BIOCARBON REGISTRY MONITORING REPORT TEMPLATE[1]

Treatment of non-hazardous industrial waste to obtain Biocompost

Document prepared by POLARIS NETWORK ESPAÑA SL

Date of issue (*Version number 2 22/02/2024*)

Monitoring Report Template (Version 2.0)[2]	
Name of project	Treatment of non-hazardous industrial waste to obtain Biocompost
BCR Project ID	
Registration date of the project activity	
Project holder	WORMS ARGENTINA S.A.
Contact	PABLO MAURICIO ZIMMERMAN, Nucci y San Martín Arroyo Seco Santa Fe (Argentina), ftiscornia@wormsargentina.com.ar +543402575283
Version number of the Project Document applicable to this monitoring report	*Version number 3 (04/07/2024)*

[1] This form is for the monitoring report of projects using the BCR Program.
[2] The instructions in this form are a guide. Do not represent an exhaustive list of the information the preparer shall provide under each section of the template.

Monitoring Report Template (Version 2.0)[2]	
Applied methodology	The methodology used to calculate CO_2 emission savings is a UN CDM methodology: AMS.III.F, Avoid methane emissions through composting, Version 12.0 - Sectoral scope(s): 13.
Project location (Country, Region, City)	Country: Argentina Region: Santa Fe City: Arroyo Seco
Project starting date	*Indicate the start date of the project activities* *(01/04/2018)*
Quantification period of GHG reductions/removals	*Indicate the programmed period of quantification of the reduction of GHG emissions* *(01/04/2018 to 31/12/2022)*
Monitoring period number	*1*
Monitoring period	01/04/2018 to 31/03/2028
Amount of emission reductions or removals achieved by the project in this monitoring period	*Total of GHG reduction or removals in this monitoring period* 57.495,24 tCO_2e
Contribution to Sustainable Development Goals	9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. 11. Make cities and human settlements inclusive, safe, resilient and sustainable. 12. Ensure sustainable consumption and production patterns. 13. Take urgent action to combat climate change and its impacts.

Monitoring Report Template (Version 2.0)[2]	
Special category, related to co-benefits	not applicable

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1 General description of project

The project activity consists of composting the organic fraction of non-hazardous organic waste from biodiesel, oil and cellulose plants, the dairy industry, breweries and agro-industries that produce GHG. It does NOT involve any of the below:

- Recover or combust landfill gas from disposal site.
- Undertake controlled combustion of the waste that is not treated biologically in a first step.
- Recover biogas from wastewater treatment.
- Co-digestion of organic matters.

1.1 Sectoral scope and project type

For the validation and verification of projects and program of activities by a designated operating entity (DOE) that uses this methodology, the application of sectoral scope 13 is mandatory.

1.2 Project start date

01-04-2018.

1.3 Project quantification period

Indicate the project quantification period, specifying the day, month and year for the start and end dates and the total number of years.

1.4 Project location and project boundaries

Physical address	Geographic coordinates/Other information
Industrial Sector 3 Prof. Nucci St. S/N between Buenos Aires highway and San Martín street, Arroyo Seco, Santa Fe, Argentina	33°08'28.7"S, 60°32'09.3"W

Physical address	Geographic coordinates/Other information
https://www.google.es/maps/place/Complejo+Industrial+de+Tratamiento+y+Valorización+de+NFU%60s/@-33.1420886,-60.5353886,1199m/data=!3m1!1e3!4m5!3m4!1s0x95b7098003704eeb:0xc44239fc4fc4b71b!8m2!3d-33.142272!4d-60.5358492	

1.5 Summary Description of the Implementation Status of the Project

The project involves reducing the emission of methane into the atmosphere from organic matter (from non-hazardous organic waste from biodiesel, oil and cellulose plants, the dairy industry, breweries and agro-industries that produce GHG) that otherwise, they would have been left to decompose anaerobically in a solid waste disposal site (SWDS) or in an animal waste management system (AWMS), or in a wastewater treatment system (WWTS). Controlled aerobic treatment through biomass composting is introduced in the project activity.

The project activity consists of composting the organic fraction of non-hazardous organic waste from biodiesel, oil and cellulose plants, the dairy industry, breweries and agro-industries that produce GHG. It does NOT involve any of the below:

- Recover or combust landfill gas from disposal site.
- Undertake controlled combustion of the waste that is not treated biologically in a first step.
- Recover biogas from wastewater treatment.
- Co-digestion of organic matters.

PERIOD	TOTAL EMISSIONS SAVINGS	
1/april/2018-31/march/2019	9,523.06	
1/april/2019-31/march/2020	13,050.84	
1/april/2020-31/march/2021	10,972.24	
1/april/2021-31/march/2022	13,273.77	
1/april/2022-31/march/2023	12,746.06	
TOTAL EMISSION 5 YEARS	57.495,24	tCO_2e

2 Title, reference and version of the baseline and monitoring methodology applied to the project

The methodology used to calculate CO_2 emission savings is a UN CDM methodology: AMS.III.F, Avoid methane emissions through composting, Version 12.0 - Sectoral scope(s): 13.

3 Registry or participation under other GHG Programs/Registries

Not Applcable

4 Contribution to Sustainable Development Goals (SGD)

The monitoring will be done in relation to the tool based on the BioCaron Registry format as specified in the SDG-2023-Solid Worms file.

ODS 9.- The number of local people employed by the project activity increase every year.

ODS 11.- Quantity of the organic waste collected by the project activity.

ODS 12.- The project increases the use of a municipal waste and transform it un a useful material.

ODS13.- The project involves reducing the emission of methane into the atmosphere from organic matter (from non-hazardous organic waste from biodiesel, oil and cellulose plants, the dairy industry, breweries and agro-industries that produce GHG) that otherwise they would have been left to

decompose anaerobically in a solid waste disposal site (SWDS). Controlled aerobic treatment through biomass composting is introduced in the project activity.

5 Compliance with Applicable Legislation

Worms Argentina S.A. complies with all the regulations required at local, regional and national level, in addition to having updated all the necessary permits, as shown by the following links to the documents.

- 7-Otorgamiento uso conforme de suelo A. Seco 29-06-2017
- 34-Habilitación Munic. Planta A. Seco - Resol.Nº 024-18 - 16.03.2018
- 27-Resol. Nº 523 WORMS ARG. S.A. EIA
- 55-Disp. 287-19 Renov. Reg. RT 0029
- Permiso vuelco de efluentes 21-06-19 WORMS
- 2-WORMS Renovacion directorio 2021

6 Climate change adaptation

The project activity consists of composting the organic fraction of non-hazardous organic waste from biodiesel, oil and cellulose plants, the dairy industry, breweries and agro-industries that produce GHG. It does NOT involve any of the below:

- Recover or combust landfill gas from disposal site.
- Undertake controlled combustion of the waste that is not treated biologically in a first step.
- Recover biogas from wastewater treatment.
- Co-digestion of organic matters.

The project applies the methodology outlined in sector 13 of the Clean Development Mechanism (CDM): Waste handling and disposal; specifically AMS-III.F "*Avoidance of methane through composting"*. This methodology is applicable to the composting of the organic fraction of municipal solids and biomass residues from agricultural or agro-industrial activities, including manure. This methodology includes the construction and expansion of treatment facilities, as well as activities that increase capacity utilization at an existing facility.

The location and characteristics of the biomass, animal manure and composting wastewater disposal site will be known in the baseline condition, in such a way as to allow the estimation of its methane emissions, using the provisions of AMS- III.G, AMS-III.E (related to reserves), AMS-III.D "*Methane recovery in animal manure management systems*" or AMS-III.H, respectively. Mixing materials may be added in the project setting

to increase the efficiency of the composting process (e.g., to achieve a desirable C/N ratio or free air space value). However, only the amount of solid waste or manure or wastewater diverted from the reference treatment system is used for the emission reduction calculation.

Project activities for animal manure composting will also meet the requirements of section 3 and 4(c) of the latest versions of AMS-III.D. For solid waste diverted from a solid waste disposal site, the following requirement must be verified ex ante at the beginning of each crediting period:

a) Establish that the identified landfills/reserves can be expected to accommodate the waste to be used for the project activity during the crediting period;
b) Establish what is the common practice in the region in disposing of solid waste (landfill)/reserve(s).

Project participants shall clearly define the geographical boundary of the region referred to in paragraph 11(b), and document it in the PDD. When defining the geographical boundary of the region, the project participants must take into account the origin of the waste, i.e., if the waste is transported up to 50 km, the region can cover a radius of 50 km around the project activity.

In addition, the distance that the final product will be transported after composting should also be considered. In any case, the region must cover a reasonable radius around the project activity that can be justified with reference to the circumstances of the project but in no case will it be greater than 200km. Once defined, the region should not be changed during crediting periods.

In the event that the compost produced is handled aerobically and subjected to soil application, the appropriate conditions and procedures must be guaranteed (which do not produce methane emissions).

In case the compost produced is thermally/mechanically treated, the provisions of AMS-III.E related to thermal/mechanical treatment.

In the event that the compost produced is stored under anaerobic conditions and/or delivered to a landfill, the emissions of residual organic content will be taken into account and calculated according to the latest version of the methodological tool "Emissions from solid waste disposal sites".

7 Carbon ownership and rights

The owner of the project is WORMS ARGENTINA SA.

8 Environmental Aspects

Worms Argentina S.A. executes a series of control programs in order to comply with regulations and maintain the best practices available in its management and quality system. The main programs are described below and reports condensing soil, water and air monitoring are attached.

SOIL RESOURCE PROTECTION PROGRAM

Hazardous Waste Management Subprogram:

This Subprogram is based on the segregation of hazardous waste streams at their generation points. The operating personnel will be trained and made aware of the areas where the generation of hazardous waste is foreseeable.

In the eventual case of receiving improper or rejects with dangerous characteristics, they will be stored in compliance with current regulations, and subsequent referral to an authorized operator according to the current in question.

Drainage and Flooding Control Subprogram:

The construction works of the internal circulation roads and transport parking areas were carried out respecting the natural drainage conditions of the land, avoiding the generation of flooding inside the property.

