MF \quad \text{(Equation 2)}$$

where

$B_{recycled,y}$

= Baseline amount of recycled plastic waste in year y (tonnes)

: $\sum_{i=1}^{n} B_{p,recycled,i,y}$

= Baseline amount of recycled plastic waste of material type i in year y (tonnes) without depolymerization

AF_i -

= Adjustment factor for non-composite materials = 1

$$\sum_{i=1}^{n} B_{dp,recycled,i,y} \times MF$$

= Baseline amount of recycled plastic waste in the form of depolymerized plastics from material type i in year y (tonnes) = 0

MF

= Mass fraction of the output of the depolymerization process used for plastic production

Since the project activity is incentivizing an increase in the collection and sorting of plastic waste to enable an increase in its recycling and since the facility has been operational for between one and three years, the average annual recycling rate for the period from the operational start date of the existing facility until the start of the project activity is considered.

$B_{recycled,y}$ = 1,981 tonnes

4.2 Project Collected and/or Recycled Plastic Waste

As per the Plastic Waste Collection Methodology, collected plastic waste is calculated as:

$$P_{collected,d,y} = \sum_{i=1}^{n} P_{collected,i,d,y} \quad \text{(Equation 3)}$$

where

$P_{collected,d,y}$

= Total plastic waste collected by project activity and transferred to destination d in year y (tonnes)

$$\sum_{i=1}^{n} P_{collected,i,d,y}$$

= Total plastic waste collected by the project activity and transferred to destination d in year y (tonnes)

Year	Estimated project collected	Estimated project collected	Estimated project collected	Estimated project collected	Estimated project collected

	PET plastic (tonnes)	PP plastic (tonnes)	LDPE plastic (tonnes)	HDPE plastic (tonnes)	plastic (tonnes)
2024	500	3,600	1,500	1,000	6,600
2025	500	4,200	1,500	1,000	7,200
2026	667	4,800	2,000	1,333	8,800
2027	667	5,400	2,000	1,333	9,400
2028	667	6,000	2,000	1,333	10,000
2029	833	7,200	2,500	1,667	12,200
2030	833	7,800	2,500	1,667	12,800
2031	833	8,400	2,500	1,667	13,400
2032	1,083	9,000	3,250	2,167	15,500
2033	1,083	9,600	3,250	2,167	16,100
Total	**7,667**	**66,000**	**23,000**	**15,333**	**112,000**

As per the Plastic Waste Recycling Methodology, collected plastic waste is calculated as:

$$P_{recycled,y} = \sum_{i=1}^{n} P_{p,recycled,i,y} \times AF_i + \sum_{i=1}^{n} P_{dp,recycled,i,y} \times MF$$ (Equation 3)

where

$P_{recycled,y}$

= Total amount of plastic waste recycled by the project activity in year y (tonnes)

$P_{p,recycled,i,y}$

= Amount of plastic waste of material type i recycled by the project activity in year y (tonnes) without depolymerization collected by the project activity and transferred to destination d in year y (tonnes)

AF_i

= Adjustment factor for non-composite materials = 1

$P_{dp,recycled,i,y}$

= Amount of plastic waste in the form of depolymerized plastics of material type i recycled by the project activity in year y (tonnes) = 0

MF

= Mass fraction of the output of the depolymerization process used for plastic production

Year	Estimated project recycled PET plastic (tonnes)	Estimated project recycled PP plastic (tonnes)	Estimated project recycled LDPE plastic (tonnes)	Estimated project recycled HDPE plastic (tonnes)	Estimated project recycled plastic (tonnes)
2024	483	3,474	1,448	965	6,369
2025	483	4,053	1,448	965	6,948
2026	643	4,632	1,930	1,287	8,492
2027	643	5,211	1,930	1,287	9,071
2028	643	5,790	1,930	1,608	9,650
2029	804	6,948	2,413	1,608	11,773
2030	804	7,527	2,413	1,608	12,352
2031	804	8,106	2,413	1,750	12,931
2032	1045	8,685	3,136	2,091	14,957.5
2033	1045	9,264	3,136	2,091	15,536.5
Total	**7,398**	**63,690**	**22,195**	**14,797**	**108,080**

