



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: Emission Reductions from PET Recycling by Sumilon ECO PET SARL in Maroc

Version 1.0

Date 16/01/2022

First CoU Issuance Period: 06 years, 01 month, 13 days

Date: 18/12/2015 to 31/01/2022



Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION

Title of the project activity	Emission Reductions from PET Recycling by Sumilon ECO PET SARL in Maroc
Scale of the project activity	Small Scale
Completion date of the PCN	16/01/2022
Project participants	Creduce Technologies Private Limited (Representator) Sumilon ECO PET SARL (Project Proponent)
Host Party	Morocco
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-III.AJ : “Recovery and recycling of materials from solid wastes”, version 8.0 Standardized Methodology: Not Applicable.
Sectoral scopes	13 Waste handling and disposal
Estimated amount of total GHG emission reductions	To be estimated during verification [An ex-ante estimate is 5,538 CoUs per year]

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The proposed project titled under UCR is “Emission Reductions from PET Recycling by Sumilon ECO PET SARL in Maroc”, which is a small-scale PET recycling project located in Tanger - Maroc in the country of Morocco. The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

Purpose of the project activity:

The proposed project activity is promoted by ‘Sumilon ECO PET SARL’ (herein after called as Project Proponent or PP). The project activity has been designed and developed for PET recycling, which is a plastic waste that directly reduces energy consumption that would have been otherwise required for the production of equivalent plastic products made of virgin inputs. Hence, the project is reducing greenhouse gases (GHGs) emissions associated with the production of such virgin products by recycling of PET.

In general, Waste PET bottles are supplied by collectors. Such collectors are authorized companies for plastic waste collection activities from different sources including from companies which generate such a waste (i.e. after usage of bottles (i.e. mineral water/soft drinks and beverages etc.) consumer dump the bottles, becomes plastic waste): PET post-consumer bottles with or without caps, with or without labels, sorted or not by colours, in baled PET which are transported to project site. This Project activity comprises of washing line with total capacity of 2000 kg/hr while extrusion capacity of 1800 kg/hr. These raw bottles are processed in three stages to prepare PET flakes namely - sorting by colour and removal of mechanical contamination, crushing of the bottles into flakes (small pieces of 2-12 mm) and hot washing of the flakes leading to final clean flakes with purity more than 99.5% PET. This cleaned flakes are then undergoes to PET granules manufacturing through three stages namely – drying of flakes, processing through extrusion with degassing & colour dosing and crystallization, cooled and bagging. The project activity is already been commissioned on 18/12/2015.



Sumilon Eco PET SARL is incorporated in Morocco to produce PET Food Grade Resin (r-PET) from discarded PET plastic bottles. As part of the process, the waste plastic bottles are collected and post necessary cleaning these bottles are flaked in small pieces. With proven and established technology, flakes can be recycled to produce food grade PET Resin, which are primary raw materials for manufacturing PET bottles for various applications like water, colas, juices, beer and wine bottles etc.

Therefore, the project activity is reducing the energy consumption that would have been otherwise required for the production of Polyethylene Terephthalate (PET) from virgin materials. And hence the project activity reduces GHG emissions. Based on capacity project activity could recycle an estimated annual 12,960 tonnes of waste PET from total generated waste in host country i.e., Morocco. The estimated annual CO₂e emission reductions by the project activity are expected to be 5,538 tCO₂e, whereas actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification.

With regards to Sustainable Benefits and ESG credentials:

Due to inherent nature of the sectoral scope, there will be reduction in GHG emission and thereby the project contributes to climate change mitigation efforts. In addition to GHG mitigation, the project is associated with high sustainable benefits such as:

- ✓ Recycling is good for the environment and the economy, especially under ‘Circular Economy’ approach
- ✓ Recycling process involves a complete value chain, hence there are different types of jobs created as a part of the project both during its construction as well as during the entire operation of the project.
- ✓ Recycling Saves Natural Resources while addressing the concern of waste pollution.
- ✓ Recycling Reduces the Need for More Landfills and Incinerators and saves from polluting oceans.
- ✓ Recycling Saves both direct and indirect Energy as compared to baseline
- ✓ Recycling Results in Less Air and Water Pollution

It has been observed, to reduce bad effects of waste plastics, it is better to recycle and re-utilize waste plastics in environment-friendly manners. As per statistics, about 80% of post-consumer plastic waste is sent to landfill, 8% is incinerated and only 7% is recycled. In addition to reducing the amount of plastics waste requiring disposal, recycling and reuse of plastic can have several other advantages, such as – (1) Conservation of non-renewable fossil fuels as Plastic production uses 8% of the world’s oil production, 4% as feedstock and 4% during manufacture It is an internationally approved material for use in foodstuffs; (2) Reduced consumption of energy; (3) Reduced amounts of solid waste going to landfill; (4) Reduced emissions of carbon-dioxide (CO₂), nitrogen-oxides (NO_x) and sulfur-dioxide (SO₂).

At present specific ESG credentials have not been evaluated, however, the project essentially contributes to various indicators which can be considered under ESG credentials. Some of the examples are as follows:

Under Environment:

The following environmental benefits are derived from the project activity

- Recycling instead of using material from virgin inputs decreases the overall energy use, GHGs and environmental burden from natural resources extraction. At the same time, recycling of PET waste will reduce the amount of waste to be disposed in the landfill.
- Recycling saves natural resources used for energy generation
- With plastic recycling less oil is needed to make plastic products
- Recycling reduces the need for more landfills and incinerators, hence reducing environmental load
- Recycling saves energy and reduces GHG emission
- Recycling results in less air and water pollution
- Recycling also contributes to local environmental sustainability

For the project proponent, energy saved by the project activity due to PET recycling contributes to GHG emission reduction and conservation of depleting energy sources, more waste generation and management associated with the project baseline. Hence, project contributes to ESG credentials.