Likewise, the maintenance of the internal protection channels and the external pluvial drainage channels is carried out, controlling the clogging and vegetation in them.

WATER RESOURCE PROTECTION PROGRAM

Groundwater monitoring subprogram

From the construction of the extraction well, a sampling of the resource extracted from the aquifer will be carried out in order to determine the base conditions and their variation over time. The objective of the monitoring will be to ensure the quality of the water extracted and at the same time determine that the extraction carried out does not affect the hydrogeological profile of the resource.

- Number of samples: 1.
- Sampling Point: underground water extraction well.
- Maximum admissible limits (LMA): s/Annex A of Law 11,220.

Parameter	Annual Frequency	Optional Analyzes

Turbidity	X	
Color	X	
Smell and taste	X	
Ph	X	
Total Alkalinity	X	
Total hardness		X
Chloride		X
Sulfate		X
Magnesium		X
Fluorine		X
Arsenic	X	
Lead		X
Nitrites	X	
Nitrates	X	
Ammonia		X
Iron		X
Total dissolved solids	X	
Conductivity	X	
Bacteriological: total aerobes, total coliforms, *Escherichia coli, Pseudomonas aeruginosa*	X	

AIR QUALITY REPORT

Worms Argentina S.A. has prepared a report with the objective of determine the concentration of Suspended Particulate Matter (PM10) and Hydrogen Sulfide in the air, in four (4) assigned monitoring posts, for a short measurement period (20 min).

The work has been carried out under standardized procedures, by trained personnel and through the use of equipment and instruments developed for this purpose. HSE Engineering guarantees the veracity of the information contained in this report and its confidentiality. The environmental regulation applicable to this monitoring report is the Resolution Nº 201/04 – Air quality guide levels for province of Santa Fe.

contaminants	C.A.P.C. (20 min) mg/m^3
particulate matter (PM10)	0.50
Hydrogen sulfide (H2S)	—

The methodologies applicated were:

- EPA1 Method IO-2.3: Reference standard for determining suspended particulate matter (such as PM10) for short monitoring periods (20 min.).
- Methods of Air Sampling and Analysis (Third Edition) - 701: Standard method for determination of hydrogen sulfide in the atmosphere.

Four SKC model 1700 air sampling equipment with a PM10 cyclone and an impingers system containing a capture solution for H2S were used.

MONITORING DESCRIPTION

The monitoring positions were recorded with the applicant. They were located around the plant, arranged as shown in the following image:

The equipment was installed and put into operation on 11/04/2021.

At the time of monitoring, the following data was recorded:

Temperature	Humidity	Pressure	Visibility	Win-Dir	Win - speed	Precipitation	Weather Conditions
28º	33 %	1003.73 HPa	14 Km/h	SO	9 Km/h	N/A	Partly cloudy

RESULTS

The results obtained are presented below:

PARAMETERS	Point 1 CA-01	Point 2 CA-02	Point 3 CA-03	Point 4 CA-04	UNIT	Guide Level *
particulate matter PM10	0,07	0,11	0,008	0,007	mg/m^3	0,50
Hydrogen sulfide (H_2S)	Not detected	Not detected	Not detected	Not detected	mg/m^3	-

** NOTE: Analysis Protocol No. 2254-2255-2256-2257 issued by the HSE Laboratory is attached.*

CONCLUSION

In accordance with the provisions of Resolution 201/04 of the Secretary of the Environment of the Province of Santa Fe, all the monitoring points of the Plant belonging to the company Worms Argentina S.A. - from the town of Arroyo Seco - COMPLY with the guide values established as maximum concentration in short periods (C.A.P.C.), for all the parameters analyzed: Suspended Particulate Matter and Hydrogen Sulfide (H2S).

WATER QUALITY ANALYSIS

Worms Argentina S.A has prepared a report with the objective of determine and evaluate the concentration of the following parameters in the effluent: pH, color, conductivity, turbidity, solids in total suspension, bod, cod, total coliforms and fecal coliforms.

This report was prepared based on the results obtained from the monitoring carried out at the request of Worms Argentina S.A – Dry Creek (Sta. Fe). The work has been carried out under standardized procedures, by trained personnel and through the use of equipment and instruments developed for this purpose. HSE Engineering guarantees the veracity of the information contained in this document and its confidentiality.

The analytical determinations to which the water samples obtained from the monitored wells were subjected were selected as required by Law 11,220 Annex A, identical parameters and limits established in Provincial Resolution No. 1089/82 Annex A (Limits for the provision of drinking water).

Said law provides for the regulation of service provision and provides for a system for the preservation of natural resources and the environment.

The purposes of this law are to guarantee the maintenance and promote the rehabilitation, improvement and development of the service throughout the province of Santa Fe, to establish the standards that ensure quality and efficiency levels consistent with the nature of the service, to establish an adequate legal framework that allows reconciling an efficient and effective provision of the service by providers, with the proper exercise of state powers related to the protection of the health interest, the welfare of the population, and the environment and natural resources throughout the province of Santa Fe.

The sampling methodology used is that recommended in the manual of Standardized Methods for the Analysis of Potable and Residual Water published by the APHA-AWWA-WEF1, 23rd edition.

All analytical determinations are performed using international standardized methods.

Methods from the manual of Standardized Methods for the Analysis of Drinking and Wastewater published by the APHA-AWWA-WEF, 23rd edition, together with the EPA 481.1 standard, are currently used.

MONITORING DESCRIPTION

The sampling was carried out in the corresponding phreatic wells that the company has for this purpose. It was only possible to take samples from wells 1, 2, 6, 7 and 8, since the rest of the parameters were dry.

The following image shows the location of the water meters on the property, with their respective coordinates:

P4 (blanco)	33° 8'29.90"S; 60°32'18.30"O
P1	33° 8'35.00"S; 60°32'2.20"O
P2	33° 8'38.30"S; 60°32'9.40"O
P3	33° 8'31.60"S; 60°32'8.00"O
P5	33° 8'28.86"S; 60°32'6.10"O
P6	33° 8'33.29"S; 60°31'57.93"O
P7	33° 8'30.24"S; 60°31'53.03"O
P8	33° 8'26.91"S; 60°31'55.52"O

The sampling was carried out on 11/04/2021.

RESULTS

The results obtained by the analysis laboratory are presented below:

PARAMETERS	LC	UNIT	P1	P2	P6	P7	P8	LIMIT
Color	1	PI/Co	1					20
Conductivity	0,1	µS/cm	935	734	804	1701	805	-
BIOCHEMICAL DEMAND FOR OXYGEN (DBO)	10	mg/l	N/D	N/D	N/D	N/D	N/D	-
CHEMICAL DEMAND OF OXYGEN (DQO)	5	mg/l	N/D	N/D	N/D	N/D	N/D	-
PH	-	UpH	7,4					-
SOLIDS IN SUSPENSION TOTALS (SST)	1	mg/l	<1	<1	<1	<1	<1	-
Turbidity	1	UNT	<1					
FECAL COLIFORMS	2,2	NMP/100ml	<1,1	<1,1	<1,1	<1,1	<1,1	<2,2
TOTAL COLIFORMS	2,2	NMP/100ml	<1,1	<1,1	<1,1	<1,1	<1,1	<2,2

** NOTE: Analysis Protocol No. 2258-2259-2260-2261-2262 issued by the HSE Engineering Laboratory is attached.*

CONCLUSION

In accordance with the guide values established for the parameters legislated in Provincial Resolution No. 1089/82 Annex A (Limits for the provision of drinking water), the analytes are below said established limit values.

Likewise, groundwater is not used as a source of drinking water supply, but with its control it must be verified that there has been no impact on the water resource in relation to the inputs, raw materials and products used in the production. industrial activity developed in the complex.

Observing the results, it can be stated that there are no impacts that negatively affect the groundwater resource at the groundwater level.

9 Socioeconomic Aspects

Worms Argentina S.A. has formal and regular processes for gathering information from stakeholders (focus groups, surveys, community meetings, etc.) and has not received any negative feedback from them so far, in the other hand, is focusing in improving the positive impact in the community, the axes of the social policies are:

Donations

The donations are directed to those civil and / or commercial organizations of the town of Arroyo Seco since Worms Argentina S.A is committed to developing the local territory in which our production plant is located.

These social actors as important for the community as are clubs, schools, volunteer firefighters, community gardens, invite the community and companies to make their contribution either to, the continuity of its services and for building maintenance and purchase of new tools and machinery.

Currently, Worms Argentina S.A makes monetary donations to:

1. Volunteer Firefighters of the town of Arroyo Seco.

New initiatives:

2. Orchard and community nursery in the town of General Lagos

The project consists of donating 400 kilos of compost monthly.

Who do we donate to?

For the eligibility of civil or commercial organizations receiving donations, they carry out a permanent survey of the organizations in the community and their needs, through:

- General mapping of social organizations and analysis of the areas they work with (impact areas) to evaluate which ones we identify with and begin to generate networks and joint projects.

- Periodic meetings to generate a close and trusting bond with them.

Supplier Policy, all suppliers adhere to the Supplier Code of Conduct, more than 80% of suppliers are National, spending on local suppliers is more than 60%, contributing to the improvement of socio-economic conditions in the Community.

Recruitment policy that prioritizes hiring local workers, currently going from 40% to 59% currently.

10 Stakeholders' Consultation

From a national point of view, the visit of the Minister of Productive Development of the Argentine Republic (Matias Kulfas) has been received at the facilities. He himself has declared that the circular economy is 1 of the 4 axes of the Green Productive Development Plan promoted by the Nation, being a plan to reduce the environmental impact of its productive activities and will allow the generation of more jobs.

https://twitter.com/KulfasM/status/1453851371195744256?cxt=HHwWgICyhdGHj60oAAAA

https://twitter.com/WormsSA/status/1453861053650120724?cxt=HHwWqMC5-Zy7k60oAAAA

He has also received a visit from the Minister of Production of the Nation (Daniel Schteingart) with his team, interested in the continuous improvements of his projects.

https://twitter.com/WormsSA/status/1363628583772635141?cxt=HHwWioCy1Zu-yuwlAAAA

An endless number of visits from different municipalities, councilors and deputies have also been received at the provincial level, seeing how it works and the need to see a company like Worms Argentina S.A in the fight against climate change.

https://twitter.com/WormsSA/status/1271927365594230785?cxt=HHwWgsC95ebM5aYjAAAA

It can be seen in the following Link, agreements, social training, visits to the representative plant of the Government of Argentina, etc.

https://twitter.com/wormssa

The company implemented a book of complaints and suggestions open to the community in the area where the non-hazardous organic waste processing plant is located.

