Plastic Waste Reduction Standard

MR. GREEN AFRICA & REMOVALL: PLASTIC WASTE REDUCTION PROJECT IN KENYA

Document Prepared by Removall SAS

Removall

MR. GREEN AFRICA

Project Title	Mr. Green Africa & Removall: Plastic waste reduction project in Kenya
Project ID	*4949*
Version	*V0*
Date of Issue	*30-01-2024*
Project Location	*Kenya*
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1 PROJECT DETAILS

1.1 Summary Description of the Project

The "Mr. Green Africa & Removall: Plastic Waste Reduction Project in Kenya" project is a grouped plastic waste reduction activity developed and coordinated by Mr. Green Trading Africa Ltd (MGA). This project (hereafter referred to as MGA) aims to recover and recycle additional plastic waste throughout the host country of Kenya.

MGA's collection and recycling activities:

Plastic waste is sourced through multiple collection mechanisms, involving both organized entities and independent collectors. These mechanisms include centralized collection centres, fixed buying stations, and mobile acquisition units. After the initial sorting and bundling of the collected plastic waste, it is then moved to a dedicated facility for further processing. Here, the waste undergoes a transformation process, where it is converted into raw materials, such as flakes or pellets, suitable for use by manufacturers in the production of new plastic goods.

MGA's infrastructure locations:

The organization operates a network of waste aggregation centres across various strategic locations within the country, serving as primary collection and sorting points for plastic waste. Additionally, it has established fixed collection sites in multiple urban areas to facilitate convenient waste drop-off. For areas beyond the reach of fixed sites, the organization deploys mobile units, allowing direct collection from suppliers via equipped vehicles. MGA operates five plastic waste aggregation hubs throughout the country, located in Nairobi, Eldoret, Mombassa (Bamburi and Bombolulu) and Malindi. The culmination of these efforts is centred around a single processing and recycling facility based in Nairobi, where collected waste is transformed into reusable materials, further contributing to the sustainability cycle.

Baseline scenario (scenario existing prior to the implementation of the project):

In Kenya, only 8%[1] of plastic waste gets collected for ensuring an appropriate end-of-life. The rest is dumped in unsanitary landfills or dumpsites – or, for most of it, not even collected. This results in around 465,000 tonnes of mismanaged plastic waste per year. This estimate is projected to increase: by 2060, plastic generation will be 1.9 million metric tonnes per year[2]. In addition, collection of plastics is largely sourced by the informal sector, with no guaranteed revenue streams. Many waste pickers live in informal settlements or are homeless. They usually do not

[1] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

[2] Duke Nicholas Institute (Feb 2022) – Plastic Pollution Policy Country Profile: Kenya

have the necessary equipment for collecting plastic waste from toxic dumpsites – and are therefore exposed to toxic chemicals.

Plastic Credits finance:

Plastic Credits finance will allow the project to expand to new geographies for collection activities and to increase the volumes and types of plastic waste recycled.

Estimates of annual average and total amount of collected and/or recycled plastic waste:

The project intends to collect approximately 59,684 tonnes of plastics and recycle approximately 47,588 tonnes of recyclable plastics, across a 7-year crediting period starting 01 July 2020.

1.2 Project Type and Eligibility (2.1)

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

Material type(s) managed by the project:

The project manages the following types of plastic waste, which are all eligible under the plastic program:

- PP
- PET
- HDPE

The project also intends to extend its scope of types of plastic waste managed to LDPE and ABS in the coming years.

The project is a collection and/or recycling project:

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

Activity type(s) in the project:

The activities carried out in the project involve informal collection, pre- sorting at the collection points, sorting, processing and mechanical recycling at the project's facility of plastic waste material.

Demonstration that the project has not generated plastic waste primarily for the purpose of its subsequent collection and/or recycling:

The project collection sources are mentioned in Section 1.1 above. In addition, Kenya has a baseline scenario of unmanaged plastic waste due to the insufficient infrastructure capacities of

local government bodies. Thus, the project does not generate plastic waste primarily for subsequent collection and/or recycling.

1.3 Project Configuration (3.3)

The project is a grouped project with multiple instances of multiple project activities. The project activities are the collection and recycling of plastic waste and can be separated in two instances.

Collection instances:

In this project, a collection instance refers to an aggregation hub where plastic waste is gathered for initial processing. These points collect plastic waste either directly from individuals or entities that bring their waste to the location, or indirectly through collected waste being transferred from various collection sites or mobile units. At these points, preliminary processing steps such as sorting by type and colour, crushing, and bundling are undertaken to ready the plastic waste for transport to the main processing facility.

As of 2023, MGA operates 5 aggregation hubs in Bamburi, Bombolulu, Eldoret, Nairobi and Malindi. Future instances will involve similar collection and pre-processing processes activities located in other areas of Kenya and might include other types of plastic.

Recycling instance:

The sorting and recycling activity of the project are carried out at the MGA processing and Recycling facility in Nairobi where plastic waste is transformed into pellets.

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 operated 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 (July 1, 2020) and be validated at the time of verification. Only volumes generated during the crediting period (from July 1, 2020, to June 30, 2027) and starting from the next verification period 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.
- All new project activity instances shall be included in the Monitoring Report with sufficient technical, financial, geographic and other relevant information to demonstrate compliance with the applicable set of eligibility criteria.
- 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

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1.5 Other Entities Involved in the Project

No other entities are involved in the project.

1.6 Ownership (3.4)

Mr. Green Africa is the owner for all instances. Project Instances operate private leased lands for its collection in accordance with host country policies and laws. The mechanical recycling site is located in Nairobi on private land.

Project proponents demonstrate that they have the legal right to control and operate project activities. Ownership documents in line with the Section 3.4.1 of the Plastic Waste Reduction Standard V1.0 shall be submitted later during validation of the activity.

1.7 Project Start Date (3.5)

The project start date is 01/07/2020. The records for the same will be submitted later during the validation.

1.8 Project Crediting Period (3.6)

The grouped project activity adopts a renewable crediting period of seven years which can be renewed for a maximum of twice. This start date of the crediting period will vary based on the actual earliest commissioning/operation start date within the project activity instances of grouped project activity.

Crediting period start date	Crediting period end date
July 1, 2020	June 30, 2027

1.9 Estimated Collected and/or Recycled Plastic Waste

Table 1: Estimated annual net collected & recycled quantities, all instances *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated net collected plastic waste (tons)	Estimated net recycled plastic waste (tons)
2020	570	460
2021	2682	1858
2022	3983	2360
2023	5049	3410
2024	8400	7000
2025	12000	10000
2026	18000	15000
2027 (until June 30th)	9000	7500
Total estimated amount	**59684**	**47588**
Total number of crediting years	**7**	**7**
Average annual amount	**8526**	**6798**

For the detail per instances, please refer to *Section 4.3 Net Collected and/or Recycled Plastic Waste*

1.10 Description of the Project Activity

In Kenya, plastic waste management persists to be a major issue with around 92% of total plastic waste generated in the country mismanaged[3]. Due to the lack of organized Waste Management practices, the informal sector often fills the gap despite working in extremely unsafe and unstable conditions. The purpose of MGA's activities is to develop a network of collection and recycling infrastructure in order to remove plastic waste from the environment. The project benefits to local populations and most importantly it provides decent and sustainable living conditions for the informal sector while producing recycled plastic materials to displace the use of virgin plastics. The project focuses on PET, PP and HDPE which are widely used for packaging but overly mismanaged, which results in important plastic leakages throughout the country[4]. The project engages in both plastic collection and recycling activities under the methodology PWRM0001 v1.1 and PWRM0002 v1.1, respectively.

The whole project activity process is illustrated in Figure 1 below:

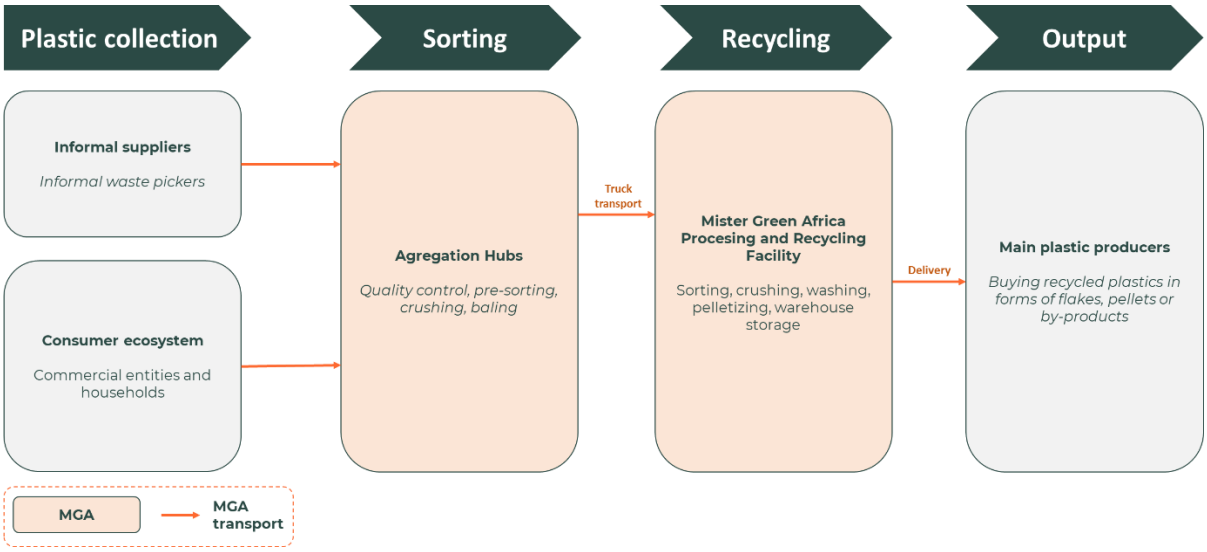

Figure 1: Flow diagram depicting the project activities from collection till end disposal

[3] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

[4] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

Collection activities:

Plastic waste is sourced through a combination of organized collection networks and contributions from individual collectors, originating from both natural and commercial sources. The collection framework includes central aggregation hubs, fixed collection points, and mobile collection services.