Social aspects:

The social well-being is assessed by contribution to improvement in living standards of the local community. The implementation of the project activity has provided job opportunities to the local community; contribute in livelihood alleviation of the local community and development of basic amenities to community leading to improvement in living standards of the community. Project activity also contributes towards better working conditions in the local region, to regional integration and connection with other sectors and to local and social community development

Technology and Quality aspects:

Sumilon Eco PET is involved in manufacturing and supply of Recycled PET, which is primarily produced to meet needs of food grade packaging. At SUMILON ECO PET the process is committed to provide a high quality and environment friendly product with optimum economics.

The Quality standards must be meet at levels, and everyone working at any level is expected to improve the quality assurance program of Sumilon Eco PET. The quality control system implemented in three areas of r PET manufacturing; for example, incoming material specifications, process control of manufacturing operations, and final product specifications. The three areas will include data collection with quality records throughout the manufacturing process and material testing procedures during selected phases manufacturing process. The material in compliance to quality parameters only shall be passed to next process for further manufacturing or packaging and dispatch.

Sumilon ensure implementation of our quality policy by:

- Maintain the process that will support customer satisfaction and efficient operation of business.
- Involvement, commitment and awareness of all employees about the quality system and their responsibilities in supporting it.
- Having a management structure, which involves senior management to ensure the quality system, is operating effectively.
- Driving continuous improvement to enhance customer satisfaction.
- We all at Sumilon Eco PET must remain committed to ensure adherence to quality policy.

Economical well-being:

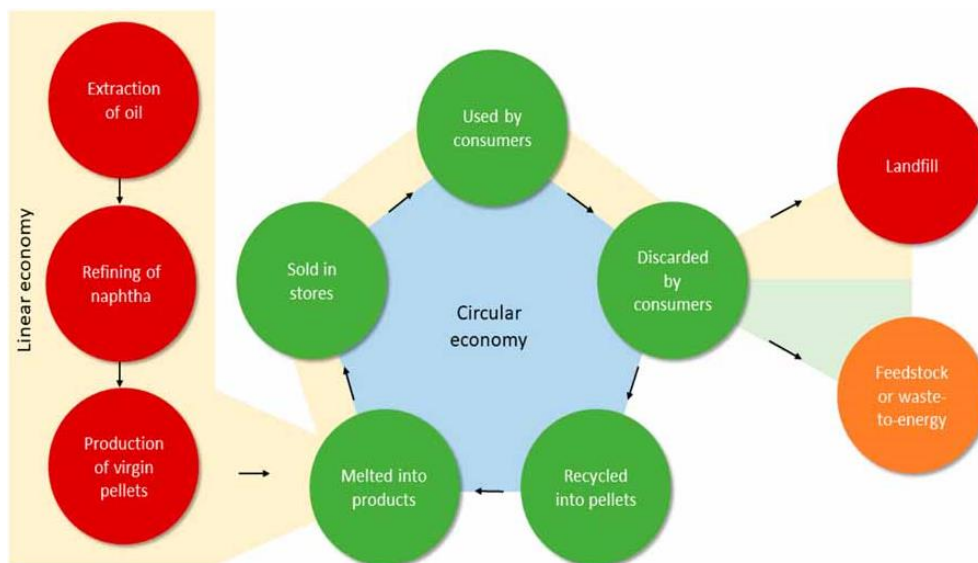
Economic well-being refers to additional investment consistent with the needs of the local community. These activities, with the additional investment, have contributed to the economic well-being of the local community. The project activity has also provided direct and indirect job opportunities to the local community during construction and shall provide permanent job opportunities during operation. During operation of the project activity, many persons has been employed directly, apart from indirect employment, which would augur well for the economic well-being of the community. Project activity also contributes towards better revenue distribution to improve local and regional economic development; contributes toward development of local technological capacity because the manpower and the technical maintenance are provided domestically in the country; and contributes to the local municipalities’ funds for social insurance, such as health and pension funds;

Other positive aspects:

At Sumilon Eco PET, following contaminants are not allowed at any level:

- Plastic microwave trays, dishes, bakery trays, covers, deli containers, drink cups, and “clamshells”
- Polystyrene (PS)(#6) plastic – rigid or foam
- Plastic bags and plastic film
- Wood, Glass, Motor Oils and Grease etc.
- Rocks, Stones, Mud, Dirt Medical and Hazardous Waste, etc.

Thus, the project is contributing to various Sustainability and ESG related aspects, which will be achieved through the lifecycle of the project.