AGREGAR ALGUN ACTA con empresas de los residuos como proveedores.

11 REDD+ Safeguards

Not Applicable.

12 Special categories, related to co-benefits

Not Applicable

13 Grouped Projects

Not Applicable

14 Implementation of the project

14.1 Implementation status of the project

Include a description of the implementation and operational status of the project as of this monitoring period in accordance with the latest version of the BCR Validation and Verification Manual[3]. Include information on the following:

1. *The starting date of operation of the project is 01/04/2019 to 31/12/2027, The operation of the project activities during this monitoring period is active without modifications at the moment;*
2. *Not Applicable;*
3. *Not Applicable;*
4. *Not Applicable.*

For AFOLU projects, also provide a description of the following:

1. *Not Applicable;*

[3] https://biocarbonregistry.com/procedures/BCR_Validation-and-Verification-Manual.pdf

2. *Not Applicable;*
3. *Not Applicable.*

14.2 Revision of monitoring plan

-0-

14.3 Request for deviation applied to this monitoring period

Not Applicable.

14.4 Notification or request of approval of changes

Not Applicable.

15 Monitoring system

15.1 Description of the monitoring plan

The monitoring plan applied to the project is established as follows:

The data and information to estimate GHG reductions or absorptions during the quantification period are collected based on the cargo manifests that accompany the waste that is transported from the waste producer to WORMS.

It must be taken into account that for the calculation of the reduction of emissions, only the amount of solid waste from cereal industries that diverted from the reference disposal site, the landfill, is considered. No emission reductions will be claimed for the mixing materials. Therefore, the project meets the applicability condition.

Worms Argentina S.A. only accepts the entry of non-hazardous solid waste included in Annex B of Decree Nº 2151/14 from Santa Fe about non-hazardous waste.

They must be accompanied by the corresponding characterization analyzes or a certificate issued by the generator, plus the prior approval of the firm's internal laboratory, for their admission.

If residues with dangerous characteristics or that do not correspond to the characterization reports are detected, the company will not admit their entry.

If improper solids are detected upon entry, after their extraction, the client will be notified and their entry into the plant will be restricted until the measures to prevent their future entry into the system are communicated.

Income Control

At this point, the presence of waste not suitable for treatment in the load, the state of the vehicle and transit permits will be verified.

The scale operator is in charge of recording the data of each vehicle, weighing it, recording the tare weight (if known), charging, generating invoices or receipts and weighing documents, weighing the vehicles after unloading to generate tare weights and manage this part of the operation.

Transport Control

Some of the possible breaches of security measures by carriers and that can be detected at the entrance are: uncovered loads, transport of liquids with runoff, visible content of improper, overweight in vehicles.

When these deviations are detected, the necessary actions will be taken to correct the deviations or reject the load, if applicable.

The acceptance procedure occurs after the verification of all the measurements in the weighbridge area and ends when the transport is authorized to go to the reception tank area.

Download controls

This control is carried out in all cases by the operators who participate in the unloading of the waste once the transport arrives at the unloading sector and is secured for its dumping.

The control basically consists of verifying the appearance and characteristics of the waste at times prior to unloading, that is, at the time the load is lowered from the truck. The reception operator is monitored by a trained area manager and remains there making visual contact with the waste to be unloaded.

In this instance, in addition to the visual control, the temperature of those wastes that, due to their characteristics, may present advanced fermentation processes is carried out: piles of organic waste, mud or waste that show the emission of vapors or smoke not detected in the control. input, waste with high apparent moisture content. The waste is

considered to have unacceptable characteristics if the measured temperature is greater than 55°C.

If any type of residue is observed to have dangerous characteristics, the suspicious material will be isolated and its disposal on the work front will be avoided, informing the transporter and supervisor with the urgency that the case warrants.

Waste with high moisture content

An important part of compostable waste is waste that is easily degradable due to its high moisture content. Sludge from effluent collection systems from livestock establishments are the most common components of this fraction of waste destined for composting.

On the occasions that it is necessary, the Supervisor can define that a certain amount of solids be dried prior to mixing in case of detecting a percentage of humidity higher than usual. To do this, you can spread a limited amount of it in the composting area so that, through the action of air for 24 hours, the moisture content of the waste is reduced by evaporation.

Sector Preparation

To minimize the infiltration of excess liquids into the soil, with a potential negative impact on groundwater, the Company prepares the land where the compost piles are installed according to the characteristics of the substrate, by:

- Soil stabilization with lime: with lime the resistance properties can be improved, it increases the contraction limit and decreases the plastic index.
- Compaction and levelling.
- Armed cribs and mixtures of different substrates.

This operation is carried out each time the composting area is expanded in the lots and prior to using a sector in which the previous composting process has already been completed.

Mix – Field Assembly

Through the operation of a mechanical shovel and the manual work of 2 operators, the field is assembled.

The supervisor indicates the amounts of each waste fraction to be mixed that are recommended to obtain an adequate Carbon/Nitrogen balance in the resulting mass.

To properly determine this mixture, the supervisor is guided by the following table, so that daily work is done with the objective of obtaining a balanced mixture of waste with a C/N ratio between 25 and 40:

DRY BASE			
MATERIALS	C%	N%	C/N
Sawdust	40	0.1	400
Cereal Plant Sweeps	45	0.3	150
Sludge from liquid effluent capture systems and manure from livestock pens or feedlots.	8/15	0.5/0.7	11/30

Based on the preceding data and the experience of the personnel responsible for the operation, the mixtures of the different solid currents received are defined.

The court is set up so that its height does not exceed 2 m and the length is such that it allows taking advantage of the available space in the composting area without mixing piles in different fermentation processes.

Once the daily field is assembled, the fermentation start date is identified and the data required by the control sheets is recorded.

Fermentation and maturation

The temperature of the piles is taken at a depth of no less than 30 cm at points separated no more than 2 m along it using a digital thermometer. The temperature is recorded in the daily composting control sheet.

Ideally, the temperature of the mixture reaches 55°C, to ensure the destruction of weed seeds, pathogens and parasites. The supervisor is notified when the temperature of the mix exceeds 60°C.

Periodically, an operator controls taking a sample to verify the correct humidity of the mixture, to decide if it is necessary to irrigate the controlled pile.

The recommendation throughout the composting process is to turn the piles at least once a week during the first month after the pile is established. Then every 15 to 20 days, as long as the temperature does not exceed 60°C, in which case it is turned over. The operation is carried out with machinery that is described in the corresponding section.

Composting completion

The total duration of the composting process is variable, depending on several factors, especially the composition of the pile and the C/N ratio achieved in the mixture.

In general, the fermentative processes, characterized by the controlled increase in the temperature of the cell, have a thermophilic stage that ends in the order of 8 weeks.

Meanwhile, based on the experience and the controls carried out in the Worms' piles, a period of the order of 24 weeks is considered as the average time for the completion of the composting period.

For this reason, the period of 6 months has been considered as the indicated one to reflect the mass balance in the solid treatment line. Depending on external conditions (for example: temperature, solar radiation, excess humidity) this period may be somewhat shorter.

This period is considered to be over when periodic temperature checks indicate that the values recorded for a battery have stabilized. At that point, the supervisor decides to remove it to form a pile that occupies a smaller area (and thus optimizes the use of soil resources) and reaches a height of up to 2 meters. At that moment the maturation period of the compost begins.

The maturation of a pile can lasts between 1 and 2 months, a period in which the biological balance of the mass is produced, where a gradual decrease in the temperature of the material should be observed. With the current rotation, this period usually doubles these times, ensuring their stabilization.

During this time, controls of the material's temperature continue to be carried out and it must be reported if there are increases that indicate that the fermentation process has not been completely completed. In these cases, the battery must be removed to promote ventilation and avoid unwanted increases in temperature.

The supervisor defines the moment of completion of the process by sensory review of the product (smell, color, granulometry, percentage of structuring agent). A dark brown or black homogeneous mass should be obtained, without an unpleasant odor.

Periodically, the company proceeds to carry out analyzes of the compost obtained, once the stabilization stage has been completed.

The compost obtained through this procedure is stored in big-bags or shipped in bulk and marketed as a soil improver.

An analyzed fraction of this compost, in turn, can be derived to the vermiculture area.

Control of possible leachates

Due to the operational controls implemented, aimed at maintaining a humidity between 60-70% during the fermentation process, with controlled parameters, this phenomenon is considered extremely possible, which should not occur under normal operating conditions.

However, the eventual generation of leached liquids has been foreseen as a result of composting piles that could have excess moisture in the processed materials, or due to some anomaly in the degradation process or rainfall regime.

For this purpose, the company has requested the corresponding overturning permit, the feasibility of which has been granted by the Enforcement Authority (attached), for which the overturning conditions established in RESOLUTION No. 1089/82 REGULATION FOR THE CONTROL OF THE DISCHARGE OF RESIDUAL LIQUIDS. Once contained, the leached liquids are pumped to the liquid pools, recirculating through the process line, stabilizing parameters and avoiding the loss of biomass.

In any case, due to the characteristics of the materials entered or processed, it is ensured that the levels of metals or other contaminants in the leachate are low or zero, and a high microbial concentration is maintained as a result of the biological processes that occur in the pile.

The company has projected improvements in the perimeter channeling in case of extreme rains, and its execution will allow the optimal use of liquids from the composting process.

The projected work involves improvements to a perimeter channeling network for every 5,000 m^2 of surface area occupied by composting piles. This network of canals with open sections of compacted and waterproofed soil 50 cm wide and 30 cm deep, and with sections for circulation of machinery or personnel with perforated PVC pipes.