The organization manages a number of central aggregation hubs distributed across key locations within the country. These hubs are involved in the initial stages of waste management, which include the collection of raw plastic waste, followed by preliminary processing steps such as sorting, crushing, and packaging. Waste is supplied to these centres both directly by individual collectors and communities, and indirectly through the organization's fixed and mobile collection services. The prepared waste is then dispatched to a dedicated facility for further processing and recycling.

MGA operates five plastic waste aggregation hubs throughout the country, located in Nairobi, Eldoret, Mombassa (Bamburi and Bombolulu) and Malindi.



Figure 2: Nairobi Hub



Figure 3: Eldoret Hub



Figure 4: Bombolulu Hub



Figure 5: Bamburi Hub



Figure 6: Malindi Hub



Figure 7: example of a MGA Collection Point where waste pickers come and sell their collected plastic waste

For its consumer ecosystem, MGA has also established buy-back centres throughout the country.



Figure 8: example of a MGA buy-back centre[5]

[5] Mr. Green Africa – We all win by recycling !

Plastic waste delivered to aggregation hubs, either from collection points or from specified buy-back centres, undergoes an initial sorting phase to distinguish between accepted types of plastics and other materials. This preliminary sorted waste is then measured and transported to the central processing location in Nairobi. Here, it undergoes a further sorting step to categorize it by colour. Subsequently, the plastic is processed through crushing equipment to create flakes, effectively reducing the volume for storage. Finally, the prepared material is compacted and packaged, making it ready for transport to the main recycling and processing facility



Figure 9: Pre-processing operation line of the Nairobi hub

The organization commenced operations in 2020 with a single collection centre situated near its primary processing facility. Over the following years, additional centres were established in various locations, expanding the network's reach. Funding from plastic credit schemes is anticipated to support both the enhancement of current operations and the establishment of new collection points in additional areas, further broadening the initiative's impact across the region.

Recycling activity:

After the transportation from the different aggregation hubs, plastic waste is processed and transformed into flakes or pellets to be sold to plastic producers. MGA operates one processing and recycling facility located in Nairobi. The recycling activities consists in receiving sorted and crushed plastic waste as input, washing it into clean flakes and pelletizing it as output.

The processing process consists of washing and drying crushed plastic waste. The machinery line used is functioning in sequences based on the colour of the plastic waste. Colour-sorted plastic waste goes through a friction washer, a hot wash tank, drug barrels, float/sink tanks and driers. An inspection of the hot-washed flakes is performed before they are packaged. It controls the size, cleanliness, remaining labels, dryness, contaminants (check for metals, ceramics, glass, wood, paper…) of the flakes. The washing process entails the production of by-products such as sinking flakes (eliminated at the float/sink tank), fine particles (which are very small plastic flakes which do not meet the requirements to go through the packaging phase), loose labels, sludge which will also be sold to specific clients. The hot wash tank uses chemicals such as cleaning and brightening agents. It is therefore closely monitored by the project and a specific effluent treatment process is used (see Section 2.3.4).

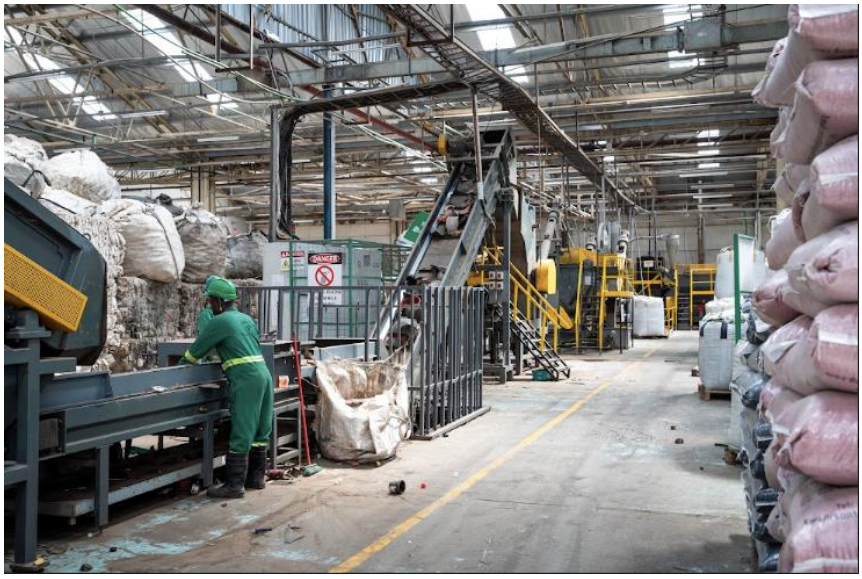

Figure 10: Washing line of the whole project, located in the processing and recycling facility in Nairobi

MGA mechanically recycles plastic waste producing pellets from the hot-washed flakes obtained during the processing process. Hot washed flakes are put into the conveyer which moves them to the heating part of the machine where they are melted and come out as pellets. The pellets are inspected to ensure conformity of colour and size. The pelletizing process entails the production of by-products such as machines lumps (which is materials that have not properly melted but is eliminated in the sieve) and dust, which will also be sold to specific clients.



Figure 11: Pelletizing line of the whole project, located in the processing and recycling facility in Nairobi

MGA started its recycling activity in 2020 with the current processing and recycling facility in Nairobi. Plastic Credits finance will help to scale-up the recycling activity by separating the processing and recycling facilities: processing operations will be relocated in a new centre close to the previous one, and new machines will be added in the existing recycling facility.

Plastic Credits finance will also help MGA to address new types of plastic (such as LDPE or ABS) in the recycling facility.

1.11 Project Location (3.7)

The project location and geographic boundaries are designated in the KML files attached as part of this document. At present, the collection and recycling centres have the following project location and geographic boundaries:

Table 2: List of instances location

Instance type	Instance name	Latitude & Longitude
Collection	Nairobi Hub	1°19'41.6"S 36°51'56.1"E
Collection	Bamburi Hub	3°59'58.9"S 39°42'53.3"E
Collection	Bombolulu Hub	4°01'13.7"S 39°41'55.9"E

Collection	Eldoret Hub	0°34'54.0"N 35°13'14.9"E
Collection	Malindi Hub	3°13'34.5"S 40°06'46.3"E
Recycling	Nairobi facility	1°19'41.6"S 36°51'56.1"E

Other aggregation hubs across Kenya are under planning.

The aggregation hub from Nairobi will soon move to another place.

Figure 12 below illustrates the locations of the instances as well as the project region.