A.2 Do no harm or Impact test of the project activity>>

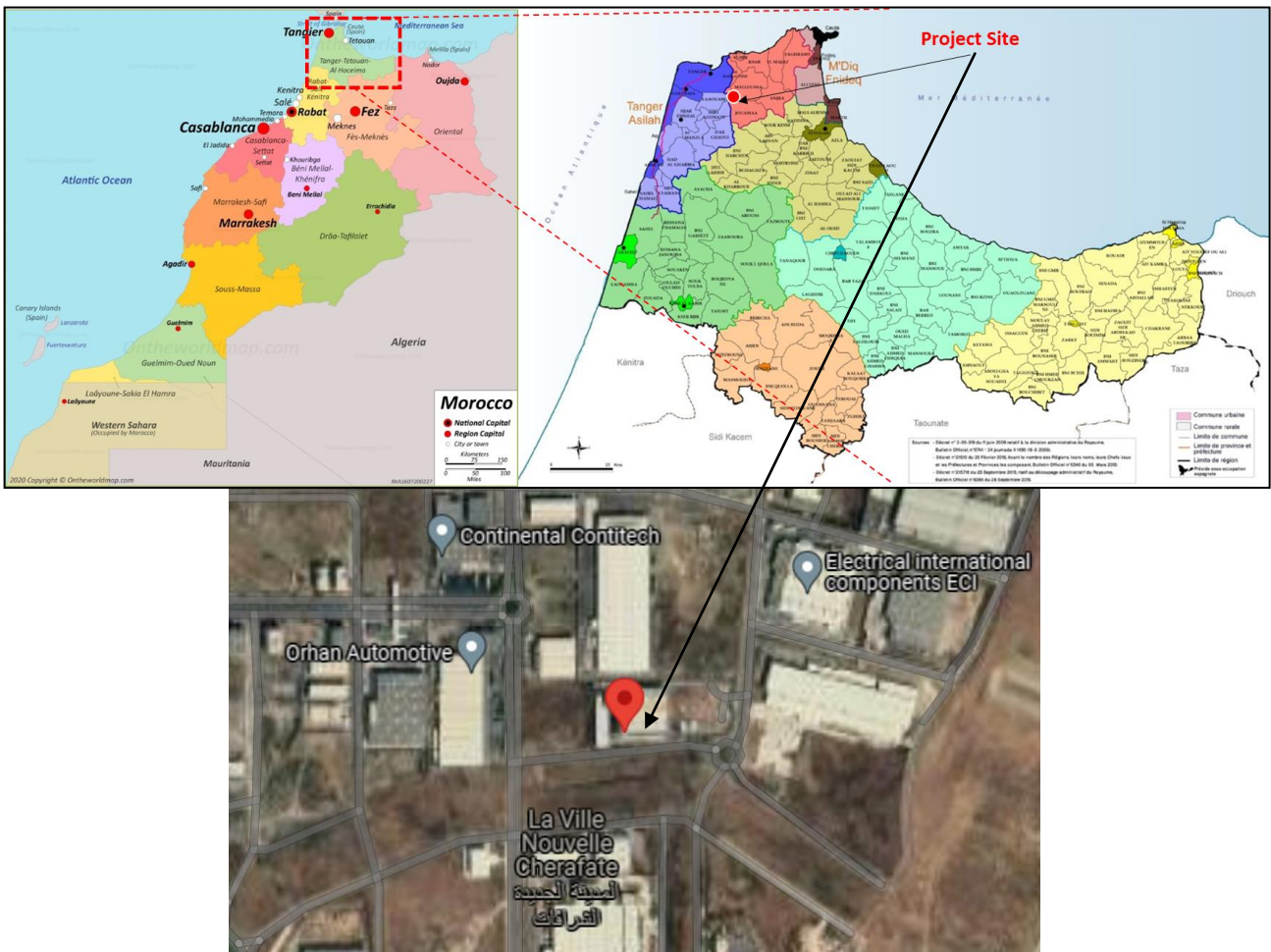
There is no harm identified from the project and hence no mitigations measures are applicable. In fact the project positively contributes to environmental and social aspects in the project region. Additionally, the project has received all required NOCs and approvals from local authority to commission and operate, which also ensures that there is no probable harm or negative impact due to project activity.

A.3. Location of project activity >>

Country : Morocco
Province : Tanger-Tetouan-Al Hoceima
District : Maroc

This project is located in Tanger-Maroc of Morocco and recycle waste PET bottles collected locally. The project site is about 25 kms from province capital i.e., Tangier. The nearest airport is at Tangier i.e., Tangier-Ibn Battuta International Airport which is about 35 kms. The geographic co-ordinates of the project locations are 35°39'21.8" N and 5°39'28.7" W.

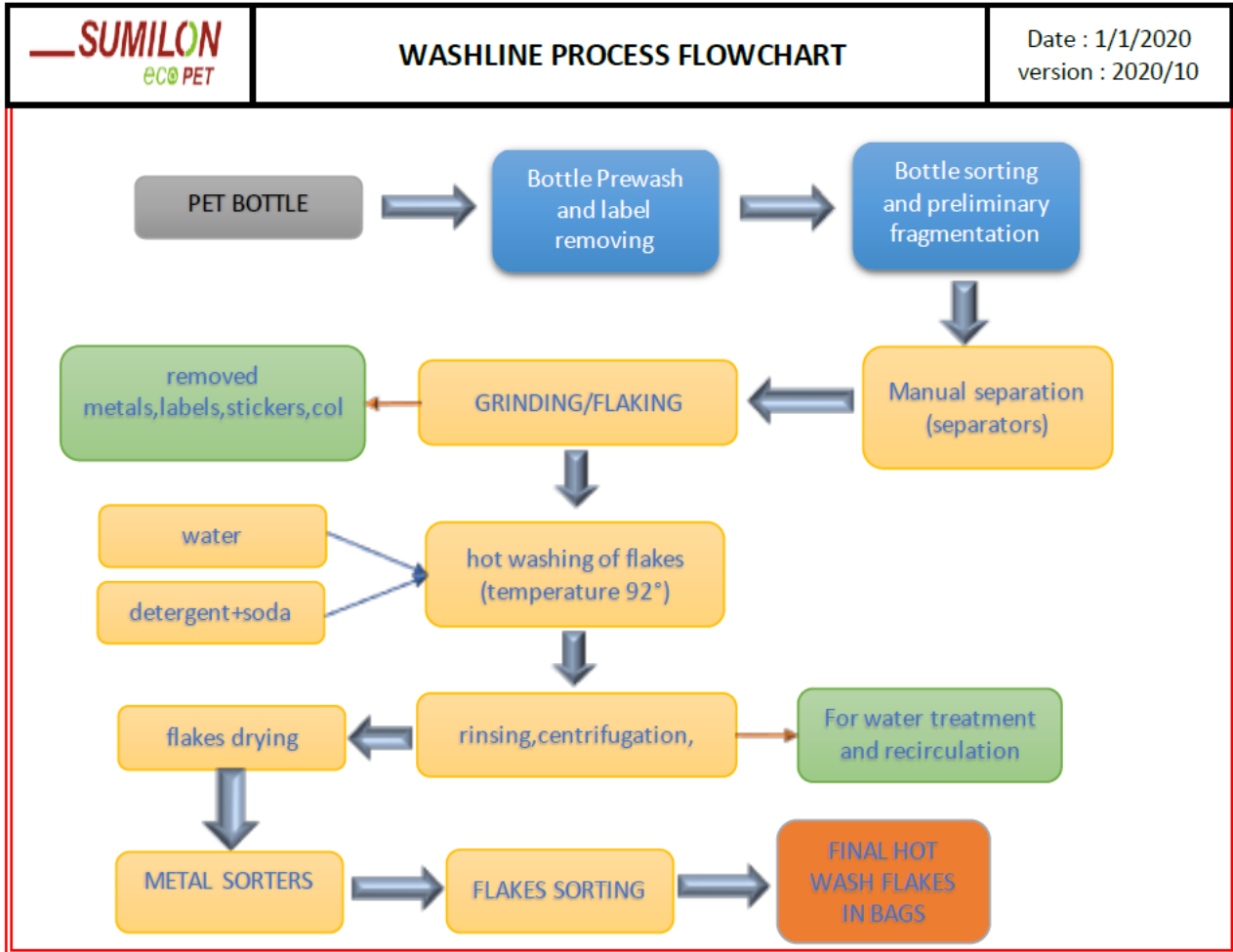
The representative location map is included below:

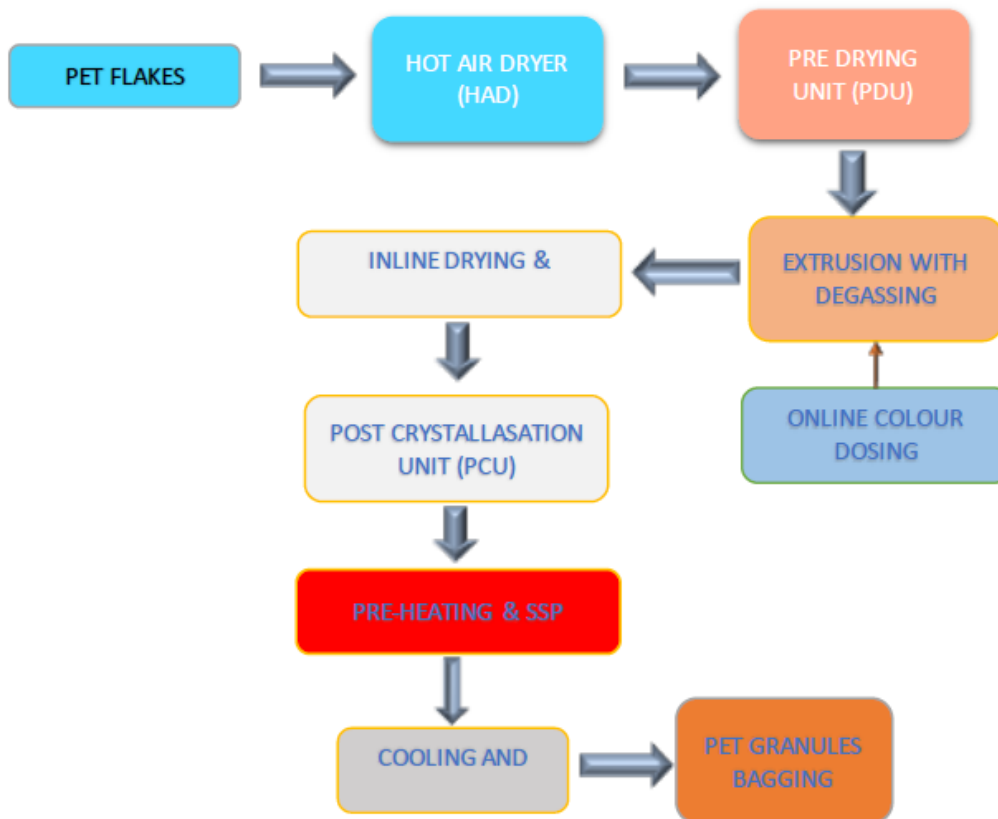


(Courtesy: google map and images)

A.4. Technologies/measures >>

The project activity mainly involves two processes namely – washline process for sorting, washing, separation, flaking, hot washing, rinsing, drying, flakes sorting and extrusion process for extrusion with degassing, coloring, crystallization, heating, cooling & bagging of PET granules. These processes can also be better understood by referring to the block diagram below.





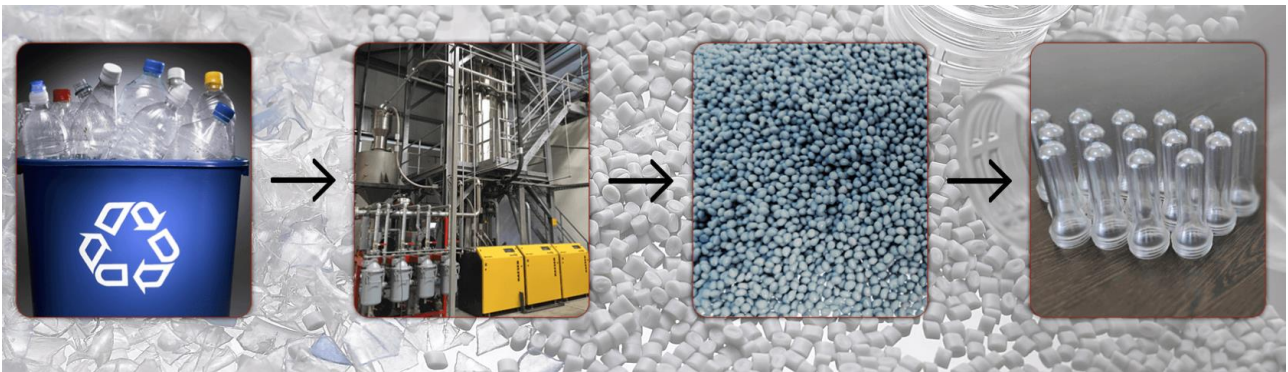
The other salient features of the technology are:

Wash line capacity	1800-2000 kg/hr
Extrusion capacity	1600-1800 kg/hr
Flake Specification	
Surface Moisture	Max. 1%
PVC content	Max. 50 ppm
Glue content	Max. 4000 ppm
Label content	Max. 20 ppm
PO content	Max. 20 ppm
PET dust	Max. 0.1%
Metal content	Max. 20 ppm
Coloured PET flakes	Max. 30 ppm
Yellow PET flakes	Max. 4000 ppm
Flake size	Max. 8-10 mm
Bulk density	Min. 290 gm/lit
Hot Air Dryer	
Vessel diameter	1400 mm
Vessel volume	3700 lit
Heating capacity	60/90 kW
Bull's eye with lighting	Yes
Agitator speed	~2.6 rpm

The project is already been commissioned by Starlinger & Co. (the technology supplier) on 18/12/2015.