The channels flow down a gentle slope of 1-5% towards a plastic collection chamber of 1 m^3 for each 5,000 m^2 network. Submersible pumps will be able to recover the leachate collected for recirculation to the composting piles.

The capacity of each sector of the network is 45 m^2, with a total capacity of 630 m^3, which is equivalent to the consumption of 5 days of water for irrigation.

Vermiculture

A shed has been installed to carry out indoor vermiculture tasks, with controlled ambient temperature conditions and adequate lighting. The dimensions of the Vermiculture area are 35 m x 30 m and it shares infrastructure in the same Warehouse with the Laboratory.

The roofs of these buildings function as rainwater collectors that are used in the irrigation process.

Operational controls

Varying amounts of Compost processed in compliance with the methodology described above are used for the vermiculture process.

The Californian-type worms are deposited on the material destined for the vermiculture cradles, which when fed with this material transform it into a product rich in substances such as Nitrogen, Potassium, Phosphorus, etc., in addition to presenting a texture that favors its use in improvement of arid or impoverished land.

As the vermicompost or vermicompost is being produced, it is sieved to separate undesirable materials (such as grass or stones), it is homogenized and it is packaged in bags according to the destination that will be given to the product.

For these steps there is infrastructure and machinery listed in the equipment section.

The Company has a Laboratory that fulfills the functions of:

- controls of the materials entered
- quality controls of products for soil amendment
- production of *Trichoderma harzianum* to improve the composting process and the quality of the products.

Trichoderma harzianum is a fungus that is also used as a fungicide. It is used in foliar applications, seed and soil treatment to control various diseases caused by fungi. In the compost, it fulfills the function of inhibiting the development of pathogens that harm the process and cause bad odors.

In the finished product, the presence of this fungus in the soil improver collaborates in the development of crops by stimulating the defense mechanisms of plants against pathogens that affect their development.

PRODUCTION QUALITY: REGULATORY FRAMEWORK

To guarantee the quality of the production of Worms Argentina S.A. control procedures are carried out by performing chemical and bacteriological analyses. Documented information referring to the inscriptions of the products of Worms Argentina S.A. is attached hereto, used as soil amendment by Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA).

The company gradually incorporates into its practices the guidelines of Joint Resolution Nº 1/2019 (RESFC-2019-1-APN-SECCYMA#SGP) issued by the NAC SERVICE OF HEALTH AND AGRO-FOOD QUALITY and the SECRETARY OF ENVIRONMENTAL CONTROL AND MONITORING of the Nation that approves the REGULATORY FRAMEWORK FOR THE PRODUCTION, REGISTRATION AND APPLICATION OF COMPOST.

However, it is necessary to sanction a provincial rule that adopts it in the local legal system (or one that establishes the conditions for regulating the activity at the Provincial discretion), as well as the adaptation and updating of regulations by SENASA.

Notwithstanding this, to date the firm is in the process of managing a new application for registration in the National Registry of Fertilizers, Amendments, Substrates, Conditioners, Protectors and Raw Materials within the framework of this Resolution.

Treatment of waste received in a state of solid aggregation.

Recovery technologies applied in the process:

- Segregation, recovery and revaluation of recyclable materials.
- Composting and vermiculture of the organic fraction of organic waste from agricultural and industrial origin.
- Biological Treatment of Organic Waste.

Calculation of operating capacity.

Proportion of income streams over the total:

Income Streams	Percentage
Filter soils	19 %
Livestock sludge and sludge from livestock farming	11 %
Slurry	5 %
Dust and cereals	58 %
Others	7 %

COMPOSTABLE SURFACE

Compost pile dimensions	
Width (m)	3,20
Tall (m)	1,20
Length (m)	145
Volume	556,8
Separation between piles (m)	2 – 2,5
Number of possible courts	80
Average density (t/m^3)	0,7 – 0,9
Average treatment time	180
Truck capacity	14
Average Truck Income	7

Products obtained from the transformation process, potential uses and marketing.
The current production capacity is:

Product	Quantity	Destiny
Fatty acids/oils	653,4 t/month prom.	Sale of the domestic market and export to industrial input.
Humus (Bags and bulk)	134 t/average semesters	Sale in the domestic market/stock
Liquid Humus (liquid organic amendment)	60 t/average semesters	Sale in the domestic market/stock
Compost (bags and bulk)	288 t/average semesters	Sale in the domestic market/stock
Black earth	7951 t/average semesters	Filling and leveling on the property, substrate for new compost piles, input for lombricultura.

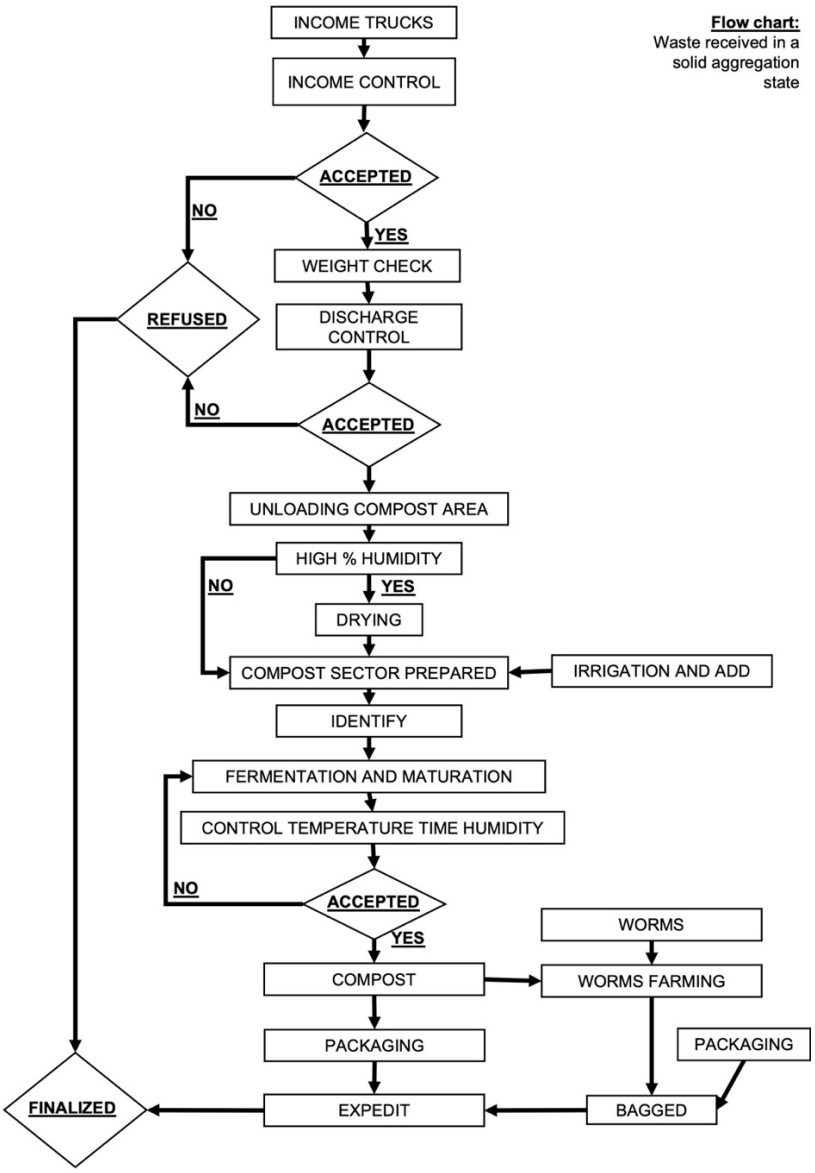
Recovered water for irrigation	1588 t/average semesters	Input for composting piles

Maximum processing capabilities

Based on the calculations of the operating capacity and current proportions of waste streams, considering the surface still available for compost piles and the installed capacity in tanks and pools, as well as the average processing times for each stream, it is estimated that the capacities capacity of the plant is in the order of 40% above the current operating capacity, resulting in:

Residual currents that enter in a state of solid aggregation.

Current average		Maximum capacity
2450,82	total tons average monthly income	3431,14
98,03	average total tons daily income	137,25



Carbon reservoirs and GHG sources

Source or reservoir	GHG	Included (Yes/No/Optional)	Justification
Baseline scenario-landfill site	CO_2	No	Not significant.
	CH_4	Yes	Main source of emission
	N_2O	No	Not significant.

Project scenario – Composting site	CO_2	Yes	Emission from diesel consumption and electricity consumption at site
	CH_4	Yes	Significant emission from composting
	N_2O	Yes	Significant emission from composting

Worms Argentina S.A. is aligned with the National Plan of Adaptation and Mitigation to Climate Change in Argentina. Specifically, the strategic line “productive transition” aims to integrate the macroeconomic, social and environmental component, implementing policies and improvements in the competitiveness of national productive development, which promote the reduction of GHG emissions and the increase in the resilience of the national productive system. Policies for the promotion of energy efficiency and efficiency and rational use of resources:

- Development of national value chains
- Sustainable design and process innovation
- Circular economy
- Productive resilience

In Worms Argentina S.A. the protection and conservation of the ecosystem services are an important part of our propose. We are committed to the challenge of being able to guarantee the human well-being of the team and the people who live in relation to the company, combining our business with the generation of positive social and environmental contributions. This purpose is compilated in the Environmental Manual, the Resource Conservation Manual and the Environmental Management System, which are included in the certification of B Corp Company.

The Environmental Manual establishes our commitments with the respect and responsible uses of the sources in all of our company: environment (ecosystems, water, soil and air), offices (waste separation and recycling, energy efficiency and water care).

Therefore, we implement different practices and policies aligned to preserve and care for the resources and the environment where we operate. Our raw material is 98% industrial waste. We provide a comprehensive solution to the problem of final deposition of liquid and solid industrial waste from the country's large generators, which over the years, in the absence of government regulations and lack of responsibility on the part of these industries, have led to the contamination of rivers, lakes and seas; to the expansion of open-air dumps, clandestine dumps, decompositions, harming the population and living beings of other species: fish and plants.