4.3 Net Collected and/or Recycled Plastic Waste

As per the Plastic Waste Collection Methodology, collected plastic waste is calculated as:

$$N_{collected,y} = \sum_{d=1}^{m} P_{collected,d,y} - B_{collected,d,y}$$

(Equation 4)

where,

$N_{collected,y}$

= Net Plastic Waste Collected in year y (tonnes)

Total Estimated Net Collected Plastic Waste

Year	Estimated baseline collected plastic waste (tonnes)	Estimated project collected plastic waste (tonnes)	Estimated net collected plastic waste (tonnes)
2024	0	6,600	6,600
2025	0	7,200	7,200
2026	0	8,800	8,800
2027	0	9,400	9,400
2028	0	10,000	10,000
2029	0	12,200	12,200
2030	0	12,800	12,800
2031	0	13,400	13,400
2032	0	15,500	15,500
2033	0	16,100	16,100
Total	**0**	**112,000**	**112,000**

Total Estimated Net Collected PET Plastic:

Year	Estimated baseline collected PET plastic waste (tonnes)	Estimated project collected PET plastic waste (tonnes)	Estimated net PET collected plastic waste (tonnes)
2024	0	500	500
2025	0	500	500
2026	0	667	667
2027	0	667	667
2028	0	667	667
2029	0	833	833
2030	0	833	833
2031	0	833	833

2032	0	1,083	1,083
2033	0	1,083	1,083
Total	**0**	**7,667**	**7,667**

Total Estimated Net Collected LDPE Plastic:

Year	Estimated baseline collected LDPE plastic waste (tonnes)	Estimated project collected LDPE plastic waste (tonnes)	Estimated net LDPE collected plastic waste (tonnes)
2024	0	1,500	1,500
2025	0	1,500	1,500
2026	0	2,000	2,000
2027	0	2,000	2,000
2028	0	2,000	2,000
2029	0	2,500	2,500
2030	0	2,500	2,500
2031	0	2,500	2,500
2032	0	3,250	3,250
2033	0	3,250	3,250
Total	**0**	**23,000**	**23,000**

Total Estimated Net Collected HDPE Plastic:

Year	Estimated baseline collected HDPE plastic waste (tonnes)	Estimated project collected HDPE plastic waste (tonnes)	Estimated net HDPE collected plastic waste (tonnes)
2024	0	1,000	1,000
2025	0	1,000	1,000

2026	0	1,333	1,333
2027	0	1,333	1,333
2028	0	1,333	1,333
2029	0	1,667	1,667
2030	0	1,667	1,667
2031	0	1,667	1,667
2032	0	2,167	2,167
2033	0	2,167	2,167
Total	**0**	**15,333**	**15,333**

Total Estimated Net Collected PP Plastic:

Year	Estimated baseline collected PP plastic waste (tonnes)	Estimated project collected PP plastic waste (tonnes)	Estimated net PP collected plastic waste (tonnes)
2024	0	3,600	3,600
2025	0	4,200	4,200
2026	0	4,800	4,800
2027	0	5,400	5,400
2028	0	6,000	6,000
2029	0	7,200	7,200
2030	0	7,800	7,800
2031	0	8,400	8,400
2032	0	9,000	9,000
2033	0	9,600	9,600
Total	**0**	**66,000**	**66,000**

As per the Plastic Waste Recycling Methodology, collected plastic waste is calculated as:

$$N_{recycled,y} = P_{recycled,y} - B_{recycled,y}$$

(Equation 4)

where,

$N_{recycled,y}$ = Net Recycled Plastic Waste in year y (tonnes)

Note: Since the average annual recycling rate for the period from the operational start date of the existing facility until the start of the project activity is considered for the baseline, this volume has not been split by polymer and is uniformly considered as