In the absence of the project activity the equivalent amount of PET granules would have otherwise been produced or generated from virgin raw material. Apart from reducing consumption of virgin raw material and minimizing PET waste, this project activity has produced the product with less energy consumption. Hence, baseline scenario of the project activity is production of virgin pellets of plastics consisting of PET, which is also the pre-project scenario as discussed in the previous section.

Some representative photos of the process and plant are presented below:



A.5. Parties and project participants >>

Party (Host)	Participants
India	<p>Creduce Technologies Private Limited (Representator)</p> <p>Contact person: Shailendra Singh Rao Phone: +91 9016850742, 9601378723 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan - 327001, India</p> <p>.....</p>
Morocco (Host country)	<p>Sumilon ECO PET SABL (Developer)</p> <p>Address: Tanger Automotive City, Plot 98/99, Tanger, Maroc, Morocco. E: info@sumiecopet.com P: +212 5310 69072</p>



A.6. Baseline Emissions>>

The baseline scenario identified at the PCN stage of the project activity is:

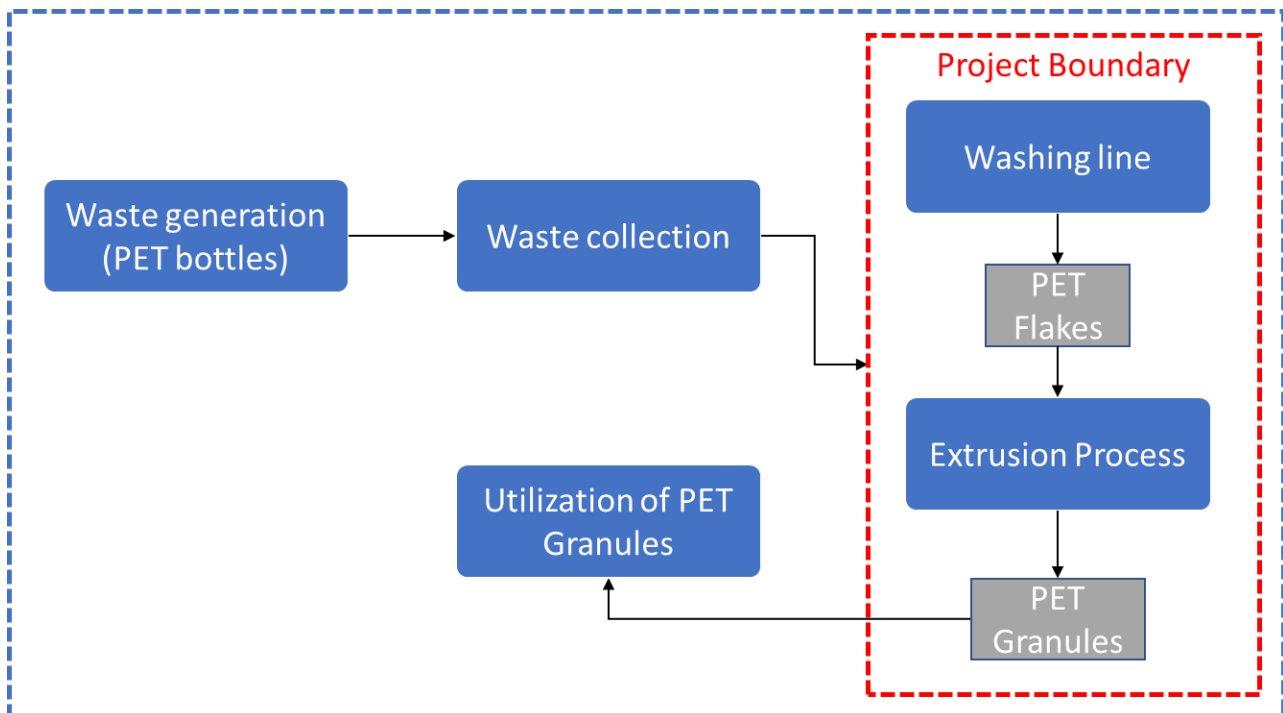
- For the production of plastic, the emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials;

In the absence of the project activity, the equivalent amount of PET granules would have been generated by utilizing virgin raw material coming from oil refinery. Hence, baseline scenario of the project activity is production of virgin pellets of plastics consisting of PET, which is also the pre-project scenario.

Schematic diagram showing the baseline scenario:



Schematic diagram showing the project Scenario:



Baseline Scenario:

The project has applied approved baseline and monitoring methodology under Clean Development Mechanism (CDM) of UNFCCC. As per the approved consolidated methodology AMS-III.AJ. Version 8.0, if the project activity is the installation & commissioning of a new plastic recycling plant by informal sector, the baseline scenario is the following:

“For the production of plastic, the emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials;”.

The project activity involves setting up of a new waste PET bottle recycling plant in the province of Tanger, Morocco. In the absence of the project activity, the equivalent amount of PET granules would have been generated by utilizing virgin raw material. Hence, the baseline for the project activity is the energy saved from recycling of waste.

A.7. Debundling>>

This project activity is not a debundled component of a larger project activity.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE:

13, Waste handling and disposal

TYPE:

III - Others

CATEGORY:

AMS. III.AJ. (Title: “Recovery and recycling of materials from solid wastes”, version 8.0)

B.2. Applicability of methodologies and standardized baselines >>

The methodology AMS-III.AJ. Version 8.0, covers the emissions associated with:

- a) Production of virgin pellets of plastics consisting of either high density polyethylene (HDPE), low density polyethylene (LDPE), Polyethylene Terephthalate (PET) or Polypropylene (PP). For the sake of this methodology, “plastic” means HDPE, LDPE, PET and PP, unless otherwise specified;
- b) Production of container glass using virgin input (“container glass” hereafter) that is displaced by the recycled container glass (“container glass cullet” hereafter) due to the project activity;
- c) Production of metals (i.e., aluminium and steel) from mined ore or virgin raw materials that are displaced by the recycled metals due to the project activity.