The objective of the Environmental Management System is the control of selected indicators in order to monitor and determine the degree of impact produced on the environment from the activities of all the business units operating in Worms Argentina S.A.

Risk Management

With the objective of coordinating actions to prevent possible emergencies, Worms Argentina S.A. has implemented a contingency plan that includes different risks and actions related to the Tool https://biocarbonstandard.com/wp-content/uploads/no-net-harm. pdf

Environmental Risk:

Identification of the potential natural and anthropogenic risks that GHG mitigation actions may face and determine the measures necessary to mitigate such risks.

Risk	Measures
NATURAL PHENOMENA - Flood	Road and water reservoir maintenance. Suspension of operations in case of risk of flooding.
NATURAL PHENOMENA - thunderstorm	Lightning rod installation.
Extern agents and staff risk.	24 hours security with perimeter fencing, cameras and access control.
Risk of fire (forest or grass, waste piles or organic waste composting process).	Emergency Response Plan. Alarm and start of preventive protocol to avoid damage to combustible materials in storage.
Personal risk or transportation incident	Demarcation, signaling and maintenance of internal streets and access. Accident prevention and first aid courses.

Financial Risk

Identified potential financial risks related to expected costs and investments, as well as project cash flows and defined measures to mitigate financial risks.

Risk	Measures
Increase in cost and expenses	Diversified activities in order to developed 3 activities simultaneously with in the company allowing to redirect profits from one of them in other if necessary.
Low cash flow	Continuation of the expansion plan to increase the number of suppliers and clients increasing the business volume and cash flow.

Social Risk

Determined medium- and short-term risks associated with the participation of local communities and stakeholders in the activities proposed.

Risk	Measures
Change in governmental priorities	Establish measures to ensure the project´s independency from governmental help and self-operating capacity. Closed work with local governments to collaborate in local policies.
Problems in communication with the stakeholders	Implementation of the communication and consultation plan to aligned the different stakeholders' priorities.

Leakage and non-permanence

In order to keep possible leakages under control, the following criteria will be maintained as it has been applied to date.

Using bio-oils whose origin is from industrial waste not conditioning or affecting in any way the agricultural waste-based bio-oil production elsewhere.

Avoiding the increased use of fossil fuel due to the replacement of biomass fuel with fossil by using agricultural industrial waste without commercial value being the alternative treatment it´s deposition in to the sewers or landfills.

Preventing the leakage from the anaerobic breakdown of the bio-oil, produced in the project activity as the methodology establishes that if invoices are provided proving the sale of the bio-oil, this leakage can be omitted and the commercial sale of the bio-oil is and all the recovered fatty acids is the main goal of the installation.

The data control required to monitor and control the GHG reduction process are the same that are required to verify the correct functioning of the company, therefore, the mechanisms of monitorization and control applied for both criteria.

The information will be collected and controlled for the VCC that will be conducted every three years maximum during the duration of the project.

Reversal Risk

This is a case of an ex-post project, which means that the current activity has been operating for four years already. All the project participants and stakeholders are already committed and with contracts in place. The possible difficulties could be of financial and social nature and have already been considered in the risk management plan.

The best proof of the commitment of the stakeholders involved is the trajectory and expansion of the project in the previous years and plans for its expansion and growth contemplated in this document.

15.2 Data and parameters to quantify the reduction of emissions

The monitoring plan is designed to ensure that both the project process and all the data required to calculate the GHG mitigation are constantly updated and allow the project to be more efficient, detect possible problems or threats and implement contingency and improvement plans when required.

In order to keep the information updated the following parameters will be monitored:

Data and parameters available at the validation

Relevant data and parameters will be determined or available at validation as indicated in the tables below.

Data/Parameter 1

Data/Parameter	φ_y
Data unit	-
Description	Default value for the model correction factor to account for model uncertainties for year y
Source data	Methodological tool 4 "Emission from solid waste disposal sites" version 08.1.
Value applied	0,85
Justification of choice of data or description of measurement methods and procedures applied	As per table 2 (page 7) and table 1 (page 13) of the tool, the default value is applied for application B and in humid/wet conditions.
Purpose of data	Determination of the baseline.
Any comments	-

Data/Parameter 2

Data/Parameter	f_y
Data unit	-
Description	Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y
Source data	Methodological tool 4 "Emission from solid waste disposal sites" version 08.1.
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	The landfill sites where the waste had been deposited are unmanaged, so the value applied for f_y is 0.
Purpose of data	Determination of the baseline.

Any comments	-

Data/Parameter 3

Data/Parameter	GWP_{CH4}
Data unit	t CO_2e/t CH_4
Description	Global Warming Potential of methane.
Source data	IPCC
Value applied	28
Justification of choice of data or description of measurement methods and procedures applied	Global warming potential of methane valid for the relevant commitment period.
Purpose of data	Determination of the baseline and determination of the project emissions.
Any comments	*https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_0.pdf*

Data/Parameter 4

Data/Parameter	***OX***
Data unit	-
Description	Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)
Source data	Based on an extensive review of published literature on this subject, including the IPCC 2006 Guidelines for National Greenhouse Gas Inventories and Methodological tool 4 “Emission from solid waste disposal sites” version 08.1.
Value applied	0,10
Justification of choice of data or description of measurement methods and procedures applied	As per table 2 (page 7) and table 2 (page 14), for applications A and B, the default value of OX is 0,1.
Purpose of data	Determination of the baseline.
Any comments	-

Data/Parameter 5

Data/Parameter	***F***
Data unit	-
Description	Fraction of methane in the SWDS gas (volume fraction)
Source data	Methodological tool 4 "Emission from solid waste disposal sites" version 08.1. and IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
Value applied	0,5
Justification of choice of data or description of measurement methods and procedures applied	As per table 2 (page 7) and table 3 (page 14), for applications A and B, the default value of F is 0,5.
Purpose of data	Determination of the baseline.
Any comments	-

Data/Parameter 6

Data/Parameter	$DOC_{f,y}$
Data unit	weight fraction
Description	Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year y (weight fraction)
Source data	Methodological tool 4 "Emission from solid waste disposal sites" version 08.1. and IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
Value applied	0,5
Justification of choice of data or description of measurement methods and procedures applied	As per para 18, table 2 for application B, and table 4 (page 14) in the case of MSW, default value is established by IPCC Guidelines for National GGI.
Purpose of data	Determination of the baseline
Any comments	-

Data/Parameter 7

Data/Parameter	MCF_y
Data unit	-
Description	Methane correction factor for year y
Source data	Methodological tool 4 “Emission from solid waste disposal sites” version 08.1. and IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
Value applied	1
Justification of choice of data or description of measurement methods and procedures applied	As per para 18, table 2, for application B, considering SWDS without a water table above the bottom of the SWDS, the default values (based on SWDS type) for MCF_y is 1, as per table 5 (page 15), for anaerobic managed solid waste disposal sites.
Purpose of data	Determination of the baseline
Any comments	-

Data/Parameter 8

Data/Parameter	DOC_j
Data unit	-
Description	*Fraction of degradable organic carbon in the waste type j (weight fraction)*
Source data	Methodological tool 4 “Emission from solid waste disposal sites” version 08.1. and IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
Value applied	15%
Justification of choice of data or description of measurement methods and procedures applied	*As per table 6 (pages 15 and 16), this value is applied for “Food, food waste,beverages and tobacco (other than sludge)”.*
Purpose of data	Determination of the baseline
Any comments	-

Data/Parameter 9

Data/Parameter	k_j

Data unit	1/yr
Description	Decay rate for the waste type j (1/yr)
Source data	Methodological tool 4 “Emission from solid waste disposal sites” version 08.1. and IPCC 2006 Guidelines for National Greenhouse Gas Inventories.
Value applied	0,185
Justification of choice of data or description of measurement methods and procedures applied	As per table 7 (page 17), for rapidly degrading waste (food, food waste, beverages and tobacco) and boreal and temperate (MAT ≤ 20ºC), Wet (MAP/p ET > 1), the value is 0,185 1/yr.
Purpose of data	Determination of the baseline
Any comments	-

Data/Parameter 10

Data/Parameter	***y***
Data unit	year
Description	Year of the crediting period for which methane emissions are calculated (y is a consecutive period of 12 months)
Source data	Standard BCN ap 10.5
Value applied	10
Justification of choice of data or description of measurement methods and procedures applied	The crediting period for energy, waste, and other product use projects is 10 years. Since 1/april/2018 to 31/march/2028
Purpose of data	Determination of the baseline
Any comments	-

Data/Parameter 11

Data/Parameter	$EF_{EF,j,y}$
Data unit	$t\ CO_2/MWh$
Description	Emission factor for electricity generation for source j in year y
Source data	Methodological tool 5 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation“(version 3).