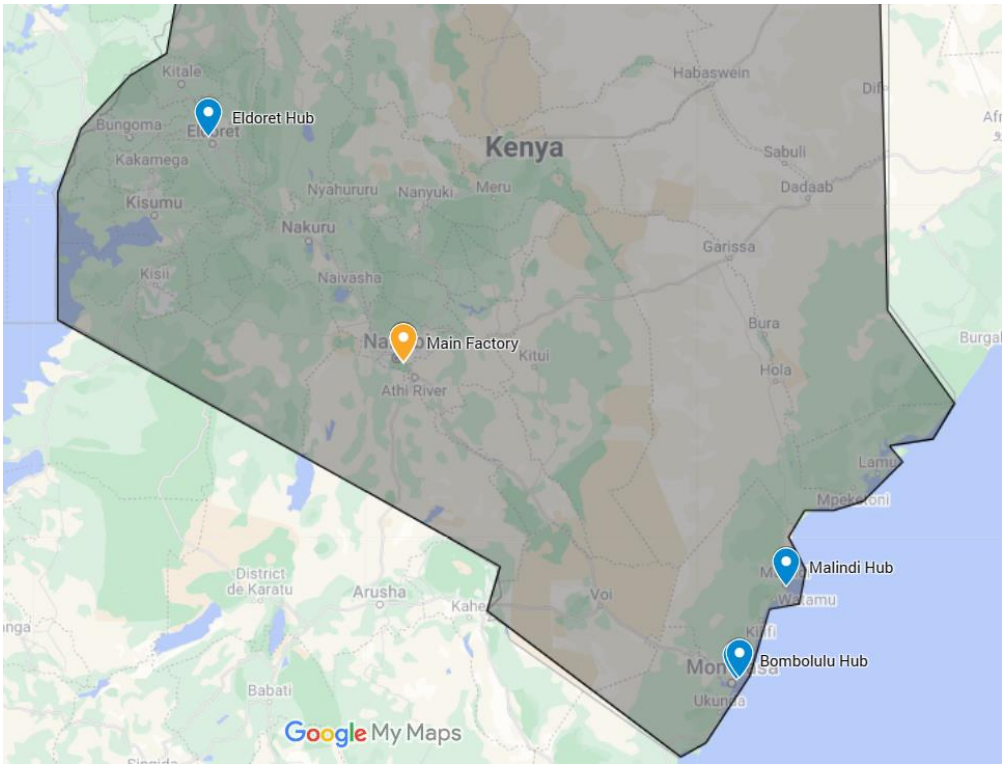

Figure 12: Project collection and recycling instances and project region

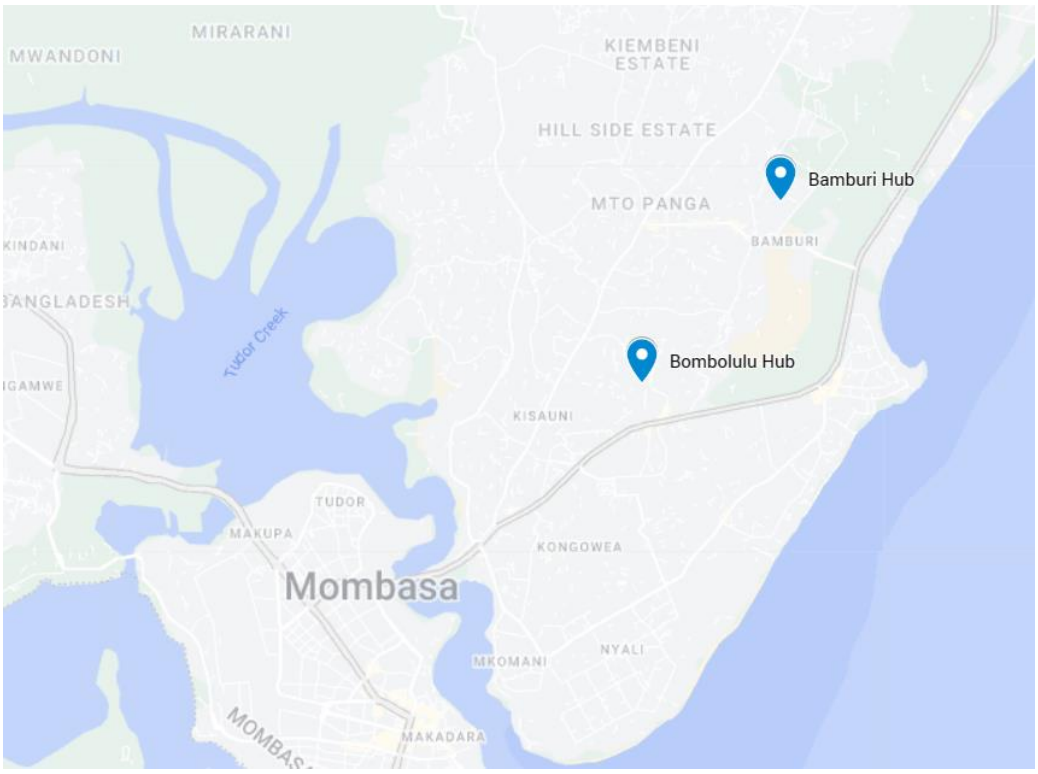

Figure 13: Location of project collection instances in Mombasa

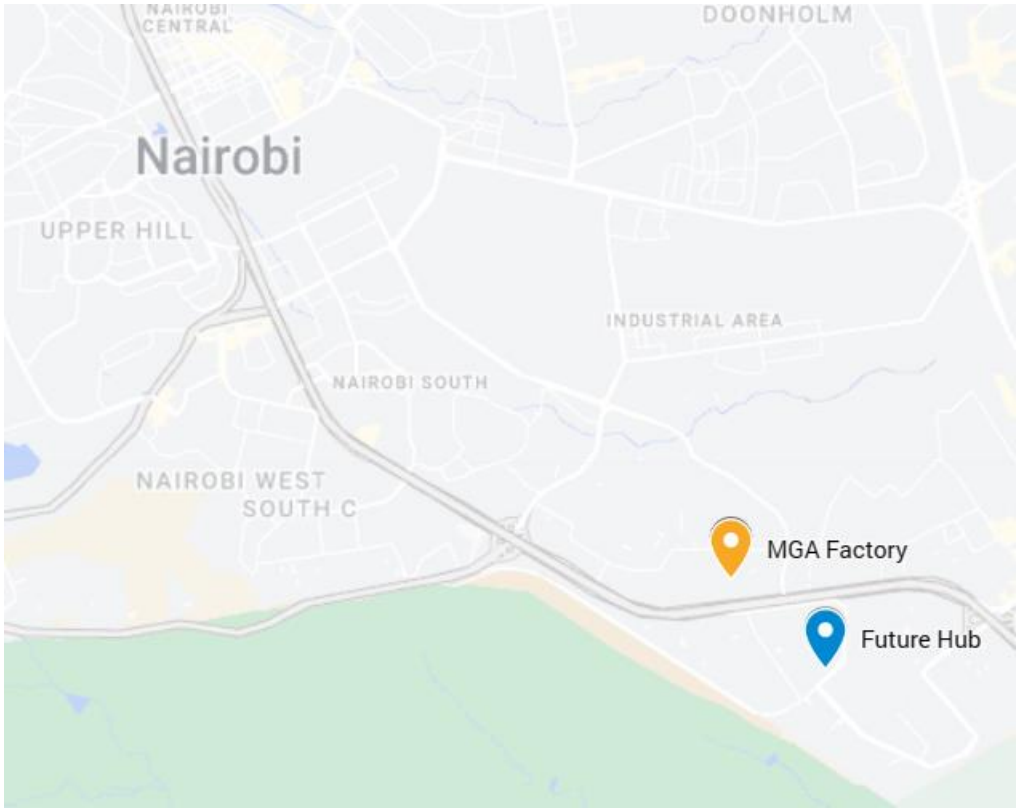

Figure 14: Location of the factory and future location of the Nairobi Hub

1.12 Conditions Prior to Project Initiation

1.12.1 General Conditions

The baseline scenario is the same as the general conditions existing prior to the project initiation. Please refer to Section 3.5 (Plastic Waste Collection and/or Recycling Baseline Scenario) below.

1.12.2 Social and Environmental Conditions

Environmental impact:

According to the Duke Nicholas Institute for environmental policy solutions[6], 92% of plastic waste is mismanaged in Kenya – representing a total of 465,000 tonnes per year. Even though plastic waste generated is low in Kenya compared to the world average, it is projected to increase: by 2060, plastic generation will be 1.9 million metric tonnes per year.

In rural areas, waste management infrastructures are missing. There is no minimal recovery and no collection services, resulting in around 37,000 tonnes of plastic waste leaking into the ocean every year[7]. Plastic waste flows into waterways, endangering aquatic biodiversity and releasing harmful chemicals into the surrounding soil, which can then seep into groundwater or other surrounding water sources, and the larger ecosystem. This can cause a range of potentially harmful effects on the species that drink the water.[8]



Figure 15: Plastic waste stuck in waterways near Nairobi, Kenya

[6] Duke Nicholas Institute (Feb 2022) – Plastic Pollution Policy Country Profile: Kenya

[7] Duke Nicholas Institute (Feb 2022) – Plastic Pollution Policy Country Profile: Kenya

[8] African Wildlife Foundation (2023) – Choked rivers: The cost of inaction on plastic pollution in Kenya

Collected plastic waste in urban areas are mostly put in unsanitary landfills or dumpsites. They do not include proper ecological precautionary measures such as wastewater treatment or landfill sealing. Nairobi's Dandora dump site is one of the largest in Africa. It covers approximately 30 acres and is the destination of about 850 tonnes of solid waste generated daily by the city.[9]



Figure 16: Burning plastic waste in Dandora dumpsite, causing air pollution near a waste picker

Open burning of mismanaged plastic waste in Kenya poses significant risk for human health, due to the release of noxious chemical substances such as dioxin and particulate matters. It also directly contributes to climate change.

Mismanagement of plastic waste also impacts animals – and therefore the whole food chain. A study by the National Environment Management Authority (NEMA) in 2018 found that 50% of livestock slaughtered in Nairobi's abattoirs had plastics in their stomach[10].

Social impact:

Kenyan informal waste sector is responsible for most of the waste management activities in the country. Informal waste pickers are collecting recyclable materials mainly from homes, businesses, or illegal dumpsites. They then sell the plastic waste to trading points for recycling – at a price that fluctuates a lot. As their revenue streams are not guaranteed, many waste pickers live in informal settlements or are homeless. They usually do not have the necessary equipment for collecting plastic waste from toxic dumpsites – and are therefore exposed to toxic chemicals. Studies have shown that serious illnesses like diarrhoea, malaria and infections of respiratory system have also been associated with populations living near dumpsites[11].

[9] UNEP (2018) – Smoking Nairobi landfill jeopardizes schoolchildren's future

[10] NEMA (2018) – The prevalence of plastic bag waste in the rumen of slaughtered livestock at three abattoirs in Nairobi Metropolis, Kenya and implications on livestock health

[11] IPEN (2021) - The Toxic Plastic Waste Trade - a Case Study of Muoroto Slum in Mombasa, Kenya



Figure 17: Informal settlement of waste pickers in Nairobi, Kenya

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 the table below[12]:

Table 3: list and description of local laws and regulations applicable within Kenya

Regulation name	Relevant information or sections
Constitution of Kenya, 2010	"We, the people of Kenya, respectful of the environment, which is our heritage, and determined to sustain it for the benefit of future generations…" Article 42 guarantees every person in Kenya the right to a clean and healthy environment
Environmental Management and Coordination Act (EMCA) of 1999 (last revised in 2018)	Kenya's overarching framework environmental law. Although it makes no express reference plastics or plastic waste, it has general provisions for measures to ensure sound management of waste.
The National Environment Policy 2013	• Development of an integrated national waste management strategy • Promotion of the use of economic incentives to manage waste • Promotion for the establishment of facilities and incentives for cleaner production, waste recovery, recycling, and reuse.