The Project activity is recycling PET wastes reducing energy consumption that would otherwise be required for the production of plastic made of virgin inputs for the production of plastic products, and consequently reducing greenhouse gases emissions. Therefore, the Project meets the Case (a) of the emissions associated methodology, as mentioned above.

The project status is corresponding to the methodology AMS-III.AJ. Version 8.0 and applicability of methodology is discussed below:

Applicability Criterion	Project Case
Case A: Project activities that target the participation of the informal waste sector	
1. In Case A, the recycling facility is operated by the informal sector. The recycling facility may also receive wastes collected by the formal waste sector (e.g., public collection system). Waste fractions that were already being recycled in the baseline by enterprises in the formal sector cannot be included in the calculations.	The Project is a Case A activity with informal sector participation. The Project is owned and operated by the informal sector and there are no participation of the formal sectors in its organization or management functions.
2. The following applicability conditions shall apply to project activities under this case: (a) The recycling facility may be an existing facility, or a newly implemented facility;	(a) Proposed project activity is a newly implemented facility (b) The Project directly measures and records the final output of the recycling

Applicability Criterion	Project Case
<p>(b) It is possible to directly measure and record the final output of the recycling facility, that is the weight of materials leaving the recycling facility (on a dry basis), segregated by type;</p> <p>(c) Each type of recycled material is sold directly to a processing/manufacturing facility, or to a chain of intermediary retailers that are able to transfer the materials to final identifiable processing/manufacturing facilities that process the segregated fractions;</p> <p>(d) The Project Design Document (PDD) shall explain the procedures such as contractual agreements proposed to eliminate double counting of emission reductions, for example due to the formal waste sector or the processing/manufacturing facility, or other parties possibly claiming credits for emission reductions. Similarly, through contractual agreement and other means such as survey/analysis undertaken by a third party, credible proof shall be provided to show that the materials supplied from the recycling facility are used for processing/manufacturing and not for other purposes such as a source of fuel or disposal;</p> <p>(e) Emission reductions can be claimed for the difference in energy use for the production of materials from virgin inputs versus production from recycled material. In the case of paper or cardboards, emission reductions due to the avoidance of methane formation in anaerobic decay may be claimed if the baseline scenario is the waste disposal in a disposal site without methane recovery.</p>	<p>facility, that is the weight of materials leaving the recycling facility (on a dry basis) i.e., PET granules using calibrated balances.</p> <p>(c) PET recycled material is sold directly to a processing/manufacturing facility, or to a chain of intermediary retailers that are able to transfer the materials to final identifiable processing/ manufacturing facilities.</p> <p>(d) Contractual agreements have been signed to eliminate double counting of emissions reductions and they will be made available at the time of verification of this project and prove that the materials supplied from the recycling facility are used for processing/manufacturing.</p> <p>(e) The Project emission reductions are based only on the energy saving associated with the recycling of PET wastes.</p>
Case B: Greenfield facility and/or capacity addition to existing facilities with formal sector participation	
<p>3. In Case B, the recycling facility is owned and operated by the formal waste sector. It may receive recyclable materials from the informal waste sector but has no participation of the informal sector in its organization or management functions.</p>	<p>Not applicable</p>
<p>5. The following applicability conditions shall apply under this case:</p> <p>(a) If the recycling facility is an existing activity, the average data on the amount of recycled materials from the previous three years of operation (a minimum of one year data would be required if the facility is less than three years old) shall be used for the estimation of the baseline recycling activity, and project activity shall consist of the increase of the recycling capacity above this level. If the recycling facility is newly implemented as a Greenfield activity, all recycled materials are eligible for the</p>	<p>(a) Not applicable</p>

Applicability Criterion	Project Case
<p>emission reduction calculation. However, in this case the project participants shall demonstrate that the materials recycled by the project activity are not diverted from other existing recycling facilities belonging to the formal sector, or, alternatively, that it is not a common practice in the region to recover and recycle these materials from municipal solid waste streams by means of formal businesses;</p> <p>(b) It is possible to directly measure and record the final output of the recycling facility and the input to the final processing/manufacturing facilities, that is the weight of materials leaving the recycling facility and of those entering the processing/manufacturing facilities (on a dry basis),³ segregated by type;</p> <p>(c) The recycled materials shall be sold directly to a processing/manufacturing facility, or to a chain of intermediary retailers that are able to transfer the recycled materials to a final identifiable processing/manufacturing facility;</p> <p>(d) The PDD shall explain how procedures, such as contractual agreements, shall be put in place to eliminate double counting of emission reductions, for example potentially resulting from waste pickers, the recycling facility or the processing/manufacturing facility, or other parties possibly claiming credits for emissions reduction. Similarly, through contractual agreement and other means, credible proof shall be provided to show that the materials supplied from the recycling facility are used for processing/manufacturing and not for other purposes such as a source of fuel or disposal;</p> <p>(e) For recycling of PET/PP, the project participants shall demonstrate the chemical equivalence of the recycled PET/PP to that of PET/PP made from virgin inputs by the comparison of intrinsic viscosities to ensure that the recycled PET/PP replaces virgin inputs;</p> <p>(f) Emission reductions can only be claimed for the difference in energy use for the production of finished products from virgin inputs versus production from recycled materials. In the case of paper or cardboards, emissions reductions due to avoidance of methane formation in anaerobic decay may be claimed, if the baseline scenario is waste disposal in a disposal site without methane recovery.</p>	<p>(b) Not applicable</p> <p>(c) Not applicable</p> <p>(d) Not applicable</p> <p>(e) Not applicable</p> <p>(f) Not applicable</p>

B.3. Applicability of double counting emission reductions >>

There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate,

B.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology AMS-III.AJ. Version 8.0;

“The project boundary includes the physical geographical sites of:

- (a) Waste collection sites (e.g. door-to-door collection);*
- (b) The recycling facility;*
- (c) Processing/manufacturing facility;*
- (d) Virgin material production;*
- (e) MSW disposal site or treatment plant in the baseline scenario.”*

Thus, the project boundary includes the recycling facility.