<table>
<tr><td>Value applied</td><td>
<table>
<tr><td>PERIOD / YEAR</td><td>1
1/april/2018-31/march/2019</td><td>2
1/april/2019-31/march/2020</td><td>3
1/april/2020-31/march/2021</td><td>4
1/april/2021-31/march/2022</td><td>5
1/april/2022-31/march/2023</td></tr>
<tr><td>$EF_{,EF,j,y}$ (t CO_2/MWh)</td><td>0,2815</td><td>0,271</td><td>0,2835</td><td>0,28185</td><td>0,25135</td></tr>
</table>

For the estimation period since 1/april/2023 to 31/march/2028, the value for $EF_{EF,,j,y}$ is the same as for year 2023, 0,231 t per year.
</td></tr>
<tr><td>Justification of choice of data or description of measurement methods and procedures applied</td><td>Based on the information from the Argentine Government: https://www.argentina.gob.ar/economia/energia/energia-electrica/estadisticas ;https://cammesaweb.cammesa.com/download/factor-de-emision/., the emission factor is an average of each years for the period.
<table>
<tr><td></td><td>2018</td><td>2019</td><td>2020</td><td>2021</td><td>2022</td><td>2023</td></tr>
<tr><td>$EF_{,EF,j,y}$ (CO_2t/MWh)</td><td>0,296</td><td>0,267</td><td>0,275</td><td>0,292</td><td>0,2717</td><td>0,231</td></tr>
</table>
</td></tr>
<tr><td>Purpose of data</td><td>Determination of the project emissions</td></tr>
<tr><td>Any comments</td><td>-</td></tr>
</table>

Data/Parameter 12

Data/Parameter	***TDLj,y***
Data unit	-
Description	Average technical transmission and distribution losses for providing electricity to source j in year y
Source data	IEA Statistics OECD/IEA 2018.
Value applied	15%

Justification of choice of data or description of measurement methods and procedures applied	Based on The Wolrd Bank stadistics (IEA), the electric power transmisión and distribution losses (% of outputs) in Argentina is 15.% https://data.worldbank.org/indicator/EG.ELC.LOSS.ZS
Purpose of data	Determination of the project emissions
Any comments	-

Data/Parameter 13

Data/Parameter	$EF_{FC,default}$
Data unit	Tons of CO_2 per liters (tCO_2/L)
Description	Emission factor of diesel in year y
Source data	Govern of Argentina
Value applied	0,00261
Justification of choice of data or description of measurement methods and procedures applied	Based on dates from the Goverment of Argentina: "Emisiones de CO_2 calculadas a partir de las ventas al público de combustibles líquidos en EESS- año 2018"
Purpose of data	Determination of the project emissions
Any comments	-

Data/Parameter 14

Data/Parameter	$EF_{CH4,y}$
Data unit	$t\ CH_4 / t$
Description	Emission factor of methane per tonne of waste composted valid for year *y*
Source data	Methodological tool 13 "Project and leakage amissions from composting" version 2.0.
Value applied	0,002
Justification of choice of data or description of measurement methods and procedures applied	As per table 2, page 11 from the tool, $EF_{CO4,y}$ (option 2) is a default value. The emission factor was selected based on studying published results of emission measurements from composting facilities, literature reviews on the subject and published emission factors. Data from recent, high quality sources was analyzed and a value conservatively selected from the higher end of the range in results.

Purpose of data	Determination of the project emissions.
Any comments	-

Data/Parameter 15

Data/Parameter	$EF_{N2O,y}$
Data unit	$t\ N_2O/\ t$
Description	Emission factor of nitrous oxide per tonne of waste composted valid for year *y*
Source data	Methodological tool 13 "Project and leakage amissions from composting" version 2.0.
Value applied	0,0002
Justification of choice of data or description of measurement methods and procedures applied	As per table 3, page 12 from the tool, $EF_{N2O,y}$ (option 2) is a default value. The emission factor was selected based on studying published results of emission measurements from composting facilities, literature reviews on the subject and published emission factors. Data from recent, high-quality sources was analyzed and a value conservatively selected from the higher end of the range in results.
Purpose of data	Determination of the project emissions.
Any comments	-

Data/Parameter 16

Data/Parameter	GWP_{N2O}
Data unit	t CO_2e/t N_2O
Description	Global Warming Potential of nitrous oxide.
Source data	IPCC
Value applied	265
Justification of choice of data or description of measurement methods and procedures applied	Global warming potential of nitrous oxide valid for the relevant commitment period.
Purpose of data	Determination of the project emissions.
Any comments	https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_0.pdf

Data and parameters monitored.

Relevant parameters will be monitored during the crediting period as indicated in the tables below.

Data/Parameter 17

Data/Parameter	$W_{j,x}$				
Data unit	t				
Description	Amount of solid waste type j prevent from disposal in the SWDS in year x				
Source data	Measurements by project holder.				
Value applied	Since the measurement of the amount of solid waste has an 2% of uncertainly, the final values applied are above,				
	1 /april/2018-/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2 31/march
	12,292.56	16,857.45	14,177.14	17,143.75	16,512
	For the estimation period since 1/april/2023 to 31/march/2028, the value for $W_{,y}$ is the same as for period number 5 (1/april/2022-31/march/2023), 16,591.93 tons per year.				
Justification of choice of data or description of measurement methods and procedur	According to paragraph 25, of the methodological tool 4 "*Emissions from solid waste disposal sites. Version 08.1*" "in case that only one type of waste is disposed, then $W_{j,x,} = W_x$ and $W_{x,} = W_{i.}$" And, as per table 11 (page 19), for application B this parameter is the total amount of waste disposed in a SWDS in year x and its data source are the measurements of the project holder.				

es applied	
Purpose of data	Determination of the baseline
Monitoring frequency	Monitored continuously with the entrance of each truck at the plant.
Any comments	-

Data/Parameter 18

Data/Parameter	Q_y
Data unit	t
Description	Quantity of waste composted in year y
Source data	Measurements by project holder.
Value applied	Since the measurement of the amount of solid waste has an 2% of uncertainly, the final values applied are above

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023	TOTAL (t)
Q_y (t)	12,292.56	16,857.45	14,177.14	17,143.75	16,512.75	76,983.65

For the estimation period since 1/april/2023 to 31/march/2028, the value for $W_{,y}$ is the same as for period number 5 (1/april/2022-31/march/2023), 16,512.75 tons per year.

Justification of choice of data or description of measure	According to paragraph 14, of the methodological tool 13 "*Project and leakage emission from composting*", option 1, the composting installation monitor the weight of waste delivered using an on-site weighbridge or any other applicable and calibrated weighing device. So, Qy and W_j has the save values.

ment methods and procedures applied	
Purpose of data	Determination of the project emissions.
Monitoring frequency	Monitored continuously with the entrance of each truck at the plant.
Any comments	-

Data/Parameter 19

Data/Parameter	$FC_{,i,y}$
Data unit	Liters per year
Description	Fossil fuel consumption
Source data	Measurements by project holder.
Value applied	

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023
FC (L)	12,174.80	20,528.73	17,923.14	19,959.50	34,699.79

For the estimation period 6-10, the results of FC are the same as for period 5 per year (34,699.79 litters per year)

Justification of choice of data or description	As per page 15 of the methodology AM0057 and table 1 (page 5) the Methodological tool number 3 “Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion” (version 3), these parameters are measured by the project holder continuously.

of measurement methods and procedures applied	
Purpose of data	Determination of the project emissions.
Monitoring frequency	Monitored continuously with the invoice of fuel consumption by the supplier.
Any comments	-

Data/Parameter 20

Data/Parameter	$EC_{PJ,j,y}$
Data unit	MWh/yr
Description	Quantity of electricity consumed by the project electricity consumption source j in year y
Source data	Methodological tool 5 “Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation” (version 3).
Value applied	PERIOD/ YEAR: 1 1/april/2018-31/march/2019; 2 1/april/2019-31/march/2020; 3 1/april/2020-31/march/2021; 4 1/april/2021-31/march/2022; 5 1/april/2022-31/march/2023 $EC_{PJ,j,y}$ (MWh): 16.75; 19.50; 21.25; 22.50; 20.00 For the estimation period since 1/april/2023 to 31/march/2028, the value for $EF_{EF,,j,y}$ is the same as for period 5, 20.00 MWh per year.
Justification of choice of data or description of measurement	As per table 10, pages 20 and 21 from the tool, the quantity of electricity consumption are measured by the project holder continuously.

methods and procedures applied	
Purpose of data	Determination of the project emissions
Monitoring frequency	Monitored continuously with the invoice of electricity consumption by the supplier.
Any comments	-

SDG and Risk monitoring

The monitoring of the SDGs will be carried out in relation to the tool based on the Registration format of the BioCaron Registration Platform called SDG Tool. The monitoring of Social, environmental and economic Risks according to the tool: BCR project activities do not cause any net-harm to the environment or to local communities and society in general. Attached is the monitoring plan for the BioCarbon format (BCR_Monitoring-Report-Format), with the file name BCR_Monitoring-Report-solid2023 and the file SDG WORMS solid V2.

Relevant SDG Indicator	**SGD 9: Industry, innovation and infrastructure**
Unit	Not Applicable
Description	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Source of data	Chief operating officer
Purpose of monitoring	Fulfilment of SDG 9
Monitoring Frecuency	Annual

Relevant SDG Indicator	**SGD 11: sustainable cities and communities**
Unit	Not Applicable
Description	Make cities and human settlements inclusive, safe, resilient and sustainable
Source of data	Chief operating officer
Purpose of monitoring	Fulfilment of SDG 11
Monitoring Frecuency	Annual

Relevant SDG Indicator	**SGD 12: responsible production and consumption**
Unit	Not Applicable
Description	Ensure sustainable consumption and production patterns.
Source of data	Chief operating officer
Purpose of monitoring	Fulfilment of SDG 12
Monitoring Frecuency	Annual

Relevant SDG Indicator	**SGD 13: Climate Action**
Unit	Not Applicable
Description	Take urgent action to combat climate change and its impacts
Source of data	Chief operating officer

Purpose of monitoring	Fulfilment of SDG 13
Monitoring Frecuency	Annual

Indicator	Natural Risks
Unit	Not Applicable
Description	Identification of potential natural and anthropogenic risks that GHG mitigation actions may face and determine the necessary measures to mitigate said risks.
Source of data	Chief operating officer
Purpose of monitoring	Compliance Monitoring Of natural risks
Monitoring Frecuency	Annual

Indicator	**Financial Risks**
Unit	Not Applicable
Description	Identify potential financial risks related to expected costs and investments, as well as project cash flows and define measures to mitigate financial risks.
Source of data	Chief operating officer
Purpose of monitoring	Compliance Monitoring Of Financial Risks
Monitoring Frecuency	Annual

Indicator	**Social Risks**
Unit	Not Applicable
Description	Determine medium and short-term risks associated with the participation of local communities and interested parties in the proposed activities.
Source of data	Chief operating officer
Purpose of monitoring	Compliance Monitoring Of Social Risks
Monitoring Frecuency	Annual

16 Quantification of GHG emission reduction / removals

16.1 Baseline emissions

As per para 24 of the applied methodology (AMS III.F.), baseline emissions shall exclude emissions of methane that would have to be captured, fuelled or flared to comply with national or local safety requirements or legal regulations.

$$BE_y = BE_{CH4,SWDS,y} + BE_{ww,y} + BE_{CH4,manure,y} - MD_{y,reg} \times GWP_{CH4}$$