[12] NEMA (March 2023) – Plastics Pollution Control: Kenya's experience ; WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

The National Solid Waste Management Strategy 2015 (NEMA)	• The most recent government action establishing a common platform for action between stakeholders to systematically improve waste management. • The long-term goal of the strategy is to achieve, by 2030, at least 80 per cent waste recovery (for recycling) and 20 per cent disposal of inert materials in a sanitary landfill.
Gazette Notice No. 2334 of 2017 (NEMA)	Ban on manufacture and use of plastic carrier bags and flat bags used for domestic and commercial packaging.
Gazette Notice No.4858 of 2019 (NEMA)	Ban 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.
National Sustainable Waste Management Policy of 2021	The goal is to 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.
Sustainable Waste Management Act of 2022	• Establishes the legal and institutional framework for the sustainable management of waste with the possibility of a mandatory EPR system • Emphasizes the establishment of Material Recovery Facilities across all counties to facilitate sustainable recycling and incorporation of the circular economy
National Marine litter Action Plan, 2021	Ensure how waste is properly managed so that it does not reach marine ecosystems that are a livelihood, especially to coast and lake region counties.
Nairobi County Waste Management Action Plan, 2021	Identification of waste management to be a function of the County Government and development of key structures to ensure waste management is effective and efficient
The Mombasa County Solid Waste Management Act, 2021	The goal is to provide for the collection, treatment, transportation and disposal of solid waste.

Even though laws on plastic waste management are quite numerous for the past two decades, they have been unable to properly ensure the managed collection and recycling of plastic waste throughout the country. Public literature shared in above section 1.12 and section 3.5 are showing figures from key reports produced by well-known organizations such as UNIDO, IUCN or WWF. Therefore, it can be acknowledged that the current situation of compliance rate in terms of collection and recycling of plastic waste is below 20% in Kenya.

There were no mandatory EPR system regulated at the start date of the project. However, it is worth noting that, through the Sustainable Waste Management Act 2022, the government plans to introduce the “polluter-pays” principle in the form of a mandatory EPR. According to a recent WWF report[13], the legal framework of EPR has not yet formally passed the required governmental

[13] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

approvals to come into force". Therefore, "it cannot currently be foreseen when and in what exact form the draft EPR regulations or other EPR-related legislation will come into force". Concrete next steps and a common understanding of how the components of an EPR scheme should be shaped has not been reached.

As the potential EPR regulation concerns producers only, we shall precise that MGA is not a producer but an independent private entity who is implementing this project activity on a voluntary basis. The impact of latest amendment bills and regulations would require monitoring and evaluation on annual basis, and it will take time and efforts to achieve the objective of the laws. Thus, the project activity will provide strength in achieving the overall objective of the latest regulations.

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 are any individuals, companies, organizations or government entities who either impact or are impacted upon by MGA activities at any stage in the process during its lifespan, from the collection to the sales of the recycled products. MGA pays particular attention to its relationships with each stakeholder group. Thanks to its network of partners (local authorities, informal waste pickers, local NGOs, suppliers, customers…) and its strong local presence, MGA has been able to identify all stakeholders directly or indirectly impacted by the project activities. In addition, all entities implied in MGA's operations must comply with the Code of Conduct, which includes strict standards for employees.

2.1.2 Stakeholder Description (3.13.2 – 3.13.3)

The most relevant stakeholder groups identified for the project are:

Table 4: List and description of the most relevant stakeholder groups identified for the project

Stakeholder group	Description
Informal Suppliers	MGA works with a large network of informal waste workers which are employed to collect plastic waste in exchange for a remuneration. This mainly concerns the informal waste workers and waste aggregators paid for collecting waste and bringing it to aggregation hubs.
Consumer Ecosystem	MGA collects available plastic waste which correspond to local commercial entities and households (buy-back centres).
Local authorities	MGA is in discussion with any relevant local authority since they formally control the dumpsites and permission demands. MGA is also in discussion with the National Environmental Management Authority (NEMA) on Waste Management regulation, for better defining waste management operations in the country.
Local communities	MGA is present in multiple geographical areas within Kenya and has established strong links with local communities to gather their opinions and feedback on the project.
Local NGOs	MGA partners with local NGOs on different subjects:

	• Along with Challenge Fund for Youth Employment to provide sustainable income and jobs for youth. • Along with the Danish Refugee Council to provide a sustainable income for refugees while having a positive impact on the environment.
Recyclers	MGA employs the local population in its sorting and recycling facilities.
Main Plastic Producers	MGA collaborates with a vast network of plastic producers who purchase MGA's recycled plastic flakes and pellets to manufacture products which displace the use of virgin plastic.

2.1.3 Stakeholder Consultation (3.13.4 – 3.13.8)

Stakeholder groups identified in Section 2.1.2 have been and will continue to be notified of the development of MGA's project. For the marginalized and vulnerable stakeholder groups such as informal waste pickers, MGA's team develops close relationship with regular contact to collect feedback and to answer any concerns or questions.

Consultations were held to discuss with the different stakeholders group impacting or impacted by MGA's project during various events since 2020. The biggest event organized was to officiate the partnership between MGA and the NGO Danish Refugee Council. It gathered aggregators, waste pickers, NGO's staff and MGA's staff.



Figure 18: launch of the Danish Refugee Council – MGA partnership

MGA also had impactful exchanges on the project with local communities on the World Environment Day where a community cleaning was organized.



Figure 19: Community cleaning on the World Envionment Day

Marginalized and vulnerable stakeholders, such as waste pickers, are the priority beneficiaries of the project. This is why MGA organizes regular "Tea Parties" in all Trading Points (TPs) which invites all regular waste pickers. They are offered a balance diet meal or food items to take home to their families and it is the place to have open discussions about any expectations, doubts or queries about the project.



Figure 20: Tea Party at Saika Collection Centre

MGA's team in charge of collecting the available plastic waste comes directly to the supplier's premises which is a privileged timeslot to discuss about their collaboration and gather their feedback on the project.

Finally, MGA keeps a close relationship with the plastic manufacturers buying its recycled plastic products. The project installed a dedicated hotline for plastic manufacturers to share feedback on their experience and on the project in general. MGA also participates in events when collaborating with specific partners which also are dedicated times to discuss about the project.



Figure 21: Collaboration between MGA and Total Energies on a new recycled lube oil packaging

MGA also uses an advisory board which includes stakeholder representation and in which workers have the opportunity to elect members.

Stakeholder groups are also informed about the requirements and processes of Verra's Plastic Waste Reduction Standard and the generation of Plastic Credits. A dedicated stakeholder consultation will be held before the validation audit.

2.1.4 Free, Prior and Informed Consent (3.13.6)

No property rights are impacted by any of MGA's collection and recycling instances. For each of MGA's collection and recycling instance, lease agreements are established to state the same.

2.1.5 Continued Consultation and Adaptive Management (3.13.9)

Following the first consultation with all stakeholders at the beginning of the project, such consultations are and will be repeated frequently in order to gather the updated opinions of each stakeholder. In case of future addition of a new instance, a first consultation similar to the one organized in 2020 will be held.

In-person stakeholder consultation meetings are completed with more regular internal and external communication through phone, email, WhatsApp, Bulk SMS and verbal communication thanks to MGA's coordinators when suppliers are not well acquainted with the language or technology.

This continuous process allows MGA to operate with an adaptative management.

2.1.6 Anti-Discrimination (3.13.10)

MGA do not encourage any discrimination in any location or infrastructure associated with project activities. MGA and Removall both have internal organizational anti-discrimination policies (MGA's Employee handbook and Removall's Diversity Charter and Code of Ethics) that ensure

there is no discrimination in the workplace and frequent training is provided to all workers to establish the same. MGA advisory board sets specific, measurable diversity improvement goals. In addition, MGA has 50+% of management positions fulfilled by women. The MGA Employee handbook will be shared with the auditor during the validation audit of the project.

2.1.7 Feedback and Grievance Redress Procedure (3.13.11)

Regular communication is maintained by MGA to provide constant feedback to the project proponents. Internal communication goes through emails to discuss meetings details, WhatsApp messaging for general information on operations and with other departments and telephone calls for more urgent matters. External communication goes through phone calls for supplier-customers relations, Bulk SMS for all suppliers and verbal communication thanks to MGA's coordinators when suppliers are not well acquainted with the language or technology.

MGA endeavours to answer any feedback received.

2.1.8 Feedback and Grievance Redress Procedure Accessibility (3.13.12)

MGA's contact information is publicly available on its website and MGA's coordinators strengthen the feedback and grievance procedure by maintaining regular communication with all stakeholders through phone, email, WhatsApp, Bulk SMS and verbal communication.

2.1.9 Stakeholder Access to Project Documentation (3.13.13)

All relevant documents submitted to Verra will be available on the Verra Registry during the 30-day public comment period and after. The project proponents also intend to provide project documentation to all stakeholders through the regular communication channels.

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 well in advance, through the regular communication channels. In case of future addition of a new instance, 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 well in advance and MGA's representatives will be available to facilitate on-site communication.

2.2 Public Comments (3.13.15 – 3.13.18)

Section to be completed after the 30-day public comment period.

2.3 Safeguards (3.14)

2.3.1 Health and Safety (3.14.2 – 3.14.3)

The collection and recycling of plastic waste poses health and safety risks for all workers involved in the activity and especially to the waste pickers and to the employees of the processing and recycling facility.