$B_{recycled,y}$ = 1,981 tonnes

Total Estimated Net Recycled Plastic Waste by Polymer

Year	Estimated baseline recycled plastic waste (tonnes)	Estimated project recycled PET plastic waste (tonnes)	Estimated project recycled LDPE plastic waste (tonnes)	Estimated project recycled HDPE plastic waste (tonnes)	Estimated project recycled PP plastic waste (tonnes)	Estimated net recycled plastic waste (tonnes)
2024	1,981	483	1,448	965	3,474	4,388
2025	1,981	483	1,448	965	4,053	4,967
2026	1,981	643	1,930	1,287	4,632	6,511
2027	1,981	643	1,930	1,287	5,211	7,090
2028	1,981	643	1,930	1,608	5,790	7,669
2029	1,981	804	2,413	1,608	6,948	9,792
2030	1,981	804	2,413	1,608	7,527	10,371
2031	1,981	804	2,413	1,750	8,106	10,950
2032	1,981	1045	3,136	2,091	8,685	12,977
2033	1,981	1045	3,136	2,091	9,264	13,556
Total	**19,808**	**7,398**	**22,195**	**14,797**	**63,690**	**88,272**

5 MONITORING

5.1 Data and Parameters Available at Validation (3.12)

For plastic waste collection:

Data / Parameter	$B_{collected,d,y}$
Unit	tonnes / year
Description	Amount of plastic waste collected in the baseline scenario and transferred to destination *d* in year *y*
Equation	$B_{collected,d,y} = \sum_{i=1}^{n} B_{collected,i,d,y}$
Value	0
Source of data	Baseline analysis conducted using publicly available studies conducted by qualified, independent third parties
Justification of choice of data or description of measurement methods and procedures applied	Since collection activities will be new in each project instance, the baseline plastic waste collection is zero.
Purpose	Determination of baseline scenario
Comments	None

For plastic waste recycling:

Data / Parameter	$B_{recycled,d,y}$
Unit	tonnes / year
Description	Amount of plastic waste by polymer recycled in the baseline scenario and transferred to destination *d* in year *y*

Equation	$B_{recycled,y} = \sum_{i=1}^{n} B_{p,recycled,i,y} \times AF_i + \sum_{i=1}^{n} B_{dp,recycled,i,y} \times MF$
Value	To be calculated per polymer as: • PET - 10% • PP - 5% • LDPE - 15% • HDPE - 19%
Source of data	Baseline analysis conducted using publicly available studies conducted by qualified, independent third parties
Justification of choice of data or description of measurement methods and procedures applied	Domestic recycling rates for the individual polymer types.
Purpose	Determination of baseline scenario
Comments	None

5.2 Data and Parameters Monitored (3.12)

For plastic waste collection:

Data / Parameter	$P_{collected,d,y}$
Unit	tonnes / year
Description	Amount of plastic collected by the project activity and transferred to destination *d* in year *y*
Equation	$P_{collected,d,y} = \sum_{i=1}^{n} P_{collected,i,d,y}$
Source of data	Measurement on a dry basis at the primary processing center, as output of the sorting activity and at the recycling facility
Description of measurement methods and procedures applied	At processing centers operated by Rintz Industries, direct measurement of the sorted waste as well as sales receipts between Rintz and the waste suppliers are maintained. At the recycling facility, direct measurement of the waste

	received for recycling is captured and recorded in the end destination certificate.
Frequency of monitoring/recording	Each time plastic waste collected is received at and dispatched from the processing centers and received at the recycling centers.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Quality assurances are: • Sales receipt between waste suppliers and processing centers with details of payment; • Frequent calibration of in house weighbridges and provision of calibration certificates for third party weighing mechanisms; • QC processes maintained by the recyclers.
Purpose	Calculation of project collected plastic waste
Comments	-

For plastic waste recycling:

Sorting Output

Data / Parameter	Sorting Output
Unit	tonnes/year
Description	Quantity of sorted plastic waste of each polymer type
Equation	-
Source of data	On-site measurement
Description of measurement methods and procedures applied	Measurement of each polymer type with weighing scales after sorting of waste
Frequency of monitoring/recording	Recorded at the time of sending each batch of sorted plastic waste from the processing centers to the recycling facility.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Scales are calibrated according to the equipment manufacturer's specifications. At the processing facility, the quantity of material types are cross-checked with the sales receipt of sorted plastic waste sold to the recycling facility by material type.

Purpose	Monitoring for compliance with Applicability Condition 4 in Section 4
Comments	Hazardous material if found during sorting, is removed and disposed of following relevant national, regional and local regulations.