Where:

BE_y = *Baseline emissions in the year y (tCO_2e)*

$BE_{CH4,SWDS,y}$ = *Yearly methane generation potential of the solid waste composted by the project activity during the years x from the beginning of the project activity (x=1) up to the year y estimated as per the latest version of the methodological tool "Emissions from solid waste disposal sites" (tCO_2e). The tool may be used with the factor "f=0.1" taking into account the methane oxidation effect by the upper layer of the landfill. With the definition of year x as 'the year since the project activity started diverting wastes from landfill disposal, x runs from the first year of crediting period (x=1) to the year for which emissions are calculated (x=y)'*

$MD_{y,reg}$	=	*Amount of methane that would have to be captured and combusted in the year y to comply with the prevailing regulations (tone)*
$BE_{CH4,manure,y}$	=	*Where applicable, baseline emissions from manure composted by the project activities, as per the procedures in AMS-III.D (tCO_2e)*
$BE_{ww,y}$	=	*Where applicable, baseline emissions from the wastewater co-composted, calculated as per the procedures in AMS-III.H (tCO_2e)*
GWP_{CH4}	=	*Global Warming Potential for CH_4 applicable to the crediting period (t CO_2e/t CH_4)*

The project does not involve co-composting along with waste water. Hence, the project does not involve composting of manure. Also, the existing landfill does not contain a methane recovery system: in order to comply with the prevailing regulations, it's not required to capture or combust methane for the project activity. So, final equation applied is:

$$BEy = BE_{CH4,SWDS,y}$$

Yearly methane generation potential from solid waste disposal site ($BE_{CH4,SWDS,y}$)

The Yearly Methane Generation Potential for the solid waste ($BE_{CH4,SWDS,y}$) is calculated using the first order decay model as described in the latest version of the methodological tool "Emissions from solid waste disposal sites" (version 08.1).

Since the methane generation from municipal solid waste is treated with composting technology, the tool is applicable for the project under 'Applicability B' of the project activity. As per para 17, the baseline methane emission from solid waste disposal site will be calculated as below:

$$BE_{CH4,SWDS,y} = \varphi_y * (1 - f_y) * GWP_{CH4} * (1 - OX) * \frac{16}{12} * F * DOC_{f,y} * MCF_y * \sum_{x=1}^{y} \sum_{y} (W_{j,x} * DOC_j * e^{-kj*(y-x)} * (1 - e^{-kj})$$

Where:

$BE_{CH4,SWDS,y}$ = Baseline methane emissions occurring in year y generated from waste disposal at a SWDS during a time period ending in year y (t CO_2e/yr)

x = Years in the time period in which waste is disposed at the SWDS, extending from the first year in the time period (x = 1) to year y (x = y)

y = Year of the crediting period for which methane emissions are calculated (y is a consecutive period of 12 months)

$DOC_{f,y}$ = Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year y (weight fraction)

$W_{j,x}$ = Amount of solid waste type j disposed or prevented from disposal in the SWDS in the year x (t)

φ_y = Model correction factor to account for model uncertainties for year y.

f_y = Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y

GWP_{CH4} = Global Warming Potential of methane

OX = Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste)

F = Fraction of methane in the SWDS gas (volume fraction)

MCF_y = Methane correction factor for year y

DOC_j = Fraction of degradable organic carbon in the waste type j (weight fraction)

k = Decay rate for the waste type j (1 / yr)

j = Type of residual waste or types of waste in the MSW

Model correction factor to account for model uncertainties for year y (φ_y)

The default value is applied for application B and in humid/wet conditions, so **φ_y = 0,85.**

Fraction of methane captured at the SWDS and flared, combusted or used in another manner that prevents the emissions of methane to the atmosphere in year y (fy)

For application B the monitoring annually: Select the maximum value from the following: (a) contract or regulation requirements specifying the amount of methane that must be destroyed/used (if available) and (b) historic data on the amount captured.

fy = 0 (assumed)

Global Warming Potential of methane (GWP_{CH4})

This parameter is established by IPCC for each years.

GWP_{CH4} = 28 tCO_2e / t CH_4

Oxidation factor (OX)

For applications A and B, the default value of OX is 0,1.

OX = 0,1

Fraction of methane in the SWDS gas (volume fraction) (F)

For applications A and B, the default value of F is 0,5.

F = 0,5

Fraction of degradable organic carbon (DOC) that decomposes under the specific conditions occurring in the SWDS for year y (weight fraction) ($DOC_{f,y}$)

For application B, and table 14 (page 14) in the case of MSW, default value is established by IPCC Guidelines for National GGI. So, **$DOC_{f,y}$ = 0,5**

Methane correction factor for year y (MCF_y)

For application B, considering SWDS without a water table above the bottom of the SWDS, the default values (based on SWDS type) for MCFy is 1, as per table 5, for anaerobic managed solid waste disposal sites.

MCF_y = 1

Amount of solid waste type j disposed or prevented from disposal in the SWDS in the year x (t) ($W_{j,x}$)

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023	TOTAL (t)
W,y (t)	12,292.56	16,857.45	14,177.14	17,143.75	16,512.75	76,983.65

For the estimation period since 1/april/2023 to 31/march/2028, the value for $W_{,y}$ is the same as for period number 5 (1/april/2022-31/march/2023), 16,512.75 tons per year.

Fraction of degradable organic carbon in the waste type j (weight fraction) (DOC_j)

For application B, and table 6, the value for MSW and food, food waste, beverages and tobacco (other than sludge) is 15% wet waste.

DOC_j = 15%

Decay rate for the waste type j (1/yr) (k_j)

For rapidly degrading waste (food, food waste, beverages and tobacco) and boreal and temperate (MAT ≤ 20ºC), Wet (MAP/p ET > 1), the value is 0,185 1/yr. **k_j = 0,185 1/yr.**

So, the results of the baseline for each year are:

PERIOD/YEAR	BASELINE (t CO_2 e)
1 1/april/2018-31/march/2019	10,873.35
2 1/april/2019-31/march/2020	14,911.21
3 1/april/2020-31/march/2021	12,540.35
4 1/april/2021-31/march/2022	15,164.45

5 1/april/2022-31/march/2023	14,606.30
6 1/april/2023-31/march/2024	14,606.30
7 1/april/2024-31/march/2025	14,606.30
8 1/april/2025-31/march/2026	14,606.30
9 1/april/2026-31/march/2027	14,606.30
10 1/april/2027-31/march/2028	14,606.30
TOTAL (t CO_2 e)	141,127.18

16.1.1 GHG emission reductions in the project- scenario

Project emissions from composting process (PE_y) will be determined as per the methodological tool "Project and leakage emissions from composting", version 2. As per the tool the project emission from composting is calculated as below:

$$PE_y = PE_{COMP,y} = PE_{EC,y} + PE_{FC,y} + PE_{CH4,y} + PE_{N2O,y} + PE_{RO,y}$$

Where:

$PE_{COMP,y}$ = Project emissions associated with composting in year y (t CO_2e/yr)

$PE_{EC,y}$ = Project emissions from electricity consumption associated with composting in year y (t CO_2/yr)

$PE_{FC,y}$ = Project emissions from fossil fuel consumption associated with composting in year y (t CO_2/yr)

$PE_{CH4,y}$ = Project emissions of methane from the composting process in year y (t CO_2e/yr)

$PE_{N2O,y}$ = Project emissions of nitrous oxide from the composting process in year y (t CO_2e/yr)

$PE_{RO,y}$ = Project emissions of methane from run-off wastewater associated with co-composting in year y (t CO_2e/yr)

The project does not involve co-composting. Hence, $PE_{RO,y}$=0

Hence the project emission equation is reduced as below:

$$PE_y = PE_{EC,y} + PE_{FC,y} + PE_{CH4,y} + PE_{N20,y}$$

Determination of project emissions from electricity consumption ($PE_{EC,y}$)

Since the electricity will be consumed only from grid, the project emission from electricity consumption is estimated as per the methodological tool 05 '[Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation]', version 3, as per para 16 of the tool the project emission from electricity consumption. It's calculated as below:

$$PE_{EC,y} = \sum_j EC_{PJ,j,y} * EF_{EL,j,y} * (1 + TDL_{j,y})$$

Where,

$PE_{EC,y}$	=	Project emissions from electricity consumption in year y (t CO_2 / yr)
$EC_{PJ,j,y}$	=	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)
$EF_{EL,j,y}$	=	Emission factor for electricity generation for source j in year y (t CO_2/MWh)
$TDL_{j,y}$	=	Average technical transmission and distribution losses for providing electricity to source j in year y

Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr)

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023
$EC_{PJ,j,y}$ (MWh)	16.75	19.50	21.25	22.50	20.00

For the estimation period since 1/april/2023 to 31/march/2028, the value for $EF_{EF,,j,y}$ is the same as for period 5, 20.00 MWh per year.

Emission factor for electricity generation for source j in year y (t CO_2/MWh)

Based on the information from the Argentine Government: https://www.argentina.gob.ar/economia/energia/energia-electrica/estadisticas ;https://cammesaweb.cammesa.com/download/factor-de-emision/., the emission factor is an average of each years for the period.

	2018	2019	2020	2021	2022	2023
$EF_{,EF,j,y}$ (t CO_2 e /MWh)	0,296	0,267	0,275	0,292	0,2717	0,231

So,

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023
$EF_{,EF,j,y}$ (t CO_2 e /MWh)	0,2815	0,271	0,2835	0,28185	0,25135

For the estimation period since 1/april/2023 to 31/march/2028, the value for $EF_{EF,,j,y}$ is the same as for year 2023, 0,231 (t CO_2 e /MWh) per year.

Average technical transmission and distribution losses for providing electricity to source j in year y (TDL).