To mitigate those risks, the employees of the processing and recycling facility are reminded of safe working practices and trainings (e.g. emergency shut offs) at every manufacturing meeting and are provided with adapted PPE gear (such as clothing, eye, and foot protection). Waste pickers are also provided with adapted PPE gear and trainings (at least twice a year) which encompasses physical risks of their collection activity but also on additional subjects such as gender violence to ensure them with a safe working environment. A worker health and safety committee help monitor and advise on health and safety programs. In addition to the remuneration in exchange of plastic waste from waste pickers, a loyalty program has been created by MGA which allows them to earn additional benefits (balanced diet meal, food items, better PPEs...). MGA also has a crowdfunded yearly health program called "*Support a waste worker"* which donates health checks and individual counseling to waste workers directly in a chosen TP (Trading Point) during Health Events. Above 95% of MGA's workers are covered by a health insurance.

Finally, MGA has tested the emission of its boiler in a study conducted by an accredited Kenyan laboratory which concluded that the requirements of the air quality (EMC regulation of 2014) were fully met. MGA also monitors its indoor air quality to avoid "Sick Building Syndrome".

2.3.2 Labor (3.14.4 – 3.14.8)

The project complies with all relevant labour and human rights laws of the host country and strict measures are in place to ensure compliance with all applicable laws governing the project. 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 or safety. MGA's activities do not involve any child or forced labour. Trainings provided for waste pickers include the subject of child and forced labour prohibition.

Marginalized and vulnerable stakeholders, such as waste pickers, are the priority beneficiaries of the additional income generated by the project helping them to improve their livelihood. There is also 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)

The main sources of (GHG) emissions of such collection and recycling projects are the energy consumption of the machinery used in the recycling facility and all transportation involved in the project. While the project does not actively measure energy consumption or (GHG) emissions yet, MGA endeavors to make active efforts to enhance energy efficiency and reduce (GHG) emissions activities.

The first priority is optimizing vehicle capacity for material delivery, aiming to improve their efficiency. To do so, MGA commits to crush and bale material in order to optimize vehicles loadings.

Another important point is that while the machinery used during the recycling process consumes a lot of energy, the recycling process results in overall reduction in (GHG) emissions. The recycled plastic produced displaces the use of virgin plastic and its production and is a synonym of better management practices as it avoids plastic waste openly burned or landfilled. Additionally, around 90% of the Kenyan electricity, used in the project's recycling facilities, is renewable.

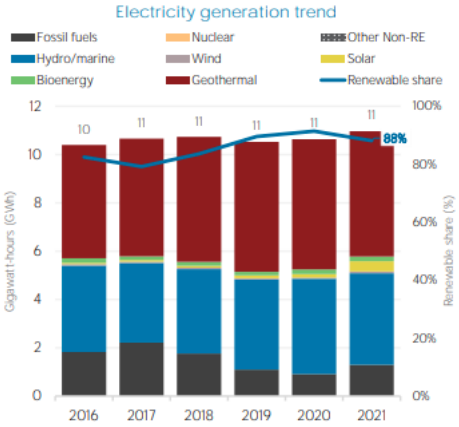

Figure 22: Kenyan electricity generation figures by sources[14]

2.3.4 Condition of Natural Resources (3.14.14 – 3.14.15)

Air quality:

Around 42% of plastic waste is openly burnt in Kenya[15]. MGA's project collects and recycles plastic waste which helps to reduce the amount of plastic waste openly burnt and therefore improving air quality. MGA also tested the emission of its boiler in a study conducted by an accredited Kenyan laboratory which concluded that the requirements of the air quality (EMC regulation of 2014) were fully met.

Water quantity and quality:

MGA's project collects and recycles plastic waste which helps to reduce the amount of plastic waste in landfills or dumped into the environment, therefore reducing the pollution of chemicals and microplastics from plastic waste into water bodies. In addition, MGA implements a dedicated manufacturing process to ensure effluent water treatment. The input of this process is the chemically polluted water from the recycling facility machineries (during the washing process

[14] IRENA (2023) – Energy profile Kenya

[15] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

specifically) which goes through flocculation, clarifier, and carbon filter to produce treated water to be reused. This extra process allows to reduce the quantity of polluted water therefore improving the quality of water overall.



Figure 23: Effluent water treatment installation located in the processing and recycling facility in Nairobi

Soil quality:

MGA's project collects and recycles plastic waste which helps to reduce the amount of plastic waste in landfills or dumped into the environment, therefore reducing the pollution of chemicals and microplastics from plastic waste into the soil.

Biodiversity and ecosystem health:

MGA's project collects and recycles plastic waste which helps to reduce the amount of plastic waste in landfills or dumped into the environment of which a significant part ends-up in waterbodies, resulting in an overall improvement of the marine ecosystem. In addition, MGA's project activities do not take place in protected areas or impact threatened and endangered species.

2.3.5 Additional Impact Certifications (3.14.16)

MGA is the first African recycling company to be certified B-Corporation[16], since 2021. The B-Corporation certification assesses the sustainable, long-term social, environmental and economic impact of MGA's collection, recycling and sales activities. MGA received an overall B Impact Score of 80,9 which is highly above the median score for ordinary businesses of 50,9. Detailed scorecard is accessible on B-Corp website[17].

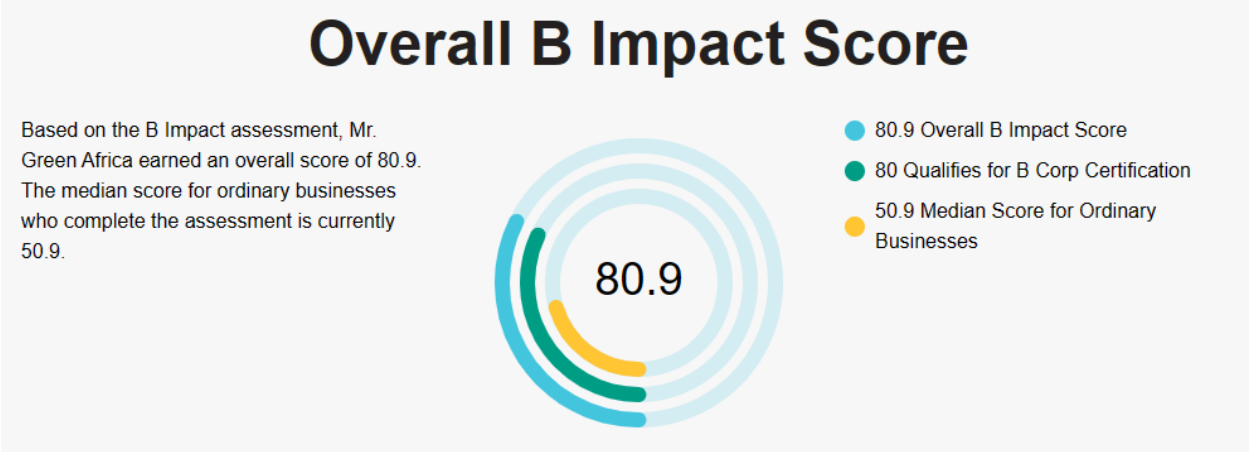

Figure 24: Mr. Green Africa scorecard available on B-corporation website

[16] Mister Green Africa (2021) – First recycling company in Africa to be Certified B Corporation

[17] B Lab Global Site (2021) – Mr. Green Africa

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology (3.1.2)

This project aims at following two methodologies as MGA is collecting and then recycling plastic waste:

- PWRM0001 Plastic Waste Collection Methodology, Version 1.1 (dated 30th June 2022)
- PWRM0002 Plastic Waste Recycling Methodology, Version 1.1 (dated 30th June 2022)

3.2 Applicability of Methodology

The project meets each of the applicability conditions specified in PWRM0001, as demonstrated in the table below:

Table 5: Justification of applicability conditions for collection methodology PWRM0001

Applicability condition	Justification
4.1	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.
4.2	Each collection instance is a new activity carried out for the recycling of plastic waste in MGA recycling plant in Nairobi; this results in significant increases in the collection of plastic waste.
4.3	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 or openly burned in the absence of the project activity. This can be demonstrated by using the most recent and accurate data available, as described in the baseline scenario (Section 3.5).
4.4	The collected waste is pre-sorted at aggregation hubs and then sorted by type, weighed and transferred to the mechanical recycling facility in Nairobi, where it is processed into flakes and/or pellets and sold to plastic manufacturing facilities.
4.5	The dry weight of the final output of collected plastic waste that reaches to MGA recycling factory is directly measured and recorded. Evidence such as sales invoices generated by the project proponent are available.
4.6	The output of the collection activity is not used in any unauthorized, illegal or non-statutory activities within the project boundary. Payment invoices are recorded and used to verify that the collected waste goes to the recycling facilities.

4.7	The waste material collected in the project activity is taken to the mechanical recycling as the appropriate end destination throughout this methodology, where it is processed into flakes and/or pellets.
4.8	The availability of plastic waste is demonstrated by defining the baseline scenario (Section 3.5) and using the most recent publicly available data on plastic waste.
4.9	Plastic waste collection and recycling are negligible in scope due to a lack of formal waste collection services and coordinated government resources. As well as defined in the project eligibility, the plastic waste recovery is below 20%. Therefore, the project activities do not compete with other collection activities. Contrarily, it expands and enhances formal collection in cities and towns with low formal collection and high plastic leakage. Please refer to Section 3.5 for further information.
4.10	Plastic waste collected during the project activities are all taken to to the mechanical recycling facility in Nairobi, which is an appropriate end-of-life. The project activities do not include dumping on open land, in water bodies and/or at dumpsites; open burning; or incineration without energy recovery. Contaminated plastic waste is either not accepted by the recycling facility or is stored for later disposal by the authorized agency as per the relevant regulations.
4.11	There is no transboundary movement of collected plastic waste between countries.