Source		Gas	Included?	Justification/Explanation
Baseline	Electricity Consumption	CO ₂	Yes	1.11 MWh/t; 0.8088 tCO ₂ /MWh
	Natural Gas Consumption	CO ₂	Yes	15 GJ/t; 0.202 tCO ₂ /MWh
Project	Electricity Consumption	CO ₂	Yes	Respective emission from project boundary is accounted
	Natural Gas Consumption	CO ₂	Yes	Respective emission from project boundary is accounted

B.5. Establishment and description of baseline scenario >>

This section provides details of emission displacement rates/coefficients/factors established by the applicable methodology selected for the project.

As per para 22 of the approved consolidated methodology AMS-III.AJ. Version 8.0, if the project activity is the installation of a new PET recycling plant owned and operated by informal sector, the baseline scenario is the following:

“For the production of plastic, the emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials”.

The project activity involves setting up of a new PET recycling plant owned and operated by informal sector. In the absence of the project activity, the equivalent amount of PET granules would have been generated by utilizing virgin input material coming from oil refinery. Hence, baseline scenario of the project activity is production of virgin pellets of plastics consisting of PET, which is also the pre-project scenario. Hence, the baseline for the project activity is the energy saved from recycling of waste.

Net GHG Emission Reductions and Removals

$$\text{Thus, } ER_y = BE_y - PE_y - LE_y$$

Where:

- ER_y = Emission reductions in year y (tCO₂/y)
- BE_y = Baseline Emissions in year y (tCO₂/y)
- PE_y = Project emissions in year y (tCO₂/y)
- LE_y = Leakage emissions in year y (tCO₂/y)

Baseline Emissions

Baseline emissions include only CO₂ equivalent emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.

The baseline emissions are to be calculated as follows:

$$BE_y = \sum [Q_{i,y} \times L_i \times (w_{i,\text{in-country},y} \times SE_{i,\text{in-country},y} + w_{i,\text{imported},y} \times SE_{i,\text{imported},y})]$$

Where:

BE_y	=	Baseline emissions in year y (t CO ₂)
I	=	Indices for material type i (i = 1,2,3,4 for HDPE, LDPE, PET and PP)
$Q_{i,y}$	=	Quantity of plastic type i recycled in year y (t/y)
L_i	=	Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material (use 0.75)
$w_{i,\text{in-country},y}$	=	Percentage of plastics produced in the host Country out of total plastic consumed in year y (%)
$SE_{i,\text{in-country},y}$	=	Specific emissions in the baseline for the production of virgin plastics type i in the host Country in year y (tCO ₂ /t _i)

$W_{i,imported,y}$	=	Percentage of imported plastics out of total plastic consumed in year y (%)
$SE_{i,imported,y}$	=	Specific emissions in the baseline for virgin plastics type i imported in year y (tCO ₂ /t _i)

Project Emissions

As per paragraph 37 of AMS-III.AJ, version 8.0, project emissions include emissions associated with the energy use at recycling facility includes both waste sorting and processing are calculated through equation below.

As per applied methodology only emission associated with the fossil fuel combustion, emission from operation of DG Set, would be accounted for the project emission on actuals. Therefore, following project emission type has been considered for the project activity:

$$PE_y = EC_{PJ,y} \times EF_{el,PJ,y} + \sum (FC_{f,PJ,y} \times NCV_{f,y} \times EF_{f,CO_2,y})$$

Where:

PE_y	=	Project emissions in year y (tCO ₂)
I	=	Material type i (i = 1, 2, 3, 4, 5, 6, 7, 8, 9 for HDPE, LDPE, PET, PP, aluminium, steel, paper, cardboard and container glass cullet)
$EC_{PJ,y}$	=	Electricity consumed by the recycling facility in year y (MWh)
$EF_{el,PJ,y}$	=	Emission factor for the electricity consumption for the recycling of plastic in project activity (tCO ₂ /MWh)
$FC_{f,PJ,y}$	=	Fuel type f consumed by the recycling facility in year y (unit mass or volume/t)
$NCV_{f,y}$	=	Net calorific value of the fossil fuel type f consumed in the recycling facility in year y (GJ/unit mass or volume)
$EF_{f,CO_2,y}$	=	CO ₂ emission factor of the fossil fuel type f consumed at the recycling facility in year y (tCO ₂ /GJ)

Leakage

As per paragraph 43 of AMS-III.AJ, version 8.0, “If it is demonstrated that organic biogenic waste segregated in the recycling facility would otherwise have been deposited in a landfill without methane recovery in the baseline scenario, or if the baseline scenario is the incineration of the wastes, then no leakage calculation is required.” The baseline for the proposed project activity involves disposal of plastic waste through both landfill and incineration method, and therefore the leakage from the project activity is considered as zero.

Hence, LE_y = 0

The actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification. However, for the purpose of an ex-ante estimation, following calculation has been submitted:

Estimated annual Baseline Emission (BE_y)

= 10,948 tCO₂

Estimated annual project emission (PE_y)

= 5,409 tCO₂

Therefore, estimated annual emission reduction (ER_y) from proposed project activity as per following equation;

$$ER_y = BE_y - PE_y - LE_y$$

$$= 5,538 \text{ tCO}_2$$

Thus, for the purpose of an ex-ante estimation, above calculated value has been submitted; whereas the actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification. Thus, annual net emission reduction is equivalent to 5,538 CoUs/year.

B.6. Prior History>>

The project activity is a small-scale PET recycling project and was not applied under any other GHG mechanism prior to this registration with UCR. Also, project has not been applied for any other environmental crediting or certification mechanism. Hence, project will not cause double accounting of carbon credits (i.e., COUs).

B.7. Changes to start date of crediting period >>

There is no change in the start date of crediting period.

The start date of crediting under UCR is considered as 18/12/2015 i.e., commissioning date for the project, and no GHG emission reduction has been claimed so far.