Based on The Wolrd Bank stadistics (IEA), the electric power transmission and distribution losses (% of outputs) in Argentina is 15%. So, **$TDL_{j,y}$ = 15%**

So, the results of the project emission from electricity consumption are:

PERIOD / YEAR	1 1/april/2018-31/march/2019	2 1/april/2019-31/march/2020	3 1/april/2020-31/march/2021	4 1/april/2021-31/march/2022	5 1/april/2022-31/march/2023	6-10 1/april/2023-31/march/2028 (yearly)
$PE_{EC,y}$ (t CO_2e)	5.42	6.08	6.93	7.29	5.78	5.31

Determination of project emissions from fossil fuel consumption ($PE_{FC,y}$)

Project emissions from fossil fuel consumption ($PE_{FC,y}$), since the only fuel in the project activity is diesel, is calculated as below:

$$PE_{FC,j,y} = FC_y \times EF_{FC,default}$$

Where:

$PE_{FC,j,y}$ = CO_2 emissions from fossil fuel combustion in process j during the year y (tCO_2/yr)

FC_y = Quantity of diesel combusted in process j during the year y (L/yr)

$EF_{FC,default}$ = Emission factor of diesel in year y (tCO_2/L)

The value of the emission factor of diesel for every year is based on the information from the Argentine Government:

https://www.energia.gob.ar/contenidos/archivos/Reorganizacion/informacion_del_mercado/mercado_hidrocarburos/mapas/metodologia_huella_CO2_eess.pdf

The results of this equation are collected in the following table:

PERIOD / YEAR	1 1/april/2018 - 31/march/2019	2 1/april/2019 - 31/march/2020	3 1/april/2020 - 31/march/2021	4 1/april/2021 - 31/march/2022	5 1/april/2022 - 31/march/2023
FC (L)	12,174.80	20,528.73	17,923.14	19,959.50	34,699.79
EF (ton CO_{2e}/L)	0,00261	0,00261	0,00261	0,00261	0,00261
$PE_{FC,y}$	**31.78**	**53.58**	**46,78**	**52.09**	**90.57**

For the estimation period 6-10, the results of $PE_{FC,y}$ are the same as for period 5 per year (90.57 ton CO_2e)

Determination of project emissions of methane ($PE_{CH4,y}$)

As per para 22 of the tool, Project emissions of methane from composting are determined as follows:

$$PE_{CH4,y} = Q_y \times EF_{CH4,y} \times GWP_{CH4}$$

Where:

$PE_{CH4,y}$ = Project emissions of methane from the composting process in year y (t CO_2e / yr)

Q_y = Quantity of waste composted in year y (t / yr)

$EF_{CH4,y}$ = Emission factor of methane per tonne of waste composted valid for year y (t CH_4 / t)

GWP_{CH4} = Global Warming Potential of CH_4 (t CO_2e / t CH_4)

As per option 2, the default value is used for emission factor of methane per tonne of waste; $EF_{CH4,} = EF_{CH4,efault}$ = 0,002 (t CO_2 e /t CH_4)

Hence, the emissions of methane are as following:

PERIOD / YEAR	1 1/april/2018 - 31/march/2019	2 1/april/2019 - 31/march/2020	3 1/april/2020 - 31/march/2021	4 1/april/2021 - 31/march/2022	5 1/april/2022 - 31/march/2023
$PE_{CH4,y}$	674.62	925.14	778.04	940.85	906.22

For the estimation period 6-10, the results of $PE_{CH4,y}$ are the same as for period 5 per year.

Determination of project emissions of nitrous oxide ($PE_{N2O,y}$)

As per para 26 of the tool, project emissions of nitrous oxide from composting are determined as follows:

$$PE_{N20,y} = Q_y \times EF_{N20,y} \times GWP_{N20}$$

Where:

$PE_{N2O,y}$ = Project emissions of N_2O from the composting process in year y (t CO_2e/yr)

Q_y = Quantity of waste composted in year y (t /yr)

$EF_{N2O,y}$ = Emission factor of N_2O per tonne of waste composted valid for year y (t N_2O/t)

GWP_{N2O} = Global Warming Potential of N_2O (t CO_2e / t N_2O)

As per option 2, the default value is used for emission factor of N_2O per tonne of waste, ie, $EF_{N2O,} = EF_{N2O,default}$ = 0,0002 (t CO_2 e /t N_2O)

Hence, the emissions of nitrous oxide are as following:

PERIOD / YEAR	1 1/april/2018 - 31/march/2019	2 1/april/2019 - 31/march/2020	3 1/april/2020 - 31/march/2021	4 1/april/2021 - 31/march/2022	5 1/april/2022 - 31/march/2023
$PE_{N2O,y}$ (t CO_2 e)	638.48	875.58	736.36	890.45	857.67

For the estimation periods 6-10, the results of $PE_{N2O,y}$ are the same as for period 5 per year.

In conclusion, the results of the project emissions are as following:

PERIOD / YEAR	1 1/april/2018- 31/march/ 2019	2 1/april/2019- 31/march/ 2020	3 1/april/2020- 31/march/ 2021	4 1/april/2021- 31/march/ 2022	5 1/april/2022- 31/march/ 2023	6-10 1/april/2023- 31/march/ 2028 (yearly)
$PE_{EC,y}$	5.42	6.08	6.93	7.29	5.78	5.31
$PE_{FC,y}$	31.78	53.58	46,78	52.09	90.57	90.57
$PE_{CH4,y}$	674.62	925.14	778.04	940.85	906.22	906.22
$PE_{N2O,y}$	638.48	875.58	736.36	890.45	857.67	857.67
TOTAL (t CO_2 e)	**1,350.29**	**1,860.37**	**1,568.11**	**1,890.68**	**1,860.24**	**1,859.77**

Emission reduction

All the activities described are the result of the construction of new composting facilities or the expansion of capacity of existing composting facilities within the period contemplated. Therefore, the formula used as indicated in the methodology AMS-III.F. Small-scale methodology: Avoidance of methane emissions through composting Version 12.0, is the Equation 2:

$$ERy = BEy + (PEy - LEy)$$

Where:

ERy = *Emission reduction in the year y (tCO_2e)*

BEy = *Baseline emissions in year y (tCO_2e)*

PEy = *Project emissions in the year y (tCO_2e)*

LEy = *Leakage emissions in year y (tCO_2e)*

PERIOD	BASELINE EMISSIONS	PROJECT EMISSIONS	LEAKAGE EMISIONS	EMISSION REDUCTION
1/april/2018-31/march/2019	10,873.35	1350.29	-	9,523.06
1/april/2019-31/march/2020	14,911.21	1,860.37	-	13,050.84
1/april/2020-31/march/2021	12,540.35	1,568.11	-	10,972.24
1/april/2021-31/march/2022	15,164.45	1,890.68	-	13,273.77
1/april/2022-31/march/2023	14,606.30	1,860.24	-	12,746.06
1/april/2023-31/march/2024	14,606.30	1,859.77	-	12,746.53
1/april/2024-31/march/2025	14,606.30	1,859.77	-	12,746.53
1/april/2025-31/march/2026	14,606.30	1,859.77	-	12,746.53
1/april/2026-31/march/2027	14,606.30	1,859.77	-	12,746.53
1/april/2027-31/march/2028	14,606.30	1,859.77	-	12,746.53
TOTAL (t CO_2 e)	141,127.18	17,828.55		123,298.63

16.2 Project emissions/removals

Emission reduction

All the activities described are the result of the construction of new composting facilities or the expansion of capacity of existing composting facilities within the period contemplated. Therefore, the formula used as indicated in the methodology AMS-III.F. Small-scale methodology: Avoidance of methane emissions through composting Version 12.0, is the Equation 2:

$$ERy = BEy + (PEy - LEy)$$

Where:

ERy = *Emission reduction in the year y (tCO_2e)*

BE_y = *Baseline emissions in year y (tCO_2e)*

PE_y = *Project emissions in the year y (tCO_2e)*

LE_y = *Leakage emissions in year y (tCO_2e)*

16.3 Leakages

Based on methodology AMS.III.F, there is no leakage emission from this project activity because:

- No composting technology equipment is transferred from or to another activity.
- The compost is not stored in anaerobic condition and not disposed of in a SWDS.

The permanence of the project is ensured because this project is retroactive and the emission reduction is calculated after its commissioning.

So, $LE_y = 0$.

16.4 Net GHG Emission Reductions / Removals

Present the net GHG emission reduction/removals, including the total baseline emissions, the project emissions reductions/removals, the total leakage, and the total emissions reductions/removals. Specify the GHG emission reductions/removals by calendar year.

Quantify the net GHG emission reductions and removals, summarizing the key results using the table below.

PERIOD	BASELINE EMISSIONS	PROJECT EMISSIONS	LEAKAGE EMISIONS	EMISSION REDUCTION
1/april/2018-31/march/2019	10,873.35	1350.29	-	9,523.06
1/april/2019-31/march/2020	14,911.21	1,860.37	-	13,050.84
1/april/2020-31/march/2021	12,540.35	1,568.11	-	10,972.24
1/april/2021-31/march/2022	15,164.45	1,890.68	-	13,273.77
1/april/2022-31/march/2023	14,606.30	1,860.24	-	12,746.06
1/april/2023-31/march/2024	14,606.30	1,859.77	-	12,746.53
1/april/2024-31/march/2025	14,606.30	1,859.77	-	12,746.53
1/april/2025-31/march/2026	14,606.30	1,859.77	-	12,746.53
1/april/2026-31/march/2027	14,606.30	1,859.77	-	12,746.53

1/april/2027-31/march/2028	14,606.30	1,859.77	-	12,746.53
TOTAL (t CO_2 e)	141,127.18	17,828.55		123,298.63

16.5 Comparison of actual emission reductions with estimates in the project document

For the estimation period since 1/april/2023 to 31/march/2028, the value for $W_{,y}$ is the same as for period number 5 (1/april/2022-31/march/2023), 16,512.75 tons per year.

16.6 Remarks on difference from estimated value in the registered project document

Estimated total and average annual GHG emission reduction amount 123,298.63 ton CO_2 total in 10 years, (12.298,63 ton CO_2 average annual)

History of the document

Version	*Date*	*Nature*
1.0	*August 28, 2023*	*Initial version*
Nature of document: Regulatory *Document Type: Guideline, Form* *Function: Verification registration and CCV issuance*		