The project meets each of the applicability conditions specified in PWRM0002, as demonstrated in the table below:

Table 6: Justification of applicability conditions for recycling methodology PWRM0002

Applicability condition	Justification
4.1	The project involves the installation and operation of a new mechanical recycling facility for collected plastic waste. It also provides regular payments to waste pickers and waste aggregators, enhancing total sorting volumes. Finally, it enables to consistently purchase new equipment for enhancing recycling rates.
4.2	The plastic waste is collected from the environment: untreated landfills, open dumpsites, public areas, streets, near waterways, industries as well as through buyback centres as explained above in Section 1.10.
4.3	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 and Section 1.12.
4.4	The waste undergoes multiple stages of sorting from collection till processing. The initial sorting occurs mainly at the aggregation hubs. The waste received at the recycling facility is further sorted to ensure that only relevant plastic polymers are put through the recycling process, thus enabling increased plastic recovery efficiency.

4.5	Plastic waste intended for recycling is not mixed with hazardous materials or substances (e.g., coatings, adhesives, or colorants) that could become unsafe. Any plastic waste contains hazardous materials or substances, and must be treated following the relevant national, regional, and local regulations.
4.6	The different types of plastic are recycled separately, and the final output of the recycling facility is measured and recorded. The plastic, after being recycled into flakes and/or pellets, is placed into bags of different weights for sale to plastic manufacturers.
4.7	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. MGA has established a customer feedback procedure for permanently assess the quality of the produced recycled products compared to virgin plastic's performances. Credible evidence can be provided specifically on the sale of recycled plastic to plastic manufacturers. All sales receipts are processed and stored.
4.8	The availability of plastic waste is demonstrated by defining the baseline scenario (Section 3.5) and using the most recent publicly available data on plastic waste.
4.9	Project activities do not include any depolymerization of sorted plastic waste.
4.10	MGA does not divert plastic waste from any historically existing, legally recognized recycling activity. As defined in the project eligibility criteria for additionality (Section 3.6), the plastic waste recovery is below 20%. Therefore, the project activities do not compete with other collection activities. The availability of plastic waste is demonstrated by defining the baseline scenario and using the most recent publicly available data on plastic waste. Without the project activities, there would be mismanaged plastic waste, which would be at significant risk of entering the ocean.
4.11	Plastic waste that enters the project recycling facility but is not recycled or is lost during the recycling process (e.g., due to contamination) is managed in a way that does not include dumping on open land, in water bodies and/or at dumpsites; open burning; or incineration without energy recovery. Contaminated plastic waste is either not accepted by the recycling facilities or is stored for later disposal by the authorized agency as per the relevant regulations.
4.12	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)

Table 7: Project boundary

Source		Material Type	End-of-Life	Explanation
Baseline	Unregulated disposal sites	HDPE	Continues to remain in the dumpsites, sometimes openly burnt and leaks into the environment	Minimal to no collection activities depending on region. Plastic waste is mainly found in the environment. In Kenya, the landfill is an unsanitary landfill. There is a chance of leakage of plastics back into the environment, and the incineration of waste is predominant in landfills, causing air pollution.
		PP		
		PET		
	Environment	HDPE	Continues to remain in the Environment or if cleaned up, is transported to a dumpsite.	
		PP		
		PET		
Project	Unregulated disposal sites	HDPE	Recycled into feedstock such as pellets or flakes, etc.	Through mechanical recycling, it is made into flakes and/or pellets, and sold for manufacturing units. The plastics which are collected but not recycled are sent to the landfills.
		PP		
		PET		
	Environment	HDPE	Recycled into feedstock such as pellets or flakes, etc.	
		PP		
		PET		

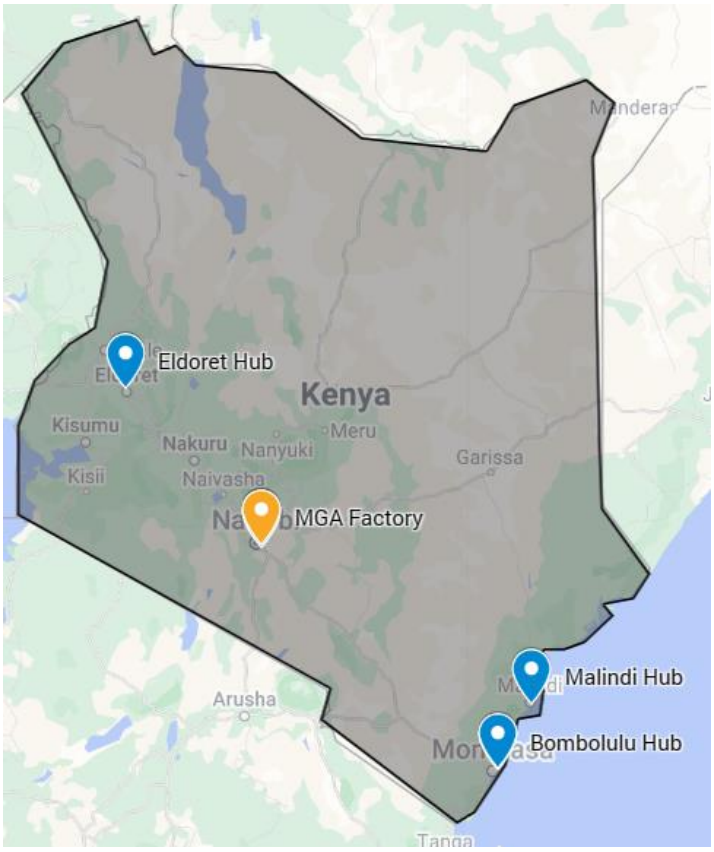

Figure 25: Project Region and Project instances location

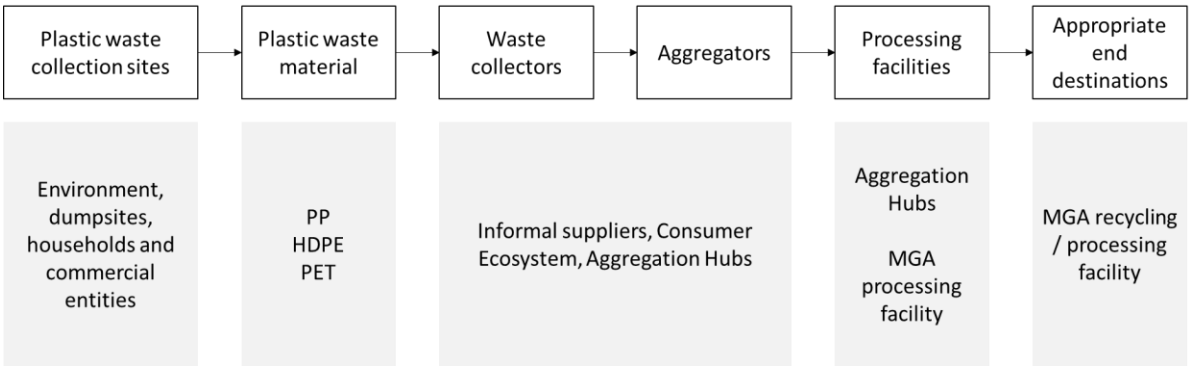

Figure 26: Project Boundary Diagram as per Plastic Waste Collection Methodology (PWRM0001)

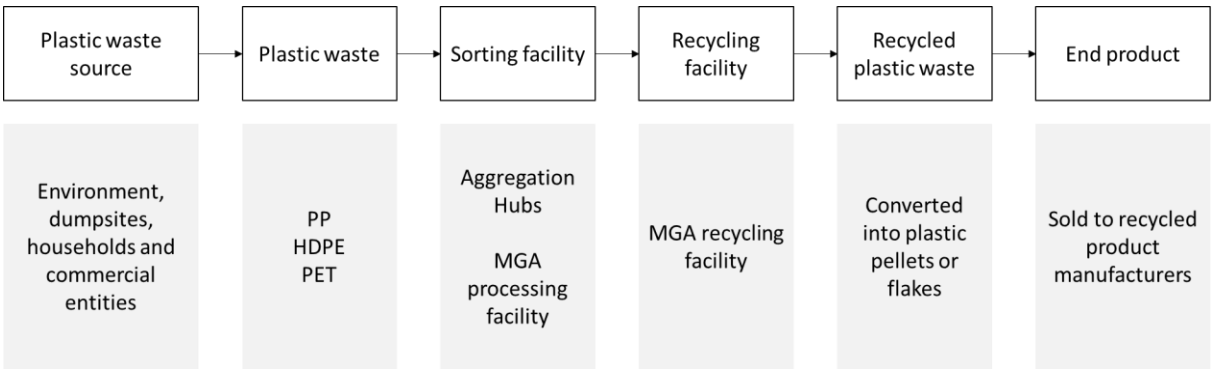

Figure 27: Project Boundary Diagram as per Plastic Waste Recycling Methodology (PWRM0002)

3.4 Project Region

The project operates in different locations of Kenya with all project instances located within the country's national boundary. More details are provided in the Section 1.11.

As a grouped project with multiple instances of multiple activities, all future instances will also be located within Kenya.

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

Kenya has an estimated population of 54.0 million people[18], following a regular demographic growth since the beginning of the century. The biggest city is Nairobi, with 4.6 million inhabitants. Since 2005, Nairobi has one of the highest African growth rates per annum, 75% of the urban population growth being absorbed by informal settlements[19]. Mombasa is the second biggest city with a population over one million – and it faces similar problems.