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

B.9. Monitoring period number and duration>>

First Monitoring Period:

06 years, 01 month, 13 days

18/12/2015 to 31/01/2022 (inclusive of both dates)

B.8. Monitoring plan>>

Data and Parameters available at validation (ex-ante values):

Data / Parameter	$EF_{BL,el,y}$, EF_{BL,FF,CO_2} , $EF_{el,imported}$, $EF_{FF,imported,CO_2}$ and $EF_{el,PJ,y}$
Data unit	$EF_{BL,el,y} = tCO_2/MWh$ $EF_{BL,FF,CO_2} = tCO_2/GJ$ $EF_{el,imported} = tCO_2/MWh$ $EF_{FF,imported,CO_2} = tCO_2/GJ$ $EF_{el,PJ,y} = tCO_2/MWh$
Description	<p>As per AMS-III.AJ, version 8.0;</p> <p>$EF_{BL,el,y}$ = Emission factor for the baseline electricity consumption for virgin plastic production in the host party;</p> <p>EF_{BL,FF,CO_2} = CO₂ emission factor of the baseline fossil fuel</p> <p>$EF_{el,imported}$ = Emission factor for the baseline electricity consumption for the portion of plastic that is imported. Apply a default value of 0.24 tCO₂/MWh</p> <p>$EF_{FF,imported,CO_2}$ = CO₂ emission factor for fossil fuel. Assume that natural gas supplies the energy needed to produce the virgin plastic imported if it is not possible to identify the fuel type.</p> <p>$EF_{el,PJ,y}$ = Emission factor for the project electricity consumption for recycled plastic production in the host party</p>
Source of data	<p>Grid emission factor for Morocco as per - https://ecometrica.com/assets/Electricity-specific-emission-factors-for-grid-electricity.pdf</p> <p>IPCC default emission factor value for ‘natural gas’ is considered as provided in Table 2.2 of Chapter 2 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories and is fixed Ex-ante.</p> <p>Emission factors for fossil fuel used is considered as per AMS-III.AJ, Small-scale Methodology Recovery and recycling of materials from solid wastes, Version 8.0, Sectoral scope:13; Baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.</p>
Value applied	$EF_{BL,el,y} = 0.8088 tCO_2/MWh$ $EF_{BL,FF,CO_2} = 0.0561 tCO_2/GJ$ $EF_{el,imported} = 0.24 tCO_2/MWh$ $EF_{FF,imported,CO_2} = 0.0561 tCO_2/GJ$ $EF_{el,PJ,y} = 0.8088 tCO_2/MWh$
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of Data	For the calculation of Emission Factor
Additional Comment	This parameter is fixed ex-ante for the entire crediting period

Data / Parameter	L_i
Data unit	-
Description	Net to gross adjustment factor to cover degradation in material quality and material loss in the production process of the final product using the recycled material
Source of data	Clean Development Mechanism AMS-III.AJ, Small-scale Methodology Recovery and recycling of materials from solid wastes, Version 8.0, Sectoral scope:13; Baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.
Value applied	0.75
Measurement methods and procedures	From baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials
Purpose of Data	Calculation of baseline emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	SEC_{BL}
Data unit	MWh/t of PET recycled
Description	Specific electricity consumption at virgin PET production facility
Source of data	Emission factors for fossil fuel used is considered as per AMS-III.AJ, Small-scale Methodology Recovery and recycling of materials from solid wastes, Version 8.0, Sectoral scope:13; Baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.
Value applied	1.11
Measurement methods and procedures	-
Purpose of Data	Calculation of baseline emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	SFC_{BL}
Data unit	GJ/t of PET recycled
Description	Specific natural gas consumption at virgin PET production facility
Source of data	Emission factors for fossil fuel used is considered as per AMS-III.AJ, Small-scale Methodology Recovery and recycling of materials from solid wastes, Version 8.0, Sectoral scope:13; Baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.
Value applied	15
Measurement methods and procedures	-
Purpose of Data	Calculation of baseline emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	B_i
Data unit	-
Description	Correction factor based on share of production in non-Annex I countries
Source of data	Emission factors for fossil fuel used is considered as per AMS-III.AJ, Small-scale Methodology Recovery and recycling of materials from solid wastes, Version 8.0, Sectoral scope:13; Baseline methodology for emissions associated with energy consumption for the production of plastic pellets from virgin plastic materials.
Value applied	0.56
Measurement methods and procedures	-
Purpose of Data	Calculation of baseline emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter	$Q_{PET\ Flakes,y}$
Data unit	t / y
Description	Quantity of PET plastic recycled in year y
Source of data	Weighing balance at facility
Measurement procedures (if any):	Direct weighing and recording of the weight Cross-check with the mass of product(s) used at the processing/manufacturing facility using production records
Measurement Frequency:	Monthly
Value applied:	12,960 (Annualized average value has been considered here for an ex-ante estimation only, whereas this is an ex-post parameter hence actual value shall be applied during monitoring and verification)
QA/QC procedures applied:	Calibration of the weighing balance will be carried out once in five (5) years.
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Comments:	All the data will be archived till a period of two years from the end of the crediting period.

Data / Parameter	$EC_{PJ,y}$
Data unit	MWh
Description	Electricity consumed by the PET recycling facility in year y
Source of data	Electricity bill / invoices at facility
Measurement methods and procedures	Metering with calibrated equipment
Frequency of monitoring/recording	Monthly
Value monitored	To be monitored as per actuals

QA/QC procedures to be applied	Calibration of the energy meters will be carried out once in five (5) years.
Purpose of the data	Calculation of project emissions.
Comments	The data would be archived up to two years after the end of crediting period.

Data / Parameter	$FC_{f,PI,y}$
Data unit	unit mass or volume/t
Description	Fuel type f consumed by the recycling facility in year y
Source of data	Records / invoices at facility
Measurement methods and procedures	Metering with calibrated equipment
Frequency of monitoring/recording	Monthly
Value monitored	To be monitored as per actuals
QA/QC procedures to be applied	Calibration of the energy meters will be carried out once in five (5) years.
Purpose of the data	Calculation of project emissions.
Comments	The data would be archived up to two years after the end of crediting period.

The section also keeps the provision of defining any further required parameter to monitor, estimate and claim carbon credits in a reliable and conservative manner; which can be introduced by PP in due course of validation and verification of the project.