Recycling Input Parameter

Data / Parameter	Recycling input
Unit	Dimensionless
Description	List of input materials (e.g., solvents, process fuels) to the recycling process. This includes the category of plastic waste of each material type and any other material(s) used in the recycling process.
Equation	-
Source of data	On-site records
Description of measurement methods and procedures applied	-
Frequency of monitoring/recording	Recorded prior to each batch of sorted plastic waste entering the recycling process
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Where hazardous material is found in the input to the recycling process, it must be eliminated from the process following national, regional and local regulations.
Purpose	Monitoring for compliance with Applicability Condition 5 in Section 4
Comments	-

Project Recycling Parameter

Data / Parameter	$P_{\text{recycled},d,y}$
Unit	tonnes / year
Description	Amount of plastic recycled by the project activity and transferred to destination *d* in year *y*

Equation	$P_{recycled,y} = \sum_{i=1}^{n} P_{p,recycled,i,y} \times AF_i + \sum_{i=1}^{n} P_{dp,recycled,i,y} \times MF$
Source of data	Measurement at the recycling facility weighment mechanisms as output of the recycling process
Description of measurement methods and procedures applied	Measurement at each polymer type that is recycled is carried out and logged at the recycling facility before leaving the facility for sale or use in manufacturing of products onsite
Frequency of monitoring/recording	Recorded at each polymer batch of recycled plastic waste after recycling and prior to leaving the recycling facility.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Project proponents to ensure that recycling facilities adhere to stipulated QCs wherein scales used for measuring the waste are calibrated frequently. Where possible, the amount of plastic recycled shall also be cross-checked with sales receipts of the material sold to the final buyer.
Purpose	Calculation of project recycled plastic waste
Comments	Only the polymer type for which recycling activities are determined to be additional are included in this monitoring.

Adjustment factor (not applicable as the material does not contain composite material)

Data / Parameter	AF_i
Unit	-
Description	Adjustment factor for composite material
Equation	$P_{recycled,y} = \sum_{i=1}^{n} P_{p,recycled,i,y} \times AF_i + \sum_{i=1}^{n} P_{dp,recycled,i,y} \times MF$
Source of data	Default factors listed in Table 2 of the methodology PWRM0002, Version 1.1 that correspond to the composite materials recycled
Description of measurement methods and procedures applied	Apply the default factors listed in Table 2 of the methodology PWRM0002, Version 1.1 that correspond to the composite materials recycled.

Frequency of monitoring/recording	-
Quality Assurance/Quality Control (QA/QC) procedures to be applied	-
Purpose	Calculation of project recycled plastic waste
Comments	-

End destination non-recycled plastic waste

Data / Parameter	End destination of non-plastic waste from recycling facility
Unit	-
Description	End destination of waste (other than non-recycled plastic) produced by the recycling activities of the facility. This includes any waste segregated at the sorting stage within the recycling facility that is not used as an input to the recycling activity and any waste coming out of the recycling process.
Equation	-
Source of data	Third-party evidence such as sales receipts and contractual agreements along with recycling process logs.
Description of measurement methods and procedures applied	-
Frequency of monitoring/recording	Recorded at each polymer batch of recycled plastic waste after recycling
Quality Assurance/Quality Control (QA/QC) procedures to be applied	All hazardous waste shall be managed through environmentally and socially appropriate technologies and processes in accordance with the relevant national, regional and local regulations and guidelines.
Purpose	Monitoring for compliance with Applicability Condition 11 in Section 4
Comments	-

5.3 Monitoring Plan (3.12.3 – 3.12.5)

Robust data collection and monitoring procedures are followed to manage data and information throughout the project operations and to establish continuous flow of materials and chain of custody, whilst ensuring full traceability across the project's value chain. Detailed SOPs will be provided for each measurement task, that outlines responsibilities across the value chain & also records time and location of measurement. Trained project personnel, aware of the value of precise data collection conduct the monitoring of project activities and quantities collected with collector identities. Regular training makes sure that all personnel use standardized processes for data capture.

Table xxx below captures the method of measuring, recording, storing and reporting data and parameters related to different aspects of the project (stages of value chain, social and economic parameters, etc.).