As Kenya does not have any petrochemical industries that produce virgin plastics, all virgin plastics are imported into the country – representing a total volume of 553,519 tonnes of plastics in 2020[20]. However, the full amount of plastic that becomes waste in Kenya is difficult to estimate. A recent study made by UNIDO[21] in 2021 has concluded that it lies within the approximate range of 500,000 to 1,300,000 tons per year.

On average, 11 kg/year of plastic waste are generated per capita in Kenya – which matches the average for east-southern African countries of 12 kg/cap/year[22]. As mentioned in *Section 1.12 - Conditions Prior to Project Initiation,* 92% of plastic waste produced in Kenya is mismanaged. This means that only 8% of plastic waste is collected for recycling, the rest being disposed in unsanitary landfills or dumpsites or - for most part of it - not even collected. This is mainly due to a lack of global waste management infrastructure, despite the recent country's economic development.

Even though there exists waste management laws and regulations, they are not properly enforced (see *section 1.13*). This results in an increasing role of the informal waste sector – ranging from waste pickers, collectors, sorters and recyclers. As they only focus on high-value plastics that are easy to recycle, low-value plastics are left behind. Low-value plastics account for non-recyclable plastics or recyclable plastics contaminated with other types of waste – which is often the case in dumpsites. This results in large amounts of plastic waste not addressed.

[18] World Bank (2022) – Population, total - Kenya

[19] UN-Habitat (2005) – Kenya: Nairobi Urban Profile

[20] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

[21] UNIDO (2021) – Study on plastic value chain in Kenya.

[22] World Bank (2018) – What a waste 2.0

The table below provides plastic waste management data for urban and rural archetypes in Kenya. The collected waste is mostly mismanaged: collection for recycling only accounts for 19% in best cases. The other is put in illegal dumpsites or is leaked into the environment. That is why MGA aggregation hubs are spread throughout the country to act in geographical areas where it is urgently needed.

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 28: Kenyan plastic waste management by geographical archetype (2020)[23]

In addition, MGA focuses on plastic types which are mostly mismanaged in the country. As shown by the table below, PET, PP and HDPE result in important plastic leakage. It is worth noticing that for all types of polymer, domestic recycling rates are below 20%.

CATEGORY	AMOUNT GENERATED (TONNES)	AMOUNT COLLECTED (TONNES)	% COLLECTED	AMOUNT RECYCLED (TONNES)	% RECYCLED
PET	85,781	29,165	34%	3,792	4.4%
PP	212,502	55,251	26%	2,763	1.3%
POLYESTER	220,301	50,669	23%	0	/
LDPE	103,327	37,198	36%	5,580	5.4%
HDPE	101,377	37,510	37%	7,127	7%
PS	9,748	1,755	18%	0	/
SYNTHETIC RUBBER	46,790	13,569	29%	1,086	2.3%
PVC	68,235	9,553	20%	96	0.1%
OTHER	134,520	30,940	23%	1,238	0.9%
TOTAL	**982,580**	**265,609**	**27%**	**21,679**	**2.2%**

Figure 29: Kenyan volume of plastic waste collected and recycled by polymer type (2022)[24]

[23] IUCN, EA, Quantis (Dec 2020) – National Guidance for Plastic Pollution hotspotting and shaping action: Final report for Kenya

[24] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

At the present, there is limited investment in plastic collection and recycling systems across the country. **Therefore, the baseline scenario for MGA is that in which, "without project implementation, the plastic waste would have remained in the environment, been disposed of by open burning, been incinerated without energy recovery and/or disposed of in a dumpsite and the plastic waste would not have been recycled" to replace the usage of virgin plastic.**

3.6 Additionality (3.10)

As the project both collects and recycles plastic waste, additionality is demonstrated below for both collection methodology PWRM0001 V1.1 and recycling methodology PWRM0002 V1.1.

a) **Demonstration of collection additionality through PWRM0001 V1.1:**

Step 1: Regulatory surplus:

As explained in section 1.13 above, there are no laws or regulations that enforce the collection of the relevant material type(s) or the laws or regulations are not systematically enforced, and non-compliance is widespread in the relevant country or region.

Step 2: Positive List:

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

Step 3a: Penetration Rate

According to the Plastic Waste Collection Methodology, the penetration rate (percent) is the ratio between plastic waste collection (tonnes/year) and plastic waste production (tonnes/year) in the region.

According to the "Plastic Pollution Policy Country Profile: Kenya (2022)", Kenya generates 503,000 tonnes per year of plastic waste. 27% of the plastic waste generated in Kenya is collected. Among that, only 8% of total plastic waste is collected for recycling. The remaining 19% is disposed in unsanitary landfills or dumpsites or incinerated without energy recovery. Therefore, **92% of total plastic waste remains unmanaged**. Thus, the project activity is additional.

Even though those national figures prove project's additionality, penetration rates of collection activities can also be estimated for each geographical area of the project instances by extrapolating figures from Section 3.5.

First, a correspondence can be made between geographical areas and project instances, as follows:

Geographical area	Project instances
Nairobi	Nairobi Hub and Nairobi Factory
Mombasa	Bamburi Hub and Bombolulu Hub
Eldoret	Eldoret Hub
Malindi	Malindi Hub

Data for Nairobi and Mombasa are provided in section 3.5. Data for Eldoret and Malindi is not directly available, but it can be estimated by making the link with geographical archetypes from section 3.5.

City	Population (2019-2020)[25]	Geographical archetype
Kisumu	400,942	N.A
Eldoret	475,716	Similar to Kisumu
Malindi	119,859	Comprised between "Urban other" and "Rural"

As the situation in Kisumu is worse than in Nairobi and Mombasa (see table in section 3.5), it can be said that Eldoret and Malindi are definitely lacking plastic waste management collection infrastructures. As an example, 100% of plastic waste is mismanaged in geographical archetypes "Urban other" or "Rural".

b) **Demonstration of recycling additionality through PWRM0002 V1.1:**

Step 1: Regulatory surplus:

As explained in section 1.13 above, there are no laws or regulations that enforce the recycling of the relevant material type(s) or the laws or regulations are not systematically enforced, and non-compliance is widespread in the relevant country or region.

Step 2: Positive List:

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

Step 3a: Penetration Rate

According to the Plastic Waste Recycling Methodology, the penetration rate (percent) is the ratio between plastic waste recycling (tonnes/year) and plastic waste total generation (tonnes/year) in the region.

According to a recent WWF report[26] updated analysis from 2022 (see section 3.5), for each polymer type, the national recycling rate is below 7%. Therefore, the project is deemed additional.

[25] World Population Review (2024) – Kenya Population 2024 (Live)

[26] WWF (2022) – Extended Producer Responsibility for single-use plastics and packaging waste streams: an assessment for Kenya

3.7 Methodology Deviations (3.15)

There are no methodology deviations for this project.

4 ESTIMATED COLLECTED AND/OR RECYCLED PLASTIC WASTE

4.1 Baseline Collected and/or Recycled Plastic Waste

According to the Plastic Waste Collection Methodology PWRM0001 v1.1, baseline plastic waste is calculated as :

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

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,

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

According to the Plastic Waste Recycling Methodology PWRM0002 v1.1, baseline plastic waste is calculated as :

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

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 depolymerisation

AF_i = Adjustment factor for non-composite materials = 1

$\sum_{i=1}^{n} B_{dp,recycled,i,y}$ = 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 depolymerisation process used for plastic production

The baseline recycled plastic waste for material type *i* was determined as follows:

Since this is a new activity, the baseline is equal to 0 kg/year. Hence:

$$B_{recycled,y} = 0$$

4.2 Project Collected and/or Recycled Plastic Waste

According to the Plastic Waste Collection Methodology PWRM0001 v1.1, the project plastic waste collected is calculated as:

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

$$(Equation\ 3)$$

Where:

$P_{collected,d,y}$ = Total plastic waste collected by the project activity and transferred to destination *d* in year *y* (tonnes), where *d* is an appropriate end destination

$P_{collected,i,d,y}$ = Amount of material type *i* collected by the project activity and transferred to destination *d* in year *y* (tonnes), where *d* is an appropriate end destination. Where material collected is not identified by type, this represents the total plastic waste collected by the project activity and transferred to destination *d* in year *y* (tonnes).

According to the Plastic Waste Recycling Methodology PWRM0002 v1.1, the project plastic waste recycled is calculated as:

$$P_{recycled,y} = \sum_{i=1}^{n} P_{p,recycled,i,y}\ X\ AF_i + \sum_{i=1}^{n} P_{dp,recycled,i,y}\ X\ MF$$

$$(Equation\ 3)$$

Where:

$P_{recycled,y}$= Total amount of plastic waste recycled by the project activity in year *y* (tonnes)

$\sum_{i=1}^{n} P_{p,recycled,i,y}$= Amount of plastic waste of material type *i* recycled by the project activity in year *y* (tonnes) without depolymerisation

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 depolymerisation process used for plastic production

4.3 Net Collected and/or Recycled Plastic Waste

MGA is collecting HDPE, PP and PET. Material type is identified and traced once the plastic reaches the pre-processing facility in Nairobi. Precise data of collected plastic waste per plastic type at collection instance level is not available.

According to *section 3.11* of the *Verra Plastic Waste Reduction Standard*, "where it is unreasonable to identify collected plastic waste by material type [...], the following categories must be used: rigid material, flexible material, composite material". MGA is only collecting and recycling rigid materials. Therefore, the figures provided in below collection tables only concern rigid materials in forms of HDPE, PP and PET.