S.No	Project Activity	Checks implemented
1	Waste Collection	• Service level agreements are being drawn up between waste collectors and Rintz Industries, carefully mentioning the terms of the collection, duration of the contract, and payment terms. This is currently dependent on waste supplier awareness and bringing them to understanding to have supplier agreements. • The target material is collected at the aggregators and community-based organizations center by Rintz Industries' trucks wherein the date, name of the collector, weight of the material, vehicle number, and payment receipts are recorded. • Date and time stamped photos of the collection and the vehicle number arriving at the partner collection & consolidation facility will be provided in the documentation and recorded on the transport log.
2	Waste Transportation	• Material at Rintz Industries (and equivalent future Primary Collection Centers) is sorted into different polymers and colors, crushed and packed into 50kg & 100 kg sack bags for transportation to Vintz Plastics in Nairobi. This is weighed at third party weighbridges.

		• Transportation of the material is recorded under the delivery log, capturing vehicle numbers, driver's name, source of the waste collection to the end destination and the weight of the material transported. The picture of all outgoing vehicles on the date of transport or date of arrival at Vintz is also captured. • An inward register of the material received at Vintz Plastics is maintained in an excel sheet. Subsequently, an online tool being developed by proponents of the project will also be used.
3	Recycling facility	• Memorandum of Understanding (MoU) drawn between the recycler and Rintz Industries for processing and recycling the material. • Material reception at the recycler acknowledged by a delivery note to the recycler capturing material types and volumes of the received materials. • End of life certificate from the recycler mentioning the counterparty's name, volume and type of waste disposed and recycled and date of recycling/disposal. • End destination of the non-plastic waste recorded at each polymer batch of recycled plastic waste after recycling to be stated by the recycler
4	Socio Economic	• Worker database created as an excel sheet recording the details of each supplier, contracts, and a declaration from each supplier to not practice forced or child labour in their supply chain. • Payment acknowledgement for each waste supplier is provided by Rintz Industries and provided in the traceability documentation process. • Internal OHS policy or external certifications received;

Monitoring systems have been set up at the supply chain. An overview of monitoring system is provided below:

- Providing suitable payment receipts to the waste suppliers for the material collected at their collection points.
- Rintz administrative representative makes payments to the waste suppliers and collects the waste to be sent to the Rintz Processing Center.
- Rintz Industries manager is present during the offloading of each truck from collection points and records the quantity of materials transported by weighing it on a scale.
- Rintz Plastics project manager records and stamps sorting log for each quantity of sorted materials.
- Weighbridge certificate for transportation from Rintz in Mombasa to Vintz in Nairobi.
- Vintz Plastics administrative representatives are present at each waste unloading instance for waste transportation that came from the collection instances.
- Vintz Plastics project manager verifies the quantity of the sorted materials by weighing them at the facility and confirms the quantity of materials on the sorting log with a signature and stamp.
- Project manager at Vintz Plastics monitors the washing of the materials, records the new quantity of materials before and after washing and crushing due to a loss ratio during washing and monitors the transport to recycler.

Documentation Verification Procedure

Upon receipt of pre-verified documents from the project partner, Rintz Industries, a multi-tiered verification process is carried out by associates, senior managers, and directors at rePurpose Global to authenticate the documents. This multi-tiered verification approach allows for any non-compliance observed in project activities to be identified and addressed in accordance with the project description. In addition to monthly documentation checks, the project undergoes internal physical audits conducted by the project team at rePurpose Global at regular intervals to assess and improve system efficiency on the ground.

Verification and checks by rePurpose Global will ensure that the project operations are in accordance with the standards developed by rePurpose Global - Verified Plastic Removal Protocol, Impact Creation Playbook and Impact Code. The Verified Plastic Removal Protocol provides a comprehensive framework for the design and implementation of credible plastic removal projects, while the Impact Code is a set of principles that ensure on-ground operations are conducted with necessary social safeguards, environmental and business integrity, and traceability of the impact delivered. Impact Creation Playbook prescribes traceability documentation template, process standard operation procedure implemented internally within rePurpose Global as well as project operation guidelines for the Impact Partner. The documents are collected and hosted on a common shared drive to enable verification and storage of documentation for future reference and records.

Furthermore, rePurpose Global employs a technology-based verification tool/platform called reTrace, which has been developed in-house to monitor and verify plastic recovery volumes..

This tool is in the process of being formalized and will be extended for all project volumes across crediting periods subsequently.

The project follows an adaptive methodology, where the project proponent and the local management team regularly record the lessons learnt from prior experience and find ways to improve the project procedures.