Table 8: Annual net collected quantities (rigid plastics only), collection Instance 1 – Nairobi *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	570	570
2021	0	2586	2586
2022	0	3622	3622
2023	0	3546	3546
2024	0	5900	5900
2025	0	8429	8429
2026	0	12643	12643
2027 (until June 30th)		6322	6322
Total	0	43618	43618

Table 9: Annual net collected quantities (rigid plastics only), collection Instance 2 – Eldoret *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	0	0
2021	0	96	96
2022	0	360	360
2023	0	395	395
2024	0	657	657
2025	0	938	938
2026	0	1407	1407
2027 (until June 30th)	0	704	704
Total	0	4556	4556

Table 10: Annual net collected quantities (rigid plastics only), collection Instance 3 – Bamburi *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	0	0
2021	0	0	0
2022	0	1	1
2023	0	216	216
2024	0	360	360
2025	0	514	514
2026	0	771	771
2027 (until June 30th)	0	386	386

Total	0	2248	2248

Table 11: Annual net collected quantities (rigid plastics only), collection Instance 4 – Bombolulu *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	0	0
2021	0	0	0
2022	0	0	0
2023	0	589	589
2024	0	980	980
2025	0	1401	1401
2026	0	2101	2101
2027 (until June 30th)	0	1050	1050
Total	0	6122	6122

Table 12: Annual net collected quantities (rigid plastics only), collection Instance 5 – Malindi *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	0	0
2021	0	0	0
2022	0	0	0
2023	0	302	302
2024	0	503	503
2025	0	718	718
2026	0	1077	1077
2027		539	539

(until June 30th)			
Total	0	3139	3139

Table 13: Annual net collected quantities (rigid plastics only) – Total *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline collected plastic waste (tons)	Estimated project collected plastic waste (tons)	Estimated net collected plastic waste (tons)
2020	0	570	570
2021	0	2682	2682
2022	0	3983	3983
2023	0	5049	5049
2024	0	8400	8400
2025	0	12000	12000
2026	0	18000	18000
2027 (until June 30th)	0	9000	9000
Total	0	59684	59684

Table 14: Annual net recycled quantities, recycling Instance 1 – Nairobi *(start date: 01/07/2020, end date: 30/06/2027)*

Year	Estimated baseline recycled plastic waste (tons)	PET recycled (tons)	HDPE recycled (tons)	PP recycled (tons)	Estimated net recycled plastic waste (tonnes)
2020	0	0	230	230	460
2021	0	0	929	929	1858

2022	0	60	1150	1150	2360
2023	0	418	1496	1496	3410
2024	0	858	3071	3071	7000
2025	0	1226	4387	4387	10000
2026	0	1839	6581	6581	15000
2027 (until June 30th)	0	919	3290	3290	7500
Total	0	5320	21134	21134	47588

5 MONITORING

5.1 Data and Parameters Available at Validation (3.12)

For plastic waste collection:

Table 15: Project baseline collection parameter available at validation

Data / Parameter	$B_{collected,\,d,\,y}$
Unit	Tonnes/year
Description	Amount of plastic waste collected in the baseline and transferred to destination *d* in year *y*
Equation	PWRM0001, version 1.1.: Equation 2
Value	0
Source of data	Baseline analysis conducted in *Section 3.5* using publicly available studies conducted by qualified, independent third parties
Justification of choice of data or description of measurement methods and procedures applied	Baseline plastic waste collection is zero for new project activities
Purpose	Determination of baseline plastic waste collection for new activities

Comments	-

For plastic waste recycling:

Table 16: Project baseline recycling parameter available at validation

Data / Parameter	$B_{\text{recycled, } d, \text{ y}}$
Unit	Tonnes/year
Description	Amount of material type *i* recycled in the baseline in year *y*
Equation	PWRM0002, version 1.1.: Equation 2
Value	0
Source of data	Baseline analysis conducted in *Section 3.5* using publicly available studies conducted by qualified, independent third parties
Justification of choice of data or description of measurement methods and procedures applied	Baseline plastic waste recycling is zero for new project activities
Purpose	Determination of baseline plastic waste recycling for new activities
Comments	-

5.2 Data and Parameters Monitored (3.12)

For plastic waste collection:

Table 17: Project collection parameter monitored

Data / Parameter	$P_{collected, d, \text{ y}}$
Unit	Tonnes/year
Description	Amount of plastic waste collected by the project and transferred to destination *d* in year *y*
Equation	PWRM0001, version 1.1.: Equation 3

Source of data	Measurement on a dry basis at Collection Centres and Aggregation hubs as output of the sorting activity.
Description of measurement methods and procedures applied	Measurement of collected plastic waste is carried out using weighing machines, and the data is documented in the MGA ERP system.
Frequency of monitoring/recording	Recorded every time collected material is recovered.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Hanging scales are regularly calibrated, mandatory QC training and test before starting to work for the responsible of data collection. Strict compliance with MGA's QC policies (e.g., pre-sorting policy…)
Purpose	Calculation of project collected and/or recycled plastic waste
Comments	-

For plastic waste recycling:

Table 18: Sorting output parameter monitored

Data / Parameter	Sorting output
Unit	Tonnes/year
Description	Quantity of sorted plastic waste of each material type *i* in year *y*.
Equation	-
Source of data	Measurement on a dry basis at Collection Centres and Aggregation hubs as output of the sorting activity.
Description of measurement methods and procedures applied	Measurement of sorted plastic waste is carried out using weighing machines, and the data is documented in the MGA ERP system.
Frequency of monitoring/recording	Recorded every time collected material is recovered.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Hanging scales are regularly calibrated, mandatory QC training and test before starting to work for the responsible of data collection. Strict compliance with MGA's QC policies (e.g., pre-sorting policy…)
Purpose	Calculation of project collected and/or recycled plastic waste

Comments	-

Table 19: Recycling input parameter monitored

Data / Parameter	Recycling input
Unit	Tonnes/year
Description	List of input materials (e.g., solvents, process fuels) to the recycling process. This includes the category of plastic waste of material type *i* and any other material(s) used in the recycling process in year *y*.
Equation	-
Source of data	On-site records
Description of measurement methods and procedures applied	Measurement of sorted plastic waste is carried out using weighing machines before sending as a recycling input, and the data is documented in the MGA ERP system.
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	Weight measurement before processing/recycling process
Purpose	Monitoring for compliance with Applicability Condition 5 in Section 4 of PWRP0002, v1.1
Comments	-

Table 20: Project recycling parameter monitored

Data / Parameter	$P_{recycled,\,d,\,y}$
Unit	Tonnes/year
Description	Amount of plastic recycled by the project activity and transferred to destination *d* in year *y*.
Equation	PWRM0002, version 1.1.: Equation 3
Source of data	Direct measurement at project facility using weighing scales.

Description of measurement methods and procedures applied	Measurement of each material type *i* with weighing scale after the final stage at the recycling facility, before leaving the project site.
Frequency of monitoring/recording	Recorded at each batch of recycled plastic waste after recycling and prior to leaving the recycling facility.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	Continuous inspection is operated on flakes and pellets that are produced. Production of by-products is recorded to calculate Processing Loss rates.
Purpose	Calculation of project recycled plastic waste
Comments	-

Table 21: End destination of non-plastic waste from recycling facility parameter monitored

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 as well as data extracted from MGA's ERP system.
Description of measurement methods and procedures applied	-
Frequency of monitoring/recording	Recorded at each batch of recycled plastic waste after recycling.
Quality Assurance/Quality Control (QA/QC) procedures to be applied	-
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 for Sourcing, Manufacturing and Sales are meticulously followed by all stakeholders involved in MGA's processes. They outline the detailed process, responsibilities and Quality Assurance/Quality Control (QA/QC) procedures. The following table describes more precisely the method for measuring, recording, storing, aggregating and reporting data and parameters related to different aspects of the project.

Figure 22: Monitoring procedures in place at every step of the project

Project activity	Monitoring procedures in place
Collection and pre-processing	At each collection site, operations are overseen by a designated official responsible for acquiring plastic waste from various suppliers. This official conducts an initial quality check of the delivered materials to ensure compliance with predefined standards, utilizing a sorting table for this purpose. The total weight of the acceptable materials is determined in the presence of the supplier, using a precision scale, and the details are meticulously recorded in an organizational database. Transactions for the collected plastic are completed on-site, with immediate payment to the supplier, and any applicable reward points are also allocated as per the organization's incentive program. Both the official and their supporting personnel are required to undergo and pass a quality control training and evaluation before commencing their duties, ensuring a consistent standard of operation.
Processing and recycling	The manufacturing processes for converting plastic waste into flakes and pellets involve detailed planning and monitoring, with specific attention to the quality and type of input materials. These processes are carried out by trained staff who ensure that materials are sorted by type and colour, as required by the machinery. Continuous quality inspections are conducted on the output, and the weights of both the final products and any by-products are recorded to assess the efficiency of the processes and calculate any losses. The handling of chemicals, particularly in the washing stages, requires careful management to ensure environmental compliance, with a strong focus on the treatment of contaminated water. Maintenance of the machinery used in these processes is a critical task, carried out by a specialized team. This includes regular cleaning, lubrication, and

	inspections to prevent breakdowns and ensure that the equipment is always operational, supporting the overall efficiency of the recycling operation.
Sales	The management of sales operations and processes falls under the purview of the senior commercial leadership. In terms of customer data management, all potential and existing client information is meticulously recorded in a centralized customer relationship management (CRM) system, ensuring that every client is individually accounted for with their respective details. Regarding inventory and delivery, the organization's staff is responsible for forecasting demand and planning inventory to align client deliveries with available stock, ensuring efficient fulfilment of orders.